

March 2, 1954

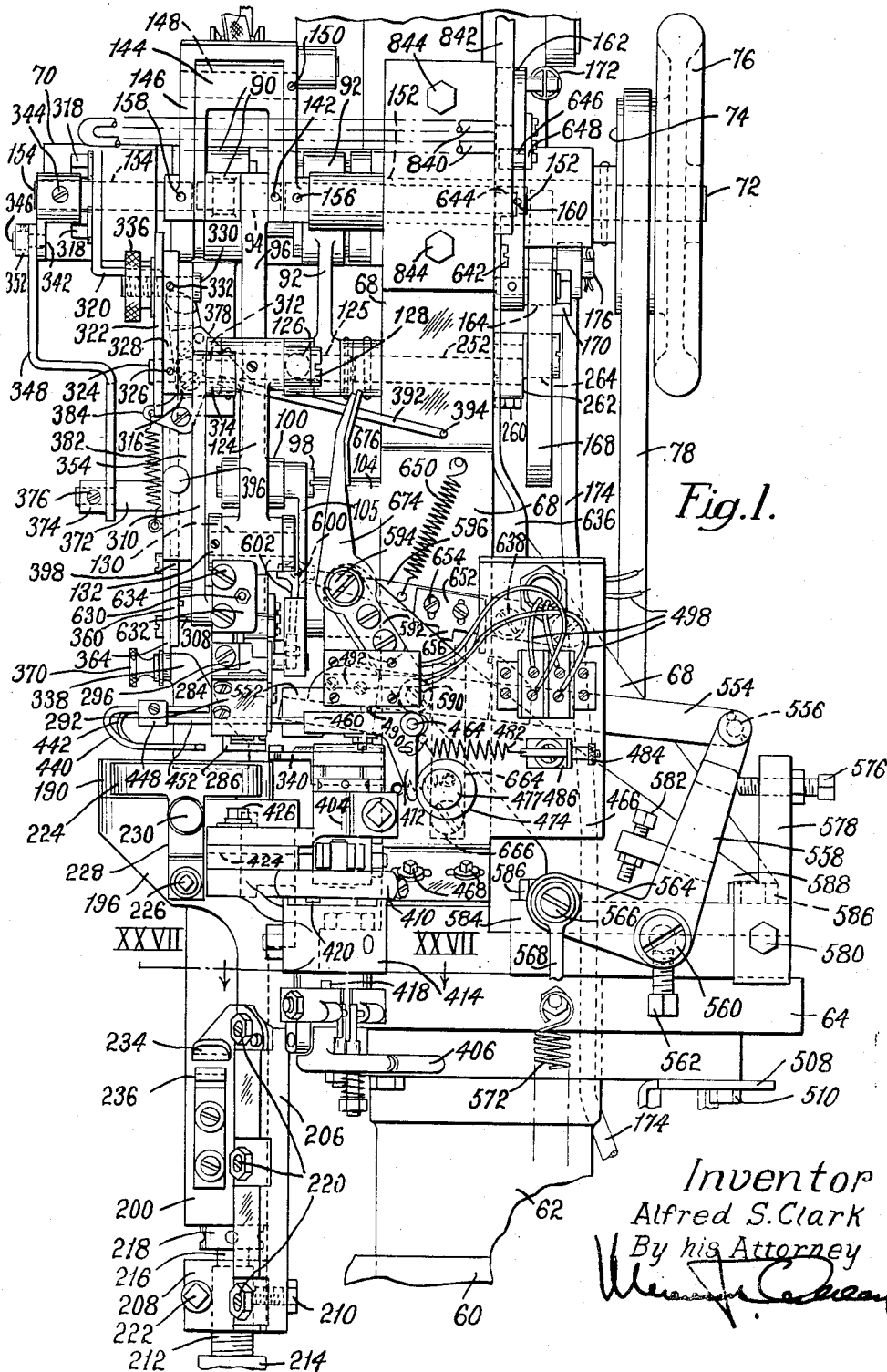
A. S. CLARK

2,670,480

MACHINE FOR OPERATING UPON INSOLES

Filed July 21, 1950

18 Sheets-Sheet 1



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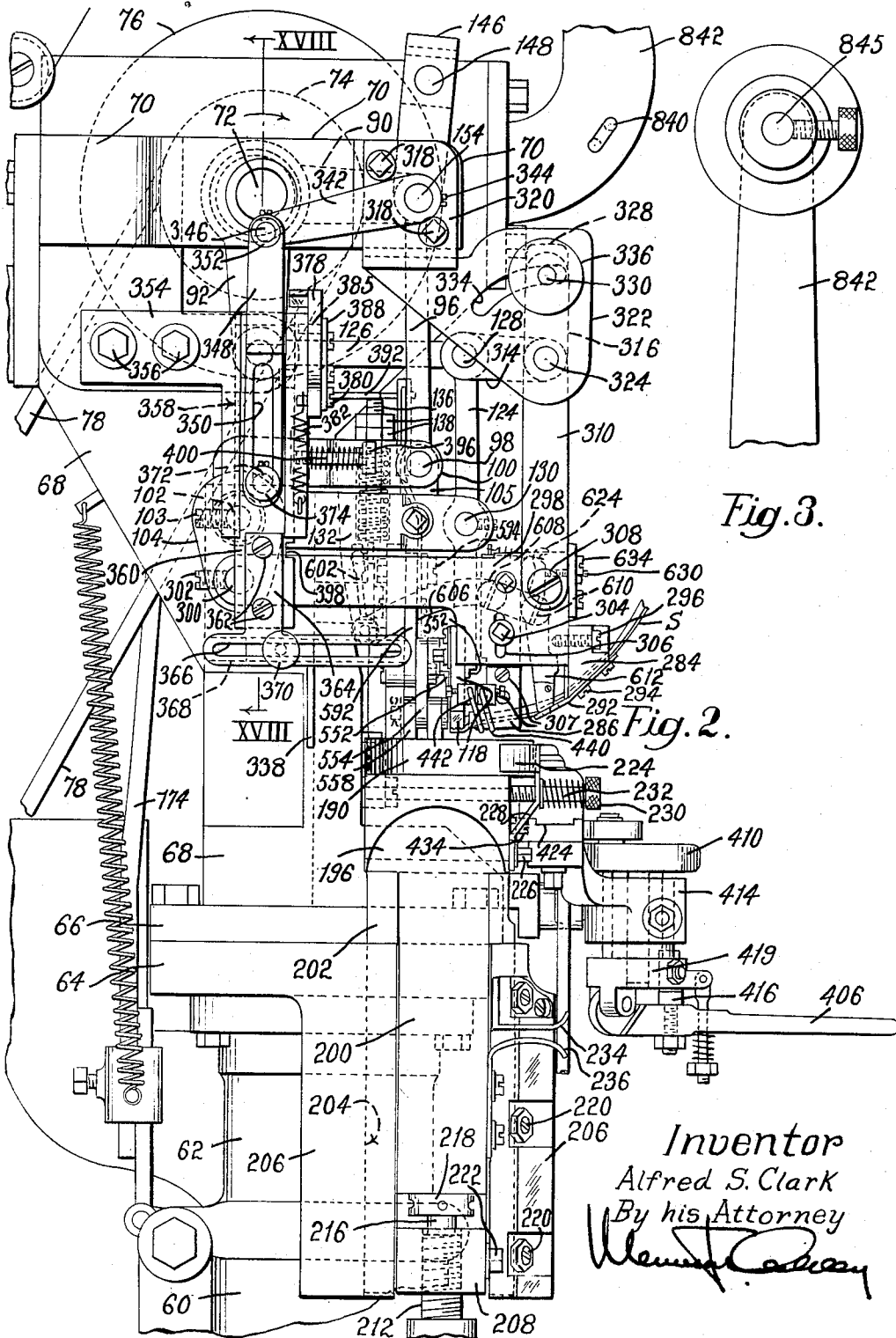
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18 Sheets-Sheet 3

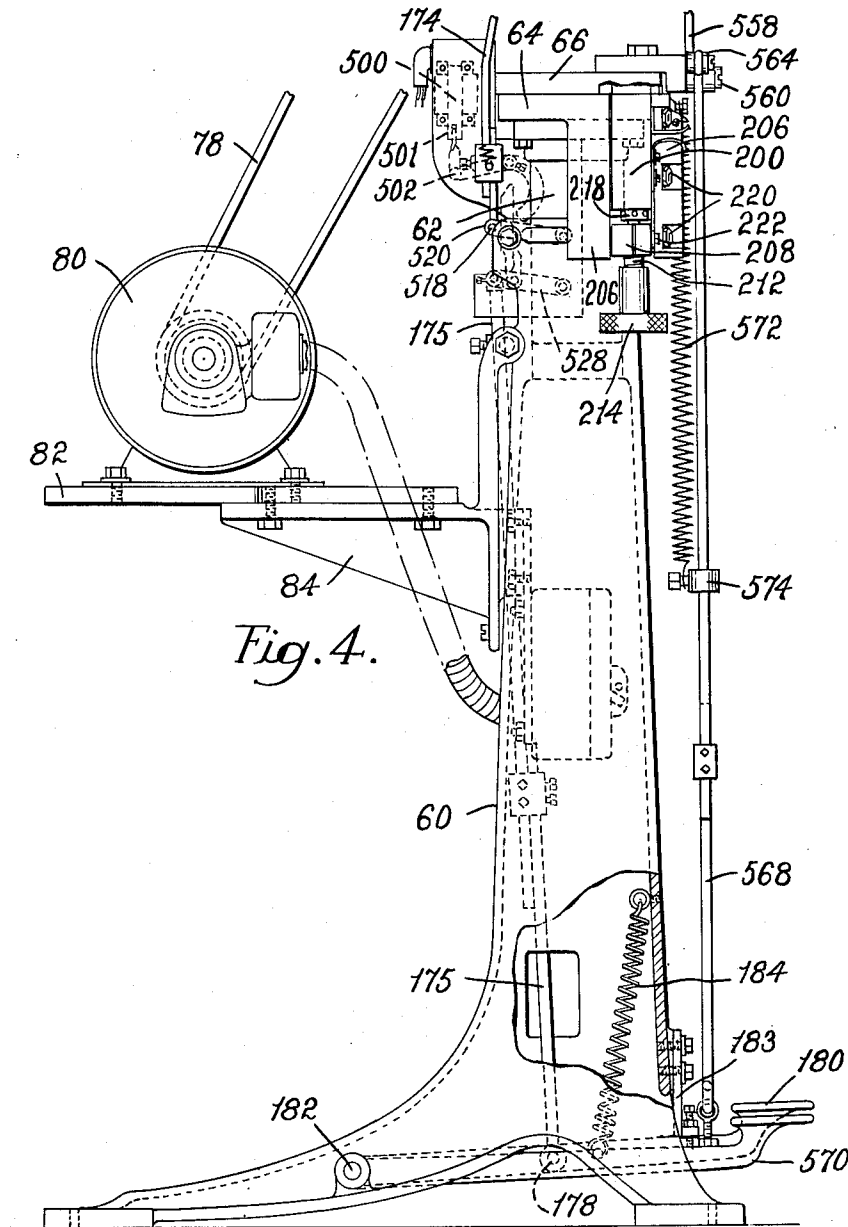


Fig. 4.

Inventor

Alfred S. Clark

By his Attorney

Henry C. Clark

March 2, 1954

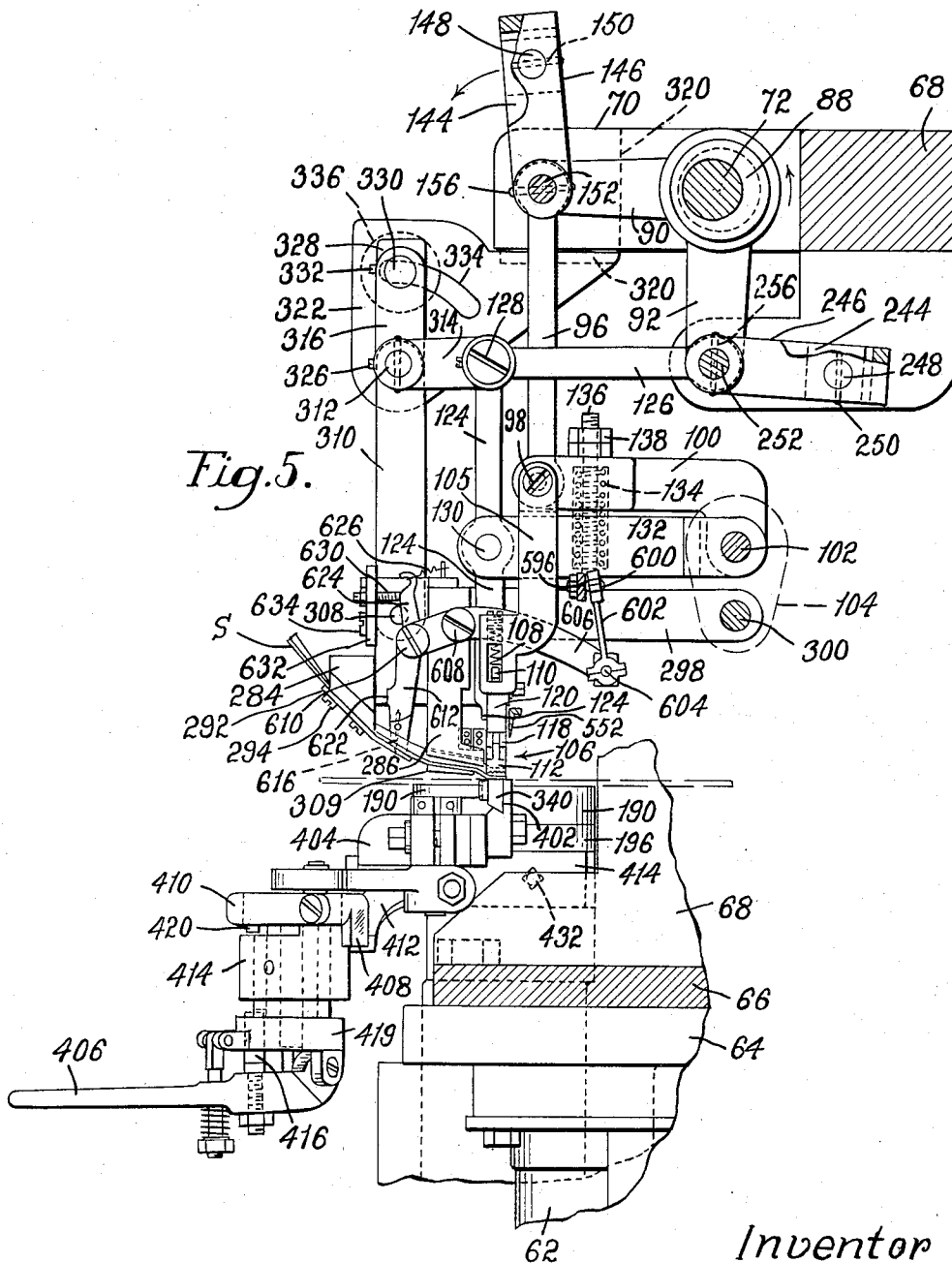
A. S. CLARK

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Inventor
Alfred S. Clark
By his Attorney
Wm. J. Casey

March 2, 1954

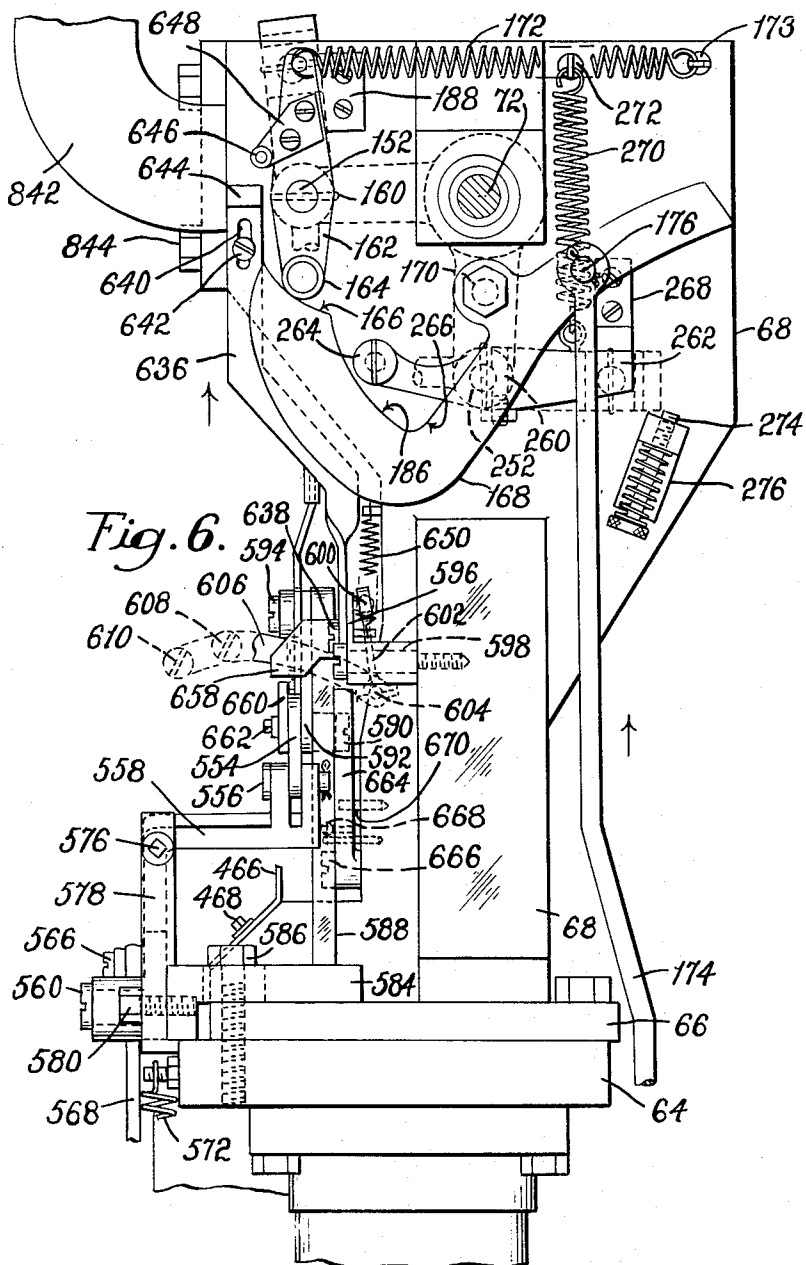
A. S. CLARK

2,670,480

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18 Sheets-Sheet 5



Inventor
Alfred S. Clark
By his Attorney
Wm. F. Carey

March 2, 1954

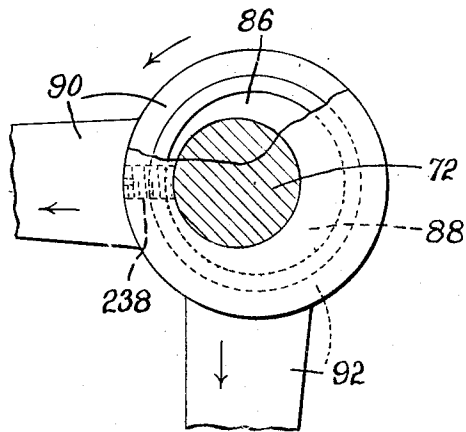
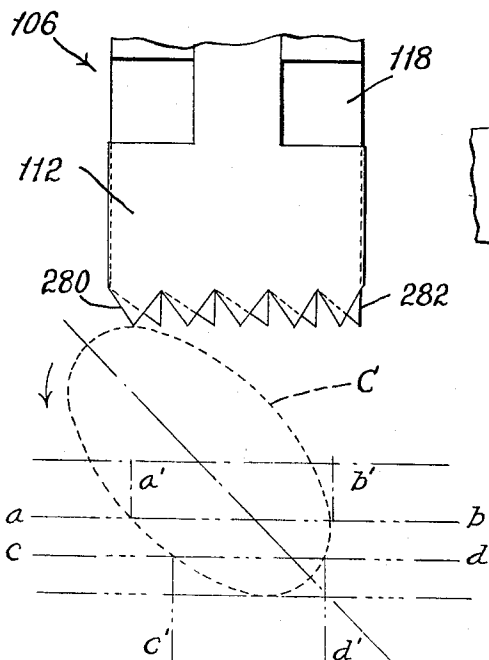
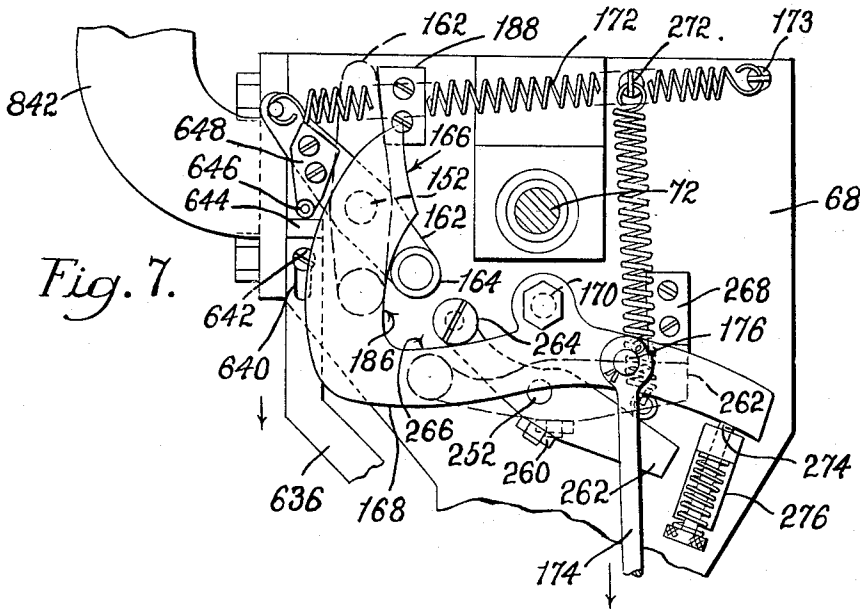
A. S. CLARK

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Inventor
Alfred S. Clark
By his Attorney
Wm. J. Casey

March 2, 1954

A. S. CLARK

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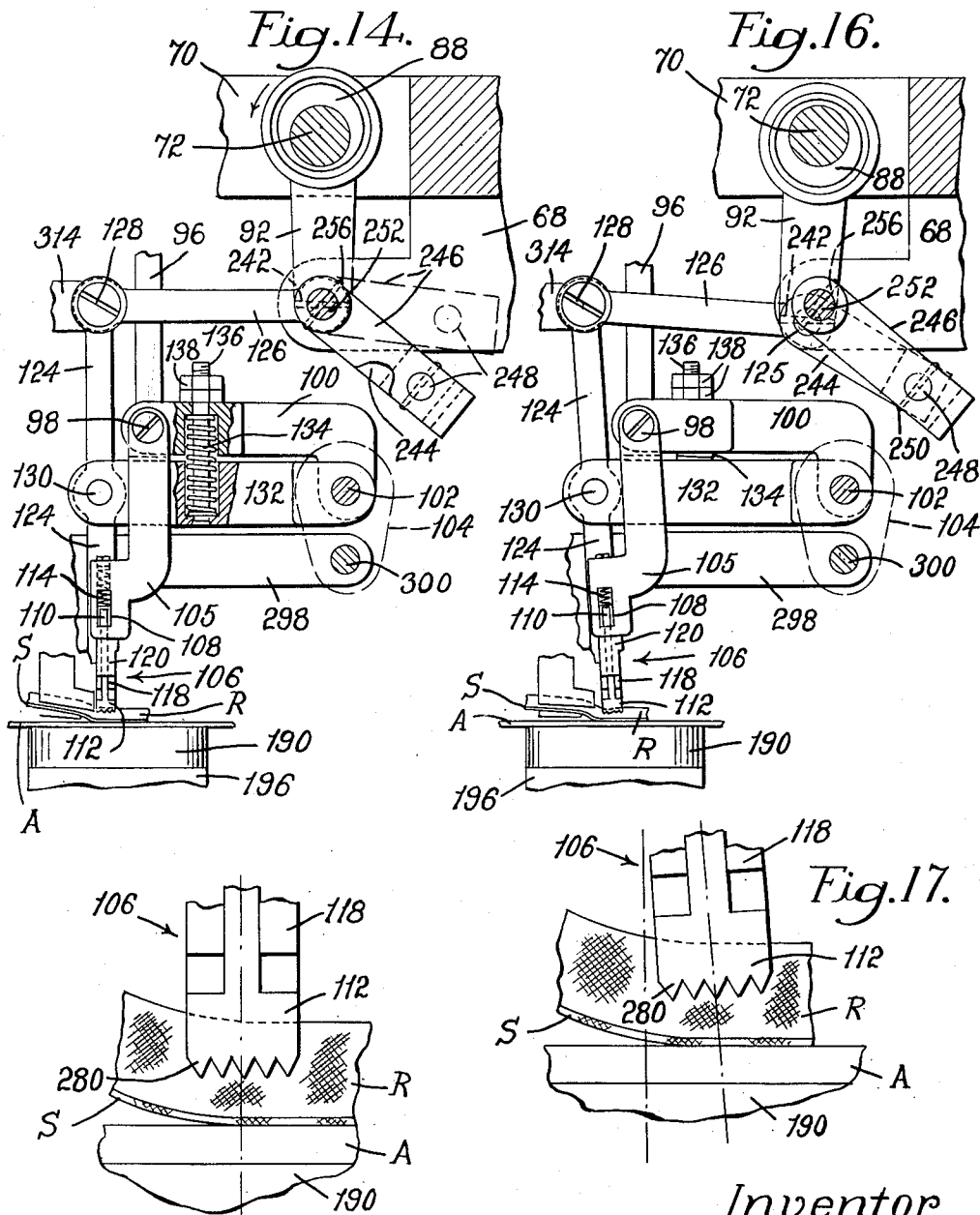


Fig.15.

Fig.17.

Inventor
Alfred S. Clark
By his Attorney
Wm. H. Kelley

March 2, 1954

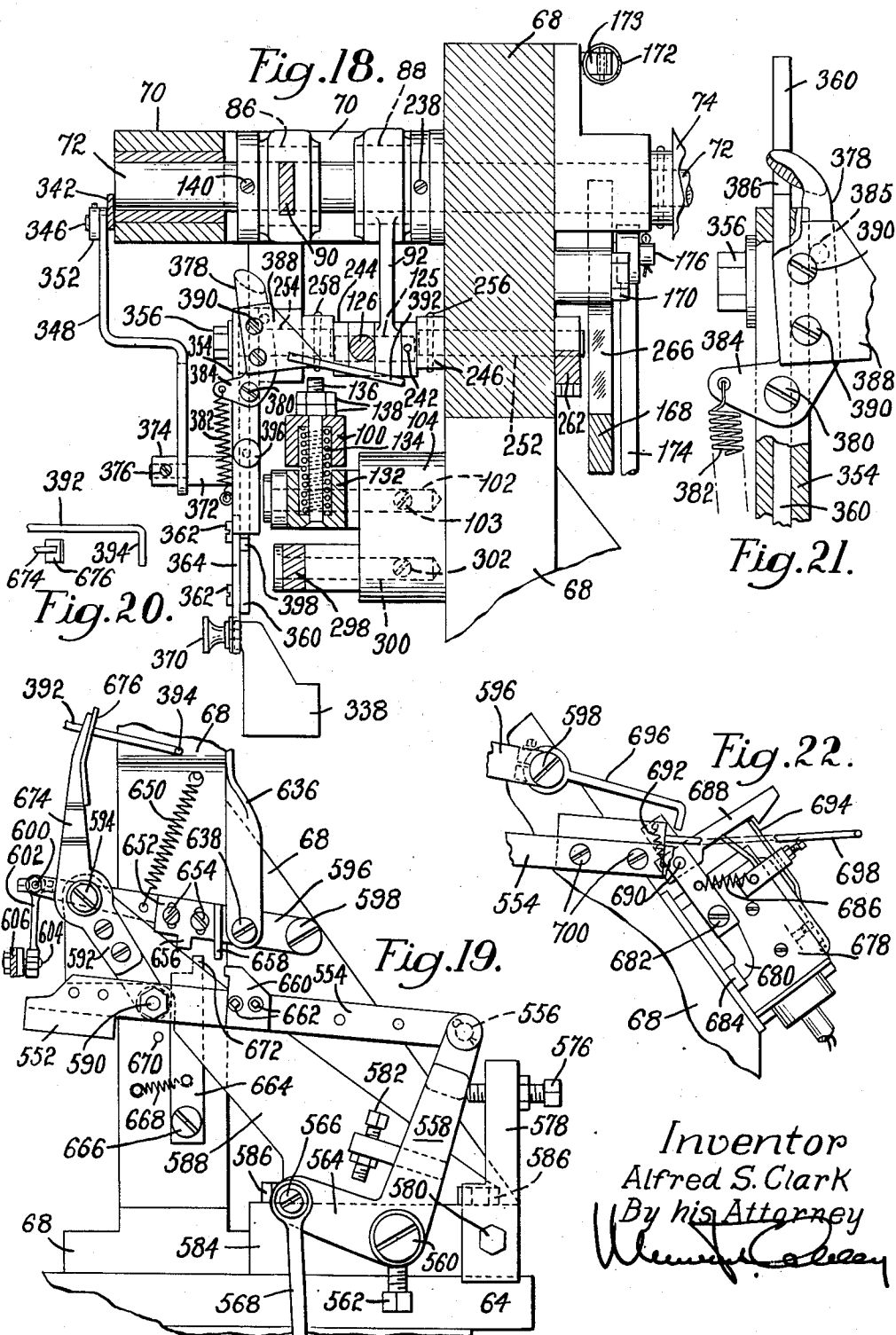
A. S. CLARK

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Inventor
Alfred S. Clark
By his Attorney
Wm. J. Casey

March 2, 1954

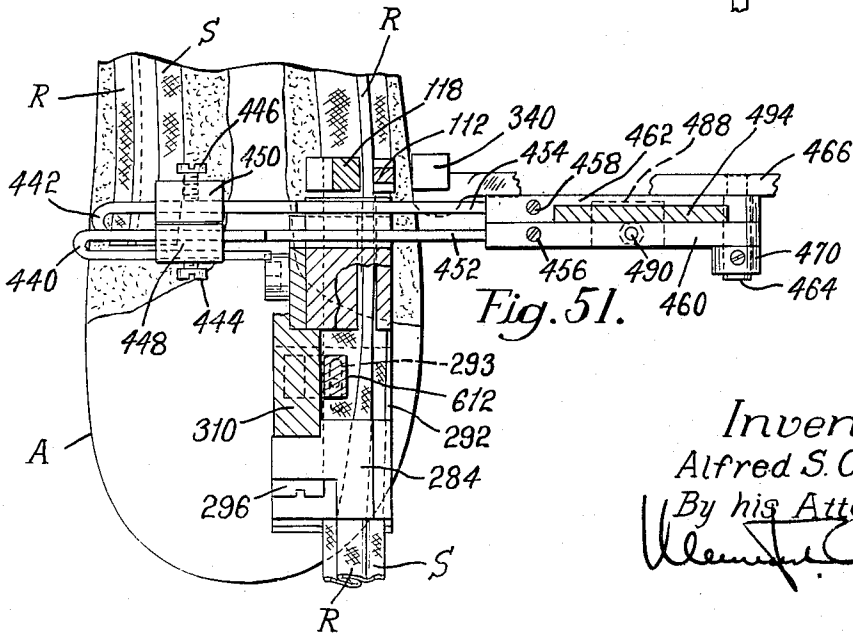
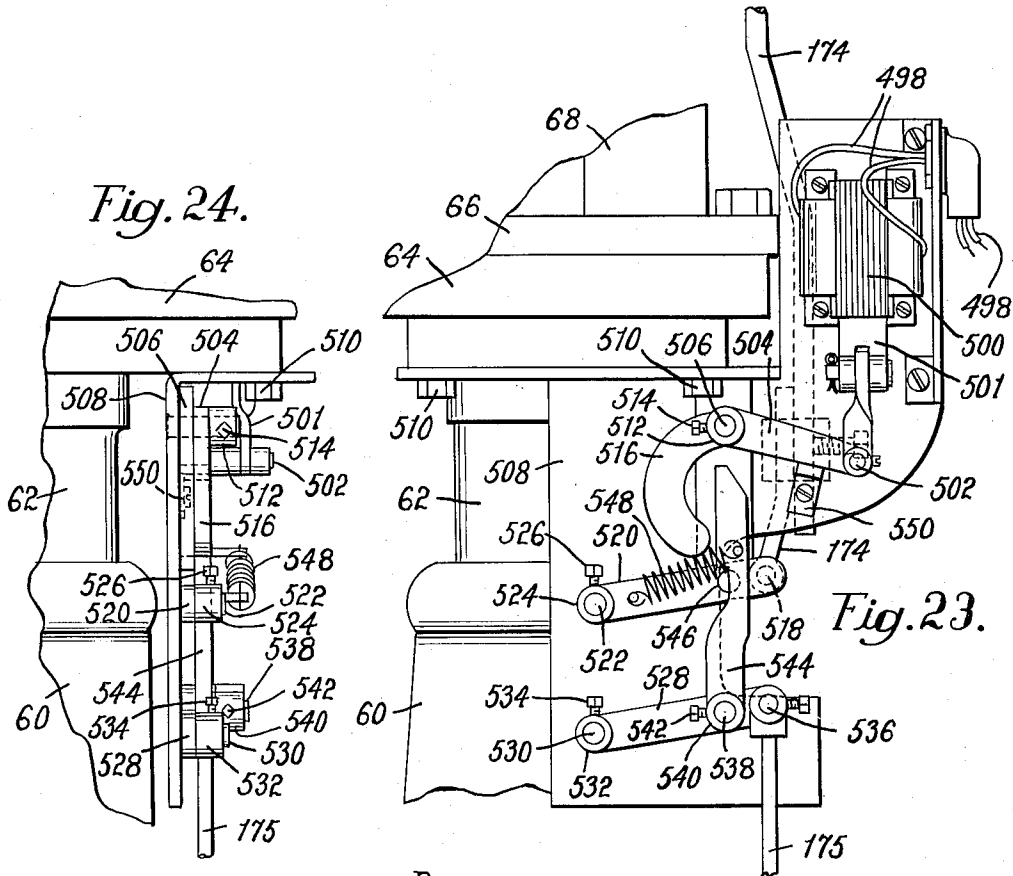
A. S. CLARK

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18 Sheets-Sheet 10



Inventor
Alfred S. Clark
By his Attorney
Wm. H. Casey

March 2, 1954

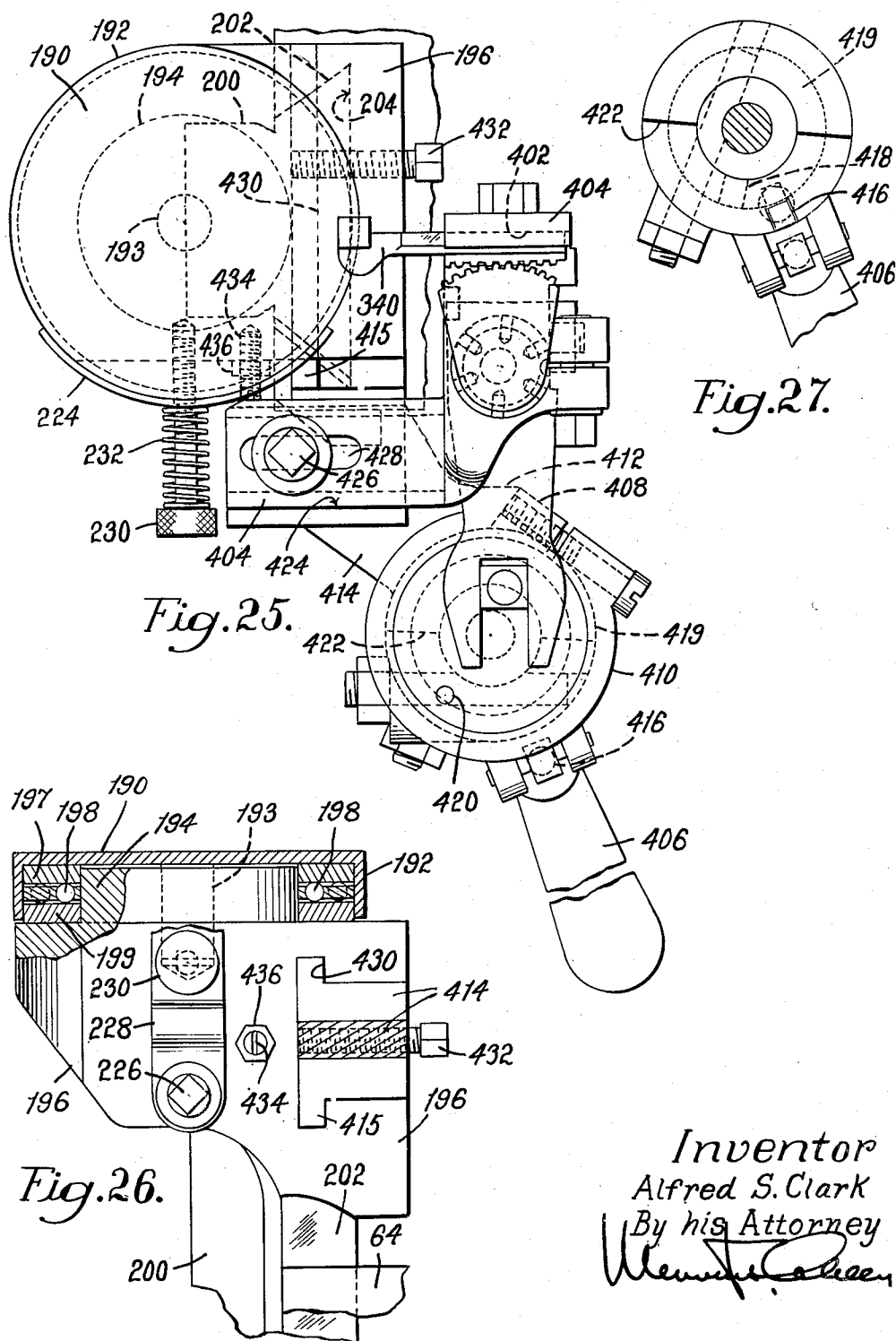
A. S. CLARK

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Inventor
 Alfred S. Clark
 By his Attorney
Wm. H. Green

March 2, 1954

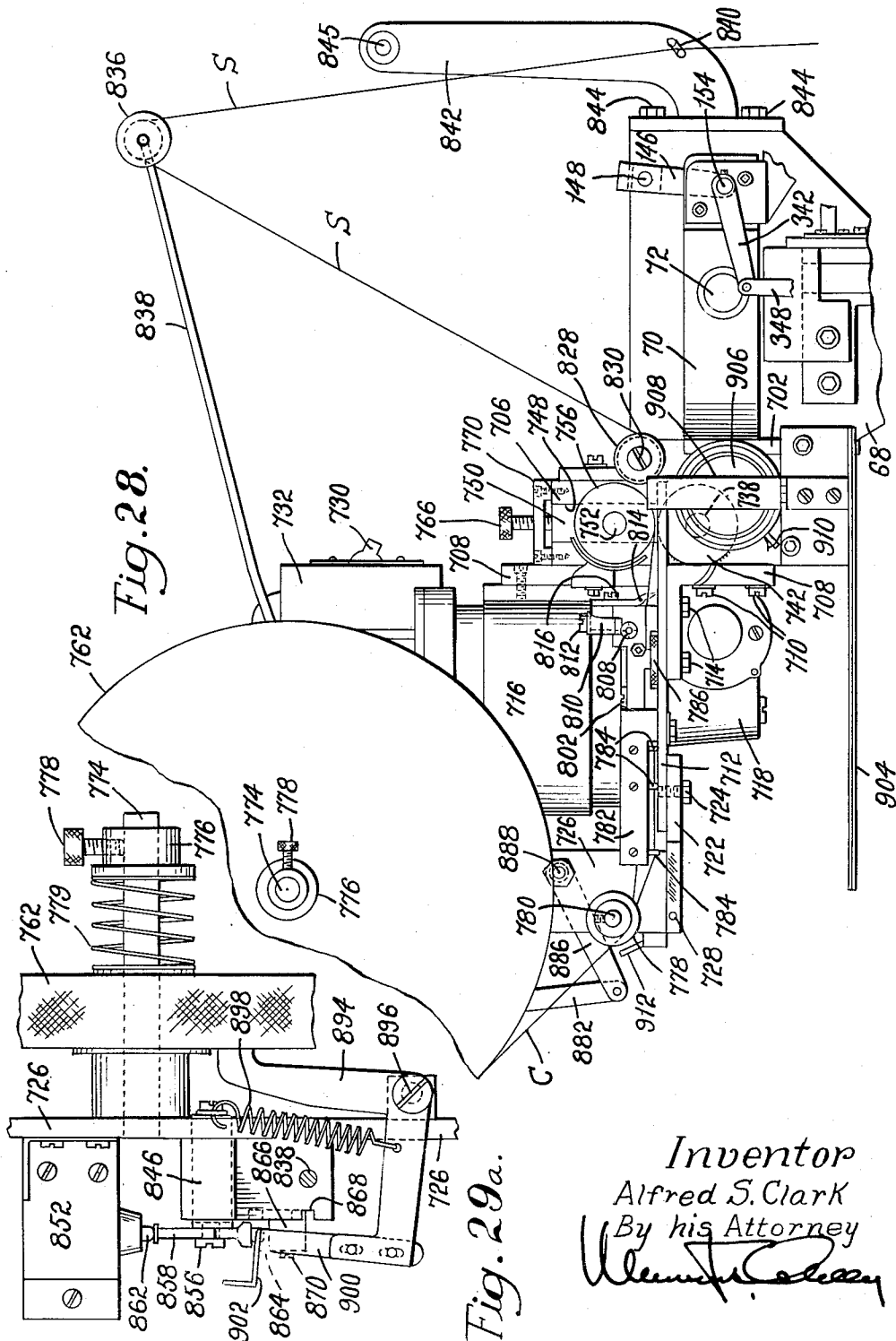
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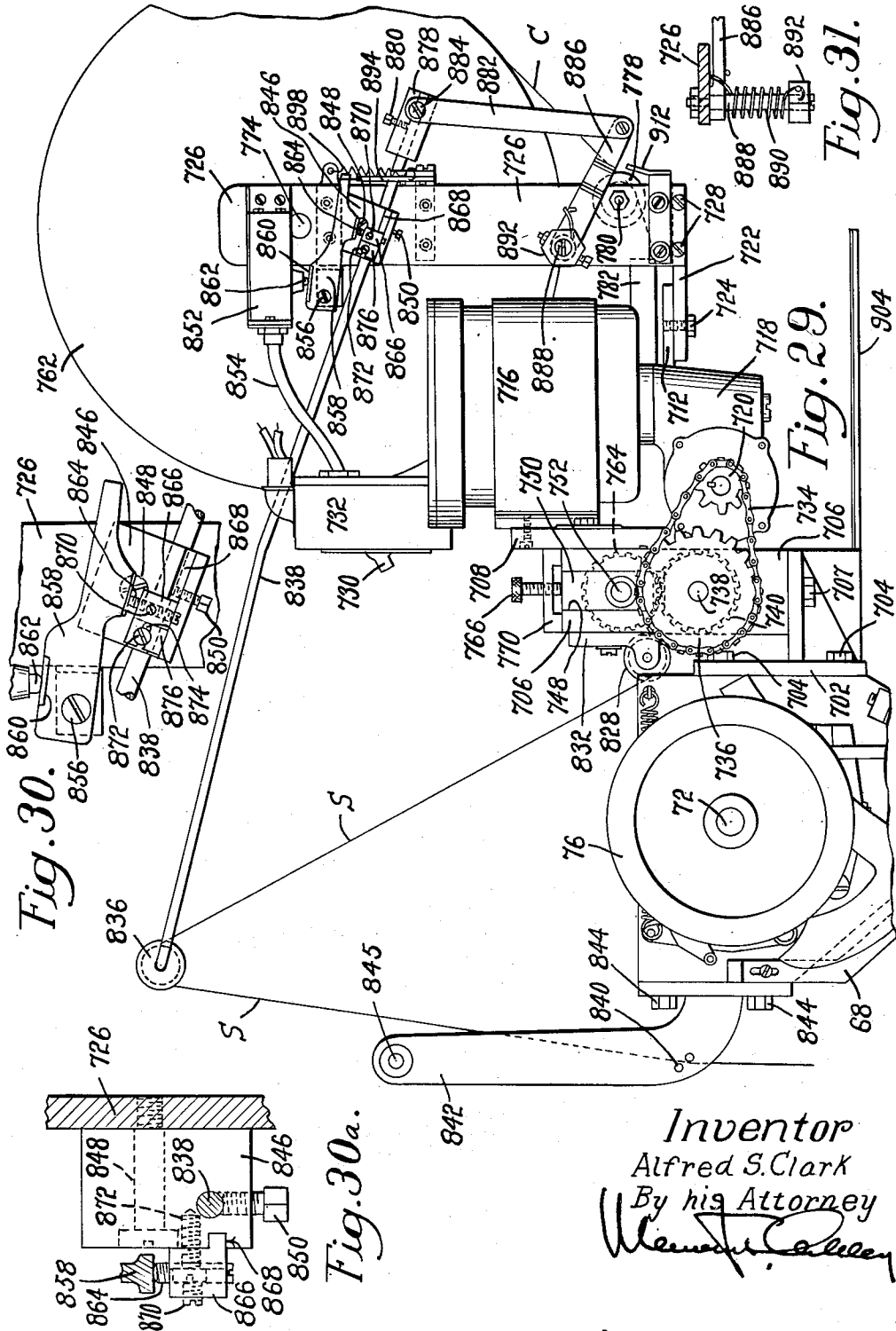
A. S. CLARK

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18 Sheets-Sheet 13



Inventor
Alfred S. Clark
By his Attorney
Wm. H. Kelley

March 2, 1954

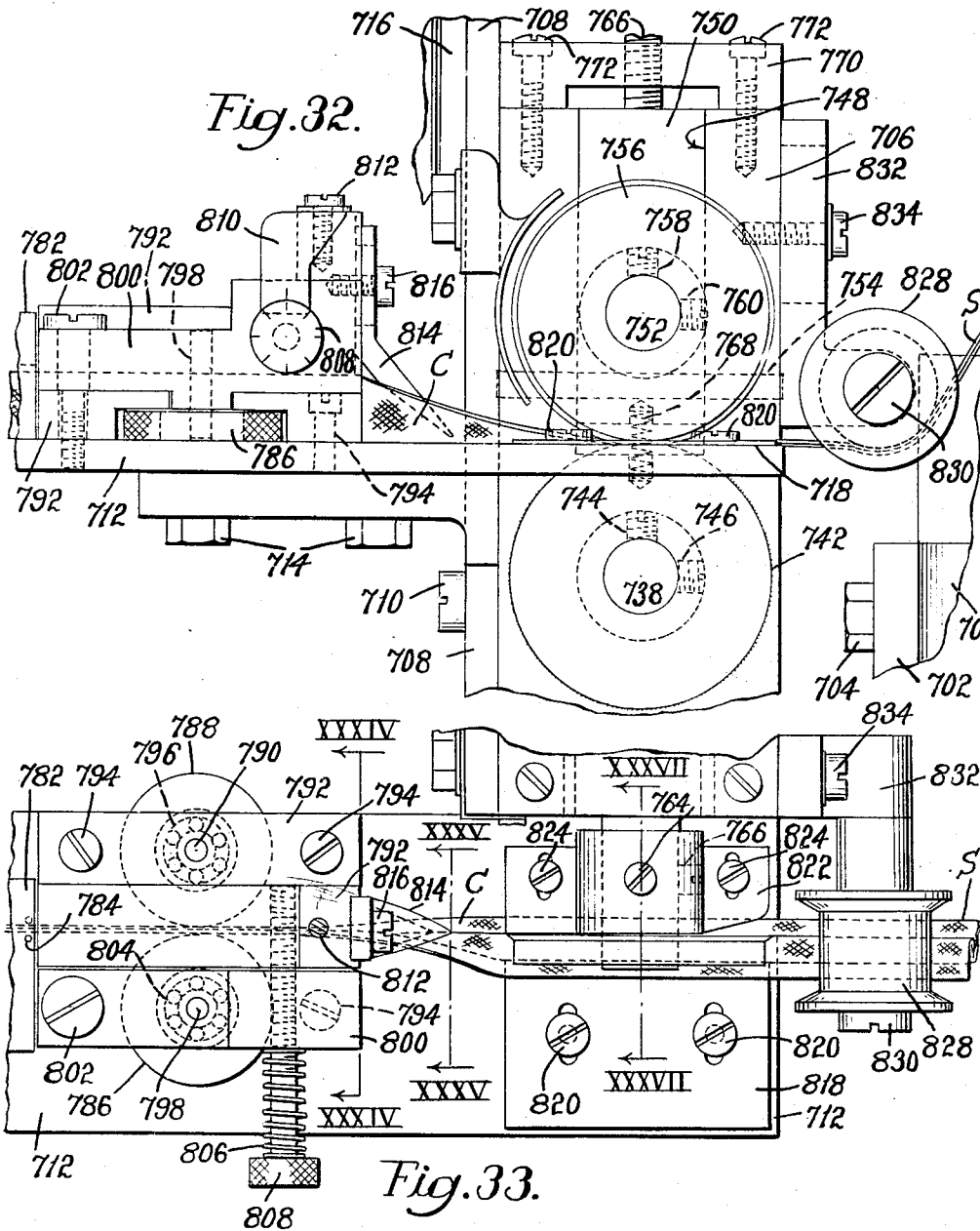
A. S. CLARK

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18 Sheets-Sheet 14



Inventor
Alfred S. Clark
By his Attorney
Wm. H. Carey

March 2, 1954

A. S. CLARK

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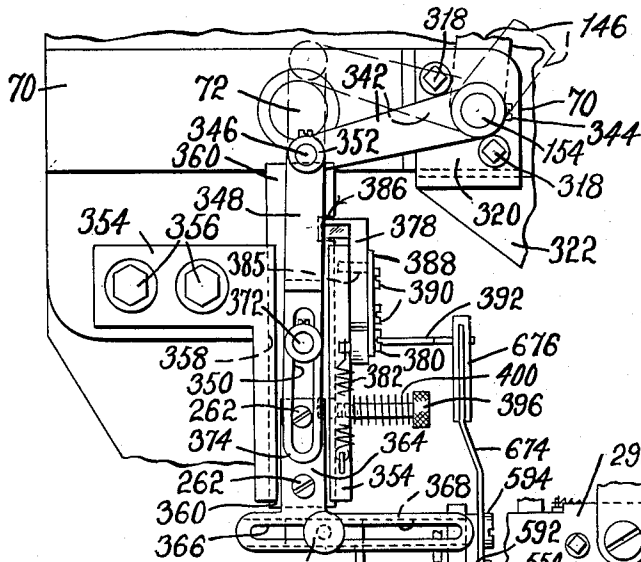


Fig. 46.

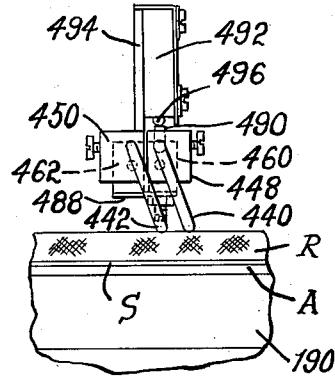


Fig. 47.

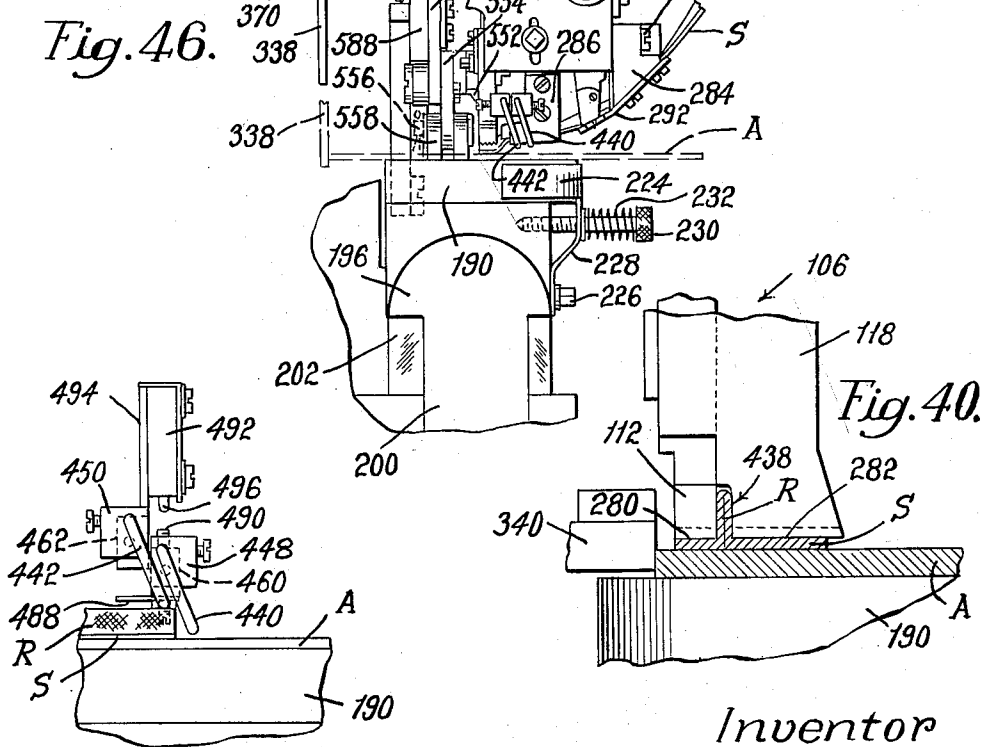


Fig. 48.

Inventor
Alfred S. Clark
By his Attorney
Wm. H. Casey

March 2, 1954

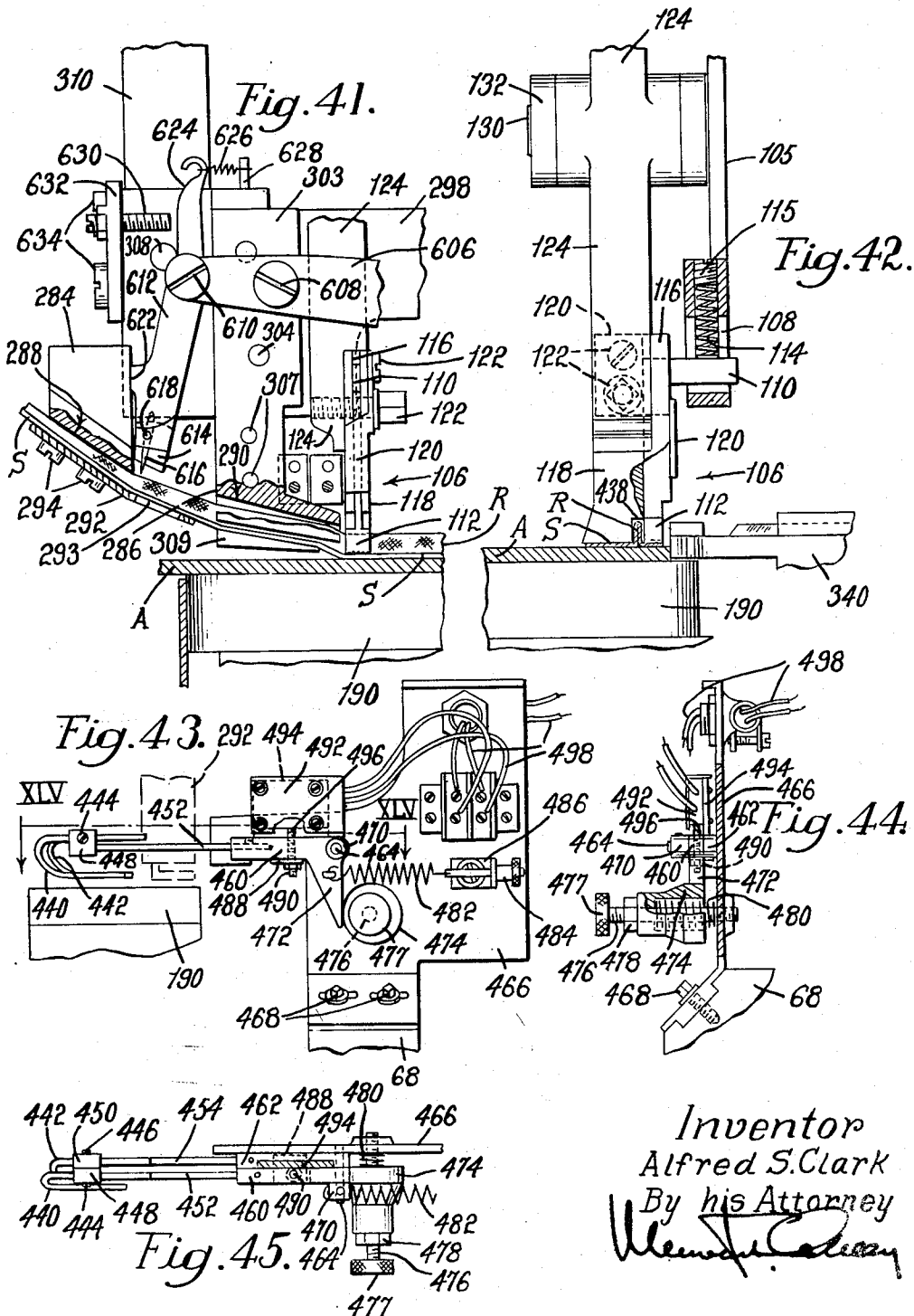
A. S. CLARK

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18 Sheets-Sheet 17



Inventor
 Alfred S. Clark
 By his Attorney
Wm. H. Casey

March 2, 1954

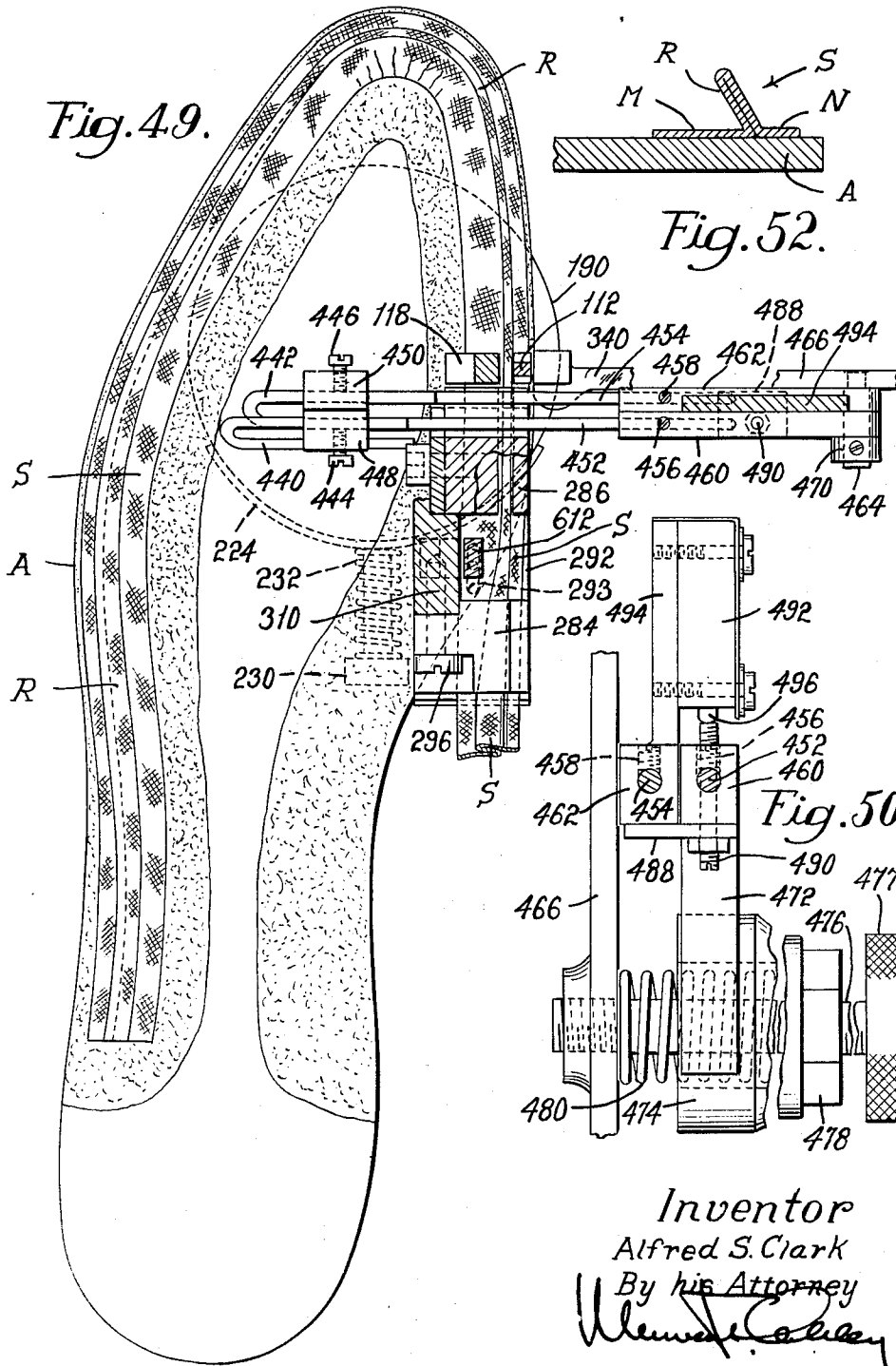
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UNITED STATES PATENT OFFICE

2,670,480

MACHINE FOR OPERATING UPON INSOLES

Alfred S. Clark, Beverly, Mass., assignor to United Shoe Machinery Corporation, Flemington, N. J., a corporation of New Jersey

Application July 21, 1950, Serial No. 175,174

131 Claims. Cl. 12—20)

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This invention relates to insoles and machines for operating upon insoles and is illustrated herein as embodied in a machine for making and attaching ribbed strips to insoles to provide sewing ribs thereon.

Objects of the invention are to provide an improved machine of the type referred to which is more efficient, accurate and faster in operation than machines used heretofore for such purposes and which is economical to build and relatively simple to operate. Other objects are to provide an improved ribbed strip making and attaching machine in which the work required by the operator is reduced to a minimum without any sacrifice in quality or speed of production, and also in which the operator can direct his attention primarily to the work being operated upon rather than to the machine without danger of injury to himself or damage to the machine or the work piece. A still further object of the invention is to provide an improved machine of the type indicated which will be adapted to operate successfully upon insoles which vary substantially in size and shape and also those which range in thickness from a few thousandths of an inch up to several irons, the machine being also adapted, without alteration or changing of parts, to operate upon relatively hard or firm materials as well as upon materials which are yieldable or relatively soft or resilient in nature.

To the attainment of the foregoing objects the invention provides, in accordance with one of its features, an improved machine of the type referred to in which single or unitary means is provided for pressing a preformed cement-coated ribbed strip intermittently against an insole to attach the strip thereto and for also feeding the combined ribbed strip and insole simultaneously with the pressing operation. As herein illustrated, the single means comprises a presser and feed foot which is made up of two elements and which is actuated by continuously-operating means controlled by a single treadle. This single pressing and feeding means is arranged, however, to press the precemented ribbed strip against the insole with substantially uniform pressure throughout the strip attaching operation but to feed the insole and strip at a speed which is variable at the will of the operator. That is to say, the pressure applied by the single or unitary presser foot of the present machine will be substantially uniform as long as pressure is being applied to the insole and strip, this pressure varying only as the thicknesses of the portions of the insole and strip engaged by

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the presser foot vary. The presser foot is adapted to accommodate such variations in thickness by causing the elements which make up the unitary presser foot to yield separately and independently of each other, although being actuated from the power-operated mechanism of the machine in such a manner that they have the same operative movement or stroke when applying pressure to the work.

Although the elements of the single presser foot apply substantially uniform pressure to the work, the pressure, varying only as indicated above, the presser foot, as stated, is arranged to feed the insole and ribbed strip at a speed which is variable at the will of the operator. This is accomplished, in the present machine, by causing the unitary presser foot to receive its feeding motion from the movement of constantly operating means any portion of which movement can be transmitted to the presser foot by the operator without affecting the transmission of the full pressing motion from said constantly-operating means to the presser foot. Consequently, the feeding movement of the presser foot may be varied at the will of the operator from minimum to maximum, or vice versa, without affecting the uniform pressing movement of the presser foot. Moreover, the feeding movement can be reduced to nothing while permitting the pressing action of the presser foot to continue with its normal uniform pressure.

In accordance with another of its features, the invention provides improved means in a machine of this type for insuring the application of a sufficient amount or length of cement-coated ribbed strip to the insoles, particularly to insoles of extremely thin, flexible material, to eliminate any tendency of the insoles to curl or "strap" after the ribbed strip has been attached or bonded thereto. As herein illustrated, the means for insuring that sufficient ribbed strip will always be attached to the insole consists of a freely rotatable support for holding the insole being operated upon and means for controlling the rotation of the support during the strip attaching operation, this means comprising a friction device for retarding the rotation of the support as much as desired. The retarding of the rotation of the support causes a drag or lag to occur between the insole on the support and the operating presser foot, this drag causing an extremely small amount of extra or excess ribbed strip or tape to be applied to the insole at each intermittent pressing movement of the presser foot. The cumulative effect of this is to insure that suffi-

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cient strip will be applied to each insole to prevent curling or strapping regardless of the type of insole being operated upon. In addition to the above, the machine is also provided with a so-called "overfeed" device which causes an even greater amount of excess strip or tape to be applied to the insole, this "overfeed" means being used only when needed, for example, on extremely thin insoles or thick insoles composed of resilient or yieldable materials, such as rubber or plastic.

In order to insure accuracy as well as speed in the attachment of the ribbed strip to the insole, the machine is also provided with a heel gage and a side or edge gage to initially position the insole on the support relatively to the single presser foot. In accordance with a further feature of the invention, the heel gage is arranged to be moved into and out of operative position without attention on the part of the operator and to be held in an inoperative position during the strip attaching operation so that it will not interfere with such operation, the gage being returned automatically into operative position, however, before the next insole is to be operated upon.

It is desirable in machines of this type to be able to cause the ribbed strip to terminate on the insole at a predetermined point or line at the opposite margins of the insole, usually in the vicinity of the heel breast line, the strip terminating at both margins on substantially the same line transversely or widthwise of the insole so that the ends of the strip will be in substantial alinement with each other. Means is provided in the present machine for accomplishing this result automatically, this means, as illustrated, being controlled by the ribbed strip itself. Although the transverse line upon which the ribbed strip is terminated at the opposite margins of the insoles is illustrated herein as approximately the heel breast line, it could, if desired, be caused to terminate at any other desired point or line on the insole. As herein illustrated, the means for controlling the length of ribbed strip applied to the insole, and thereby causing the opposite ends of the strip to terminate on the same line transversely of the insole, operates automatically by engagement with the strip already applied to the first or starting margin of the insole to stop the operation of the strip attaching mechanism when the ribbed strip being applied to the second or finishing margin of the insole reaches a point which is in transverse alinement with starting end of the strip applied to the first margin of the insole.

The machine is also provided, in accordance with another feature of the invention, with means for severing the ribbed strip substantially on the line where it was last pressed against the insole, that is, where its attachment to the insole terminates, this point, as stated, being in substantial alinement with the leading end of the strip applied to the first or starting margin of the insole which, as disclosed herein, is substantially at the heel breast line of the insole. The means for severing the ribbed strip, as illustrated herein, may be manually operated or operated automatically and, in either case, the knife will cut off the strip at precisely the desired position lengthwise of the insole.

In order to insure a clean sharp cutting operation, the ribbed strip is put under tension in the present machine by moving the insole rearwardly on the support, this action being performed by the operator and serving also to position the insole

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and strip properly for the cutting-off knife and to render the knife itself operable by removing from its path means which normally prevent the knife from operating when the presser foot is operating. When the knife is operating in the present machine, the presser foot cannot operate, thereby insuring that the machine will not be damaged or the work spoiled through accidental operation of both mechanisms at the same time.

Other features of the invention include a rotary work support which is normally stationary heightwise rather than movable or yieldable, means in the machine for making or forming the ribbed strip itself, before it is attached to the insole, and means for insuring that a sufficient length of preformed ribbed strip will always be available for attachment to an insole, this latter means being controlled automatically by excess of the ribbed strip after it has been formed, the excessive strip acting to stop and start the strip forming mechanism of the machine automatically irrespective of whether or not the strip attaching mechanism is operating. Means is also provided, in connection with the ribbed strip forming means, for preventing the supply of precoated tape from which the ribbed strip is made from being used up and thereby making it necessary for the operator to thread a new strip through the strip forming mechanism. As herein illustrated, the means for insuring that the supply of tape will not be used up operates automatically by engagement with the tape to stop the operation of the ribbed strip forming mechanism when the supply is too low, thereby notifying the operator so that he can stop attaching the strip to insoles and introduce a new supply of tape into the machine.

With the above and other objects and features in view, including improved strip forming means for making a single tape ribbed strip instead of a double tape strip, improved normally stationary mechanism for guiding the ribbed strip to the insole on the support, improved means for automatically measuring the ribbed strip applied to the insole and other novel combinations and arrangements of parts, the invention will now be described in detail in connection with the accompanying drawings and will thereafter be pointed out in the claims.

In the drawings,

Fig. 1 is a front elevation of the head of the machine which embodies the present invention;

Fig. 2 is a side elevation of the machine as viewed from the left in Fig. 1;

Fig. 3 is a detail view of the upper end of an arm shown broken in Fig. 2;

Fig. 4 is a left side elevation of the base portion of the machine;

Fig. 5 is a vertical section, looking from the right in Fig. 1, showing the work support and the ribbed strip attaching and feeding means;

Fig. 6 is a side elevation partly in section, as viewed from the right in Fig. 1, illustrating manually-controlled mechanism for actuating the attaching and feeding means;

Fig. 7 is a view similar to Fig. 6 showing the manually-controlled mechanism in a different position;

Fig. 8 is an enlarged detail view, partly in section, of eccentrics which actuate the attaching and feeding means;

Fig. 9 is a diagrammatic view, on an enlarged scale, of the path through which the attaching and feeding means travels during one cycle of operation;

Fig. 10 is a vertical section, similar to Fig. 5,

of the attaching or pressure-applying means moved into an operative position;

Fig. 11 is an enlarged fragmentary view of the lower end of the pressure applying and feeding member in the position it assumes in Fig. 10 relatively to the ribbed strip and insole;

Fig. 12 is a vertical section similar to Fig. 10 after the eccentric has rotated 180°;

Fig. 13 is an enlarged detail view, similar to Fig. 11, showing the lower end of the presser and feed foot applying pressure to the ribbed strip and insole prior to feeding the same;

Fig. 14 is a vertical section, similar to Fig. 10, illustrating the means for imparting feeding movement to the presser and feed foot, the mechanism having been moved into an operative position;

Fig. 15 is an enlarged detail view illustrating the position of the presser and feed foot of Fig. 14 relatively to the ribbed strip and insole;

Fig. 16 shows the feeding mechanism after the eccentric has rotated 180°;

Fig. 17 illustrates the position of the feed foot in Fig. 16;

Fig. 18 is a vertical section through the mechanism for operating the presser and feed foot, the view being taken on the line XVIII—XVIII of Fig. 2;

Fig. 19 is a front elevation of the knife for severing the ribbed strip and mechanism for locking the knife;

Fig. 20 is a fragmentary detail view of the upper end of means for releasing the knife illustrated in Fig. 19;

Fig. 21 is an enlarged detail view, partly in section, of means shown in Fig. 18 for locking a heel gage in an inoperative position;

Fig. 22 is a front elevation, similar to Fig. 19, of means for operating the knife automatically;

Fig. 23 is a right side elevation of mechanism for automatically stopping the operation of the presser and feed foot after a predetermined length of ribbed strip has been attached to the insole;

Fig. 24 is a front elevation of the mechanism shown in Fig. 23;

Fig. 25 is a plan view of the work support or table, a side gage and manually-controlled means for adjusting the side gage;

Fig. 26 is a front elevation of the work support and its mounting with portions broken away and in section to show details;

Fig. 27 is a horizontal sectional view of the side gage adjusting mechanism taken on the line XXVII—XXVII of Fig. 1;

Fig. 28 is a left side elevation of ribbed strip making or forming means provided on the present machine;

Fig. 29 is an elevational view of mechanism for operating and controlling the ribbed strip forming means, as viewed from the opposite direction to Fig. 28;

Fig. 29a is an enlarged detail view of the controlling mechanism as viewed from the right in Fig. 29;

Fig. 30 is an enlarged detail view of the portion of the controlling mechanism which operates the microswitch associated with said mechanism;

Fig. 30a is a detail view, partly in section, of the controlling mechanism looking from the right in Fig. 30;

Fig. 31 is a fragmentary plan view of a portion of the mechanism shown in Fig. 29 for actuating the microswitch;

Fig. 32 is an enlarged elevational view of part of the ribbed strip forming means shown in Fig. 28;

Fig. 33 is a plan view of the mechanism shown in Fig. 32;

Fig. 34 is a vertical section through the ribbed strip forming means taken on the line XXXIV—XXXIV of Fig. 33;

Fig. 35 is a vertical section through the forming means taken on the line XXXV—XXXV of Fig. 33;

Fig. 36 is a front elevational view of the ribbed strip forming rolls, as viewed from the right in Fig. 32;

Fig. 37 is a greatly enlarged vertical section taken on the line XXXVII—XXXVII of Fig. 33;

Fig. 38 is an enlarged side elevation of the ribbed strip guide illustrated in Fig. 2 with the presser and feed foot pressing the ribbed strip against an insole on the support;

Fig. 39 is a vertical section taken on the line XXXIX—XXXIX of Fig. 38;

Fig. 40 is a front elevational view, partly in section, showing the presser and feed foot operating upon the ribbed strip and insole;

Fig. 41 is a side elevational view, partly in section, of the strip guides, the presser and feed foot and the strip measuring mechanism, as viewed from the right in Fig. 1;

Fig. 42 is an elevational view of the presser and feed foot shown in Fig. 41 and a side gage, as seen from the front of the machine;

Fig. 43 is a front elevation of means for automatically controlling the length of ribbed strip to be attached to the insole;

Fig. 44 is a side elevational view, partly in section, of a portion of the mechanism shown in Fig. 43;

Fig. 45 is a plan sectional view taken on the line XLV—XLV of Fig. 43;

Fig. 46 is a side elevation, looking from the left in Fig. 1, of portions of the strip guiding, attaching and associated mechanisms;

Fig. 47 is an enlarged detail view of the means illustrated in Fig. 43 for automatically controlling the length of ribbed strip to be attached to the insole;

Fig. 48 shows this automatic means after it has operated;

Fig. 49 is a full size plan view, partly in section, of an insole to which a ribbed strip has been partially attached, the view including the means referred to for automatically controlling the length of ribbed strip to be attached to the insole;

Fig. 50 is an enlarged vertical section through the right-hand portion of the automatic means illustrated in Fig. 49 but including also a microswitch and adjusting mechanism;

Fig. 51 is a plan view, similar to Fig. 49, of the heel portion of the insole at the point where the automatic length controlling means operates; and

Fig. 52 is an enlarged transverse section through one side of the forepart of the insole shown in Fig. 49 after the ribbed strip has been attached thereto.

The machine is provided with a base or column 60 (Fig. 4) having a vertically adjustable post 62 mounted therein, the post having a plate 64 secured to its upper end to which is bolted a head 66. The head (Fig. 5) is provided with an up-standing plate 68 of a substantial thickness which constitutes the frame of the machine and supports the operating instrumentalities thereof. The plate or frame 68 is provided near its upper end with a laterally extending arm 70 which also extends forwardly and, with the main portion

68, supports a horizontal shaft 72 which is rotated continuously in the frame by a pulley 74 (Fig. 2) pinned to the shaft and provided with a hand wheel 76. The pulley 74 is driven at about 1600 R. P. M. by a belt 78 from a motor 80 (Fig. 4) bolted to a plate 82 secured by screws to a bracket 84 adjustably mounted on the column 60.

The shaft 72 is provided, at an intermediate portion as viewed in Figs. 1 and 18, with a pair of eccentrics 86 and 88, which rotate constantly with the shaft 72 and are engaged, respectively, by straps 90 and 92 located substantially at right angles to each other, the strap 90 projecting forwardly and being pivotally connected by a short pin 94 (Figs. 1 and 12) to a downwardly extending rod 96 which is pivotally connected at its lower end by a shoulder screw 98 to the bifurcated forward end of a substantially L-shaped arm or lever 100. The lever 100 is fulcrumed on a shaft 102 fastened by a set screw 103 (Fig. 2) in a boss 104 formed on the frame 68. At the forward end of the lever 100 (Figs. 1, 2, 5 and 12) is pivotally secured by the screw 98 a downwardly extending arm 105 which forms a part of the ribbed strip attaching and feeding means of the present machine, that is, the single or unitary means which applies pressure intermittently to the ribbed strip to attach it to the insole, and which also feeds the combined insole and ribbed strip after the strip has been attached to the insole, this member being indicated generally or as a unit by the reference numeral 106 and being referred to hereinafter for convenience as the presser and feed foot, or merely the presser foot.

As illustrated in Figs. 10, 12 and 40 to 42, inclusive, the presser and feed foot 106 comprises a unitary assembly of parts which is arranged to operate upon the work as a single member. The pivoted arm 105 is offset and enlarged at its lower end (Fig. 42) and has a vertical slot 108 formed therein. Mounted for heightwise movement in this slot is the tail 110 of one element 112 of the presser and feed foot, the tail 110 being normally maintained at the lower end of the slot by a spring 114 carried by the arm 105 and retained therein by a screw 115. The element 112 of the presser foot is slidably mounted in a vertical guideway 116 formed in another pressing element 118 of the presser foot 106, the guideway being covered to retain the member 112 therein by a plate 120. The plate 120 and the pressing member 118 are secured by screws 122 to the rearward side of a downwardly extending bar 124, as shown in Figs. 41 and 42. The pressing member 112 of the unitary structure, therefore, may be moved heightwise relatively to the element 118 and may be actuated independently of the element 118 through the pivoted arms 105 and 108 (Fig. 5), the member 112 yielding relatively to the member 118 by reason of the spring 114 in the arm 105. The mechanism for actuating the element 112 of the presser foot 106 is associated in operation with the mechanism for actuating the element 118 thereof and, accordingly, a description of this latter element will be given before the actuating mechanism is described.

The strap 92, which engages the right-hand or vertical eccentric 88 (Figs. 5, 16 and 18), extends downwardly and is pivotally connected at its lower end by a short shaft 125 to a forwardly extending rod 126 which has pivotally connected to its forward end, by a screw 128, the downwardly

extending bar 124 which, as indicated above, carries the pressing member 118 which forms the other element of the unitary presser and feed foot 106. About midway of its length, the bar 124 has pivotally connected thereto by a pin 130 a horizontal arm 132 (Figs. 5 and 10), the inner end of which fulcrums on the pin 102 in the boss 104 previously referred to. Interposed between the arms 100 and 132 is a relatively heavy spring 134 (Figs. 10 and 18) which is seated in aligned openings in the two arms and surrounds a screw 136 having lock nuts 138 threaded thereon whereby the tension of the spring may be adjusted. The spring 134 normally maintains the arms 100, 132 in the separated or open position determined by the nuts 138 but pressure on the arm 100 through downward movement of the rod 96 will compress the spring and force the lower arm 132 downwardly about its pivot 102, thereby moving the bar 124 and pressing element 118 yieldingly downward. It will be seen from the foregoing, that a predetermined or fixed downward movement of the vertical rod 96 will move the entire presser and feed foot assembly 106 downwardly with the arm 105 to cause the pressing element 112 to apply pressure to the work, this pressure being yielding, however, due to the spring 114. Downward movement of the rod 96 also moves the lever 100 downwardly about the shaft 102 and, through the spring 134, forces the arm 132 downwardly and thus, through the connection 130, moves the bar 124 and pressing element 118 yieldingly downward to apply pressure to the work. It will be noted, however, that the yield of the element 118, through the spring 134, is separate from, and independent of, the yield of the pressing element 112, which is moved downwardly directly by the movement of the vertical rod 96 and yields by reason of the spring 114, the member 112 sliding in the guideway 116 during its yielding action. Consequently, the two members which form the single or unitary presser and feed foot of the present machine are moved downwardly to apply pressure to the ribbed strip and insole on a work support in the machine by a predetermined downward movement of the rod 96. The two elements nevertheless apply pressure to the insole and strip separately and independently of each other, depending upon the thickness of the work engaged by each, irrespective of the fixed movement of the rod 96. The pressures applied by the members 112 and 118 depend, of course, upon the tensions of their respective springs and the thickness of the work operated upon and these pressures may be varied by adjusting the screw 115 (Fig. 42), and the nuts 138 (Fig. 14), which control the tensions of the springs 114 and 134, respectively. The portions of the ribbed strip and insole engaged by the pressing members 112 and 118 will be explained in more detail hereinafter.

The two eccentrics 86 and 88 actuate the presser and feed foot 106 to cause it to apply pressure intermittently to the ribbed strip and insole to attach the strip to the insole and also to cause the presser foot simultaneously to feed the combined insole and strip after the strip has become permanently attached to the insole by being bonded thereto by reason of a pressure-responsive cement which coats the lower surface of the base of the ribbed strip. Inasmuch as the ribbed strip and insole will be referred to frequently hereinafter in describing the present machine, it should be explained at this point that the ribbed strip disclosed in connection with the present em-

bodiment of the invention is a so-called "single tape ribbed strip" made up from a single tape or strip of fabric material, such as Gem duck, coated on one side with the usual type of pressure-responsive cement, the single tape being formed by the machine, in a manner to be later explained, to produce a two-ply upstanding rib projecting at an angle of about 60° to the horizontal from a base portion which comprises a relatively narrow outer flange, arranged to engage and overlie the feather portion of the insole, and a considerably wider inner flange arranged to overlie the insole inwardly of the rib, the base of the two-ply rib itself also being firmly bonded to the insole by the adhesive coating referred to. This type of ribbed strip is similar in many respects to the composite ribbed strip disclosed in United States Letters Patent No. 2,453,500 granted January 11, 1949 on an application filed jointly in the names of the present applicant and Frederic E. Bertrand, the ribbed strip of the patent, however, being made up of two tapes or strips of fabric material instead of only one strip. Figures 49 and 52 illustrate, in plan and transverse section, respectively, the single tape ribbed strip as it appears when applied to the surface of an insole, the completed ribbed strip being indicated generally in those figures by the letter S and the insole by the letter A. As illustrated in Fig. 52, the rib portion of the ribbed strip S slants inwardly from the edge of the insole A at an angle of about 60° to the plane of the insole and the narrow outer flange of the strip is located fairly close to the edge face of the insole at the forepart thereof, where this section is taken. At the shank portion of the insole, as illustrated in Fig. 49, the ribbed strip S usually swings inwardly away from the edge face of the insole to leave a wider margin at this portion of the insole. Since the single tape ribbed strip S is formed by the present machine as well as being attached to the insole thereby, a description of further details of the ribbed strip will be deferred until after the ribbed strip forming mechanism has been described.

The left-hand eccentric 86 (Fig. 18) is fastened to the shaft 72 by a set screw 140 and the strap 90, as stated above, is pivotally connected to the vertical rod 96 by the short shaft or pin 94 (Figs. 1 and 12). The shaft 94 projects laterally beyond the strap 90 and rod 96, as shown in Fig. 1, and has secured to its opposite ends by a pin 142 an inverted U-shaped yoke or link 144 which is mounted inside another inverted U-shaped yoke 146, the inner yoke 144 being pivotally connected at its upper or bridged portion to the arms of the outside yoke 146 by a shaft 148 fastened to the outer yoke by a pin 150 (Fig. 1). The opposite arms of the outer yoke 146 are secured respectively to shafts 152 and 154 by pins 156 and 158, the shafts 152, 154 being normally in alinement with the short shaft 94. The shaft 152 is rotatably mounted in the frame 68 and the shorter shaft 154 is journaled in the lateral arm 70 of the frame.

The inverted double yoke or link arrangement 144, 146 is normally located in the upstanding position illustrated in Fig. 5, this position being such that the yokes are substantially in alinement with each other and with the vertical rod 96 or, depending upon the adjustment of the eccentric 86, as will be presently explained, are inclined slightly forwardly or to the left a few degrees out of alinement with the rod 96, as viewed in Fig. 5, to compensate for a slight movement caused by the eccentric. When the double

links 144, 146 are located in the position shown in Fig. 5 and are substantially in alinement with the vertical rod 96, rotation of the eccentric 86 in a counterclockwise direction, as viewed in Figs. 5 and 10, will reciprocate the strap 90 and short shaft 94 (Figs. 1 and 12) forwardly and rearwardly in the machine and will cause the adjacent ends of the inside yoke 144 and the vertical rod 96 to swing forwardly and rearwardly about their respective pivots, namely, the shaft 148 and the shoulder screw 98. This action will produce no appreciable vertical or endwise movement of the rod 96, the links 144, 146 being normally inclined a small amount off center or to the left (Fig. 5) to compensate for the slight radial movement necessarily produced when this linkage is reciprocated by the eccentric 86. The slight movement thus caused, however, produces no effective vertical or endwise movement of the rod 96.

It will be observed that the foregoing construction constitutes, in effect, a toggle arrangement consisting of a double upper link 144, 146 and a lower link 96, the toggle links being joined at the center by a short shaft 94 to which is also connected the strap 90 which engages the eccentric 86. When the toggle is substantially straight, that is, when the upper and lower links are in substantial alinement with each other, as shown in Fig. 5, rotation of the eccentric merely causes the joint of the toggle to reciprocate in a substantially horizontal plane and thus produces no appreciable heightwise movement at either end of the toggle.

It will also be seen, however, that if one of these toggle links were swung out of alinement with the other link, thereby breaking the toggle and shortening the distance between the opposite ends thereof or, in other words, moving one of the pivots of the toggle nearer to the pressing and feeding member, reciprocation of the eccentric 86 would produce endwise movement or, in the present case, heightwise movement of that link of the toggle which was not fixed heightwise. In other words, if the toggle were broken and one end were pivoted on a fixed center, reciprocation of the eccentric would make and break the toggle and thus produce endwise movement of the link which was not pivoted on a fixed center. In accordance with the present construction, the double yoke or link arrangement 144, 146 is provided with a pivot at the upper end of the toggle in the form of the shaft 148 which is fixed during the operation of the eccentric 86 and this pivot may be swung from the substantially alined position shown in Figs. 2 and 5, to the forwardly inclined position illustrated in Fig. 10, thereby causing the inside yoke 144 of the double link arrangement to pivot about the shaft 148 after the latter has been swung out of alinement with the lower link 96 and moved nearer to the lower pivots or nearer to the pressing member 106. Consequently, reciprocation of the eccentric 86 will cause downward or endwise movement of the lower link 96, the length of this movement depending upon the eccentricity or throw of the eccentric and the amount the shaft 148 is moved out of alinement. In this way, a positive predetermined downward movement is imparted from the eccentric 86 to the lower link or rod 96, thereby moving the pivoted member 106 downwardly a predetermined distance and also swinging the arm 100 downwardly about its pivot 102 to cause the spring 134 thereon to force the lower arm 132 downwardly and move

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the bar 124 and pressing member 118 downwardly with a yielding movement controlled by the spring 134.

The mechanism for moving the shaft 148 out of alinement, or into the position illustrated in Fig. 10, comprises the following arrangement. As described above, the outside yoke 146 is pinned to the alined shafts 152 and 154 by pins 156, 158 (Fig. 1), these shafts being rotatably mounted in the frame 68 of the machine. The shaft 152 extends to the right beyond the frame, as illustrated in Figs. 1 and 6, and has secured to its outer end by a pin 160 a lever 162 carrying on its lower end a roll 164. The roll 164 is arranged to ride on a cam surface 166 formed on an L-shaped lever 168 pivotally mounted on a fixed stud 170 threaded into the frame 68. The roll 164 is maintained against the cam surface 166 by a spring 172 secured at one end to the lever 162 and at its other end to a pin 173 in the frame. The lever 168 is swung around its pivot 170 by a two-part treadle rod 174, 175 (Fig. 4) the two sections of which may be separated or disconnected from each other in a manner to be later described, but the upper section 174 of which is connected by a pin 176 to a rearward portion of the lever 168. The lower section 175 of the treadle rod (Fig. 4) is connected at its lower end by a pin 178, to a treadle 180 pivoted on a transverse shaft 182 mounted in the base of the machine, the treadle 180 being normally maintained in an elevated position against a stop plate 183 by a spring 184 secured at its lower end to the treadle and, at its upper end, to an eye-screw in the base 60.

The cam surface 166 (Fig. 6) on the lever 168 is shaped so that, when depression of the treadle 180 rotates the lever in a clockwise direction, about the center 170, the lever 162 will be swung counterclockwise against the tension of the spring 172, thereby turning the shaft 152 in a counterclockwise direction, as viewed in Figs. 6 and 10, and swinging the double links 144, 146 and the shaft 148 from the substantially alined or vertical position illustrated in broken lines in Fig. 10 to the full line position shown in that figure, thereby breaking the toggle 144, 146, and 96 so that, with its upper pivot, the shaft 148, fixed against heightwise movement, rotation of the eccentric 86 will produce a predetermined endwise or downward movement of the lower link or rod 96. Operative movement is thus transmitted from the eccentric 86 to the pressing and feeding elements 112 and 113 of the presser foot 106, the pressure of each member, however, being a yielding pressure which, as explained above, is separate and independent of the other member.

The cam surface 166 on the lever 168 is so shaped that it swings the lever 162 (Fig. 6) counterclockwise a sufficient distance to move the links 144, 146 and shaft 148 into the position shown in Fig. 10. Further rotation of the lever 168 by depression of the treadle causes the roll 164 to ride onto a second cam surface 186 (Fig. 7), which is concentric with the center of the shaft 170 about which the lever 168 fulcrums. Consequently, when the roll 164 rides onto the concentric surface 186, the double links 144, 146 and the shaft 148 are maintained in the full line position shown in Fig. 10. In other words, the double link arrangement 144, 146 is swung by the lever 162 into the position shown in Fig. 10 and is then maintained in that position during the remainder of the downward movement of the treadle 180. Return of the treadle by its spring 184 causes the links and shaft 148 to remain in

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the full line position shown in Fig. 10 until the roll 164 reaches the cam surface 166 at which point the lever 162 will be returned by its spring 172 into its initial or inoperative position, which is determined by a stop 188 (Fig. 6) secured by screws to the frame 68.

Since the machine normally operates at a speed of between 1500 and 1600 R. P. M., and also since the movement imparted by the eccentric 86 is relatively short, the operative motion transmitted by the eccentric to the pressing and feeding member 106 is extremely rapid. Figs. 10 and 12 show the pressure applying mechanism in two extreme or opposite positions of the eccentric 86, after the double links 144, 146 and shaft 148 have been moved into the forwardly inclined position where the eccentric 86 is caused to impart operative movement to the presser and feed foot 106. Fig. 10 shows the mechanism with the presser foot raised from the work, as is also illustrated on a greatly enlarged scale in Fig. 11, and Fig. 12 shows the mechanism when the eccentric 86 is at the other extreme of its operative position, that is, has been rotated 180° from the position shown in Fig. 10 so that the presser foot 106 is applying pressure to the ribbed strip to press it against an insole resting on a work support in the machine, the presser foot 106, as stated above, comprising the two independent pressing elements 112 and 113. Fig. 13 illustrates the presser foot on a greatly enlarged scale in the position shown in Fig. 12, Fig. 13 showing more clearly the position that these parts assume when the presser foot has begun to apply pressure to the ribbed strip and insole and has also begun simultaneously to feed the combined insole and strip relatively to the work support. As stated, the action is extremely rapid and the pressing operation takes place during the feeding movement, the presser foot passing in a substantially oval or elliptical path, normal to the plane of the insole, during its operative movement. The complete operation of the single pressing and feeding member 106, however, can be understood more clearly after the means for actuating the feeding mechanism of the machine has been described. Since the pressing operation takes place against a work support adapted to hold the insole during the application of the ribbed strip thereto, and also since the feeding movement of the presser and feed foot 106 likewise takes place relatively to this work support, the support will be described before the feeding means is described.

The means for holding and supporting the insole during the attachment of the ribbed strip thereto comprises a circular support or table which is illustrated in detail in Figs. 25 and 26, the support being fixed against heightwise movement during the operation upon the insole but being adjustable heightwise for operating upon insoles of different thicknesses or composed of different materials. The support is normally arranged to rotate freely about a vertical axis but, if desired, can be caused to rotate with a retarded movement which may be slower than the feeding movement of the insole, the arrangement being such that rotation of the support can also be stopped entirely, if desired, to render the support stationary. As illustrated in Fig. 26, the work support comprises a hollow circular table 190 of suitable diameter having a side wall 192 of substantial height. The support is provided with a central shaft 193 which is rotatably mounted in a vertical hole formed concentrically in a circular boss 194 provided on the upper end of a casting 196, the boss being considerably smaller

in diameter than the support and being slightly less in height than the wall 192. A ball bearing 198, interposed between hardened rings 197 and 199, is located in the space between the boss 194 and the wall 192 of the support and the latter rests upon the upper ring 197, as illustrated in Fig. 26, so that, when permitted, the support can rotate freely on the casting 196 about the axis 193.

The casting 196 has a lower portion 200 thereon which, as illustrated in Figs. 1, 2 and 25, has a flange 202 formed on its rearward side which is mounted for sliding movement in a dovetail slot 204 formed in a depending portion 206 of the plate 64. A split block 208 (Figs. 1 and 4) is secured in the lower end of the dovetail slot by a screw 210 and an adjusting screw 212, provided with a hand wheel 214, is threaded upwardly through the block 208, the screw having a tapped hole in its upper end into which a supporting screw 216 is threaded having an enlarged head 218 for engaging the lower portion 200 of the casting 196 and supporting the casting and the work support 190 in different heightwise positions in the slot 204. The heightwise position of the support 190, therefore, may be varied as desired by the adjusting screw 212 by rotation of the hand wheel 214. The depending portion 206 of the plate 64 is preferably provided with gib screws 220 to prevent looseness in the parts and thus insure accurate positioning of the support. The split block 208 is provided with a binding screw 222 which may be used, if desired, to lock the support 190 in any adjusted heightwise position in the slot 204.

As indicated above, the support 190 is arranged to rotate freely on the casting 196 or, if desired, to rotate with a retarded motion. Moreover, the rotation of the support can, if desired, be stopped entirely if conditions should make a non-rotatable support preferable. The ball-bearing 198 permits free rotation of the support and a friction device provides the means for retarding its rotation or, if desired, for stopping its rotation entirely. The friction device comprises a substantially T-shaped brake member or shoe 224 (Figs. 1, 2 and 25) secured to the front of the casting 196 by a screw 226 and engaging the forward portion of the side wall 192 of the support, the brake preferably engaging about the quarter of the circumference of this wall. A lower vertical arm 228 of the friction device bends forwardly and upwardly from the casting 196, as illustrated in Fig. 2, and a screw 230 passes loosely through a hole in this arm and is threaded into the casting. A spring 232, surrounding the screw 230 between its head and the arm 228, urges the brake shoe 224 constantly inwardly against the side wall of the support, thereby creating friction to retard or stop the rotary movement thereof, the tension of the spring being adjustable by the screw 230 to vary the pressure applied to the support. The arm 228 is bent so that, when the tension on the spring 232 is entirely released by outward adjustment of the screw 230, the arm holds the shoe 224 away from the support 190, thereby permitting the latter to rotate freely with substantially no friction with the aid of the ball-bearing 198.

The screw 230 can be adjusted inwardly, however, a sufficient amount to cause the spring to force the shoe against the support with enough pressure to hold the support against any rotary movement whatever in the normal operation of the machine. Consequently, by means of the

adjusting screw 232, the support 190 can be allowed to rotate, under the friction of the work passing thereover, at any desired speed from zero to maximum, irrespective of the speed of the feeding movement of the work.

Means is provided for quickly and accurately determining the proper heightwise position of the support 190 relatively to the presser and feed foot 106 when operating upon insoles of different thicknesses. This means comprises a stationary L-shaped arm 234 (Figs. 1 and 2) secured by screws to the depending portion 206 of the plate 64 and a similar L-shaped arm 236 fastened by screws in a reverse position to the portion 200 of the casting 196, the outer ends of these arms flaring away from each other, as shown in the figures referred to. The position of the arm 236 relatively to the top surface of the support 190 is such that, if the casting 196 is adjusted heightwise until the arm 236 engages the stationary arm 234, the top surface of the support will be located in a predetermined heightwise position relatively to the presser and feed foot 106, the arrangement being such that the position referred to bears a direct relation to the thicknesses of the insoles to be operated upon. Accordingly, when it is desired to set or adjust the support heightwise, an insole is introduced between the arms 234, 236 and the hand wheel 214 is rotated to move the casting 196 heightwise until the arms engage the opposite sides of the insole. The upper surface of the rotary support 190 will then be located in the proper heightwise position for the presser foot 106 to operate upon insoles of substantially the thickness of the insole which was measured by the arms 234, 236. One setting of the support heightwise with the aid of the measuring means just described is usually sufficient to position the support for operating upon a plurality of insoles of substantially the same thickness and, since the support remains stationary during the pressing and feeding operation while the presser foot yields heightwise, such a setting will usually be suitable also for operating upon insoles which vary small amounts in thickness from the insole by which the support was set, the yield in the presser foot elements permitting them to operate upon such insoles. The arms 234, 236 provide a quick and accurate means of adjusting the support 190 heightwise for insoles which vary substantial amounts in thickness.

The means for causing the single presser and feed foot 106 to feed the ribbed strip and insole relatively to the support 190, while simultaneously applying pressure intermittently to the insole and strip, is best illustrated in Fig. 5 and Figs. 14 to 18, inclusive, this mechanism being substantially the same in construction and operation as that shown in Figs. 10 and 12 for causing the presser foot to apply pressure to the insole and strip. As illustrated in Fig. 18, the right-hand eccentric 88 is fastened to the shaft 72 by a set screw 238 and has its downwardly extending strap 92 pivotally connected by the short shaft 125 (Figs. 16 and 18) to the forwardly extending rod 126. The shaft 125, however, projects laterally beyond the outer sides of the members 92 and 126 and has secured to its opposite ends by a pin 242 a U-shaped yoke or link 244 similar to the inside link 144 of Fig. 12. Surrounding the link 244 is a second U-shaped yoke 246 which carries at its rearward or right-hand end, as viewed in Fig. 16, a shaft 248 corresponding to the shaft 148 in the link 146

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and secured in the yoke 246 by a taper pin 250, the cross portion of the inner yoke 244 being rotatable on the shaft 248 in the same manner as the yoke 144 in Fig. 12 was rotatable on the shaft 148. The right-hand arm of the outside yoke 246 (Fig. 18) is secured to a horizontal shaft 252 by a pin 256 while the left-hand arm of the yoke is secured to a shaft 254 by a pin 258. The shaft 252 is journaled in the frame 68 and the shaft 254 is rotatable in a downwardly projecting portion of the lateral arm 70 of the frame, as shown in Fig. 18. The shaft 252 extends beyond the frame 68 and has secured to its right-hand end, by a binding screw 260 (Fig. 6), a lever 262 which carries at its left-hand end, as viewed in Figs. 6 and 7, a roll 264 which, as illustrated in Fig. 7, is arranged to engage and ride on a cam surface 266 formed on an inner portion of the L-shaped lever 168, previously referred to as having the cam surfaces 166 and 186 formed thereon. The lever 262 is normally held in the substantially horizontal position shown in Fig. 6, against a stop 268, by a spring 270 connected to the lever and to a pin 272 mounted in the frame 68.

When the treadle 180 is depressed to operate the pressure applying mechanism by the engagement of the roll 164 with the cam surfaces 166, 186 on the lever 168 as previously described, the concentric cam surface 186 moves past the roll 264 on the lever 262 without engaging the same. When the roll 164 moves onto the concentric surface 186, however, the roll 264 engages the cam surface 266 on the lever 168 so that, as the pressure applying mechanism of the machine reaches its full movement or stroke, the feeding mechanism commences to operate through the engagement of the roll 264 with the cam surface 266, this latter surface being shaped so that further swinging movement of the lever 168 in a clockwise direction by depression of the treadle 180 rotates the lever 262 from the position shown in Fig. 6 to the full-line position shown in Fig. 7. The shape of the cam surface 266 is such that continued depression of the treadle 180 continues to swing the lever 262 in a clockwise direction until further rotation of the lever 168 is prevented by its engagement with a stop screw 274 mounted in a plate 276 secured by screws to the frame 68. In other words, rotation of the lever 262 in a clockwise direction, as viewed in Figs. 6 and 7, continues as the treadle is depressed until the lever 168 engages the stop 274. Conversely, release of the treadle 180 and its elevation by the spring 184, swings the lever 168 counterclockwise and permits the roll 264 to ride downwardly on the cam surface 266, thereby permitting the lever 262 to be returned by the spring 270 in an opposite or counterclockwise direction back to its original position against the stop 268. It will be observed that, whereas the concentric cam surface 186 maintains the lever 162 in a predetermined position of rotation during swinging movement of the lever 168 to the stop 274, the cam surface 266 is so shaped and positioned relatively to the roll 264 that continued rotation of the lever 168 to the stop 274 continues the rotation of the lever 262 until its maximum rotation is reached when the lever 168 engages the stop 274. Since the lever 262 is secured to the shaft 252 by the binding screw 260, rotation of the lever 262 in a clockwise direction through depression of the treadle 180, rotates the shaft 252 the same amount in the same direction.

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When the treadle is elevated, the rearward yokes 244, 246 are located as shown in Fig. 5 in substantial alinement with each other. Moreover, the shaft 248 is located substantially in horizontal alinement with the shafts 125 and 252 and with the forward screw 128, these three points forming, in effect, the three pivots of a toggle arrangement similar to the toggle described in connection with the pressure applying mechanism. As pointed out above, however, the shaft 248 should preferably be a few degrees out of alinement with the centers of the shaft 252 and the screw 128 to compensate for the position of the eccentric 88 radially on the shaft 72. With the parts in the substantially alined position shown in Fig. 5, rotation of the constantly-rotating eccentric 88 produces no effective endwise or horizontal movement of the forwardly extending link or rod 126, the eccentric acting merely to reciprocate the short shaft 125 (Fig. 16) in a substantially vertical direction between the centers of the shaft 248 and the screw 128. When the treadle 180 is depressed, however, and the shaft 248 is swung downwardly by clockwise rotation of the shaft 252 from the position shown in Fig. 5 to that shown in full lines in Fig. 14, the toggle is broken so that the continuous rotation of the eccentric 88 now makes and breaks the toggle and reciprocates the horizontal rod 126 forwardly and rearwardly relatively to the rear or fixed shaft 248, thereby imparting to the upper end 123 of the bar 124 a forwardly and rearwardly reciprocating action which, by reason of its pivot on the shaft 130 on the arm 132, transmits a reverse reciprocating movement to the lower end of the bar 124 and to the pressing and feeding member 118 carried thereby. Since the pressing member 112 is connected to the member 118 through the slot 110, similar forwardly and rearwardly reciprocating motion is of course imparted to the member 112. In other words, feeding movement is transmitted from the eccentric 88 through the mechanism just described to the pressing and feeding element 112.

As illustrated in Fig. 8, the eccentrics 86 and 88 are normally located in substantial registration with each other on the shaft 72. The eccentrics may, however, be adjusted radially of the shaft with respect to each other by reason of their individual set screws to vary the timing of the pressing movement of the presser foot 106 relatively to its feeding movement. The arrangement of the mechanisms is such, however, that normally the single pressing and feeding member 106 travels in a counterclockwise direction through a substantially oval or elliptical path normal to the plane of the insole, as illustrated diagrammatically in Fig. 9, the maximum movement of the presser foot being indicated in that figure by the dotted ellipse C.

The inclined elliptical path C, illustrated in Fig. 9, is the path of movement that the single presser and feed foot 106 would normally take when the eccentrics 86 and 88 are located in substantial alinement with each other, as illustrated in Fig. 8, and when the treadle 180 is fully depressed provided, of course, the support 190 were removed. The presser foot 106 is shown in Fig. 9 in its initial or starting position and the operating movement is in a counterclockwise direction, as indicated by the arrow in that figure. Without attempting to analyze this movement, it will be clear that if the top surface of an insole resting on the support 190 were located in

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the heightwise position indicated by the broken line $a-b$ in Fig. 9, each feeding stroke, after the presser foot 106 had engaged the ribbed strip and insole and had yielded, would be longer than if the top of the work were located in the lower horizontal plane indicated by the broken line $c-d$. In other words, the length of the feeding stroke when the insole and strip are located in the plane $a-b$ is $a'-b'$, which is longer than the feed stroke $c'-d'$, the stroke produced when the top of the work is located in the lower plane $c-d$. Obviously, when the feed stroke is shorter, more pressing actions or impulses are made in traveling around a work piece than when the feed stroke is longer.

Since the eccentrics rotate constantly at a uniform rate of speed, the longer feeding stroke for each intermittent feeding action will, of course, feed the work piece faster than a shorter feeding stroke at the same rate of rotation. Any difference in the speed of the feeding movement caused by variations in the thickness of the work is not noticeable, however, since, in most cases, the thicknesses of the insoles contained in a given lot of insoles are substantially the same so that the variation in the speed of the feeding movement of the presser foot 106 from this cause is not appreciable and of no consequence. Moreover, such a variation would be offset or rendered negligible by the variable feed feature of the present machine whereby the speed of the feeding movement of the work can be varied at the will of the operator. When a group of insoles are to be operated upon by the machine which are considerably thicker or thinner than the group previously operated upon, the work support 190 may be adjusted heightwise, as described above, by the hand wheel 214 to set the support in a proper position for operating upon such insoles, the yields in the presser foot members 112 and 118, provided respectively by the springs 114 and 134, as already pointed out, permitting the machine to operate upon substantially all insoles in a given lot without changing the support since these would vary only small amounts in thickness. Usually the support 190 need not be adjusted heightwise at all for a given lot of insoles of a particular size or type but only when a new group of insoles is to be operated upon which differs substantially in thickness from the group previously operated upon. As stated, once the support has been adjusted, it remains fixed or stationary heightwise until it is moved again by the hand wheel 214. It may be locked, if desired, for a particular group of insoles by tightening the split block 203 by the screw 222, thereby preventing accidental heightwise movement of the support when operating upon a large order of insoles of a particular size or thickness. The eccentrics 86 and 88 may, as stated above, be adjusted relatively to each other about the shaft 72 and thereby vary the shape of the elliptical path of movement indicated by the letter C in Fig. 9, this adjustment being accomplished merely by loosening the set screws 140 and 238, changing the relative positions of the eccentrics on the shaft 72, and then tightening the set screws.

While the speed of the feeding movement of the presser foot 106 will not be varied noticeably by the thicknesses of the insoles in a given lot, this speed is, as stated, variable a substantial amount by the feeding mechanism described above, this variation in the speed of the feeding movement being effected at the will of the op-

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erator, whether operating upon insoles of the same thickness or of different thicknesses. Moreover, the feed is variable from zero or minimum to maximum, and vice versa, without changing the substantially uniform pressing movement of the intermittently-operating presser foot 106. In other words, as already pointed out, the length of the feeding movement of the members 112, 118 may be varied from zero to maximum or vice versa at the will of the operator by depression or release of the treadle 180 to swing the lever 163 into different positions of rotation and thereby cause the roll 264 to engage different portions of the cam surface 266 to rotate the shaft 252 different distances and thus vary the angular position of the double links 244, 246 relatively to the rod 126, thereby producing more or less reciprocating movement of this rod and of the pivoted bar 124 and the pressing element 118 carried thereby, this generally horizontal component of movement being coordinated with the uniform heightwise movement of the rod 96 and associated pressure applying mechanism. Consequently, the present presser and feed foot 106, comprising the independently yieldable pressing and feeding elements 112 and 118, is arranged to operate intermittently to press the ribbed strip S against the insole A with substantially uniform pressure throughout the rib attaching operation but to operate with a feeding movement which is variable from minimum to maximum, or vice versa, at the will of the operator. Moreover, by the present construction, the feeding movement of the presser foot can be brought to a complete stop anywhere around the work piece and can remain stationary while the uniform pressing movement of the presser foot continues uninterruptedly until the treadle 180 is released sufficiently by the operator to stop both the pressing and feeding movements of the presser foot. The pressing and feeding elements 112, 118 of the presser foot 106, as illustrated in Figs. 9 and 40, are provided respectively with small corrugations or teeth 280, 282 to enable them to grip the ribbed strip and feed it and the insole relatively to the support 190 without slipping, these teeth being insufficient in size, however, to mark or damage the work.

The ribbed strip S, as stated above, is made by the present machine before it is attached to the insole A and, after being formed by mechanism to be later described, it is directed or guided from the strip-making means to the insole on the support 190 by guiding means comprising a forward guide member 284 (Figs. 2, 5 and 41) and an inner or rearward guide 286, the guide 284 having an inverted T-shaped guideway 288 therein through which the ribbed strip passes as it travels toward the insole on the support, and the inner guide 286 having a similar guideway 290 formed therein. The inner guide 286 is located relatively close to the support 190 and the oscillating presser foot 106, as shown in Fig. 41. A bent plate 292 is secured by screws 294 to the lower end of the forward guide 284 and forms the bottom of the guideway therein, the plate extending rearwardly toward the inner guide to support the ribbed strip as it passes therebetween. The plate 292 has an elongated slot 293 formed longitudinally thereof in the direction of the feeding movement of the strip, the purpose of which will be explained hereinafter.

In accordance with the present machine, the

guides 284, 286 are substantially stationary during the normal operation of the machine, that is, they are stationary so far as any effective action influencing the ribbed strip or the operating parts of the machine is concerned. In other words, although it has been considered advantageous heretofore to utilize a movable work guide in machines of this general type to assist in feeding the ribbed strip to the attaching instrumentalities of the machine, or to assist in pressing the strip against the insole or other work piece, the guiding means of the present machine is substantially stationary to all purpose and effect during the normal operation of the machine. The guiding means may be rendered movable, however, as will be presently explained, if a greater amount of ribbed strip is desired on the insole than is provided by the normal operation of the machine through the action of the single presser and feed foot 106.

The forward guide 284 is secured by a screw 296 to the front end of an arm 298 pivoted on a pin 300 (Figs. 2 and 5) fastened by a set screw 302 in the boss 104 on the frame 68, the forward end of the arm 298 being enlarged to form a substantially square portion, as illustrated in Fig. 2. The rear guide 286 is formed by an upper member 303 (Fig. 41) mounted for heightwise adjustment on the enlarged portion of the arm 298 by a screw 304 (Fig. 2) passing through a vertical slot 306, the two guides being normally located a predetermined distance apart, as shown in Fig. 41. The member 303 has a plate 305 (Fig. 39) secured to its lower end by screws 307, the plate having a lower portion 309 which extends laterally under the slot 290 in the upper member 303 and provides a bottom for the slot, as illustrated in Figs. 39 and 41. The arm 298 is pivotally connected at its forward end by a screw 308 (Figs. 2, 5 and 41) to an upwardly extending arm 310 which is pivotally connected at its upper end by a short shaft 312 to a horizontal link 314 which is pivoted at its inner end to the pin 128 connecting the rod 126 to the bar 124, as illustrated in Fig. 5. The shaft 312 is pinned to the link 314 and extends to the left beyond the arm 310, as viewed in Fig. 1, and has pivotally mounted thereon an upwardly extending link 316. Secured by screws 318 to the left-hand wall of the lateral arm 70 on the frame 68 is an angular bracket 320 which extends under the arm 70 and then downwardly to provide a triangular vertical plate 322 (Figs. 1, 2 and 5). At its lower portion, in line with the shaft 312 (Figs. 1 and 5), the plate 322 has a short pin 324 rotatably mounted therein, this pin being secured by a set screw 326 to the lower end of a link 328. The link 328 is located between the link 316 and the vertical plate 322 and is normally in alignment with the link 316. It has a screw 330 secured to its upper end by a pin 332, the screw 330 also passing through the link 316 and being provided with a head for retaining the link thereon, as illustrated in Fig. 1. The vertical plate 322 has a curved slot 334 formed therein concentric with the centers of the shafts 324 and 312. The screw 330 extends through the slot 334 and has a hand nut 336 threaded on its left-hand end, as viewed in Fig. 1, and bearing against the plate 322 to clamp the screw 330 in different positions in the slot 334.

When the links 316, 328 are located in the vertical position shown in Figs. 2 and 5, so that they are in substantial alignment with the arm 310, reciprocating movement of the horizontal rod 75

126, due to the eccentric 88 and the double links 244, 246, produces no appreciable endwise movement of the arm 310, the shaft 312 merely reciprocating in a substantially horizontal plane with only such pivotal movement of the links 316, 328 and arm 310 as will permit the reciprocating action. When the screw 330 and links 316, 328 are moved into a position in the curved slot 334 in which the screw is out of vertical alignment with the lower shaft 312 and the screw 308, the toggle formed by the arm 310 and the links 316, 328 is broken and, consequently, reciprocating movement of the rod 126 and link 314 will produce heightwise reciprocating movement of the arm 310 in the same manner as was described in connection with the toggle link arrangements which actuate the pressure applying and feeding mechanisms of the machine through the eccentrics 86 and 88. Heightwise movement of the arm 310 swings the horizontal arm 298 up and down about the pin 300 and thus produces a corresponding movement of the guiding members 284, 286 carried by this arm, this movement having a slight forward and rearward motion in conjunction with its heightwise reciprocation due to the pivoting of the arm 298 about the pin 300. Since the movement of the guide members 284, 286 is produced by the mechanism which also operates the feeding means of the machine, the reciprocation of the guides will take place in timed relation to the feeding movement of the presser foot 106. The arrangement is such, however, that the guides 284, 286 move oppositely to the presser and feed foot 106 so that, when the presser foot is moving rearwardly of the support 190 to feed the insole thereon, the guide members are moving forwardly, or toward the left in Fig. 5, thereby causing the ribbed strip S, which is now being drawn rearwardly from the strip forming means by the presser and feed foot 106, to be pulled through the two guides by the combined actions of the feed foot and guide members. This causes a slightly greater length of the ribbed strip S to be pulled through the guide members than would have been drawn through by the feeding movement of the presser foot alone, thereby providing more ribbed strip between the inner end of the lower guide 286 and the feed feet 106 than would have been the case had the guides remained stationary. Consequently, sufficient strip will be provided, when necessary, to produce a small amount of slackness or bulge in the portion of the ribbed strip which extends between the guide 286 and the presser foot 106 and which is next to be engaged by the presser foot so that the length of the strip which is attached to the insole will be slightly greater than would have been applied had the guides remained stationary. In other words, the foregoing mechanism causes an overfeed of the ribbed strip and thereby permits a slightly greater amount of strip to be attached to the insole than is attached when the overfeed mechanism is not used.

It should be pointed out, however, that this overfeed mechanism is not necessary in most cases because the normal feeding movement of the machine, produced by the presser and feed foot 106, is ordinarily sufficient to apply the proper amount of ribbed strip to the insole. Moreover, the friction applied to the work support 190 by the brake shoe 224 can cause sufficient retarding of the rotation of the table to produce substantially the same result, that is, the drag of the support under the feed foot will

cause the normal feeding movement of the presser foot 106 to apply a very small amount more of the ribbed strip to the insole than would be the case if the rotation of the support were not retarded, thereby applying a sufficient amount of extra ribbed strip to the insole to prevent the latter from strapping or curling upwardly on the surface to which the ribbed strip is applied due to insufficient strip on the insole, particularly at the curved portions, and due also to the shrinking of the ribbed strip after it has been attached. In other words, the drag of the rotary support, due to the friction device, in conjunction with the normal feeding movement of the presser foot 106, will usually cause slightly more ribbed strip to be applied to the insole than would be applied if the table rotated freely. The cumulative effect of this relatively slight increase in strip at each feeding movement of the presser foot is such that, on normal insoles, sufficient additional strip is attached to the insole to permit the latter to lie flat after the ribbed strip has been attached rather than to curl upwardly due to strapping. The overfeed mechanism provided by the links 316, 328 and associated mechanism, however, is available, if desired, and may be used with beneficial results on very thin insoles of leather or other fibrous materials. It is also advantageous to use when applying the ribbed strip to thicker insoles of relatively soft or resilient material, such as rubber, plastics or compositions thereof. If desired, sufficient ribbed strip can be applied to insoles by the present machine to cause them to curl downwardly or in the opposite direction to that in which they would curl or bend if they were strapped.

The insole A is positioned on the rotary support 190 relatively to the guides and presser foot 106 with the aid of a heel gage 338 and a side or edge gage 340 (Figs. 1, 25 and 42), the former determining the position of the insole lengthwise forwardly and rearwardly of the support, in order to start the attachment of the ribbed strip to the first side or margin of the insole at substantially the heel breast line thereof, and the latter locating the insole widthwise or laterally of the support, both at the start of the operation and during the attachment of the ribbed strip to the insole, thereby determining or controlling the position of the ribbed strip widthwise relatively to the entire insole margin. The heel gage 338 is arranged to be moved heightwise into and out of operative position relatively to the support 190 in such a manner that it will always be located in its operative position when the insole is presented to the machine, but will be removed a substantial distance away from the support when the strip attaching mechanism starts to operate. As illustrated in Figs. 1, 2 and 46, a lever 342 is secured to the left-hand end of the shaft 154 by a setscrew 344. The lower end of the lever 342 carries a pin 346 to which is pivoted a downwardly extending arm 348 which, as shown in Figs. 1 and 18, bends rearwardly and then downwardly and is provided at its lower portion with an elongated slot 350, the arm 348 being retained on the pin 346 by a collar 352 secured to the pin by a set screw.

A bracket 354 is fastened by screws 356 to a portion of the frame depending from the lateral arm 70 and this bracket extends downwardly at one side, as illustrated in Figs. 2 and 46, and has a vertical guideway 358 formed therein. Mounted for heightwise sliding movement in this guide-

way is a slide 360 having secured to its lower portion by screws 362 an L-shaped holder 364 having an elongated slot 366 and a guideway 368 formed in its lower horizontal portion. Adjustably secured in the guideway 368 by a clamping screw 370, passing through the slot 366, is the heel gage 338 previously referred to which, as illustrated in Figs. 18 and 46, comprises an upper rectangular portion slidably mounted in the guideway 368 and a relatively thin plate extending downwardly from one end of the rectangular portion at right angles thereto, this plate being shaped as shown in Fig. 18 and, when located in its operative position, extending a short distance below the top surface of the support 190. The gage 338 is adjusted forwardly and rearwardly of the machine in the guideway 368 to position it the proper distances rearwardly of the support for insoles of different sizes or lengths, the gage being then locked in adjusted position by the screw 370. The gage is adjusted rearwardly of the support 190 a distance which will cause the leading end of the ribbed strip S to be pressed against the first or starting margin of the insole A by the presser and feed foot 106 at about the heel breast line of the insole, as shown in plan view in Fig. 49, this leading end of the strip, as illustrated in Figs. 10 and 11, extending under the presser foot and normally terminating substantially in alinement with the rearward edge of the presser foot after the strip has been cut off from the ribbed strip attached to the insole previously operated upon, as will be later explained.

The heel gage 338 is moved automatically into and out of operative position relatively to the support 190 when the operator operates the machine in the usual or normal manner to attach the ribbed strip to an insole, both of these movements being effected without attention on the part of the operator, thereby leaving him free to perform the rib attaching operation. The vertical slide 360 carries a laterally projecting stud 372 (Figs. 18 and 46) having a reduced outer end which passes through the vertical slot 350 in the arm 348, the stud being retained in the slot by a collar 374 fastened by a set screw 376. The stud is normally located at the lower end of the slot 350, as illustrated in Fig. 2, so that, when the operator depresses the treadle 180 and, through the L-shaped lever 168 (Fig. 6), rotates the lever 162 and the aligned shafts 152 and 154 in a forwardly or clockwise direction as viewed in Figs. 2 and 46, in the manner previously explained, the arm 342 on the outer end of the shaft 154 is swung upwardly to move the angular arm 348 upwardly and, through the stud 372, to move the slide 360 upwardly and elevate the heel gage 338 from its lower position rearwardly of the support 190. Figs. 2 and 18 show the heel gage located in its lower position and Fig. 46 shows the heel gage moved into its upper or inoperative position from the operative position shown in broken lines in that figure. The arrangement is such that when the treadle 180 has been depressed far enough to move the roll 164 of the lever 162 (Fig. 6) onto the cam surface 186 of the lever 168, at which point the roll 264 of the lever 262 will engage the cam surface 266 on the lever 168, thereby starting the operation of the feeding mechanism in conjunction with the already operating pressure applying mechanism, the lever 342 will have been swung upwardly or clockwise in Figs. 2 and 46 a sufficient distance to elevate the heel gage

into the inoperative position shown in Figs. 18 and 45.

Since the treadle 180 will, in the normal operation of the machine, be depressed further than this by the operator during the strip attaching operation to increase the speed of the feeding operation, as explained above, and also since, as the operation progresses around the insole, the treadle will usually be depressed and released alternately by the operator to vary the speed of the feeding movement at different places around the periphery of the insole in accordance with the particular requirements of the insole being operated upon, it is desirable that the heel gage be retained positively in its elevated position throughout the rest of the attaching operation independently of the treadle 180 so that each time the treadle 180 is released, or partially released, by the operator to vary the feeding movement of the presser foot 106 when operating on different portions of the insole, the heel gage 338 will not be lowered again into its operative position and thus interfere with the strip attaching operation.

The means for positively holding the heel gage in its elevated or inoperative position comprises a dog or latch 373 (Figs. 18, 21 and 46) pivoted on a screw 380 threaded into the bracket 354 and normally urged toward the left in Figs. 1, 18 and 21, by a spring 382 extending between a tail 384 on the lower end of the latch and an eye-bolt in the bracket 354. When the slide 360 is in its lower position, the counterclockwise movement of the latch is limited by a pin 385 carried by the latch and engaging the bracket 354. The latch is arranged to drop into a notch 386 formed in the slide 360, as shown in Figs. 21 and 46, when the latter is raised by the lever 342, and thus maintain the heel gage 338 in the elevated position shown in Fig. 46 while the strip attaching operation is being performed. The latch 373 has a triangular plate 388 secured thereto by screws 390 and provided with a small rod 392 projecting laterally toward the right from the plate, as viewed in Figs. 1 and 18, this rod having its outer end bent forwardly at right angles, as shown in Fig. 20, to form a hook 394 which is utilized to release the latch automatically from the slide 360 after the strip attaching operation has been completed, as will be explained more fully hereinafter. If it is desired to hold the heel gage in an elevated position, that is, to remove it temporarily from use when operating upon some types of insoles, the gage may be locked in its raised position by a screw 396 (Fig. 18) threaded through the forward side of the bracket 354 and arranged to engage a lower notch 398 provided in the slide 360 when the latch 373 is located in the upper notch 386, the screw 396 being held frictionally against rotation by a spring 400 (Fig. 2) surrounding the screw.

The edge gage 340, as stated above, is arranged to engage the edge face of the insole at the right-hand side of the support 190 and to control the position of the ribbed strip S widthwise of the insole margin during the attaching operation. This gage mechanism is of substantially the same construction as that disclosed in Letters Patent of the United States No. 2,326,119, granted August 10, 1943 on an application filed in the name of Frederic E. Bertrand, the present gage mechanism, however, being capable of being removed as a unit from the machine for repair or other purposes and being then returned into exactly its original position without the necessity of adjustment. As disclosed in the patent referred to,

the edge gage 340 is mounted in a transverse guideway 402 (Fig. 25) formed in a bracket 404 secured to the bracket 196, the gage being movable in this guideway into three different positions by a hand lever 406 in the manner disclosed in the patent.

The three lateral positions into which the edge gage may be moved control the positions of the ribbed strip widthwise relatively to the edge face of the insole at the shank, forepart and toe portions, respectively, of the insole, the strip being usually spaced different distances from the edge face of the insole at these portions. The gage is moved manually by the hand lever 406 into these three different positions by the operator during the strip attaching operation, these positions being determined by three adjustable stops on the gage supporting mechanism. The first position of the gage, in which the ribbed strip will be located farthest inwardly from the edge face of the insole to produce a wide margin, is determined by a lug 408 (Figs. 5 and 25) on a clamping collar 410 on the gage mechanism, this lug engaging a projection 412 on a bracket 414. The second or intermediate position of the edge gage is determined by a spring-pressed latch 416 carried by the hand lever 406 and arranged to engage a recess 418 (Fig. 27) provided in a sleeve 419 forming a part of the gage supporting mechanism. The final or outer position of the gage, in which the ribbed strip will be located nearest to the edge face of the insole to provide a relatively narrow feather portion thereon, is determined by a pin 420 (Figs. 5 and 25) carried by the clamping collar 410 and arranged to engage a vertical surface 422 (Fig. 25) formed on the bracket 414, these stops being fully disclosed in the patent referred to above so that a further description of them herein will not be necessary.

The edge gage supporting mechanism, including the bracket 404, is mounted for adjustment laterally of the support 190 in a horizontal guideway 424 (Fig. 25) formed in the bracket 196, the mechanism being secured in adjusted position by a screw 426 passing through a slot 428 in the bracket 404. The edge gage and its supporting and controlling mechanism are also adjustable forwardly and rearwardly of the machine and, as indicated above, are removable as a unit from the machine. To this end, the rearward portion of the bracket 414 is provided with a track 415 which has a sliding fit in a T-shaped guideway 430 extending forwardly and rearwardly, as shown in Figs. 25 and 26, the bracket 414 carrying a binding screw 432 whereby it may be secured in different adjusted positions in the guideway. An adjustable stop screw 434 is provided on the bracket 196 for stopping the bracket 414 and the gage mechanism in a predetermined rearward position in the guideway 430, this stop screw permitting the gage mechanism to be returned into its original rearward position in the machine after being removed therefrom without adjusting the mechanism relatively to the support 190, as would otherwise be necessary after the removal of the gage mechanism from the machine. The stop screw 434 is provided with a lock nut 436 for holding it in adjusted position.

In the normal operation of the mechanism described thus far, the operator places the insole A, heel end first, on the rotary support 190 and moves the insole rearwardly until it engages the heel gage 338, as illustrated in Fig. 10. The pre-formed ribbed strip S, which has been made by the strip forming mechanism above referred to,

will pass from the forming mechanism downwardly through the normally stationary guides 284 and 286. The leading end portion of the strip, which has been severed from the length of strip attached to the previous insole, will extend under the pressure and feed foot 106, as illustrated in Fig. 5, the severed end of this portion being located substantially on the heel breast line of the insole which has now been positioned forwardly and rearwardly of the support by the heel gage 338. The insole will be positioned widthwise of the support by the edge gage 340 which, at this time, is positioned by the inner stop, provided by the pin 420 (Fig. 25) and vertical surface 422, so that the ribbed strip will be located a sufficient distance inwardly of the edge face of the insole to provide a relatively wide margin at the shank portion of the insole.

The operator depresses the treadle 186 to cause the operating mechanisms of the machine to actuate the presser and feed foot 106, depression of the treadle moving the heel gage upwardly, as explained above, out of operative position, where it becomes locked by the latch 386. The presser foot commences its operating movement in a substantially vertical path because the pressure applying mechanism is actuated first by the lever 168 (Fig. 6). As soon as the treadle has been depressed far enough to attain the full pressing movement of the presser foot, the feeding movement commences, thereby producing the elliptical motion of the presser foot illustrated diagrammatically in Fig. 9, the pressing stroke, however, remaining substantially uniform in length throughout the rest of the operation whereas the feeding stroke may be increased or decreased upon further depression or release of the treadle, as explained above. In this way, the ribbed strip S is pressed intermittently and at relatively high speed against the insole, and the combined insole and strip are fed through the machine simultaneously with the strip attaching operation until the ribbed strip is secured to the margin of the insole up to a point substantially opposite the point at the heel breast line where the attachment of the leading end of the strip started. The insole is usually guided manually by the operator during the strip attaching operation.

The presser foot 106, comprising the individual pressing and feeding elements 112 and 118, is arranged to straddle or span the upstanding rib portion of the ribbed strip, as illustrated in Figs. 40 and 42, the pressing member 112 engaging the outer flange of the strip, which overlies the feather portion of the insole, and the member 118 being cut away as shown at 438 to provide space for the rib. The remaining portion of the member 118, as shown in Figs. 40 and 42, is arranged to engage the wide inner flange forming the base portion of the ribbed strip and to press this portion against the insole, the pressure of each of these members, as explained above, being applied separately and independently of the other member with the heavier pressure being applied by the member 118, through the relatively heavy spring 134 (Fig. 10). The pressure applied by the pressure-applying elements of the presser foot 106 is substantially uniform throughout the strip-attaching operation because, as indicated above, the concentric cam surface 186 of the lever 168 (Figs. 6 and 7) maintains the heightwise movement of the presser foot uniform. Accordingly, the pressure applied to the insole will vary only as caused by variations in the thickness of the insole operated

upon. The rate of feed, however, may be varied at the will of the operator. The widthwise position of the ribbed strip relatively to the edge face of the insole will be controlled manually by the operator by shifting the edge gage 340 into the three different positions referred to by the handle 406 while the ribbed strip is being attached to the insole. If it is desired to stop the feeding movement at any point around the periphery of the insole, the operator has only to release the treadle sufficiently to cause the lever 168 (Fig. 6) to swing counterclockwise to move the surface 286 away from the roll 264 on the lever 262, thereby causing the feeding movement to stop entirely while the pressing movement continues.

Since the elliptical operating motion of the unitary presser and feed foot 106 of the present machine causes it to be removed from the insole and strip during that portion of the operating movement when the presser foot is returning or moving forwardly through the upper half of the ellipse, prior to making another pressing and feeding stroke, the insole and strip are entirely free of pressure during substantially one-half or 180° of each operative movement of the presser foot or cycle of the machine. In other words, no pressure is being applied to the insole and strip during approximately 180° of each operating cycle of the machine, or each revolution of the shaft 72 and eccentrics 86, 88, which are actuating the presser foot. Accordingly, the insole is free to be turned or guided easily on the support 190 for at least half of each intermittent pressing and feeding movement of the presser foot so that it can be readily swung laterally of the support, for example, by the operator when the ribbed strip is being attached to curved portions at the periphery of the insole as, for example, around its toe end or at the shank portions at opposite sides of the insole.

The retarding of the rotation of the support 190 by the friction device 224 causes the insole to drag or hold back a little relatively to the motion of the presser foot 106 and thereby permits a slightly greater amount of ribbed strip to be applied to the surface of the insole than would be applied if the support were permitted to rotate freely. This construction permits the operator to control, within reasonable limits, the amount of ribbed strip that is attached to the insole, thereby preventing the insole from strapping or curling upwardly due to insufficient strip being applied thereto or due also to shrinkage of the strip after it has been applied to the insole and the cement or moisture in the insole or strip has dried out. The normally stationary guide members 284, 286 (Fig. 5) direct the ribbed strip accurately to the surface of the insole and, as stated above, if an additional length of ribbed strip is desired on the insole, that is, greater than can be applied by increasing the friction against the rotary support 190, the guides may be caused to move slightly in opposition to the feeding movement of the presser foot by adjusting the links 316, 328 (Figs. 2 and 5) in the slot 334, this feature of the construction, however, not usually being necessary on the majority of insoles but being convenient to have available when operating, for example, upon very thin flexible insoles or upon relatively thick insoles of yieldable material, such as sponge rubber or some plastic materials. The friction applied to the support 190, to retard its rotation during the operation upon the insole has a tendency to

cause the presser foot to feed the insole in a straight path rearwardly of the support 190.

As pointed out above, it is desirable in the present machine to have the ribbed strip S terminate at substantially the heel breast line of the insole at both sides thereof. The attachment of the ribbed strip is started at the heel breast line at one side of the insole by means of the heel gage 338, which is moved automatically out of operative position as soon as the presser foot begins to operate. In order to cause the ribbed strip to terminate at substantially the heel breast line at the opposite margin of the insole, so that both ends of the strip will terminate substantially in alinement with each other at said heel breast line, the machine is provided with means for automatically stopping the operation of the presser foot 106 when the ribbed strip which is being attached to the opposite or final side of the insole has been applied substantially up to the heel breast line and is in substantial alinement with the end of the strip at the starting point on the insole.

The means for automatically stopping the operation of the presser foot 106 when the ribbed strip being attached to the final side of the insole reaches the heel breast line, and thus comes into alinement with the starting end of the strip at the opposite or first side of the insole, comprises a pair of fingers or feelers which, as illustrated in Fig. 1 and Figs. 43 to 51, inclusive, consist of relatively small curved or U-shaped rods 440 and 442 secured respectively by set screws 444, 446, in rectangular blocks 448, 450, provided on the outer ends of a pair of normally parallel horizontal rods 452, 454. The rods 452, 454 are secured respectively, by set screws 456, 458, (Fig. 49), in holes bored lengthwise in a pair of parallel levers or arms 460, 462, which are rectangular in cross section and are fulcrumed on a pin 464 fastened in an upstanding plate 466 adjustably secured to the frame 68 by screws 468 (Figs. 1 and 43), the arms 460, 462 being retained on the pin by a collar 470. The outer ends of the fingers 440, 442 are bent 180° downwardly and rearwardly to produce substantially U-shaped end portions, the lower arms of these U-shaped portions being adapted to engage and ride up on the ribbed strip S during the attachment of the strip to the insole in a manner to be presently explained.

The horizontal arm 460 forms the upper arm of a bell-crank lever having a lower arm 472 which, as illustrated in Figs. 1, 43 and 50, engages an eccentric 474 mounted on a screw 476 threaded into the plate 466 and adjustable by a knurled head 477 to rotate it into different positions. The eccentric bears against a nut 478 (Figs. 44 and 50) threaded on the screw 476 and is maintained in its adjusted position by a spring 480 surrounding the screw and entering a hole in the eccentric to force the latter against the nut. The lower arm 472 (Fig. 43) of the bell-crank lever 460 is maintained against the eccentric 474 by a spring 482 extending between the lever and a screw 484 threaded through a small bracket 486 fastened to the plate 466, adjustment of the screw 484 in the bracket varying the tension of the spring 482.

The upper arm 460 of the bell-crank lever 472 is provided on its lower side with a rearwardly extending flange or plate 488, preferably integral with the lever and extending under the arm 462, as shown in Figs. 49 and 50, the flange holding the arm 462 parallel with the arm 460 when the

lower arm 472 of the latter lever is engaging the eccentric 474. Adjustment of the eccentric by the screw 476 raises or lowers the parallel arms 460, 462 together as a unit about the pivot 464 and, consequently, raises or lowers the U-shaped fingers 440, 442, thereby determining the initial heightwise position of the parallel fingers relatively to the support 190, as shown, for example, in Figs. 1, 2 and 43. The fingers are normally positioned by the eccentric so that they will clear the upper surface of an insole mounted on the support before the ribbed strip is attached to the insole. As illustrated in Figs. 1 and 49, the fingers 440 and 442 extend laterally across the circular support 190 for the greater part of its diameter some distance forwardly of the axis of the support, or so that the U-shaped portions of the fingers, as illustrated in Fig. 49, will overlies the central portion of the support and also a substantial part of the left-hand portion of the support. The initial position of the fingers transversely of the support may, of course, be varied by adjusting them widthwise in the blocks 448 and 450.

The upper arm 460 of the bell-crank lever 472, carrying the front finger 440, also carries a vertical screw 490 which, as shown in Figs. 1, 43 and 50, extends upwardly through the arm in a position to engage a microswitch 492 secured by screws to a thin vertical plate 494 fastened in any conventional manner to the inner arm 462, the screw 490 engaging a spring-pressed pin 496 in the microswitch and holding the microswitch open so that an electric circuit, indicated in Figs. 1 and 43 by the numeral 498 and controlled by the microswitch, is normally open so that no current can pass through the circuit. The wires of the electric circuit 498 are connected in any usual manner to a solenoid 500 (Figs. 23 and 24) located at the rear of the machine and having an armature 501 which is pivotally connected at its lower end by a pin 502 to a lever 504. The lever is fulcrumed on a shaft 506 mounted in an L-shaped bracket 508 secured by screws 510 to the upper end of the column 62, the lever being retained on the shaft by a collar 512 fastened by a set screw 514. The lever 504 has a forward arm 516 which curves downwardly and rearwardly, as illustrated in Fig. 23.

The upper section 174 of the two-part treadle rod referred to above is pivotally connected at its lower end by a pin 518 to the inner end of a link 520 which is fulcrumed at its forward end on a pin 422 carried by the bracket 508, the link being held on the pin by a collar 524 secured by a pin 522 carried by the bracket 508, the link 520 is a similar link 528, fulcrumed on a pin 530 fastened in the bracket 508, the link being held on the pin by a collar 532 fastened to the pin by a set screw 534. The link 528 is pivotally connected at its inner end by a pin 536 to the lower section 175 of the two-part treadle rod, as shown in Fig. 23. Between its fulcrum 530 and the pin 536, the link 528 carries a pin 538 and pivotally secured on this pin by a collar 540 and set screw 542 is a latch 544 which projects upwardly in front of the curved arm 516. The upper link 520 has a half-round pin 546 projecting therefrom and the latch 544 has a notch or shoulder thereon which is normally arranged to engage the pin 546 and connect the link 520 with the lower link 528, the latch being urged forwardly by a spring 548 extending between the latch and the link 520. This parallel link arrangement, therefore, normally connects the upper section

174 of the treadle rod to the lower section 175, as illustrated in Figs. 4 and 23, so that depression of the treadle 180, in the normal operation of the machine, lowers the section 175 and, through this parallel link arrangement, also lowers the upper section 174. It will be seen, however, from the mechanism illustrated in Fig. 23, that upward movement of the armature 501 of the solenoid 500, when the latter is energized by closing of the electric circuit 498 above referred to, will move the curved arm 516 of the lever 504 rearwardly and release the latch 544 from the pin 546 on the link 520, thereby disconnecting the lower section 175 of the treadle rod from its upper section 174 so that the mechanism which was being caused to operate through depression of the treadle 180, that is, the L-shaped lever 168 (Figs. 6 and 7) and the two double link or toggle arrangements which are caused by movement of said lever to operate the presser and feed foot 106, will be released and returned to their inoperative positions by their springs 172, 270 even though the treadle 180 is held depressed or partially depressed by the operator. In other words, the mechanism just described automatically disconnects the treadle from the mechanism which actuates the presser foot 106 and stops the operation of the presser foot by the constantly-rotating eccentrics 86 and 88.

The mechanism for automatically stopping the operation of the presser and feed foot 106, when the ribbed strip which is being attached to the second margin of the insole reaches the heel breast line and is substantially in alignment with the leading end of the strip which was applied to the first or starting margin of the insole, operates in the following manner. The U-shaped fingers 440, 442 are adjusted heightwise about their pivot 464 by the eccentric 474 until their lower arms just clear the upper surface of the insole being operated upon, the fingers remaining parallel and moving as a unit by reason of the lateral flange 438 on the forward arm 460, which causes the rearward arm 462 to swing upwardly and downwardly as a unit with the arm 460 when the latter is moved about its pivot 464 either by the eccentric 474 or by any other means. The U-shaped portions of the fingers, as shown in Figs. 49 and 51, are so positioned relatively to the support 190 that they lie inwardly beyond, or to the left of, the first margin of the insole to which the ribbed strip is to be secured at the start of the strip attaching operation. The attaching of the ribbed strip proceeds along this first margin from the heel breast line to the tip line of the insole and then around its toe end with the fingers 440, 442 still remaining out of the area to which the ribbed strip is being attached, these fingers, as shown in Fig. 49, being located during this time over an intermediate or central portion of the insole so that they do not interfere with the attachment of the ribbed strip to the insole. As the insole and ribbed strip are fed through the machine, however, and the strip is being attached to the opposite or final margin of the insole at about the shank portion thereof, the insole and ribbed strip, as will be apparent from Fig. 49, will be fed by the presser foot 106 in such a direction that, due to the narrowness of the insole at its shank portion, the ribbed strip already attached to the first margin of the insole will move gradually under the parallel fingers 440, 442. In other words, although the fingers 440, 442 overlaid the second or final margin at the shank portion of the insole when the attach-

ing operation started, they did not interfere with the operation at that time because no ribbed strip was attached to this second or final margin when the operation started. However, as the attaching operation proceeds around the insole and the shank portion at the opposite or final margin of the insole moves under the presser foot 106, the fingers 440, 442 then overlaid the starting margin. Now, however, this starting margin or side of the insole has the ribbed strip S attached thereto and, consequently, the fingers must ride up on the upstanding rib portion of the strip and ride along the rib as the operation continues toward the heel breast line of the insole at the final or finishing side thereof. Since the ends of the fingers are closed or U-shaped in formation, they will ride up upon the rib smoothly and easily and will then ride along the top of the rib on this first margin as the insole is fed along by the presser foot to move the heel portion of the insole rearwardly toward the presser foot. The rib portion of the preformed ribbed strip S is indicated hereinafter by the letter R.

It will be seen in Fig. 49 that the forward finger 440 is slightly longer than the rear finger 442, and accordingly will engage the ribbed strip first, the lower arm of the U-shaped portion of the finger being the part which actually rides on the rib R. The U-shaped portions of the fingers are preferably inclined at a slight rearward angle to the vertical from bottom to top, as illustrated in Figs. 47 and 48, to facilitate the action when the fingers ride up on the rib of the strip.

When the forward finger 440 engages the rib R of the portion of the ribbed strip attached to the first or starting margin at the shank portion of the insole, as viewed in Fig. 49, this finger moves upwardly about its pivot 464 onto the rib portion R of the strip as the toe end of the insole is fed rearwardly on the support by the presser foot 106. Since the forward finger 440 has the lateral flange 438 thereon underlying the rear finger 442, upward movement of the forward finger 440 causes upward movement of the rear finger in unison with the forward finger, thereby maintaining the two fingers in their original parallel relationship to each other even though the rearward finger has not yet quite reached the rib R. The rear finger 442 soon engages the rib and is maintained by the rib in parallel relation with the forward finger 440 without the aid of the flange 438. This same action occurs regardless of the size or height of the rib R on the strip S. In other words, whether the rib is low or high, the two fingers 440, 442 move upwardly together as a unit onto the rib, thereby maintaining the fingers in their initial parallel relationship which maintains the screw 490 (Fig. 50) in engagement with the pin 496 of the microswitch 492 and thus holds the microswitch open to prevent the electric current from passing through the circuit 493. As long as the two fingers remain parallel to each other as shown in Figs. 43 and 50, therefore, the screw 490 on the forward arm 460 will remain in the same position relatively to the pin 496 in the microswitch, because the microswitch is carried by the other arm 462. Accordingly, regardless of the heightwise position of the arms 460, 462 about their pivot 464, the pin 490 will hold the microswitch open as long as the two arms remain parallel.

When the finger 440 reaches the starting point of the ribbed strip S at the heel breast line of the insole, continued feeding movement of the

combined insole and strip moves the rib forwardly of the finger 440 and permits that finger to drop downwardly onto the heel seat portion of the insole which, as the insole is positioned in the machine at this time, is located forwardly of the heel breast line. The dropping of the forward finger 440 off the end of the rib R in this manner moves the arms 460, 462 out of their parallel relationship since the rear finger 442 is still on the rib. It will be noted that the lateral flange 438 does not hold the fingers 440, 442 parallel to each other because the flange is carried by the forward arm 460 and drops downwardly with this finger when the latter drops off the rib. This relative heightwise movement between the fingers 440, 442 and arms 460, 462, moves the screw 490 (Fig. 50) downwardly away from the pin 496 in the microswitch 492 and permits the latter to close the electric circuit. Closure of the circuit energizes the solenoid 500 (Fig. 23) and causes the core 501 to be moved upwardly with substantial force, thereby swinging the curved arm 516 of the lever 504 rearwardly about the pin 506, as viewed in Fig. 23, to disengage the latch 544 from the pin 546 on the upper link 520. Consequently, the upper section 174 of the two-part treadle rod becomes automatically disconnected from its lower section 175 so that the mechanism connected to said upper section is freed from the control of the treadle 180 and may be returned by its springs into its inoperative or idle position, thereby stopping the operation of the presser and feed foot 106 even though the treadle 180 remains depressed by the operator and the eccentrics 85 and 88 continue to be rotated by the motor, as explained above. In this way, the U-shaped fingers 440, 442, by engagement with the ribbed strip S, or with the rib portion R of the strip, automatically determine or control the length of the ribbed strip which it attached to the second or final margin of the insole. As indicated above, the control is such that the operation of the presser foot 106 ceases when the ribbed strip being attached to the second or right-hand margin of the insole is substantially in alignment with the starting end of the strip on the opposite margin thereof or, in other words, is substantially in line with the heel breast line of the insole since that is the point where the strip was started on the insole. The two ends of the ribbed strip S could, of course, be made to terminate at some other point on the surface of the insole forwardly or rearwardly of the heel breast line, if desired, but, by the present construction, they would always terminate substantially in alignment with each other widthwise of the insole irrespective of the particular point at which the attachment of the strip was started lengthwise of the insole.

Although the word "terminate" has been used herein with respect to the ending of the attachment of the ribbed strip S to the second or right-hand margin of the insole, this is intended to denote the end of the adhesive attachment of a ribbed strip of indefinite length to the insole as disclosed herein, rather than the actual termination or ending of the ribbed strip by cutting or otherwise, since obviously, at this time, the length of ribbed strip attached to the insole is still a part of the strip of indefinite length which is being supplied to the insole from the ribbed strip forming means above referred to, this latter portion of the strip not having yet been severed from the portion which is now adhesively attached to the insole.

When the forward finger 440 drops off the rib R of the strip, as shown in Figs. 48 and 51, the operation of the presser foot 106 stops almost instantaneously. Consequently, the rear finger 442 is still riding on the rib R of the strip, as shown in Figs. 48 and 51. Since the arms 460, 462 are thus still out of parallel relation to each other, the microswitch remains closed and the electric current, passing through the circuit, holds the armature of the solenoid 500 elevated to prevent the latch 544 (Fig. 23) from swinging forwardly again to connect the treadle rod sections 174, 175 if the operator should release the treadle 180, which he ordinarily does after the mechanism described above automatically stops the operation of the presser and feed foot 106. Since the treadle rod sections remain disconnected, repeated depression of the treadle 180 at this point cannot start the operation of the presser foot 106.

Although the rear finger 442 on the arm 462 remains elevated on the rib R of the strip at this time, it is subsequently caused to drop off the rib and downwardly into parallel relationship with the forward finger 440 in a manner to be described later in connection with the operation of the cutting-off mechanism of the machine. When the rear finger 442 drops off the rib and into parallel relation with the finger 440, however, the screw 490 in the arm 460 engages the pin 496 in the microswitch 492 and opens the microswitch to break the electric circuit and stop the current, thereby permitting the solenoid to swing the arm 516 forwardly out of the range of the latch 544, the lever 504 engaging a stop 550 secured to the frame to limit downward movement of the solenoid. When this occurs, the latch 544 is swung forwardly by the spring 543 into a position to latch over the pin 546 the next time the treadle 180 is released, thereby automatically connecting the treadle rod sections 174, 175 so that the presser foot 106 will be operated upon the next depression of the treadle.

The ribbed strip S on the insole is now ready to be severed from the strip of indefinite length being supplied to the attaching mechanism by the ribbed strip forming mechanism of the machine. It is important to sever or cut the ribbed strip substantially at the heel breast line of the insole in alignment with the starting end of the strip, or on the line that the forward edge of the presser foot 106 assumed on its last pressing action on the strip, thereby causing both ends of the ribbed strip to terminate in substantial alignment with each other widthwise of the insole at the heel breast line thereof. Severing the ribbed strip on the line where the forward edge of the presser foot stopped on its final pressing stroke insures that the ribbed strip will be cut off precisely at the point where its adhesive attachment to the insole ended so that there will be no danger of a short length of ribbed strip adhering to the insole forwardly of the cutting line as the insole is located in the machine, that is, rearwardly of its heel breast line.

The means for severing the ribbed strip S from the insole in the present machine may be operated either manually or automatically, the manually-operated means being somewhat more economical. At the precise point in the operation of the machine where the operation of the presser foot 106 is stopped, that is, the point described above where the desired length of ribbed strip has been attached to the insole, neither the presser foot 106 nor the cutting-off knife in the machine can be operated, the presser foot having

been rendered inoperative by the disconnecting of the treadle rod sections 174, 175, and the knife being inoperative at this time by reason of mechanism which will now be described in connection with the severing knife and the means for actuating the knife.

As illustrated in Figs. 1 and 19, a knife 552 is provided on the left-hand end of a knife bar 554 which is pivotally connected at its opposite end by a pin 556 to a bell-crank lever 558, the latter being fulcrumed on a screw 560 secured in the frame 68 by a set screw 562. A lower arm 564 on the bell-crank lever is connected by a shoulder screw 566 to a treadle rod 568 which, as illustrated in Fig. 4, extends downwardly at the front of the machine and is pivotally connected at its lower end by an eye-bolt to a treadle 570, the treadle being fulcrumed on the horizontal shaft 182 upon which the treadle 180 is also fulcrumed. The treadle 570 is normally maintained in its raised position by a spring 572 secured to a collar 574 on the treadle rod and to a pin mounted in the frame, the upper limit of the treadle being determined by a horizontal screw 576 (Fig. 19) threaded through a bracket 578 secured to the frame by a screw 580 and engaging the bell-crank lever 558. The counterclockwise movement of the bell-crank lever 558, as viewed in Figs. 1 and 19, upon depression of the treadle 570, is limited by a screw 582 carried by a boss on the lever 558 and arranged to engage the upper surface of a bracket 584 secured to the horizontal plate 64 on the frame by screws 586, the bracket 584 having an upwardly extending rearward wall 588, as illustrated in Figs. 1 and 19, located in front of the thick plate or wall 68 which forms the frame of the machine.

The knife bar 554 is pivotally connected at its left-hand portion, as seen in Fig. 19, by a pin 590 to the lower end of a lever 592 which, in turn, is pivoted on a screw 594 threaded into the wall 588 of the bracket 584. The lever 592 has an upper arm thereon the purpose of which will be explained hereinafter. The pivotal connections of the knife bar 554 to the bell-crank lever 558 by the pin 556, and to the lever 592 by the pin 590, are so positioned and arranged that, when the bell-crank lever is rotated in a counterclockwise direction, as viewed in Figs. 1 and 19, by depression of the treadle 570, the knife bar is caused to move toward the left with a downward motion at its left-hand portion caused by the lever 592 pivoting about the screw 594, the knife bar and knife 552 thereon being then caused to swing upwardly again near the left-hand limit of its movement as the lower end of the lever 592 swings to the left below its pivot 594, thereby imparting to the knife a lateral and downward slashing motion which terminates in a short upward motion near the end of its cutting stroke, the knife then returning to the right again upon release of the treadle 570 with a short downward movement followed by an upward motion as the pin 590 at the lower end of the lever 592 passes under the pivot 594. This double cutting action of the knife during its forward and return strokes insures that a sharp, clean cut will usually be made which passes completely through the ribbed strip in a single actuation of the knife.

The strip severing mechanism of the machine is initially set or adjusted so that the horizontal cutting edge of the knife 552 cuts through the ribbed strip close to the upper surface of the insole without engaging or cutting into said surface, this action being possible because the cut-

ting operation is performed, as will presently be explained, while the portion of the ribbed strip opposite to and forwardly of the knife is under tension and is located somewhat above the surface of the insole. As indicated above, the knife 552 has a lateral and downward cutting motion as it moves toward the left in Figs. 1 and 19 to make its initial cutting stroke, and it also has a short downward cutting motion as it moves in the opposite direction to return to its initial position, this entire motion being caused by one depression of the treadle 570 by the operator.

It is desirable in the present machine to prevent the knife 552 from operating while the presser and feed foot 106 is operating and also to prevent it from operating after the operation of the presser foot has been stopped by the automatic mechanism described above, the knife remaining inoperative or locked until the operator is ready to sever the ribbed strip and has put the strip under the tension above referred to. It is also desirable, after the knife has been rendered operative and is ready to be operated by depression of the treadle 570, that the presser and feed foot 106 be prevented from operating, for example, by accidental depression of the treadle 180 by the operator. Such an arrangement prevents breaking the knife or its operating mechanism and also prevents breaking the presser foot or the means for actuating the same. Moreover, it prevents damage to the insole or the ribbed strip being attached to the insole. In addition to preventing the knife and the presser foot from operating simultaneously as indicated above, it is also advantageous in the present machine to position the insole and strip accurately on the support relatively to the knife after the strip has been attached so that the strip will be severed substantially on the line where the forward edge of the presser foot 106 was located on its final pressing stroke or when stopped by the automatic control mechanism described above. The mechanisms which assist the operator in accomplishing the foregoing purposes are interconnected with each other to a certain extent and accordingly may best be described in the sequence in which they produce the desired results.

The means for preventing the cutting knife 552 from operating and for maintaining it in an inoperative or locked condition until the presser foot 106 has ceased to operate, and also until the operator is ready to actuate the knife by the treadle 570, that is, until he has positioned the insole relatively to the knife and has put the ribbed strip under tension, comprises a lever 596 (Figs. 1, 6 and 19) pivoted above the knife bar 554 on a shoulder screw 598 mounted in the frame 68. The lever 596 is connected at its left-hand end, as viewed from the front of the machine, by a universal joint 600, to a short vertical rod 602 which, at its lower end, is pivotally connected by a universal connection 604, to a curved lever 606 (Figs. 2, 5 and 41) which, in turn, is pivoted on a screw 608 mounted on an upper portion of the rear guide 286, this guide, it will be recalled, being secured to the enlarged forward end of the arm 298 pivoted on the shaft 300. The lever 606 has pivoted on a screw 610 in its forward end a lever 612 which extends downwardly and is provided at its lower end with a rectangular projection 614 (Fig. 41) having an inclined bottom surface which, when the lever 612 is moved downwardly as will be presently explained, is adapted to engage the rear portion of the inclined upper surface of the plate 292 inwardly of the ribbed

strip S, as viewed in Fig. 41, between the two guide members 284 and 286, the lower surface of the lever 612, forwardly of the projection 614 in that figure, overlying the inner flange portion of the ribbed strip, which is supported in this space between the guides by the plate 292.

The lever 612 also carries a needle point member 616 which is secured in the lower end of the lever by a pin 618 and extends downwardly above the inner flange of the ribbed strip in a position to engage and stick through said flange when the lever 612 is moved downwardly, the plate 292 being provided opposite the needle point 616 with the elongated slot 293 to permit the needle to penetrate through the inner flange without striking the plate. The lever 612 is further provided with a forwardly facing lug 622 which is arranged to engage the adjacent wall of the forward guide 284 and limit clockwise movement of the lever, as viewed in Fig. 41, thereby positioning the needle 616 in a predetermined position lengthwise of the ribbed strip S, or forwardly and rearwardly of the machine.

The lever 612 has an upper arm 624 provided at its upper end with a hook to which a spring 626 is attached, the other end of the spring being fastened to a pin 628 mounted in the forward end of the arm 298. As the parts are shown in Fig. 41 the spring 626 is maintaining the lever 612 in a forward position with the lug 622 engaging the forward guide 284, thereby holding the lever 612 in the desired position at this point in the operation of the machine, that is, while the ribbed strip is being attached to the insole. A stop screw 630 is mounted in a plate 632 secured by screws 634 to the forward end of the arm 298, the screw 630 being arranged to engage the arm 624 and limit rotation of the lever 612 in a counterclockwise direction, as viewed in Figs. 5 and 41. The screw 630 may be adjusted in the plate 632 to vary the movement of the lever 612. When the lever 612 is caused to descend from the position shown in Fig. 41 by counterclockwise movement of the lever 606 about its pivot 608, the inclined lower surface of the projection 614 on the lever 612 engages the inner portion of the inclined plate 292, inwardly of the inner flange of the ribbed strip S, and the needle 616 passes through said inner flange into the elongated slot referred to in the plate 292.

The arm or lever 596 (Fig. 19) has a link 636 pivotally connected to its right-hand portion by a screw 638, the link extending upwardly and having a vertical slot 640 formed in its upper portion (Figs. 6 and 7). A screw 642, mounted in the frame 68, extends through the slot 640 and limits heightwise movement of the link. The upper end of the link 636 has a horizontal projection 644 thereon which is arranged to be engaged by a roll 646 carried by an arm 648 secured by screws to the lever 162, previously described as being pinned to the horizontal shaft 152 (Fig. 1) which has the outside link 146 of the double toggle link arrangement 144, 146 pinned thereto. The arm 596 and link 636 are urged upwardly into an elevated position, such as that illustrated in Figs. 6 and 19, in which the screw 642 is located near the bottom of the slot 640, by a spring 650 extending between the arm 596 and a pin mounted in the frame.

The arm 596 also has a plate 652 secured thereon to the left of the link 636 by screws 654, this plate having a downwardly projecting lug 656 and a forwardly and downwardly extending flange 658 formed thereon, the flange, as illus-

trated in Figs. 6 and 19, having a horizontal lower edge and being located above and slightly to the left of an upstanding plate 660 secured by screws 652 to the knife bar 554, the plate 660 having a forwardly extending projection on its upper end, as shown in Fig. 19. Pivoted on the frame 68, below the arm 596, is a vertical arm 664 which is pivoted on a screw 666 and is urged counterclockwise, or toward the left in Figs. 1 and 19, by a spring 668 extending between pins mounted respectively in the arm 664 and the frame 68. The upper portion of the arm 664 bears against a boss or collar provided on the lower end of the lever 592 when the mechanism is located in the position shown in Figs. 6 and 19. A pin 670 is provided in the frame 68 for limiting counterclockwise movement of the arm 664 when the knife mechanism is located in another position, as will be presently explained. The arm 664 is provided at its upper end with an upstanding shoulder 672 the purpose of which will appear hereinafter.

The knife-operating mechanism, and particularly the mechanism associated therewith for locking and otherwise controlling the operation of the knife 552, occupy different positions at different stages in the operation of the machine. After the ribbed strip has been attached to an insole and is ready to be cut off by the knife through depression of the treadle 570, the knife-operating mechanism is located as illustrated in Fig. 19, or is unlocked and free to be actuated by the operator as many times as may be necessary to cut off the ribbed strip from the insole, it usually being necessary to operate the knife only once. Fig. 19 shows the knife mechanism just before the treadle 570 is depressed by the operator. At this time the lever 612 carrying the needle 616 will be located, as illustrated in Figs. 2 and 5, with the needle 616 penetrating the inner flange of the ribbed strip in the space between the guides 284 and 286, the point of the needle extending into the elongated slot referred to above in the inclined plate 292 which supports the strip in the space between the guides. The lever 612 will have been swung rearwardly, as shown in Figs. 2 and 5, and its upper arm 624 will be engaging the stop screw 630. In other words, the lower arm of the lever 612 will have been swung rearwardly about its pivot 610 on the lever 606 just prior to the operation of the knife, in a manner to be presently explained and, in the normal operation of the mechanism, will remain in this rearward position until a new insole is ready to be operated upon by the machine. In addition, the curved lever 606 will have been swung about its pivot 608 in a counterclockwise direction, as viewed in Fig. 5, so that its rearward end 604 will be raised into the highest point it assumes in the operation of the machine. The arm or lever 596 (Fig. 19), to which the curved lever 606 is connected by the rod 602, will likewise be raised to its highest position by the spring 650, thereby elevating the link 636 into the position shown in Fig. 6 with the screw 642 located near the bottom of the slot 640. It will be seen from the foregoing that the elevated positions of the levers 606 and 596, and the link 636, under the tension of the spring 650 are actually controlled or limited by the stop screw 630 in the plate 632 (Figs. 2 and 5), against which the upper arm 624 of the lever 612, carrying the needle 616, abuts when that lever is swung counterclockwise, as viewed in Figs. 5 and 41. It will also be noted that the flange or plate 658 on the

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arm 596 (Figs. 6 and 19) will be located above the projection on the plate 660 carried by knife bar 554, this flange and projection together constituting means for restraining or locking the knife against operative movement when the flange is located in the path of the projection. It will further be observed from Fig. 19 that, with the knife and associated mechanism located in the position illustrated in that figure, the shoulder 672 on the vertical arm 664 is positioned, by the collar on the lever 592, to the right and out of the path of the depending lug 656 on the plate 652 on the arm 596. Accordingly, as the knife and associated mechanisms are illustrated in Figs. 2, 5, 6 and 19, the knife 552 is unlocked and free to be operated by the operator because the locking flange 658 is located above the projection on the plate 660. Each time the treadle 570 is depressed, however, to operate the knife, the collar on the lower end of the lever 592 (Fig. 19) moves to the left and permits the arm 664 to be swung to the left by its spring 668 until stopped by the pin 670, at which time the shoulder 672 will be positioned directly under the projection 656. Consequently, the arm 596 is locked against downward movement about its pivot 598 during this interval of time so the link 636 thereon cannot be moved downwardly from the position shown in Fig. 6 by the roll 646 on the lever 162. This condition, in effect, locks the operating mechanism, including the treadle 180, for actuating the presser and feed foot 106 or, in other words, prevents operation of the presser foot 106 while the knife 552 is being operated. As stated above, locking of the presser foot actuating mechanism takes place automatically each time the knife is operated by depression of the treadle 570 because the vertical arm 664 will move under the projection 656 each time the knife bar 554 is moved to the left by the bell-crank lever 558.

Before describing the actual operation of cutting off the ribbed strip, it may be clearer if the position of the parts after a severing operation has taken place is first described.

After the ribbed strip S has been severed at substantially the heel breast line of the insole A, the insole with the ribbed strip attached thereto is removed from the support 190 and a new insole is placed thereon, the heel gage 338, however, having been returned automatically to its operative position rearwardly of the support during the severing operation in the following manner. The lever 592 (Fig. 19) has an upper arm 674 thereon provided at its upper end with a plate 676 which, as shown in Figs. 19 and 20, is located in a position to engage the hooked end 394 of the rod 392 which, as explained above, projects to the right from the triangular plate 388 on the latch 378 (Figs. 1 and 21). Consequently, the first time the knife bar 554 is operated by depression of the treadle 570, the arm 674 swings clockwise, as seen in Fig. 19, and engages the hook on the rod 392 and pulls the latch 378 out of the notch 386 in the vertical slide 360, thereby unlocking the slide and permitting it to descend and move the heel gage 338 automatically into its lower operative position rearwardly of the support 190. Each time the knife bar 554 returns to its inoperative position shown in Fig. 19, it moves the vertical arm 664 to the right and thus removes the shoulder 672 from under the lug 656, thereby unlocking the mechanism which actuates the presser foot 106.

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The operator mounts a new insole on the support with its heel end against the heel gage 338 and its right side against the edge gage 340. He steps on the treadle 180 to swing the lever 168 (Figs. 6 and 7) in a clockwise direction about the pivot 170, thereby rotating the lever 162 in a counterclockwise direction to move the roll 646 downwardly against the horizontal shoulder 644 on the link 636, as shown in Fig. 7. Depression of the treadle 180 simultaneously elevates the heel gage 338 in the manner previously described (Fig. 46) and permits it to become locked in elevated position by the latch 378. Depression of the treadle 180 also starts the presser and feed foot 106 operating through movement of the double toggle link arrangements out of alignment with the remaining or lower links of these toggle mechanisms, as described above. Depression of the link 636 the distance permitted by the slot 640 illustrated in Fig. 7 swings the arm 596 (Fig. 19) downwardly about its pivot 598, thereby lowering the flange 658 in front of the plate 660 to lock the knife bar 554 against operative movement, the projection 656 on the arm 596 clearing the shoulder 672 on the vertical arm 664 to permit such movement. Downward movement of the arm 596 moves the rearward end of the curved lever 606 downwardly, as illustrated in Figs. 2, 5 and 6, to elevate its forward end and thus raise the lever 612 carrying the needle point 616. The lever 612 is then moved by its spring 626 from the position shown in Figs. 2 and 5, in which it is penetrating the ribbed strip S, into the position shown in Fig. 41, in which it is raised above the strip, and the lever is maintained in this latter elevated position as long as the treadle 180 remains depressed to operate the presser foot 106. The arrangement of the mechanism is such that, although the needle 616 moves downwardly from the position shown in Fig. 41, under partial release of the treadle by the operator when varying the speed of the feeding movement of the presser foot, it does not move downwardly far enough to penetrate the inner flange of the ribbed strip. In other words, the needle 616 will descend a distance sufficient to penetrate the inner flange of the ribbed strip only when the double toggle link mechanism for actuating the presser foot has been returned to its inoperative or aligned position, at which time the needle point moves downwardly in a vertical direction from the position shown in Fig. 41 until the projection 614 on the lever 612 engages the inclined surface of the plate 292, which is the position in which the needle point penetrates the inner flange of the strip and passes into the slot in the plate 292.

As indicated above, the return of the presser foot operating mechanism to inoperative position takes place automatically when the parallel fingers 440, 442 automatically determine the length of ribbed strip to be attached to the insole and stop the operation of the presser foot. When the presser foot stops, the needle point 616 moves downwardly from the position shown in Fig. 41 to the strip-engaging position mentioned above. Since the ribbed strip S has now been attached to the insole from the heel breast line forwardly at both margins thereof, the next operation is that of cutting off or severing the ribbed strip substantially on the line of its final adhesive attachment to the insole margin at the second or final margin operated upon.

When the presser foot was stopped automatically by the parallel fingers 440, 442, the arm

556 (Fig. 19) was elevated about its pivot 538 because the vertical link 636 had now been released by the roll 646 on the lever 62 (Fig. 6) and permitted to rise by the spring 650. The arm 596, however, would be elevated by its spring 650 only the amount permitted by counterclockwise rotation of the curved lever 606 about its pivot 608. Counterclockwise rotation of the lever 606 (Figs. 5 and 41) would, of course, be limited by the amount the lever 612 could move downwardly from the position shown in Fig. 41 to the lower position in which the needle point 616 is penetrating the inner flange of the ribbed strip and the inclined projection 614 is engaging the plate 292. The upward swinging movement of the arm 596, therefore, being controlled at this time by the chain of mechanism just referred to, is not sufficient to move the flange 658 on the arm 596 (Fig. 19) upwardly far enough to clear the projection on the upper end of the plate 660 on the knife bar 554. Accordingly, since this flange, although now moved upwardly a short distance, still remains with its lower edge in front of the plate 660, the knife bar 554 cannot be moved forwardly by depression of the treadle 570 and the knife 552 still remains locked.

As stated, it is desirable, by means of the mechanism referred to above, to position the insole relatively to the knife so that the ribbed strip will be cut substantially on the line where the forward edge of the presser foot 186 last operated. It is also desirable, before cutting the ribbed strip S, to put it under tension when the lever 612 is located in the position illustrated in Fig. 41 except that it is depressed so that the needle point 616 is penetrating the inner flange of the strip because the presser foot mechanism is not operating and the link 636 has been permitted to rise. To accomplish these objects, therefore, the operator grasps the toe end of the insole and pulls the insole rearwardly on the support 109 until it is stopped, as explained below, thereby positioning the ribbed strip relatively to the knife and also putting the strip under tension. The amount the operator is able to pull the insole rearwardly on the support is determined by the lever 612, which leaves a position similar to that illustrated in Fig. 41, but with the needle 616 penetrating the ribbed strip, and swings rearwardly about its pivot 610 as the insole is pulled rearwardly. The inclined surface on the lower end of the lever 612 slides down the inclined surface of the plate 292 until the upper arm 624 of the lever engages the stop screw 630. This forward and downward movement of the lever 612 lowers the forward end 610 of the curved lever 606 until movement of the lever 612 is stopped by the screw 630. Such action raises the rearward end of the lever 606 and, through the connections described, elevates the forward end of the arm 596 (Fig. 19) so that the lower end of the flange 658 on this arm is now raised above the projection on the plate 660, thereby unlocking the knife bar 554 to permit the knife to be operated by depression of the treadle to sever the ribbed strip. The arrangement of the mechanism illustrated in Fig. 41 is such that the rearward movement of the lever 612, as it is guided downwardly by the plate 292 until stopped by the screw 630, is sufficient to permit the insole and strip to be moved rearwardly on the support 190 a distance approximately equal to the width of the presser foot members 112, 118 shown in Fig. 41, this distance usually being about $\frac{1}{4}$ of an inch. In other words, the insole will be moved rearwardly on

the support by the operator, to tension the ribbed strip and position it relatively to the knife 552, a distance controlled by the strip measuring mechanism comprising the lever 612 and the stop 630, this distance being adjustable so that it can be made to equal the width of the presser foot 186. The operator thus moves the length of strip which last received pressure from the presser foot 186 rearwardly from under the presser foot and positions the forward edge of this length of strip in substantial alignment with the cutting-off knife 552. In this way the ribbed strip is not only put under tension, so that the portion of the strip forwardly of the portion last pressed against the insole will be taut and raised slightly from the surface of the insole, but so that the line corresponding to the forward edge of the presser foot which last engaged the strip when pressing it against the insole, is brought into alignment with the knife. Consequently, when the knife is operated, it will sever the ribbed strip substantially on the line where the strip was last pressed against the insole and, as stated above, this line will also be located approximately at the heel breast line of the insole and in substantial alignment with the starting end of the strip at the first or opposite margin of the insole. No short length of ribbed strip will be left attached to the insole forwardly of the cut made by the knife 552. As stated above, when the knife bar 554 is operated by depression of the treadle 570, the arm 654 is swung to the left in Fig. 19 by the spring 662 to move the shoulder 672 under the projection 652 on the arm 596 so that the presser foot operating mechanism, including the treadle 199, for actuating the presser foot 186 cannot be operated during the severing operation. After the ribbed strip has been severed from the insole, the latter may be removed from the machine, the various mechanisms remaining as they were when the strip was cut until a new insole is mounted on the support and the treadle 180 is depressed to start the operation of such insole. When the treadle 180 is depressed, the lever 612 (Fig. 41) will be moved upwardly by depression of the link 636 (Fig. 7) to move the needle 616 out of engagement with the ribbed strip and the arm 624 will be swung rearwardly by the spring 626 away from the screw 630 into the position shown in Fig. 41. Depression of the treadle 180 also causes the action described above to take place again, that is, the knife bar 554 becomes locked to prevent operation of the knife while the presser foot is operating.

Although the machine may be provided with a manually-operated cutting-off knife, as described above and as illustrated in Fig. 19, it may also be provided with a knife which is operated automatically, if desired, the insole being pulled rearwardly by the operator, however, to position the ribbed strip S relatively to the knife and to tension the strip in the same manner as described in connection with the treadle-operated knife. Mechanism for operating the knife 552 automatically is illustrated in Fig. 22, this mechanism being actuated by the action of the operator in pulling the insole rearwardly on the support to position the insole relatively to the knife and to put the ribbed strip under tension.

As illustrated in Fig. 22, the automatic knife-operating mechanism comprises a microswitch 378 mounted on the frame 68. The microswitch has a lever 680 pivoted thereon at 682 and normally held against a stop 684 by a spring 686 extending between the lever and a pin fixed in the

box holding the microswitch. The lever 680 has a latch 688 pivoted on its upper end at 690, the latch being urged clockwise about the pivot 690 by a spring 692 extending between the latch and the outer end of the lever 680. The latch is normally located slightly above a leaf-spring 694 on the microswitch, depression of which closes the microswitch to complete an electric circuit which actuates a solenoid of usual commercial construction (not shown) which, in turn, swings the bell-crank lever 558 to the left as viewed in Fig. 19 to operate the knife 552 in the same manner as was described in connection with the treadle-operated mechanism illustrated in that figure.

The latch 688 is depressed in the following manner. The lever or arm 596 has a finger 696 (Fig. 22) secured to its rearward end which, when the arm is elevated about its pivot 598 to unlock the knife bar 554, when the operator pulls the insole rearwardly as described above, lowers the upper end of the lever 680 on the microswitch and pulls the latch 688 downwardly to close the switch 694 to operate the solenoid referred to and thus, through the bell-crank lever 558 to operate the knife 552. Since, in the normal operation of the machine, the knife should return immediately to its inoperative position, and since the solenoid will hold the bell-crank lever 558 operated as long as the microswitch remains closed, a hook 698 (Fig. 22) is secured on the rearward end of the knife bar 554 by screws 700 in position to engage the top of the latch 688 as the knife bar operates at approximately the end of the cutting stroke of the knife, thereby releasing the latch from the microswitch 694 to open the latter and break the electric circuit. A spring (not shown), similar to the spring 572 (Fig. 4) on the treadle rod 568, may be provided for returning bell-crank lever 558 to its inoperative position against the stop screw 576 when the latch 688 is released from the microswitch 694 by the hook 698. In this way the knife 552 may be operated automatically to sever the ribbed strip S at the proper time without attention on the part of the operator who merely pulls the insole rearwardly on the support 190 to tension it and position it relatively to the knife as described above and in doing so, causes the arm 596 to move upwardly to unlock the knife, the same as in the treadle-operated mechanism, and thereby, through the finger 696, closes the microswitch 694 to actuate the knife, the hook 698 releasing the latch to permit the knife to be returned immediately to inoperative position by the spring referred to.

As pointed out above, the present machine is adapted not only to attach a preformed ribbed strip to the lower or outer surface of an insole to provide a sewing rib thereon, but it is adapted also to make or form the ribbed strip itself prior to its attachment to the insole. The ribbed strip may be the double tape strip disclosed in the patent mentioned above or it may be a so-called "single tape" ribbed strip, which is similar in many respects to the double tape strip except that it is simpler in construction and more economical to make. The single tape ribbed strip has been disclosed herein by way of example as the type of strip used in the present machine. It should be understood, however, that the double tape strip could readily be formed and used in the present machine merely by providing two tape supplying rolls instead of only one, and by making relatively simple substitutions or adjust-

ments in the ribbed strip forming mechanism described hereinafter.

As illustrated in Figs. 28 to 37, inclusive, the ribbed strip forming mechanism for producing the single tape ribbed strip S illustrated in Fig. 52 comprises a bracket 702 (Fig. 29) secured by screws 704 to the frame 68 and supporting a vertical housing 706 which is fastened to the bracket by screws 707 and carries gears for driving a pair of rolls, as will presently be explained. The housing 706 has a bracket 708 fastened thereto by screws 710 (Fig. 32), this latter bracket having a horizontal plate or table 712 secured to it by screws 714. The bracket 708 extends upwardly beyond the housing 706 and has secured to its upper portion in any conventional manner a motor 716 which is provided with speed reducing gears enclosed in a casing 718, the motor driving a relatively small gear or sprocket 720 (Fig. 29) at the desired speed. The table 712 has a horizontal bracket 722 secured to its rearward end by screws 724 and this bracket has an upstanding plate 726 fastened to its right-hand end by screws 728, the plate 726 supporting mechanism for automatically controlling the motor 716 through a switch 730 in a switch box 732. The switch 730 is wired into an electric circuit separate from the circuit which drives the motor 80 (Fig. 4) which operates the ribbed strip attaching mechanism of the machine.

The sprocket 720 is connected by a chain 734 (Fig. 29) to a larger sprocket 736 secured to a shaft 738 journaled in a lower portion of the housing 706. The shaft 738 has a gear 740 secured thereto in any usual manner and, at its forward end (Figs. 28 and 32) carries a knurled roll 742 which is fastened to the shaft by set screws 744 and 746.

The upper portion of the housing 706 has a vertical guideway 748 formed therein and a block 750 is mounted for heightwise movement in this guideway. A shaft 752 is journaled in the block 750 and has its rearward end rotatable in a bearing (not shown) pivoted on a transverse pin 754 (Fig. 32). The shaft 752 has a flanged roll 756 secured to its forward end by set screws 758 and 760 and cooperating with the knurled lower roll 742 to engage a single strip or tape C of fabric material, coated at least on one side with pressure responsive cement, such as rubber cement, latex or other cement having a rubber-like base. The rolls 742 and 756 are rotated by power, as will presently appear, to pull the precoated tape C at a uniform speed from a supply reel 762 (Figs. 28 and 29), the rolls 742, 756 constituting power-operated means for moving a tape C of indefinite length from the supply reel through the ribbed strip forming means of the machine to the strip attaching mechanism thereof.

The housing 706 is similar in construction to the housing disclosed in applicant's prior Patent No. 2,502,615 granted April 4, 1950, to which reference may be had for a complete description of this mechanism. The shaft 752 carries a gear 764 (Fig. 29) which meshes with the gear 740 and thereby causes the shaft 752 to be driven in an opposite direction to the shaft 738. The speed of the gears 740, 764 is such that the strip of tape C is pulled through the forming mechanism somewhat faster than the maximum speed of the feeding movement of the strip attaching mechanism.

In order to vary the pressure of the rolls 742, 756 against the strip C, the rearward bearing for the shaft 752, as stated, is pivotable about

the transverse pin 754. The block 750 carrying the forward end of this shaft is normally urged upwardly in the guideway 748 against a stop screw 766 by a spring 768 (Fig. 32) interposed between the housing 706 and the block 750. The stop screw is threaded through a cover 770 secured to the top of the housing 706 by screws 772. Heightwise adjustment of the stop screw 766, therefore, will cause the flanged roll 756 to apply greater or less pressure against the tape C supported by the lower corrugated roll 742 as the tape is moved by said rolls toward the ribbed strip attaching mechanism.

The supply reel 762 (Figs. 28 and 29) is rotatably mounted on a spindle 774 secured in the upper portion of the vertical plate 726 carried by the bracket 722. The reel is retained on the spindle by a collar 776 (Fig. 29a) secured to the shaft by a set screw 778 and it may be prevented from rotating freely on the shaft in any convenient manner as, for example, by the friction produced by a spring 779 interposed between the collar and the roll 762. The flat strip of pre-coated tape C passes downwardly from the reel 762, as shown in Figs. 28 and 29, and passes around an idler roll or pulley 778 rotatable about a shaft 780 secured in the plate 726. The tape passes cement-side up from the idler roll 778 into the ribbed strip forming mechanism of the machine which is mounted on the horizontal table 712.

The ribbed strip forming mechanism illustrated herein is similar in many respects to the strip forming mechanisms disclosed in my prior patent referred to above and my prior Patent No. 2,498,751 granted February 28, 1950, the mechanisms of these patents, however, being adapted to produce the double tape ribbed strip referred to rather than the single tape ribbed strip illustrated herein. As illustrated in Fig. 28, the first member of the strip forming mechanism comprises a stationary folder 782 similar to the folder disclosed in the patent referred to and having three folding elements 784 in the form of downwardly projecting U-shaped wires or staples which diminish progressively in size and are arranged to engage and fold the central portion of the tape C into substantially the shape illustrated in Fig. 34 to form a two-ply rib portion R and a marginal portion which extends upwardly beyond the two-ply portion. The folded tape C passes from the folder 782 between a pair of rolls 786, 788 on vertical axes having knurled surfaces thereon for engaging the folded strip, the rolls being rotated by friction and applying preliminary pressure to the lower part of the two-ply rib portion of the strip.

The roll 788 (Figs. 33 to 35) is rotatable about a vertical pin 790 mounted in a bracket 792 secured by screws 794 to the plate 712, a ball bearing 796 being preferably provided to reduce friction. The roll 786 is rotatable on a pin 798 mounted in a movable bracket 800 pivoted to the bracket 792 by a vertical shoulder screw 802 threaded into the plate 712. A ball bearing 804 (Fig. 33) is also provided for the roll 786. The pivoted bracket 800 is normally pressed toward the fixed bracket 792 by a spring 806 (Fig. 35) surrounding a screw 808 which passes through an enlarged hole in the bracket 800 and is threaded into the bracket 792. The spring 806 presses the roll 786 toward the roll 788 to cause the rolls to apply the desired pressure to the folded portion of the tape C. The tension of the spring 806 may be controlled by an arm 810 adjustably secured to the top of the bracket 792 by a screw

812, the arm being set in a predetermined position and the head of the screw 808 being then brought into engagement with the arm.

The folded tape C passes from between the rolls 786, 788 forwardly or to the right, as viewed in Fig. 32, out of the brackets 792, 800 and into the path of a separating finger 814 (Fig. 35) secured by a screw 816 to the bracket 792 and projecting downwardly in a position to enter between the upstanding marginal portions of the folded tape to separate these portions while pressing the folded lower rib portion R downwardly toward the left against the plate 712. The finger 814 is adjustable heightwise on the bracket 792 to accommodate different widths of tape.

After being separated by the finger 814, the tape passes to the right between the forming rolls 742, 756, these rolls having been adjusted by the screw 766 to apply the desired pressure to the folded strip. Fig. 36 shows the position of the strip as it passes between the forming rolls 742, 756. The tape is guided between the rolls at the outer or left-hand side of the tape by a thin plate 818 (Fig. 36) adjustably secured to the support 712 by screws 820 and arranged to engage the end of the two-ply rib portion of the tape and guide it between the rolls 742, 756, as shown in Fig. 37. The rolls bend the longer margin of the tape downwardly against the rib portion so that the end of this margin overlies the guide 818. The tape is guided at its opposite side by a guide member 822 having an undercut portion 823 adjacent to the rolls adapted to receive the other margin of the tape, the guide 822 being adjustably secured to the support 712 by screws 824 extending through slots in the guide. As illustrated in Fig. 37, the guide 818 is beveled at 826, where the tape passes between the rolls 742, 756, to prevent a sharp corner on the guide from forming a crease or line in the tape. The flange on the upper roll 756 is arranged to form a crease or fold between the two-ply rib portion R of the tape and the longer margin or flange portion thereof, as shown in Fig. 37. The flange on the roll 756 applies heavier pressure to this folded portion of the tape than to its other portions and thus produces a permanent crease or angle between the rib portion R and the upper marginal portion (Fig. 37), which is to form the inner flange M in the completed ribbed strip. The opposite or lower marginal portion of the tape, indicated in Fig. 37 by the letter N, will form a relatively narrow outer flange or feather on the ribbed strip, as will presently appear. When the folded strip C leaves the forming or pressure applying rolls 742, 756, it has been completed by the ribbed strip forming mechanism of the present machine and, except for the horizontal position in which it is held, comprises substantially the ribbed strip S illustrated in Fig. 52. The completed ribbed strip S leaves the rolls 742, 756 in the condition illustrated in Fig. 37 and passes forwardly or to the right, as viewed in Figs. 32 and 33, around a roll or pulley 828, rotatable freely about a screw 830 carried by a bracket 832 adjustably secured to the housing 706 by a screw 834.

The ribbed strip passes upwardly from the pulley 828, as shown in Figs. 28 and 29, around a pulley 836 which is rotatable on the forward end of a long rod 838 from which the strip passes downwardly again through a U-shaped guide member 840 (Figs. 28 and 29) carried by an upwardly extending arm 842 secured by screws 844 to the forward end of the frame 68. The arm 842, incidentally, is provided at its upper end with a

spindle 845 (Figs. 3 and 28) similar to the spindle 774 and upon which another supply reel of tape may be mounted when it is desired to make a double tape ribbed strip in the machine rather than the single tape strip disclosed herein, this double tape strip, as pointed out above, being formed merely by making minor changes or adjustments in the forming mechanism described above. As illustrated in Fig. 5, the completed ribbed strip S passes downwardly from the guide 840 into the forward guide 284 and thence into the ribbed strip attaching mechanism of the machine.

The long rod 838 is supported by a block 846 (Figs. 29, 30 and 30a) which is pivoted on a shoulder screw 848 threaded into the upper portion of the upstanding plate 726 on the bracket 722, the rod being fastened in the block by a set screw 850.

Secured to the upper end of the plate 726 is a microswitch 852 which is connected in the usual manner to the switch box 732 by a cable 854. Pivoted on a screw 856 (Figs. 29 and 30), below the microswitch, is a rearwardly extending arm 858 having a horizontal flange 860 thereon arranged to engage a button 862 provided on the microswitch 852. The rearward portion of the arm 858 has a lug thereon which normally engages and rides on a screw 864 carried by a small block 866 which is slidably mounted in a guideway 868 formed in the block 846, the screw 864 being secured in adjusted position in the block 866 by a set screw 870. The block 866 may be secured in different adjusted positions lengthwise of the guideway 868 by a screw 872 passing through a slot 874 formed in a flange 876 provided on the block 866, thereby adjusting the screw 864 relatively to the pivoted arm 858. Adjustment of the screw 864 relatively to the screw 848, which is the axis about which the block 846 and rod 838 rotate, determine the angular position of the rod 838 when the latter operates to control the operation of the ribbed strip forming mechanism, as will be presently explained.

As the mechanism is shown in Figs. 28 and 29, the screw 864 is holding the arm 858 in a position in which the latter has depressed the button 862 of the microswitch and opened the microswitch to break the electric circuit and stop the motor 716 which operates the forming rolls 742, 756 of the strip forming mechanism. Consequently, the forming mechanism is not operating as shown in those figures since the rod 838 is located in its elevated position. It will be seen, however, that a substantial length of completed ribbed strip S has been formed at this time which extends from the idler roll 828 upwardly around the pulley 836 and then downwardly to the attaching mechanism of the machine, this extra length of strip being sufficient to permit the ribbed strip attaching operation to be continued on insoles for a short period of time while the forming mechanism remains idle. As the excess of strip S is used up in the attaching operation, the length of the loop passing upwardly around the pulley 836 becomes smaller, thus swinging the forward end of the rod 838 downwardly about the pivot 848 and moving the screw 864 downwardly to lower the arm 858 and move it away from the button 862 of the microswitch. When the rod 838 has been lowered into a predetermined position by the diminishing of the excess of ribbed strip S, the arm 858 causes the button 862 to close the microswitch, thereby automatically starting the motor 716 to operate

the ribbed strip forming mechanism. As stated above, the arrangement is such that the forming mechanism produces the ribbed strip S somewhat faster than the attaching mechanism applies it to an insole so that the rod 838 will start to rise again as soon as the forming mechanism begins to operate. When the rod reaches the elevated position shown in Figs. 28 and 29, the microswitch is opened to stop the strip forming mechanism until the excess of strip has been used up again to the predetermined point above referred to. In this way, the strip forming mechanism is caused to operate to provide continually a supply of ribbed strip for attachment to the insole, the supply being controlled automatically by the ribbed strip itself so that there will always be enough preformed ribbed strip on hand for attachment to the insole irrespective of whether the strip forming mechanism is operating at any particular time. It will be apparent from the foregoing that the strip forming mechanism of the present machine may be operating while the attaching mechanism is stopped or vice versa, or both mechanisms may be operating at the same time. They may also both be stopped at the same time. The only connection between the two mechanisms is that provided by the excess of ribbed strip S which starts the operation of the forming mechanism when it has diminished a predetermined amount below that shown in Figs. 28 and 29, at which time the forming mechanism starts operating automatically, and the action keeps repeating as long as the machine is in operation.

The rod 838 is caused to rise into its elevated position in the following manner. A block 878 (Fig. 29) is secured to the rearward end of the rod by a set screw 880 and a downwardly extending link 882 is connected to the block by a screw 884. The link is pivotally connected at its lower end to an arm 886 fulcrumed on a pin 888 fastened in the plate 726. A torsion spring 890 (Fig. 31) surrounding the pin 888 has one end secured to the nut 892 and presses downwardly against the arm 886, thereby urging the link 882 downwardly to swing the rod 838 clockwise about the pivot 848 and move its forward end upwardly.

It is desirable in the present machine to stop the operation of the ribbed strip forming mechanism before the supply of tape C on the reel 762 has been entirely used up, thereby making it unnecessary for the operator to thread a new tape through the strip forming mechanism, which takes considerable time. It is also preferable to stop the strip forming mechanism while a sufficient length of flat tape C still remains on the reel 762 so that it can be conveniently attached, by splicing or otherwise, to a new reel of tape. It is also desirable to stop the operation of the strip forming mechanism automatically so that the operator will know that the tape on the reel 762 is low and can thereupon stop the operation of the machine and attach a fresh roll of tape to the end of the tape remaining on the reel. In doing this, he will pull the remaining length of flat tape from the used reel 762, remove the old reel from the spindle 774, connect the loose end of this piece to the leading end of the new reel and then mount the new reel on the spindle 774, thereby reloading the machine without the extra labor and loss of time that would be required if the ribbed strip were permitted to run out through the strip forming mechanism.

In order to stop the strip forming mechanism

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automatically when the supply of tape C reaches a predetermined low point on the reel 762, a bell-crank lever 894 (Fig. 29a) is pivoted on a shoulder screw 896 threaded into a plate secured to the vertical plate 726, the upper arm of the bell-crank lever being arranged to rest lightly against the side of the tape 762, and being held against the tape by a spring 898 extending between the lower arm of the bell-crank lever and a lug on the plate 726. Adjustably mounted on the end of the lower arm of the lever 896 is an upwardly extending arm 900 which has a laterally extending L-shaped projection or hook 902 on its upper end. When the tape C on the reel 762 has diminished far enough, that is, above the end of the upper arm of the bell-crank lever 894, this arm drops inwardly, or to the right in Fig. 29a, to elevate the arm 900 and cause the hook 902 to engage the pivoted arm 858 and raise it against the button 862 of the microswitch to open the microswitch and thus stop the operation of the ribbed strip forming mechanism. When the forming mechanism has been stopped in this manner, the operator knows that the supply of tape on the reel 762 has been used up to the allowed minimum and he can stop the operation of the attaching mechanism as soon as he has finished with the insole upon which he is then operating. He pulls the remaining length of tape C off the reel 762 and removes the empty reel from the spindle 774, the forward portion of the tape, of course, being threaded through the strip making mechanism and extending downwardly to the insole on the support 190. The operator next mounts a new reel of tape on the spindle 774 and pulls its leading end downwardly toward a horizontal table 904 secured by screws to the bracket 702 and extending below the strip forming mechanism of the machine, as shown in Figs. 28 and 29. A closed container 906 (Fig. 28) is preferably provided adjacent to the table 904 and held by an arm 908, this container carrying a roll of thin splicing gauze 910 which is coated on both sides with pressure-responsive adhesive and may be readily pulled from the container and cut off in suitable lengths for use in joining the remaining length of tape to the leading end of the new roll of tape, this operation being conveniently performed on the table 904 and being carried out in a manner in which no tape is lost, since the connecting gauze, which may be cut off in lengths of two or three inches, is so thin that it will readily pass through the strip forming mechanism thereby permitting the two ends of the tape to be joined together in abutting relation to each other by the gauze. As soon as the new reel of tape is mounted on the spindle 774, the upper arm of the bell-crank lever 894 is forced toward the left in Fig. 29a into its original position, thereby returning the arm 900 and hook 902 into their normal positions and allowing the microswitch 852 to close so that the strip making mechanism will operate as soon as the operator throws the switch 730 in the switch box 732. A stop 912 (Fig. 29) is preferably provided on the lower end of the vertical plate 726 against which the arm 886 can come to rest in case no ribbed strip S happens to extend over the pulley 836 to limit the lower position of this arm.

Although the operation of the machine will be apparent from the foregoing description, a brief summary of the operation will be given here in order that a clear understanding of the invention may be obtained. After the support 190

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has been adjusted heightwise for the thickness of the insoles to be operated upon and the power of the machine has been turned on, the operator places an insole such as the insole A on the support, heel end first, and slides the insole forwardly until it strikes the heel gage 338. He brings the right-hand edge of the insole against the edge gage 340 which is located in its inner position for the shank portion of the insole. The leading end of the preformed ribbed strip S will underlie the presser and feed foot 106 and the severed edge of this portion will be located substantially at the heel breast line of the insole after the latter has been positioned on the support. The operator depresses the treadle 180 to swing the L-shaped lever 168 (Figs. 6 and 7) in a clockwise direction and thereby cause the eccentrics 86, 88 to start imparting operative movement to the presser foot 106 through the movement of the double link or toggle arrangements (Fig. 5) out of alinement with the other links which make up these mechanisms. As the treadle is depressed, the heel gage 338 is elevated and becomes latched in its upper position, thereby preventing the gage from interfering with the strip attaching operation. The elements 112 and 118 of the presser foot 106 are caused first to apply pressure to the opposite flange portions M and N of the ribbed strip S, as shown in Figs. 38 and 40, and then to feed the combined insole and strip rearwardly of the support 190. The pressures exerted on the flanges by the elements 112 and 118 are independent of each other and dependent upon the thicknesses of the portions of the work operated upon respectively by these members, each member yielding independently under its own spring as the operating mechanism completes its full pressure stroke. The insole and strip are fed at a speed which is under the control of the operator who may, if he desires, depress the treadle 180 its full distance to obtain the maximum feeding movement or may at times release the treadle to a point where the feeding movement stops entirely, the pressing action continuing at a substantially uniform pressure as the ribbed strip is attached to the insole. The operator will shift the edge gage 340 by means of the handle 406 when the ribbed strip is being attached to the shank portion of the insole and also around the forepart and toe ends of the insole. If the insole has a pointed toe, he can slow down the feeding movement as much as desired while the ribbed strip is being attached around the toe portion. The insole is urged lightly toward the edge gage 340 by the rotation of the support 190, the friction against the support having been adjusted as desired before the operation was started.

As the strip is being attached to the second or final margin of the insole, the parallel fingers 440 and 442 ride up on the rib R of the portion of the ribbed strip already attached to the starting margin of the insole and ride along the top of the rib. The attaching operation is continued through the shank portion at the second margin and proceeds toward the heel breast line at this second side. The finger 440 drops off the end of the rib on the starting side of the insole at substantially the heel breast line and, by thus moving the fingers 440, 442 out of their parallel relationship, closes the microswitch 492 to complete the electric circuit and actuate the solenoid 500 (Fig. 23) thereby disconnecting the lower portion 175 of the treadle rod from its upper portion 174 to permit said upper portion to be ele-

vated into its inoperative position by the return of the lever 168 into its initial position (Fig. 6) by the springs 172 and 270. This automatically stops the operation of the presser foot 106 even though the operator continues to hold the treadle 180 depressed or partially depressed.

The ribbed strip S is now applied to the entire margin of the insole A and is ready to be severed by the knife 552. The operator grips the toe portion of the insole rearwardly of the support 190 and pulls the insole rearwardly until it is stopped by the engagement of the upper arm 624 of the lever 612 (Fig. 41) with the stop screw 630, this action, in effect, measuring the length of ribbed strip which was last pressed against the insole by the presser foot 106 and moving it rearwardly to bring the forward edge of such portion into substantial alinement with the knife 552. This action also puts the ribbed strip under tension and raises it slightly from the support. The measuring operation elevates the rearward end of the curved lever 606 (Figs. 19 and 41) and raises the arm 596 the final distance necessary to unlock the knife bar 554 and permit the knife to operate. The operator depresses the treadle 568 to operate the knife and sever the ribbed strip substantially at the heel breast line of the insole at its second or final margin which is substantially in transverse alinement with the end of the strip applied to the insole at its first or starting margin. When the knife is operated by depression of the treadle 568, the plate 676 on the lever 674 swings to the right, as viewed in Figs. 1 and 19, and engages the hook 394 on the rod 392 and thereby unlocks the heel gage which descends into its lower position rearwardly of the support 190.

When the operator pulled the insole rearwardly on the support to position it relatively to the knife 552, the second finger 442 of the parallel fingers dropped off the rib at the first or starting margin of the insole. This brought the two fingers again into their parallel relationship to open the microswitch 496 and break the electric circuit so that the solenoid 500 (Fig. 23) was returned into its original lower position, thereby permitting the latch 544 to be in a position to latch over the bar 546 when the operator next releases the operating treadle 180. This action, however, renders the mechanism for actuating the presser foot 106 operative again, if the operator should happen to depress the treadle 180 before depressing the treadle 568 for operating the knife 552 and, accordingly, when the knife-operating mechanism (Fig. 19) is unlocked by pulling the insole rearwardly on the support, the projection 656 on the arm 596 is also elevated to permit the arm 664 to swing to the left while the knife is operating and, through the projection 672, to prevent lowering of the arm 596 during the cutting operation so that the presser foot can not be operated during this time. In other words, the link 636 (Figs. 6 and 19) is locked in its elevated position when the projection 672 is under the lug 656 on the arm 596. Consequently, the treadle 180 cannot be depressed far enough to actuate the presser foot.

If the machine is provided with the automatic severing mechanism illustrated in Fig. 22, the action is substantially the same except that the pulling of the insole rearwardly on the support 190 by the operator to determine or measure the length of the ribbed strip last operated upon by the presser foot elevates the arm 596 (Fig. 22) and, through the finger 696, automatically closes the microswitch 678 to complete the circuit and actuate the knife 552 thereby causing the knife

automatically to sever the strip at the proper location, the mechanism being returned immediately into its inoperative position by reason of the rod 698 on the knife bar 554 which strikes the lever 688 and opens the microswitch again as the knife bar moves near the end of its operative movement.

The insole, having now been completed, is removed from the support 190 and a new insole is placed thereon and the operation is repeated, the first portion of the depression of the treadle 180 causing the needle 616 to be raised away from the inner flange of the ribbed strip and returned by its spring 626 into the position shown in Fig. 41, thereby resetting the mechanism for operating upon the next insole. The ribbed strip forming mechanism may, or may not, be operating at this time depending upon the excess of ribbed strip extending over the roll or pulley 836 on the rod 838. Since this mechanism is controlled automatically by the excess of strip, however, there will always be enough preformed ribbed strip on hand ready for attachment to the insoles being operated upon regardless of the number of insoles in the lot or group.

Having thus described my invention, what I claim as new and desire to secure by Letters Patent of the United States is:

1. A machine for attaching cement-coated ribbed strips to insoles to provide sewing ribs thereon having, in combination, means for supporting an insole, driving means constantly rotating at the same speed, a unitary member operable by said driving means toward and away from the supporting means for pressing the cement-coated ribbed strip against the insole to cause the strip to become bonded to the insole by the cement on the strip, and operator-controlled means for causing movement to be imparted from said driving means to said unitary member to feed the insole at a progressively varying speed.

2. A machine for attaching ribbed strips to insoles to provide sewing ribs thereon having, in combination, a horizontal table for supporting an insole, a foot mounted for vertical movement to press a ribbed strip intermittently against the insole on the table and for horizontal movement to feed the strip and insole, power means continuously operating at the same speed, and means under control of the operator for causing pressing movement to be imparted to said foot and for causing progressively increasing feed movements to be imparted to said foot.

3. In a machine for attaching cemented ribbed strips to cemented insoles to provide sewing ribs thereon having, in combination, means for supporting an insole in a fixed plane, power means continuously operated at the same speed, means for pressing a cemented strip intermittently against the supported insole, and manually controlled means for causing pressing movements to be imparted to said pressing means from said power-operated means, further movement of said manual means causing the pressing means to feed the insole with progressively increasing lengths of feed.

4. A machine for attaching ribbed strips to insoles to provide sewing ribs thereon having, in combination, means for supporting an insole, a unitary member operable in conjunction with the supporting means to press a cement-coated ribbed strip against the insole to cause the strip to become cement-attached thereto and for simultaneously feeding the insole and strip during the pressing operation, and means under the con-

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trol of an operator and connected to the unitary member for varying the operative movement of said unitary member at will during the operation thereof, said last-named means being arranged for pivotal movement into different positions to vary said operative movement.

5. A machine for attaching ribbed strips to insoles to provide sewing ribs thereon having, in combination, means for supporting an insole, a unitary member cooperating with the supporting means for pressing a cement-coated ribbed strip against the insole to cause it to become bonded to the insole and also for feeding the combined insole and strip, and manually-controlled means connected to the unitary member for moving said member with a compound movement which is uniform in one direction but progressively variable in another direction, said manually-controlled means being movable by an operator into different angular positions to effect said progressively variable movement.

6. A machine for attaching ribbed strips to insoles to provide sewing ribs thereon having, in combination, a support for an insole, single means for pressing a cement-coated ribbed strip against the insole on said support to cause the strip to adhere to said insole by the cement on said strip, said single means being also arranged to feed the insole and strip transversely of the support, means movable into and out of a predetermined inoperative position for actuating said single means to cause it to apply pressure intermittently to the strip and insole and simultaneously to feed the insole and strip, said actuating means being constructed and arranged to vary the feeding movements of said single means without changing its pressing movements, and treadle-operated means for moving said actuating means into and out of said predetermined position.

7. A machine for attaching ribbed strips to insoles to provide sewing ribs thereon having, in combination, a support for an insole, a single member for pressing a ribbed strip intermittently against the insole on the support and for feeding the insole transversely of said support, and operator-controlled means pivotally connected to said single member for actuating said member to cause it to apply substantial pressure to the insole and strip and to feed said insole and strip transversely of said support during each pressing action, said operator-controlled means having mechanism thereon constructed and arranged to be moved into a position by the operator to permit the operator to vary the feeding movement of said single member progressively at will without changing its pressure applying movement.

8. A machine for attaching ribbed strips to insoles to provide sewing ribs thereon having, in combination, means for supporting an insole, a unitary member for pressing a ribbed strip against the insole and for also feeding the insole and strip, said member acting to press the strip against the insole with substantial pressure and to feed the insole and strip at a variable speed, continuously-operating means for actuating said unitary member but normally operating without affecting said member, and manually-controlled means remote from said continuously-operating means for rendering said continuously-operating means effective to actuate said unitary member.

9. A machine for attaching ribbed strips to insoles to provide sewing ribs thereon having, in combination, means for supporting an insole, a single member for pressing a ribbed strip against the insole and for also feeding the insole and

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strip, said member acting to press the strip intermittently against the insole with substantial pressure and to feed the insole and strip at a speed which may be varied at the will of an operator, a pair of continuously-rotating eccentrics, pivoted means actuated by each of said eccentrics for operating said single member, the pivots of said pivoted means being normally so positioned that the motion of said eccentrics is ineffectual to operate said single member, and manually-controlled means for changing the position of said pivots to render the motion of said eccentrics effective to operate said single member.

10. A machine for attaching ribbed strips to insoles to provide sewing ribs thereon having, in combination, means for supporting an insole, a single member for pressing a cement-coated ribbed strip against the insole to attach it thereto by the cement on said strip and for also feeding the combined insole and strip, continuously-operated means for operating said single member, said continuously-operated means acting to reciprocate in a direction which is normally ineffectual to operate said single member, and manually-controlled means for changing the direction of said reciprocating movement to cause said continuously-operated means to operate said single member, said manually-controlled means acting to change said reciprocating movement in a manner to cause said single member to apply substantial pressure to the insole throughout the strip attaching operation and to feed the insole at a variable speed.

11. A machine for attaching ribbed strips to insoles to provide sewing ribs thereon having, in combination, means for supporting an insole, a unitary member for pressing a ribbed strip against the insole to force said strip thereagainst and for also feeding the insole and strip, said member acting to press the strip intermittently against the insole and to feed the insole and strip at a speed which is variable at the will of an operator, continuously-rotating eccentrics, pivoted means between said eccentrics and said single member for operating said member, the pivots of said pivoted means normally having positions in which the movement of said eccentrics is ineffectual to operate said single member, and single means for changing the relative positions of said pivots to cause said pivoted means to operate said single member to apply substantial pressure to the insole and to feed the insole and strip at a speed which can be varied continuously at the will of the operator.

12. A machine for attaching ribbed strips to insoles to provide sewing ribs thereon having, in combination, means for supporting an insole, a single member for pressing a precemented ribbed strip against the insole to bond said strip thereto and also for feeding the combined insole and strip, said single member acting to press the strip intermittently against the insole with substantial pressure and to feed the insole and strip at a speed which is variable at the will of an operator, a pair of continuously-rotating eccentrics, a set of pivoted means between each of said eccentrics and said single member for operating said member, the pivots of each set of pivoted means normally having positions in which the movement of said eccentrics is ineffectual to operate said single member, and a cam for simultaneously changing the relative positions of said pivots to cause each set of pivoted means to operate said single member, said cam acting to change

the positions of the pivots of one set of pivoted means a predetermined amount to cause that set of pivoted means to impart uniform movement to the single member and to change the positions of the pivots of the other set of pivoted means a variable amount to cause that set to impart variable movement to said single member.

13. A machine for operating upon work pieces having, in combination, means for supporting a work piece, a member for applying pressure to said work piece and for simultaneously feeding the work piece, a pair of constantly-rotating eccentrics, pivoted means between each of said eccentrics and said member for transmitting operative movement from the eccentrics to said member, and single operator-controlled means for causing said pivoted means to transmit movement to said member first from one eccentric and then from the other.

14. A machine for operating upon work pieces having, in combination, a pressing and feeding member, a pair of continuously-rotating eccentrics, a pair of toggles with their joints connected each to one of said eccentrics whereby movement of the joint of one toggle moves the pressing and feeding member in a direction to apply pressure to the work piece and movement of the joint of the other toggle imparts feeding movement to said member, and means for shifting a pivot of each toggle which is remote from said pressing and feeding member nearer to said member whereby both pressing and feeding movements are imparted to said member.

15. A machine for operating upon work pieces having, in combination, a pressing and feeding member, a pair of constantly-rotating eccentrics, a pair of toggles with their joints connected each to one of said eccentrics at 90° from each other whereby movement of the joint of one toggle moves the pressing and feeding member in a direction to apply pressure to the work and movement of the joint of the other toggle moves said member in a direction to feed the work, and manually-controlled means for shifting a pivot of each toggle which is remote from said member nearer to said member and thereby cause movement of the joints of the toggles by said eccentrics to impart pressing and feeding movement to said member.

16. A machine for operating upon work pieces having, in combination, a pressing and feeding member, a pair of constantly-rotating eccentrics, a pair of toggles with their joints connected each to one of said eccentrics by straps located at 90° to each other whereby movement of the joint of one toggle moves the pressing and feeding member in a direction to apply pressure to the work, and movement of the joint of the other toggle moves said member in a direction to impart feeding movement to the work, and means for shifting a pivot of each toggle which is remote from said member nearer to said member to cause the eccentrics to impart pressing and feeding movements to said member, said shifting means acting to shift the pivot for the pressure-applying toggle a uniform distance and to shift the pivot for the feeding toggle a variable distance whereby the pressure-applying movement will continue and the feeding movement will be varied.

17. A machine for operating upon work pieces having, in combination, means for supporting a work piece, a single member, a pair of eccentrics rotating at a constant speed, pivoted means between the single member and one eccentric for

imparting to said member movement in one direction to apply pressure to the work piece, pivoted means between the other eccentric and said member for imparting to said member movement in another direction to feed the work piece, and operator-controlled means for moving the one pivoted means to impart pressing movements to said member and then moving the other pivoted means to impart feed movement to said member.

18. A machine for operating upon work pieces having, in combination, means for supporting a work piece, a member for applying pressure intermittently to the work piece and for simultaneously feeding the same, constantly-rotating eccentrics, pivoted means for transmitting operative movement from the eccentrics to said member, and manually-controlled means for rendering said pivoted means operative to cause said member to apply pressure to the work piece and to feed it at a speed which can be varied from zero to maximum and vice versa without changing the pressure applied by said member.

19. A machine for operating upon work pieces having, in combination, means for supporting a work piece, a member for applying pressure to the work piece and also for feeding the same, a pair of eccentrics constantly-rotating at a constant speed, pivoted means between said eccentrics and said member for transmitting operative movement from the eccentrics to said member to cause the latter to apply substantial pressure to the work piece and to feed the work piece at a variable speed, and single operator-controlled means for controlling said pivoted means, said operation of said pivoted means acting during constant speed of said eccentrics to cause said member to feed the work piece at a speed ranging from zero to maximum and vice versa at the will of the operator without affecting the pressure-applying movement of said member.

20. A machine for operating upon work pieces having, in combination, means for supporting a work piece, a member movable relatively to the supporting means for applying pressure to the work piece on the supporting means and for simultaneously feeding the work piece over the supporting means, and means for operating said movable member constructed and arranged to cause said member to apply intermittent pressure continually to the work piece during the operation of said operating means and to cause the movable member to feed the work piece or to stop feeding the same at the will of an operator at any time during the operation of said operating means, said operating means having fixed pivots and relatively movable pivots.

21. A machine for operating upon work pieces having, in combination, means for supporting a work piece, a single member arranged to cooperate with the supporting means to apply pressure to the work piece and simultaneously to feed the same, continuously-operated means associated with the single member for actuating said member, and manually-operated means engaging said continuously-operated means and including a cam having two operating surfaces thereon, one surface for controlling the operation of said continuously-operated means to vary the feeding movement of said single member and the other surface for initiating its pressure applying movement.

22. A machine for operating upon work pieces having, in combination, means for supporting a work piece, a member for applying pressure to the work piece and for feeding it through the

machine, constantly-rotating eccentrics, and pivoted means located between said eccentrics and said member and movable into different positions relatively thereto for operating said member, said pivoted means acting, when moved into one position, to render said eccentrics ineffectual to operate said member but, when moved out of such position, to render said eccentrics effective to impart movement from the eccentrics to said member to operate the same.

23. A machine for operating upon work pieces having, in combination, means for supporting a work piece, a presser foot for applying pressure to the work piece and for also feeding said work piece, a plurality of constantly-rotating eccentrics, means connecting said eccentrics to said presser foot whereby the motion of said eccentrics is transmitted to said foot to operate the same, said connecting means acting to cause the combined motions of said eccentrics to move said foot heightwise and lengthwise of the work piece, and means for shifting said connecting means to vary the movements of said presser foot.

24. A machine for operating upon work pieces having, in combination, means for supporting a work piece, a single member for applying pressure to the work piece and for simultaneously feeding the work piece transversely of the supporting means, a pair of constantly-rotating eccentrics, pivoted means connecting said single member to each of said eccentrics, and manually-controlled means connected to said pivoted means and including a single rotatable cam for causing said pivoted means to impart operative movement in different directions from said eccentrics to said member.

25. A machine for operating upon work pieces having, in combination, a support for a work piece, a member for applying pressure to the work piece and for simultaneously feeding said work piece relatively to said support, a pair of constantly-rotating eccentrics, pivoted means between each of said eccentrics and said member for transmitting operative movement from the eccentrics to said member, each of said pivoted means acting to transmit no effective movement to said member when located in one position but to impart operative movement to said member when located in any other position, and single manually-operated means for moving each of said pivoted means into and out of said one position.

26. A machine for operating upon work pieces having, in combination, means for supporting a work piece, a member for applying pressure to the work piece and for feeding the same, constantly-rotating eccentrics, pivoted means connecting said eccentrics to said member, means movable into and out of a predetermined position with respect to the pivoted means for causing said pivoted means to transmit movement from the eccentrics to said member, and manually-operated means for moving said movable means out of said predetermined position.

27. A machine for operating upon work pieces having, in combination, means for supporting a work piece, a single member for applying pressure to the work piece and for feeding the same, a pair of constantly-rotating eccentrics, means connecting said eccentrics to said single member and operable to transmit operative movement from the eccentrics to said single member, and means for controlling the operation of said connecting means to cause the latter to actuate said single member to apply pressure to the work piece

and to feed the same, operation of said controlling means acting to cause the connecting means to operate said single member to feed the work piece or to cease feeding the same without affecting the pressure applying movement of said single member.

28. A machine for operating upon work pieces having, in combination, means for supporting a work piece, a single unitary member for applying pressure to the work piece and for simultaneously feeding the same, and pivoted means for operating said single member with a four-motion action to press and feed the work piece intermittently, said pivoted means including a pair of toggle constructed and arranged to cause said single member to apply intermittent pressure to the work piece and to feed the work piece at a speed which can be varied from zero to maximum and vice versa at the will of an operator without affecting the pressure-applying movement of said member.

29. A machine for operating upon work pieces having, in combination, means for supporting a work piece, a single presser and feed foot, continuously-rotating eccentrics, and means extending between said eccentrics and said presser and feed foot for causing the latter to be moved by said eccentrics in a closed oval path extending substantially at right angles to the work piece to press and feed said work piece, said last-named means including pivoted arms constructed and arranged to move relatively to the rest of said means to vary the length of the feeding movements of said foot from minimum to maximum and vice versa at the will of an operator while maintaining its pressing movements substantially constant.

30. A machine for operating upon work pieces having, in combination, means for supporting a work piece, a single member for applying pressure to the work piece and simultaneously feeding said work piece relatively to the supporting means, constantly-rotating eccentrics, and pivoted means located between said eccentrics and said single member constructed and arranged to transmit operative movement from the eccentrics to said member when the pivoted means is located in one position, but to impart no effective movement to said single member when said pivoted means is located in another position.

31. A machine for operating upon work pieces having, in combination, means for supporting a work piece, a single member for applying pressure to the work piece and for feeding the work piece transversely of the supporting means, a pair of constantly-rotating eccentrics, a set of pivoted links connecting said single member to each eccentric, and a cam movable in one direction to cause said links to transmit movement from both of said eccentrics to said single member to operate the latter and movable in the other direction to cause no movement to be imparted to said single member.

32. A machine for operating upon work pieces having, in combination, means for supporting a work piece, a single member for applying pressure to the work piece and for simultaneously feeding the work piece transversely of the supporting means, a pair of continuously-rotating eccentrics, links connecting said single member to said eccentrics, and means movable from a position of alinement with said connecting links to a position of non-alinement therewith for causing said links to transmit operative move-

ment from said eccentrics to said single member.

33. A machine for operating upon work pieces having, in combination, means for supporting a work piece, a single member for applying pressure to the work piece and for simultaneously feeding the same on the supporting means, continuously-rotating eccentrics, links connecting said single member to said eccentrics for transmitting movement from the eccentrics to said single member to operate said member, and operator-controlled means movable into and out of alinement with said links for causing the latter to render said single member alternatively operative and inoperative.

34. A machine for operating upon work pieces having, in combination, means for supporting a work piece, a member operative to apply pressure to the work piece and to feed the same laterally of the supporting means, a pair of constantly-rotating eccentrics, pivoted means actuated by said eccentrics for imparting operative movement to said member, said pivoted means normally bearing a predetermined relationship to said eccentrics, and manually-controlled means for changing the relationship of said pivoted means to said eccentrics and thereby causing the pivoted means to impart operative movement to said member.

35. A machine for operating upon work pieces having, in combination, means for supporting a work piece, a member operable to apply pressure to the work piece and to feed the same relatively to the supporting means, a pair of constantly-rotating eccentrics, pivoted means actuated by each of said eccentrics for transmitting operative movement to said member, each pivoted means being normally located in a position where it transmits no effective movement from the eccentrics to said member, means for changing the position of each of said pivoted means at will and thereby causing said means to transmit operative movement to said member, and means for returning both of said pivoted means to their original positions.

36. A machine for operating upon work pieces having, in combination, means for supporting a work piece, a member for applying pressure to the work piece and also for feeding the same, continuously-rotating eccentrics, a set of links pivotally connecting each eccentric to said member and adapted to transmit motion from the eccentric to said member to operate the latter, and single means associated with the sets of links for rendering them alternatively effective and ineffective to transmit motion from their eccentrics to said member.

37. A machine for operating upon work pieces having, in combination, means for supporting a work piece, a member for applying pressure to the work piece and also for feeding the same, a pair of continuously-rotating eccentrics, a set of linkage pivotally connecting each eccentric to said member and adapted to transmit motion from the eccentric to said member to operate the same, movable means engaging each set of linkage for rendering it alternatively effective and ineffective to transmit the motion of its eccentric to said member, and single means for actuating said movable means in turn.

38. A machine for operating upon work pieces having, in combination, means for supporting a work piece, a member for applying pressure to the work piece and also for feeding the same, a pair of continuously-rotating eccentrics, a set of link-

age pivotally connecting each eccentric to said member and adapted to transmit motion from its eccentric to said member to operate the same, said set of linkage being normally ineffectual to transmit motion from their eccentrics to said member, and means associated with each set of linkage for rendering said set effective to transmit motion from its eccentric to said member to operate the latter, said last-named means acting to cause one set of linkage to transmit uniform motion to said member but to permit the other set of linkage to transmit a variable motion to said member.

39. A machine for operating upon work pieces having, in combination, means for supporting a work piece, a single member for applying pressure to the work piece and also for feeding the same, a pair of constantly-rotating eccentrics, a set of linkage pivotally connecting each eccentric to said single member and adapted to transmit motion from the eccentric to said single member to operate the same, means associated with each set of linkage for rendering said set alternatively effective and ineffective to transmit movement from its eccentric to said single member, said last-named means being arranged to cause one set of linkage to transmit uniform movement to said single member but to cause the other set of linkage to transmit variable movement to said single member, the last-named movement being variable at the will of an operator without affecting the uniform movement transmitted by the other set of linkage, and single operator-controlled means for actuating said associated means.

40. A machine for operating upon work pieces having, in combination, means for supporting a work piece, a member operable to apply pressure to the work piece and to feed the same laterally of the supporting means, a pair of constantly-rotating eccentrics, toggles connected to said eccentrics for imparting operative movement to said member, said toggles being normally in a straight condition whereby they transmit no effective movement from their eccentrics to the member, and means for moving said toggles out of said straight condition, thereby causing them to transmit operative movement from their eccentrics to said member.

41. A machine for operating upon work pieces having, in combination, means for supporting a work piece, a unitary member arranged to apply pressure to the work piece and to feed the same transversely of the supporting means, a pair of constantly-rotating eccentrics, a pair of toggles for imparting operative movement from said eccentrics to said unitary member, each of said toggles being normally in a straightened condition whereby it transmits no effective movement from its eccentric to said member, and single means for moving both of said toggles simultaneously from a straightened to a broken condition, thereby causing them to transmit operative movement from the eccentrics to said unitary member.

42. A machine for operating upon work pieces having, in combination, means for supporting a work piece, a member for applying pressure to the work piece and for simultaneously feeding the same, a pair of constantly-rotating eccentrics, a pivoted toggle associated with each eccentric and said member for transmitting movement from the eccentric to said member to operate the latter, the pivots of each toggle being normally in alinement with each other

whereby they transmit no effective movement from their eccentrics to said member, and manually-controlled means for moving the pivots of each toggle out of alinement, thereby causing them to transmit operative movement from the eccentrics to said member.

43. A machine for operating upon work pieces having, in combination, means for supporting a work piece, a member operable to apply pressure to the work piece and to feed the same laterally of the supporting means, a pair of constantly-rotating eccentrics, a toggle between each eccentric and the pressing and feeding member for transmitting operating movement from said eccentrics to said member, pivots for each toggle which are normally in alinement with each other whereby no effective movement is transmitted by said toggle from its eccentric to said member, and manually-controlled means for simultaneously moving a pivot of each toggle out of alinement with the other pivots thereof, thereby breaking said toggles and causing them to transmit operating movement to said member, said last-named means being constructed and arranged to move the pivot of one toggle a predetermined distance out of alinement to cause that toggle to transmit a uniform movement to said member but to move the pivot of the other toggle indeterminate distances out of alinement to cause that toggle to impart a variable movement to said member.

44. A machine for operating upon work pieces having, in combination, means for supporting a work piece, a single member for applying pressure to the work piece and for simultaneously feeding the same, a pair of constantly-rotating eccentrics, straps reciprocated in different directions by said eccentrics, toggles operated by said straps and connected to said single member for moving said member in a path determined by the combined movements of the toggles, each of said toggles having pivots normally in alinement with each other whereby the reciprocating action of said straps produces no appreciable endwise movement of the toggles, a pivoted arm associated with each toggle and carrying one of its pivots, said arms being normally located in predetermined positions relatively to the toggles, and single means for swinging both of said pivoted arms out of said predetermined positions to move the pivots carried thereby out of alinement with the other pivots of said toggles and thereby cause said eccentrics to produce endwise movement of the toggles to operate said single member, the amount of endwise movement of each toggle being determined by the distance its pivot is moved out of alinement with its other pivots.

45. A machine for operating upon work pieces having, in combination, means for supporting a work piece, a member operable to apply pressure to the work piece and to feed the same laterally of the supporting means, a pair of constantly rotating eccentrics, a pivoted arm adjacent to each eccentric and carrying a pin, said arms being initially located in predetermined angular positions relatively to said eccentrics, a link pivoted on each pin, a second link pivotally connected to the first link thereby forming a toggle, said second link being pivotally connected to the pressing and feeding member, the pivots of each of said toggles being normally located in substantial alinement with each other, a connecting rod driven by each eccentric and pivotally connected to the joint of the toggle associated

with that eccentric, said eccentrics producing no appreciable endwise movement of the toggle links while their pivots are in substantial alinement, and operator-controlled means for swinging both of said pivoted arms simultaneously out of their initial positions to move the pivots of each of said toggles out of alinement with each other and thereby cause said connecting rods to produce endwise movement of the toggle links to operate said member, said operator-controlled means acting to swing one arm a predetermined distance out of its initial position but to swing the other arm a distance which may be varied at the will of the operator.

46. A machine for operating upon work pieces having, in combination, means for supporting a work piece, a member for applying pressure to the work piece and simultaneously feeding the same, continuously-rotating eccentrics, means pivotally connecting said member to said eccentrics, links pivotally connected at one end to said connecting means, pivoted members supporting the other ends of said links, said pivoted members normally holding said links in such positions with respect to said connecting means that rotation of the eccentrics has no appreciable effect thereon, and operator-controlled means for simultaneously moving said pivoted members out of said positions to change the angular relation of said links and thereby cause the eccentrics to impart movement to said connecting means to operate said member.

47. A machine for attaching ribbed strips to insoles to provide sewing ribs thereon having, in combination, a support for an insole, a member spaced from said support for pressing a ribbed strip against the insole to force the strip thereon, resilient means engaging said pressing member and constructed and arranged to cause said member to apply different pressures simultaneously to different lateral portions of the ribbed strip, and means pivotally connected to the pressing member for actuating said member.

48. A machine for attaching ribbed strips to insoles to provide sewing ribs thereon having, in combination, a support for an insole, a two-part member cooperating with said support for pressing a ribbed strip intermittently against the insole to force the strip thereagainst, said pressing member applying pressure simultaneously to the entire base portion of the strip widthwise of the insole on each intermittent movement, an eccentric for operating said member having a predetermined operative movement, means for transmitting a predetermined operative movement from said eccentric to the pressing member thereby reciprocating said member, and resilient means associated with each part of said pressing member for permitting said member to apply different pressures to different lateral portions of the base portion of the strip under the predetermined operative movement caused by said eccentric.

49. A machine for attaching ribbed strips to insoles to provide sewing ribs thereon having, in combination, a support for an insole, a single member for pressing a cement-coated ribbed strip intermittently against the insole to attach the strip thereto by the cement on the strip and for feeding the combined insole and strip during the pressing operation, said pressing and feeding member being under the influence of springs constructed and arranged to cause it to apply pressure widthwise of the base portion of the ribbed strip which is different at one side of the rib

than it is at the other side thereof, continuously-operating eccentrics for actuating said member, and treadle-operated means acting upon said eccentrics to cause them to actuate said member, said treadle-operated means acting to cause the eccentrics to actuate said member in a manner to apply pressures to the strip at opposite sides of the rib and to feed the insole and strip at a speed which is variable from minimum to maximum, and vice versa, at the will of an operator.

50. A machine attaching ribbed strips to insoles to provide sewing ribs thereon having, in combination, a support for an insole, a member for pressing a precemented ribbed strip against the insole to attach it thereto by the cement on the strip, said member including two relatively yieldable sections arranged to straddle the rib, continuously-operating means having a predetermined operative movement, means including a movable toggle for causing said continuously-operating means to actuate one of said sections to apply pressure to one lateral portion of the ribbed strip next to the rib, said section yielding after a predetermined pressure has been applied to said lateral portion, and yieldable connections between said sections for causing the operation of said one section to operate the other section to apply pressure to a different lateral portion of the ribbed strip next to the rib.

51. A machine for attaching ribbed strips to insoles to provide sewing ribs thereon having, in combination, a support for an insole, a unitary member for pressing a cement-coated ribbed strip intermittently against the insole to cause it to adhere thereto, said member comprising two relatively movable elements which straddle the rib, a constantly-rotating eccentric, connecting means for causing said eccentric to reciprocate one element of said unitary member to apply pressure to one lateral portion of the ribbed strip, a spring for permitting said one element to yield after a predetermined pressure has been applied to said lateral portion next to the rib, a pivoted member connected to the other element of said unitary member, and spring means between said pivoted member and said connecting means for causing said other element to be reciprocated by said eccentric to apply pressure to another lateral portion of the ribbed strip next to the rib, said last-named spring means permitting said other element to yield relatively to the first-named element in applying pressure to said other lateral portion of the strip.

52. A machine for attaching ribbed strips to insoles to provide sewing ribs thereon having, in combination, a support for an insole, a single unitary member for intermittently pressing a ribbed strip against the insole to force the strip thereagainst, said unitary member including two relatively yieldable sections, a constantly-rotating eccentric for operating said unitary member, connections between said eccentric and one section of said unitary member for causing the latter to be reciprocated to apply pressure to the lateral portion of the ribbed strip located inwardly of the rib, a spring engaging said one section for permitting said section to yield when a predetermined pressure has been applied to the inner lateral portion of the strip, pivoted means connected to the other section of said single member, and means between said pivoted means and said connections for causing said pivoted means to operate said other section to apply pressure to the lateral portion of the ribbed strip located out-

wardly of the rib, said means including a spring whereby said other section will yield independently of the first-named section when a different pressure has been applied to the outer lateral portion of the ribbed strip.

53. A machine for attaching ribbed strips to insoles to provide sewing ribs thereon having, in combination, a rotatable support for an insole, means cooperating with the support for pressing a ribbed strip against the insole on said support and for feeding the insole relatively to the support, and means adjacent to said support for controlling the speed of the rotation thereof.

54. A machine for attaching ribbed strips to insoles to provide sewing ribs thereon having, in combination, a rotatable support for an insole, means movable relatively to said support for pressing a cement-coated ribbed strip against the insole on the support to attach the strip adhesively to said insole and for feeding the combined insole and strip transversely of the support, and friction means mounted in a position to engage the support for controlling the speed of rotation of said support during feeding movement of the insole to influence the direction of said feeding movement.

55. A machine for attaching ribbed strips to insoles to provide sewing ribs thereon having, in combination, a rotatable support for an insole, means operable in conjunction with said support to press a ribbed strip against the insole to force the strip against said insole and also to feed the insole and strip transversely of said support adjacent to one section of the periphery thereof, said pressing and feeding means operating to feed the insole in a predetermined path, said support being rotated by the friction of the insole as it is fed across the support, and friction means arranged to engage the support for controlling the rotation of said support as the insole is fed thereover, said friction means acting to prevent speed of the rotation of the support from urging the insole laterally out of said predetermined path.

56. A machine for attaching ribbed strips to insoles to provide sewing ribs thereon having, in combination, a rotary support for an insole, means adjacent to said support and movable relatively thereto for pressing a cement-coated ribbed strip against the insole to cause the strip to adhere thereto and for also feeding the combined insole and strip, said means operating to feed the insole simultaneously with the pressing operation, thereby normally rotating the support through friction at the same speed as the insole is fed, a brake-shoe constantly acting upon the support for retarding rotation of said support below the rate of feed of the insole, and means for adjusting said brake-shoe.

57. A machine for attaching ribbed strips to insoles to provide sewing ribs thereon having, in combination, a rotary support for holding an insole in a predetermined plane, a reciprocating member operable with respect to said support for pressing a cement-coated ribbed strip against the insole to attach the strip adhesively thereto and for feeding the insole and strip, said member feeding the insole simultaneously with the pressing operation and thereby normally rotating the support at the same speed as the insole is fed, and friction means mounted on the machine and engaging said support under pressure for retarding the speed at which it can rotate, thereby causing the insole to be fed relatively to the support in a predetermined path without lateral deflec-

tion from rotation of the support faster than the insole is fed.

58. A machine for attaching ribbed strips to insoles to provide sewing ribs thereon having, in combination, a circular support for an insole rotatable freely about a vertical axis, means movable heightwise relatively to the support for pressing a ribbed strip against the insole resting on said support at one side of said axis, said means acting also to feed the insole and strip with a predetermined movement substantially normal to the radius of said support, and braking means cooperating with the support for controlling the rate of rotation of said support during the feeding movement of said insole, thereby controlling side thrust of the insole due to rotation of said support faster than the feeding movement of the insole.

59. A machine for attaching ribbed strips to insoles to provide sewing ribs thereon having, in combination, a circular table for supporting an insole, a vertical axis about which said table rotates, a ball bearing for permitting said table to rotate freely about said axis, means for pressing a cement-coated ribbed strip against an insole on said table to attach said strip to said insole by the cement on the strip and for also feeding the combined insole and strip across the table at one side of said axis in a path substantially normal to the radius of the table, said table being rotated through friction as the insole is fed thereover, friction means engaging said table for retarding rotation of the table during the feeding movement of the insole, thereby reducing lateral movement of the insole through rotation of the table during said feeding movement, and a screw for adjusting said retarding means to cause it to permit the table to rotate freely, to cease rotating, or to rotate at various speeds between said extremes whereby rotation of said table is controlled at all times.

60. A machine for attaching ribbed strips to insoles to provide sewing ribs thereon having, in combination, a rotatable support for an insole, means for pressing a ribbed strip against the insole and for simultaneously feeding the insole and strip in a predetermined path, said support being rotated through friction of the insole during its feeding movement, means for guiding the insole during said feeding movement, rotation of said support tending to swing the insole laterally toward said guiding means, and means engaging said support for controlling the rate of rotation of said support and thereby controlling the swinging movement of the insole toward said guiding means.

61. A machine for attaching ribbed strips to insoles to provide sewing ribs thereon having, in combination, a rotatable support for an insole, a member for pressing a ribbed strip against the insole and for simultaneously feeding the insole in a predetermined path, said support being rotated through friction of the insole during its feeding movement, means for guiding the edge of said insole during said feeding movement, rotation of said support tending to swing the insole laterally toward said guiding means, and friction means engaging said support for retarding the rotation of said support and thereby decreasing swinging movement of the insole toward said guiding means, thereby preventing the bending of the edge portions of insoles composed of thin flexible materials by said guiding means.

62. A machine for attaching ribbed strips to insoles to provide sewing ribs thereon having, in

combination, a rotatable support for an insole, single means for pressing a ribbed strip against the insole and for also feeding the insole and strip, said means feeding the insole in a path determined by the periphery of said insole, an edge gage for guiding the insole in said path, said gage also determining the position of the ribbed strip relatively to the margin of the insole, manually-controlled means for adjusting the edge gage laterally of the line of feed to vary the position of the ribbed strip relatively to the insole margin, and means for adjusting said edge gage longitudinally of the line of feed.

63. A machine for attaching ribbed strips to insoles to provide sewing ribs thereon having, in combination, a support for an insole, means operable in cooperation with said support to press a cement-coated ribbed strip against the insole on the support to attach the strip adhesively thereto, means located adjacent to the support for initially positioning the insole longitudinally on the support relatively to the pressing means, means for operating said pressing means, and means associated with said positioning means and controlled by operation of said operating means for moving the positioning means out of its operative position adjacent to the support before the pressing means operates.

64. A machine for attaching ribbed strips to insoles to provide sewing ribs thereon having, in combination, a support for an insole, a member movable toward and away from the support for pressing a ribbed strip against the insole to force the strip upon said insole and for also feeding the insole and strip, means mounted rearwardly of said support for initially locating the insole on the support longitudinally relatively to said pressing and feeding member, and pivoted means for moving said locating means automatically out of operative position before the pressing and feeding member operates.

65. A machine for attaching ribbed strips to insoles to provide sewing ribs thereon having, in combination, a support for an insole, a member cooperating with the support for pressing a pre-cemented ribbed strip against the insole on the support to attach the strip adhesively to said insole and for also feeding the combined insole and strip, a gage mounted adjacent to the support for initially positioning the insole longitudinally on the support relatively to said member, said gage being movable into and out of an operative position relatively to the support, and means acting upon the gage for moving said gage automatically into and out of said operative position before and after said pressing and feeding member operates.

66. A machine for attaching ribbed strips to insoles to provide sewing ribs thereon having, in combination, a support for an insole, means mounted adjacent to the support and operable to cooperate therewith to press a ribbed strip coated with cement against the insole to attach the strip thereto by the cement thereon and operable also to feed the combined insole and strip, a gage mounted rearwardly of the support for positioning the insole on the support with its heel breast line substantially opposite the pressing and feeding means, means for operating said pressing and feeding means, a treadle for controlling said operating means, means actuated by depression of said treadle for moving the gage out of operative position before the pressing and feeding means operates, and means separate from said treadle for maintaining said gage out of op-

erative position until after the pressing and feeding means has operated.

67. A machine for attaching ribbed strips to insoles to provide sewing ribs thereon having, in combination, a support for an insole, means operable relatively to the support to press a cement-coated ribbed strip against the insole to cause the strip to adhere thereto, a gage mounted independently of the support in a position to be engaged by the insole and locate it on the support with its heel breast line substantially opposite the pressing means, operator-controlled means connected to the pressing means for operating said pressing means, means actuated by the operation of said operator-controlled means for elevating said gage out of operative position before the pressing means operates, means for automatically engaging said gage and locking it in its elevated position, and means separate from the gage-elevating means for unlocking said gage and permitting it to return to operative position after the operator-controlled means has been released.

68. A machine for attaching ribbed strips to insoles to provide sewing ribs thereon having, in combination, a support for an insole, means cooperating with said support for pressing a pre-cemented ribbed strip against the insole on the support to cause the strip to become bonded to said insole and for also feeding the insole and strip, continuously-operating means pivotally connected to the pressing and feeding means for actuating said pressing and feeding means, manually-controlled means carried by the continuously-operating means for rendering said continuously-operating means effective to actuate said pressing and feeding means, a gage for initially positioning the insole on said support relatively to the pressing and feeding means, said gage being movable into and out of an operative position rearwardly of said support, and means connected to the gage and actuated by operation of said manually-controlled means for moving said gage out of said operative position before the pressing and feeding means is actuated.

69. A machine for attaching ribbed strips to insoles to provide sewing ribs thereon having, in combination, a support for an insole, a member operating in conjunction with said support for pressing a ribbed strip against the insole on the support to force the strip against said insole and for also feeding the insole and strip, constantly-rotating eccentrics connected to the pressing and feeding member, manually-operated means associated with the eccentrics for causing said eccentrics to operate said member, a gage for initially positioning the insole lengthwise on the support, said gage being normally located in an operative position adjacent to the support, means between the gage and said manually-operated means and actuated by operation of said manually-operated means for moving the gage away from operative position before the member operates, and means separate from the gage moving means for holding the gage out of said operative position.

70. A machine for attaching ribbed strips to insoles to provide sewing ribs thereon having, in combination, a support for an insole, a member cooperating with said support for pressing a cement-coated ribbed strip against the insole on the support to cause the strip to become bonded to said insole and for also feeding the combined insole and strip, a pair of constantly-rotating eccentrics, treadle-operated means mounted adjacent to the eccentrics for rendering said eccentrics effective to operate said pressing and feed-

ing member, a heel gage for initially locating the insole on said support, said gage being movable into and out of an operative position relatively to the support, means pivotally connected to the gage and actuated by operation of said treadle-operated means for moving said gage away from operative position before said pressing and feeding member operates upon the insole, and means independent of said last-named means for returning the heel gage into said operative position.

71. A machine for attaching ribbed strips to insoles to provide sewing ribs thereon having, in combination, a support for an insole, a member movable toward and away from said support for pressing a ribbed strip against the insole on the support to force the strip against said insole and for also feeding the insole and strip, a gage adjacent to said support for initially positioning the insole lengthwise on the support with its heel breast line substantially opposite the pressing and feeding member, said gage being normally located in a predetermined heightwise position rearwardly of said support, means for adjusting said gage horizontally toward and away from the support to accommodate insoles of different sizes, and means pivotally connected to the gage for moving said gage out of said predetermined heightwise position before the pressing and feeding member operates.

72. A machine for attaching ribbed strips to insoles to provide sewing ribs thereon having, in combination, a support for an insole, means cooperating with the support for pressing a pre-cemented ribbed strip of indefinite length intermittently against the insole to bond the strip thereto and for simultaneously feeding the combined insole and strip, a knife mounted adjacent to the support for cutting off the ribbed strip substantially at the termination of its bond to the insole, mechanism for operating said knife, and means associated with said operating mechanism and operated by movement of the insole on the support for locating the insole so that the knife will cut off the ribbed strip at the termination of said bond, said means acting also, in conjunction with said movement of the insole, to tension the unbonded portion of the strip and cause it to raise above the surface of the insole, thereby allowing the knife to sever the strip while it is free of the surface of the insole.

73. A machine for attaching ribbed strips to insoles to provide sewing ribs thereon having, in combination, means for supporting an insole, means operating relatively to the supporting means for pressing a pre-cemented ribbed strip of indefinite length against the insole to attach the strip thereto by the cement thereon and for also feeding the combined insole and strip, a knife movable relatively to the supporting means for severing the ribbed strip substantially at its last point of attachment to the insole, means connected to the knife for operating said knife, means movable into a position to prevent the operation of the knife-operating means when the pressing and feeding means is operating, and means actuated by movement of the insole on the supporting means for moving said movable means and thereby rendering said knife-operating means operable.

74. A machine for cement attaching ribbed strips to insoles to provide sewing ribs thereon having, in combination, means for supporting an insole, means arranged to cooperate with the supporting means for pressing a cement-coated

ribbed strip of indefinite length against the insole to attach the strip adhesively thereto, a knife movable relatively to the supporting means for severing the ribbed strip substantially on the line where its adhesive attachment to the insole terminates, treadle-operated means connected to the knife for actuating said knife, a stop movable relatively to the treadle-operated means for preventing said treadle-operated means from actuating said knife when the pressing means is operating, and means mounted above the supporting means and controlled by the position of the insole on the supporting means for moving said stop into and out of operative position with respect to said treadle-operated means.

75. A machine for attaching ribbed strips to insoles to provide sewing ribs thereon having, in combination, a support for an insole, means cooperating with the support for pressing a cement-coated ribbed strip of indefinite length against the insole on the support to cause the strip to adhere to said insole by reason of the cement on said strip and for also feeding the combined insole and strip transversely of the support, continuously-operating means mounted above the support for operating the pressing and feeding means, manually-controlled means carried by the continuously-operating means for causing said continuously-operating means to operate said pressing and feeding means, a knife pivotally mounted above the support for severing the ribbed strip substantially on the line where its adhesive attachment to the insole terminates, means for actuating said knife, means movable relatively to the knife-actuating means for preventing the operation of said knife-actuating means until after the pressing and feeding means has ceased to operate, and means engaging the strip and controlled by movement of the insole rearwardly of the support for moving said last-named movable means out of operative position relatively to the knife actuating means.

76. A machine for attaching ribbed strips to insoles to provide sewing ribs thereon having, in combination, a support for an insole, means operable in combination with said support for pressing a cement-coated ribbed strip against the insole to cause the strip to become bonded thereto, a gage adjacent to the support for positioning the insole on the support relatively to said pressing means, means remote from the support for operating the pressing means, means associated with said operating means and actuated by the operation of said operating means for moving the gage out of its operative position before the pressing means operates, means separate from the gage-moving means for holding the gage out of said operative position, a knife mounted above the support and operable to sever the ribbed strip after it has been cement-attached to the insole, and means actuated automatically by the operation of said knife for releasing the gage and permitting it to return to its operative position.

77. A machine for attaching ribbed strips to insoles to provide sewing ribs thereon having, in combination, a support for an insole, means operable in conjunction with said support to press a cement-coated ribbed strip against the insole to cause the strip to become bonded thereto and also to feed the combined insole and strip, a gage movable into and out of an operative position adjacent to said support for positioning the insole lengthwise on the support with its heel

breast line approximately opposite the pressing and feeding means, continuously-operating means mounted above said support for actuating said pressing and feeding means, a treadle for controlling the operation of said continuously-operating means, means associated with the continuously-operating means and actuated by said treadle for moving said gage out of operative position before the pressing and feeding means is actuated, a latch for locking the gage out of operative position, means for severing the ribbed strip after it has been attached to the insole, and means actuated by the operation of said severing means for returning said gage to its operative position adjacent to said support.

78. A machine for attaching ribbed strips to insoles to provide sewing ribs thereon having, in combination, a support for an insole, means operable to press a cement-coated ribbed strip against the insole to attach the strip adhesively thereto and operable also to feed the combined insole and strip, a gage normally located in a predetermined operative position for positioning the insole lengthwise on the support with its heel breast line substantially opposite the pressing and feeding means, continuously-operating eccentrics for actuating said pressing and feeding means, a treadle for causing said eccentrics to actuate the pressing and feeding means, means operated by said treadle for moving the gage out of said operative position before the pressing and feeding means is actuated, means for automatically locking the gage out of operative position while the pressing and feeding means is operating, a knife for severing the ribbed strip adjacent to the insole when sufficient strip has been attached thereto, means separate from said treadle for operating said knife, and means actuated by the operation of the knife operating means for unlocking said gage and causing it to return to operative position.

79. A machine for attaching ribbed strips to insoles to provide sewing ribs thereon having, in combination, a support for an insole, means for pressing a ribbed strip against the insole and for also feeding the insole and strip relatively to the support, continuously-rotating eccentrics, and treadle-operated means for rendering said eccentrics effective to operate said pressing and feeding means, said treadle-operated means causing said eccentrics to impart operative movement to said pressing and feeding means progressively as the treadle is depressed and to reduce said movement gradually as the treadle is released, thereby always causing the pressing and feeding means to stop in a retracted position.

80. A machine for attaching ribbed strips to insoles to provide sewing ribs thereon having, in combination, a support for an insole, a member for pressing a ribbed strip of indefinite length against the insole on the support and for also feeding the insole and strip transversely of the support, continuously-operating means for actuating the pressing and feeding member, treadle-operated means for causing said continuously-operating means to actuate said pressing and feeding means, said treadle-operated means being arranged to change the relationship of the parts of said continuously-operating means to cause it to actuate said pressing and feeding member, and means for returning said parts into their original relationship when the treadle-operated means is released, thereby stopping the operation of said pressing and feeding member,

said last-named means causing the pressing and feeding member always to stop in a fully retracted position.

81. A machine for attaching ribbed strips to insoles to provide sewing ribs thereon having, in combination, a support for an insole, means for pressing a cement-coated ribbed strip of indefinite length against the insole to cause the strip to adhere thereto and for also feeding the insole and strip transversely of the support, constantly-rotating eccentrics for actuating said pressing and feeding means, pivoted means for rendering said eccentrics effective to actuate said pressing and feeding means, a treadle for moving said pivoted means, said pivoted means causing said eccentrics to impart operative movement to said pressing and feeding means progressively as the treadle is depressed and to reduce said movement gradually as the treadle is released, thereby always causing the pressing and feeding means to return into a retracted position when not operating, and means for severing the ribbed strip adjacent to said pressing and feeding means when the latter is not operating.

82. A machine for attaching ribbed strips to insoles to provide sewing ribs thereon having, in combination, a support for an insole, means for pressing a cement-coated ribbed strip of indefinite length intermittently against the insole on the support to attach the strip adhesively to said insole and for also feeding the combined insole and strip transversely of the support, continuously-operating eccentrics for actuating said pressing and feeding means, a pivoted member movable to render said eccentrics effective to actuate said pressing and feeding means, a treadle for moving said pivoted member, said pivoted member causing said eccentrics to impart operative movement to the pressing and feeding means progressively to maximum upon depression of the treadle and to diminish said movement gradually to minimum upon release of said treadle, thereby causing the pressing and feeding means always to come to rest in a retracted position, means for severing the ribbed strip substantially at the end of the last operative movement of the pressing and feeding means, and means controlled by depression of the treadle for preventing said severing means from operating while the pressing and feeding means is operating.

83. A machine for attaching ribbed strips to insoles to provide sewing ribs thereon having, in combination, a support for an insole, a member for pressing a ribbed strip of indefinite length intermittently against the insole and for also feeding the insole and strip, a pair of continuously-rotating eccentrics, a cam for rendering said eccentrics effective to impart operative movement to said single member, a treadle for moving said cam, said cam being returned to normal position by a spring, said cam causing said eccentrics to impart operative movement to said member gradually from minimum to maximum and vice versa so that said member will always be located in its retracted position when the eccentrics are not actuating it, a knife for severing the ribbed strip substantially on the line of the final operating movement of said member, and means actuated by movement of said cam for preventing said knife from operating while the eccentrics are actuating said member.

insoles to provide sewing ribs thereon having, in combination, a support for an insole, means cooperating with said support for pressing a cement-coated ribbed strip of indefinite length intermittently against the insole to cause it to become attached thereto and for also feeding the combined insole and strip, constantly-operating means remote from said support for operating the pressing and feeding means, a knife movable relatively to said support for severing the ribbed strip adjacent to its last point of attachment to the insole, means connected to the knife for operating said knife, and a pivoted arm movable into different positions and controlled by the knife-operating means for preventing the operation of said pressing and feeding means when the knife is operating.

85. A machine for attaching ribbed strips to insoles to provide sewing ribs thereon having, in combination, a support for an insole, means movable heightwise relatively to said support for pressing a cement-coated ribbed strip of indefinite length against the insole to cause the strip to become bonded thereto and for also feeding the combined insole and strip, means above the support for operating the pressing and feeding means, a knife mounted at one side of said support for severing the ribbed strip substantially at the end of its attachment to the insole, automatic means for operating said knife, and means pivoted adjacent to said knife and controlled alternately by the means for operating the pressing and feeding means and by said automatic means for preventing the operation of said automatic means when the pressing and feeding means is operating, and for preventing the operation of the means for operating the pressing and feeding means when the automatic means is operating.

86. A machine for cement attaching ribbed strips to insoles to provide sewing ribs thereon having, in combination, means for cement attaching a ribbed strip to an insole, and means associated with the attaching means and engaging the insole rib for controlling the length of ribbed strip which is being attached to the insole by the attaching operation, said controlling means being entirely automatic and acting to stop the attaching means.

87. A machine for cement attaching ribbed strips to insoles to provide sewing ribs thereon having, in combination, means including a work support for adhesively attaching a cement-coated ribbed strip to an insole and for feeding the insole and strip relatively to said work support, and means adjacent to the work support for automatically determining the length of ribbed strip attached to said insole by the attaching means, said determining means including a plurality of strip-engaging fingers relative movement of which stops the attaching means.

88. A machine for attaching ribbed strips to insoles to provide sewing ribs thereon having, in combination, means for supporting an insole, means operable in conjunction with the supporting means to attach a ribbed strip of indefinite length to the margin of the insole and to feed the insole and strip, and a pair of fingers controlled by the ribbed strip initially attached to the insole by the attaching and feeding means for automatically stopping the operation of said attaching and feeding means at a point on the insole determined by the position of the starting end of the strip on said insole.

84. A machine for attaching ribbed strips to insoles to provide sewing ribs thereon having, in combination, a support for an insole, means for pressing a cement-coated ribbed strip of indefinite length against the insole to cause the strip to adhere thereto and for also feeding the insole and strip transversely of the support, constantly-rotating eccentrics for actuating said pressing and feeding means, pivoted means for rendering said eccentrics effective to actuate said pressing and feeding means, a treadle for moving said pivoted means, said pivoted means causing said eccentrics to impart operative movement to said pressing and feeding means progressively as the treadle is depressed and to reduce said movement gradually as the treadle is released, thereby always causing the pressing and feeding means to return into a retracted position when not operating, and means for severing the ribbed strip adjacent to said pressing and feeding means when the latter is not operating.

89. A machine for attaching ribbed strips to insoles to provide sewing ribs thereon having, in combination, a support for an insole, means movable heightwise relatively to said support for pressing a cement-coated ribbed strip of indefinite length against the insole to cause the strip to become bonded thereto and for also feeding the combined insole and strip, means above the support for operating the pressing and feeding means, a knife mounted at one side of said support for severing the ribbed strip substantially at the end of its attachment to the insole, automatic means for operating said knife, and means pivoted adjacent to said knife and controlled alternately by the means for operating the pressing and feeding means and by said automatic means for preventing the operation of said automatic means when the pressing and feeding means is operating, and for preventing the operation of the means for operating the pressing and feeding means when the automatic means is operating.

soles to provide sewing ribs thereon having, in combination, a support for an insole, means cooperating with said support for attaching a ribbed strip to the insole and for also feeding the combined insole and strip, means for operating the attaching and feeding means, a plurality of members arranged to engage a portion of the ribbed strip initially attached to the insole as the insole is fed, said members being adapted to ride along the rib of such portion until one of them drops off the end of said rib, and means controlled by the strip engaging members for automatically stopping said operating means when one of said strip engaging members drops off the end of said rib.

90. A machine for attaching ribbed strips to insoles to provide sewing ribs thereon having, in combination, a support for an insole, means cooperating with said support for attaching a ribbed strip to the margin of the insole and for simultaneously feeding the insole and strip on the support, means for operating the attaching and feeding means, a pair of members mounted above said support and arranged to overlie the surface of the insole at the central portion thereof and to ride up on the rib of the portion of the strip initially attached to the insole as the insole is fed, said members being normally located in the same horizontal plane, a micro-switch, said members holding the micro-switch open when both members are located in the same horizontal plane but closing the micro-switch when they are not both located in said plane, and means controlled by said micro-switch for automatically stopping the operation of said operating means when said micro-switch is closed by one of said fingers dropping off the starting end of said rib during the feeding movement of the insole and thereby moving out of said horizontal plane.

91. A machine for attaching ribbed strips to insoles to provide sewing ribs thereon having, in combination, a support for an insole, means operating relatively to said support for attaching a ribbed strip to the margin of the insole and for also feeding the combined insole and strip, means for operating the attaching and feeding means, a pair of normally parallel fingers mounted adjacent to the support and arranged to overlie the insole and to ride up on the rib of the first portion of the strip attached to the insole by the attaching and feeding means as the insole is fed across the support, a micro-switch, said fingers engaging said micro-switch and holding it open when the fingers are located in parallel relation to each other but closing the micro-switch when they are not parallel, and means actuated by said micro-switch for stopping the operation of said operating means when the micro-switch is closed by one of said fingers dropping off the end of the rib as the insole is fed on the support and thus moving the fingers out of said parallel relation, said last-named means thereby stopping the operation of the attaching and feeding means automatically when the portions of the strip at the opposite sides of the insole are substantially in alignment with each other.

92. A machine for attaching ribbed strips to insoles to provide sewing ribs thereon having, in combination, a support for an insole, a member cooperating with said support for attaching a ribbed strip to the margin of the insole and for also feeding the insole and strip across the support, means connected to the attaching and feeding member for operating said member, a pair of normally parallel fingers pivotally mounted adja-

cent to the support and arranged side by side to overlie the insole and to ride up on the first portion of the ribbed strip attached thereto as the insole is fed across said support, a micro-switch, and connecting means between the micro-switch and said operating means and controlled by said micro-switch for stopping the operation of said operating means when the micro-switch is closed, said fingers engaging the micro-switch and holding it open when the fingers are located in their parallel position but closing the micro-switch when they are moved out of said parallel position, the first of said fingers dropping off the ribbed strip when it reaches the starting end thereof during feeding movement of the insole across the support and thereby moving the fingers out of said parallel position to close the micro-switch, closing of the micro-switch thus causing said connecting means to stop the operation of said operating means when the length of ribbed strip attached to the second side of the insole is substantially the same as the length of strip initially attached to the first side of said insole.

93. A machine for attaching ribbed strips to insoles to provide sewing ribs thereon having, in combination, a support for an insole, means acting in conjunction with said support for attaching a ribbed strip to the margin of the insole and for simultaneously feeding the insole and strip, treadle-operated means for operating the attaching and feeding means, a micro-switch mounted adjacent to said support, parallel fingers arranged to overlie the insole on the support during its feeding movement and to ride up on the rib of the first portion of the strip attached to the insole, said fingers engaging the micro-switch and holding it open when they are parallel but closing the micro-switch when they are non-parallel, means connected to said micro-switch and controlled thereby for disconnecting said treadle-operated means and thereby stopping the operation of said attaching and feeding means, means between the fingers for maintaining said fingers parallel as they ride up on the rib, thereby holding the micro-switch open, the first of said fingers thereafter dropping off the starting end of the ribbed strip during feeding movement of the insole to render said fingers non-parallel and thereby close the micro-switch to cause said disconnecting means to disconnect said treadle-operated means to stop the operation of said attaching and feeding means, thereby stopping the attachment of the ribbed strip at opposite sides of the insole at substantially the same points lengthwise of the insole, and means for adjusting said parallel fingers in the direction of the feeding movement of the insole to compensate for different speeds at which the insole may be fed and thereby insure that the first of said parallel fingers will drop off the rib at the right time.

94. A machine for attaching ribbed strips to insoles to provide sewing ribs thereon having, in combination, a support for an insole, unitary means cooperating with said support for attaching a ribbed strip of indefinite length to the insole on the support and for also feeding the insole and strip relatively to the support, means pivoted adjacent to the support and controlled by the height of the rib on the strip for stopping the attaching means to determine the length of strip attached to the insole, and means separate from the pivoted means for severing the ribbed strip at substantially the length determined by said pivoted means.

95. A machine for cement attaching ribbed

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strips to insoles to provide sewing ribs thereon having, in combination, a support for an insole, a member movable relatively to the support for attaching a ribbed strip of indefinite length to the insole on the support by cement and for also feeding the insole and strip, fingers mounted adjacent to the support and arranged to engage the insole for automatically stopping the operation of the attaching and feeding member when the desired length of strip has been attached to the insole, and a knife operable to cut off said desired length of strip from the remainder of said strip after the attaching and feeding means has stopped.

96. A machine for attaching ribbed strips to insoles to provide sewing ribs thereon having, in combination, a support for an insole, means cooperating with the support for attaching a ribbed strip of indefinite length to the margin of an insole on the support by cement and also for feeding the combined insole and strip, means controlled by the ribbed strip attached to the first part of the margin of the insole for determining the length of strip attached to the rest of said margin, said determining means stopping the attaching and feeding means automatically when the last portion of the strip to be attached to the insole is substantially opposite the starting end of the strip, and a knife for cutting off said last portion in substantial alignment with the starting end of the strip, thereby locating the opposite ends of the ribbed strip substantially in alignment with each other transversely of the insole.

97. A machine for attaching ribbed strips to insoles to provide sewing ribs thereon having, in combination, a support for an insole, means operable in combination with said support to cement attach a ribbed strip of indefinite length to the insole on said support, automatic means associated with the support for determining the length of ribbed strip attached to said insole, means movable relatively to the support for severing the ribbed strip after it has been attached, and means separate from said automatic and said severing means for positioning the insole relatively to the severing means so that the latter will sever the strip in accordance with the length determined by said automatic means.

98. A machine for attaching ribbed strips to insoles to provide sewing ribs thereon having, in combination, a support for an insole, means operable with the support to attach a ribbed strip of indefinite length to the insole on the support and also to feed the insole and strip, means pivoted adjacent to the support for automatically stopping the operation of the attaching and feeding means when the desired length of ribbed strip has been attached to the insole, means movable toward and away from the support for severing the strip adjacent to the insole, and means operable only after the desired length of ribbed strip has been attached for positioning the insole so that the severing means will sever the ribbed strip substantially at the end of its attachment to the insole.

99. A machine for attaching ribbed strips to insoles to provide sewing ribs thereon having, in combination, a support for an insole, means operating relatively to said support for pressing a precemented ribbed strip of indefinite length against the insole to bond the strip thereto by the cement on the strip and also for feeding the combined insole and strip, a knife movable relatively to the support for cutting off the ribbed

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strip after the desired length of strip has been bonded to the insole, said knife being fixed in the direction of the feeding movement of the insole, and means above the support and operated to penetrate the strip for positioning the insole lengthwise relatively to said knife so that the latter will cut off the strip substantially at the end of the last portion of the strip which is bonded to the insole.

100. A machine for attaching ribbed strips to insoles to provide sewing ribs thereon having, in combination, a support for an insole, means operable in conjunction with the support to press a cement-coated ribbed strip of indefinite length intermittently against the insole to bond the strip thereto by the cement on the strip and simultaneously to feed the combined insole and strip, means including a micro-switch for automatically stopping the operative movement of the intermittent pressing and feeding means when the desired length of ribbed strip has been bonded to the insole, a knife movable toward and away from the support for severing the strip adjacent to the insole, and means pivotally mounted above the support and operated by stopping the pressing and feeding means to hold the strip and position the insole and strip lengthwise so that the knife will sever the strip substantially at the end of the bond produced by the last pressing action of said intermittent pressing and feeding means.

101. A machine for attaching ribbed strips to insoles to provide sewing ribs thereon having, in combination, a support for an insole, means coacting with the support for pressing a cement-coated ribbed strip of indefinite length against the insole to bond it thereto and for simultaneously feeding the insole and strip, automatic means associated with the pressing and feeding means for controlling the length of ribbed strip bonded to the insole, a knife movable relatively to the support for severing the ribbed strip transversely at the end of said bond, and means actuated by the operation of said automatic means when controlling the length of ribbed strip for engaging the ribbed strip at a point remote from the insole and determining the lengthwise position of the insole and strip relatively to said knife, said last-named means locating the strip so that the knife will sever it substantially on the line where the bond of the strip to the insole terminates.

102. A machine for attaching ribbed strips to insoles to provide sewing ribs thereon having, in combination, a support for an insole, means cooperating with said support for pressing a precemented ribbed strip of indefinite length against the insole to bond it thereto and for simultaneously feeding the combined insole and strip, parallel members overlying the support and controlled by the ribbed strip on the insole for automatically determining the length of the strip bonded to the insole, a knife movable toward and away from the support for cutting off the strip adjacent to the end of its bond with the insole, means associated with the pressing and feeding means for preventing the operation of said knife while the pressing and feeding means is operating, a sticker point mounted above the support for penetrating a portion of the ribbed strip not bonded to the insole and determining the location of the insole and strip relatively to said knife, and means extending between said parallel member and said sticker point and actuated by the operation of said parallel members for causing the sticker point to penetrate the ribbed strip,

said sticker point thereafter controlling movement of the insole on the support to locate the insole and strip so that the knife will cut the strip substantially at the end of its bond with the insole, the action of said sticker point in locating the insole also releasing the means which prevents the knife from operating.

103. A machine for attaching ribbed strips to insoles to provide sewing ribs thereon having, in combination, a support for an insole, means cooperating with the support for providing a pre-cemented ribbed strip of indefinite length against the insole to bond it thereto by the cement on the strip and for simultaneously feeding the insole and strip, manually-operated means connected to the pressing and feeding means for operating said pressing and feeding means, a knife adjacent to the support for severing the ribbed strip at a predetermined point on the insole, means for locking said knife while the pressing and feeding means is operating, a needle point mounted above said support and arranged to penetrate a portion of the ribbed strip before it becomes bonded to the insole, said needle point being movable thereafter to position the insole and strip lengthwise so that the knife will sever the strip at said predetermined point, and means overlying the support and controlled by a portion of the strip bonded to the insole for automatically stopping the operation of said pressing and feeding means when the length of strip attached to the insole reaches said predetermined point, said last-named overlying means acting also through stopping of the pressing and feeding means to cause the needle point to penetrate the ribbed strip, said needle point operating, when positioning the ribbed strip relatively to the knife, to release the means which is locking said knife, thereby permitting the knife to operate only after the insole and strip have been positioned lengthwise relatively to said knife.

104. A machine for attaching ribbed strips to insoles to provide sewing ribs thereon having, in combination, a support for an insole coated with cement on its margin, means cooperating with said support for pressing a cement-coated ribbed strip of indefinite length against the insole to bond the strip thereto by reason of the cement on the insole and strip and for simultaneously feeding the combined insole and strip, a knife movable relatively to the support for cutting off the ribbed strip, said knife being locked against operating movement when the pressing and feeding means is operating, automatic means overlying the support for stopping said pressing and feeding means when a predetermined length of ribbed strip has been bonded to the insole, means pivoted above the support and arranged to penetrate the ribbed strip when the operation of said automatic means stops said pressing and feeding means, said pivoted means determining the position of the insole and strip relatively to said knife, said pivoted means locating the insole and strip lengthwise so that the knife will cut the strip substantially on the line where the pressing and feeding means stopped operating, and means between said pivoted means and said knife and controlled by the operation of said pivoted means for unlocking said knife, thereby insuring that the knife will be able to operate only when the insole and strip are located in the desired lengthwise position.

105. A machine for cement attaching ribbed strips to insoles to provide sewing ribs thereon having, in combination, a support for an insole,

means cooperating with the support for intermittently pressing a pre-cemented ribbed strip against the insole to bond the strip thereto and for simultaneously feeding the combined insole and strip, a knife movable relatively to the support for severing the strip at the end of its bond with the insole, means associated with said knife for locking it against operative movement while the pressing and feeding means is operating, and means pivoted above the support and operating prior to the operation of the knife for positioning the insole and strip lengthwise relatively to said knife so that the latter will always sever the strip substantially at the termination of its bond with the insole, said positioning means being connected also to the knife locking means in such a manner that it will act simultaneously to unlock said knife.

106. A machine for attaching ribbed strips to insoles to provide sewing ribs thereon having, in combination, a support for an insole, a unitary member movable relatively to said support for pressing a cement-coated ribbed strip of indefinite length against the insole to bond the strip thereto by the cement on the strip and for also feeding the combined insole and strip, manually-operated means for causing actuation of said unitary member, means controlled by the strip for determining the length of strip bonded to the insole, means actuated by said determining means for automatically stopping the operation of said manually operated means when the desired length of strip has been bonded to the insole, a knife for cutting off the portion of the ribbed strip attached to the insole from the remainder of said strip, means for locking said knife against operating while said unitary member is operating, means actuated by the stopping of said manually-operated means for engaging the strip, said strip-engaging means acting thereafter to position the insole and strip lengthwise relatively to the knife so that the latter will cut the strip at substantially the end of the portion bonded to the insole, and means for operating said knife, said strip-engaging means being also arranged when positioning the insole to release the knife-locking means.

107. A machine for attaching ribbed strips to insoles to provide sewing ribs thereon having, in combination, a support for a pre-cemented insole, means movable relatively to the support for pressing a pre-cemented ribbed strip of indefinite length intermittently against the insole on the support to bond the strip thereto and for also feeding the insole and strip, a knife adjacent to the support for cutting off the ribbed strip substantially at the end of its bond with the insole, means above the support for engaging the strip and thereafter positioning the insole relatively to said knife to insure that the latter will cut the strip at the end of said bond, and means associated with the positioning means and actuated automatically by the operation of said positioning means in positioning the insole for operating said knife after the insole has been positioned.

108. A machine for cement attaching ribbed strips to insoles to provide sewing ribs thereon having, in combination, a support for an insole, means cooperating with said support for pressing a cement-coated ribbed strip of indefinite length intermittently against the insole to bond the strip thereto and for simultaneously feeding the combined insole and strip, a knife for cutting off the ribbed strip substantially at

the end of its bond with the insole, means overlying the support and controlled by the insole for determining the point where the bond of the strip to the insole will terminate, said means automatically stopping the operation of the pressing and feeding means at said point, means actuated automatically by the stopping of said pressing and feeding means for penetrating the strip, said strip-penetrating means acting subsequently to position the insole and strip lengthwise relatively to the knife, and means actuated automatically by said strip-penetrating means when positioning the insole for operating said knife.

109. A machine for attaching ribbed strips to insoles to provide sewing ribs thereon having, in combination, a support for an insole, means coacting with the support for pressing a cement-coated ribbed strip of indefinite length against the insole to bond the strip thereto and for also feeding the combined insole and strip, means connected to the pressing and feeding means for operating said means, a knife mounted adjacent to the support for severing the ribbed strip substantially at the termination of its bond with the insole, said knife being locked against operative movement while the pressing and feeding means is operating, means controlled by the strip for positioning the insole and strip relatively to said knife after the pressing and feeding means has stopped operating to insure that the knife will cut the strip substantially at the end of its bond with the insole, said positioning means acting to engage the strip at the time the pressing and feeding means stops operating, and means actuated by the operation of said positioning means when positioning the insole for unlocking said knife after the insole has been positioned, said unlocking means also acting substantially simultaneously to operate said knife.

110. A machine for attaching ribbed strips to insoles to provide sewing ribs thereon having, in combination, a support for an insole, a unitary member cooperating with the support for pressing a cement-coated ribbed strip of indefinite length intermittently against the insole on the support to bond the strip to said insole, said unitary member also acting to feed the combined insole and strip, said member applying substantially uniform pressure to the strip and feeding the insole and strip at a speed which is variable progressively at the will of an operator, manually-controlled means for operating said unitary member, a knife movable adjacent to the support for cutting off the ribbed strip substantially on the line where its bond to the insole terminates, said knife being locked while the manually-controlled means is operating, automatic means engaging the insole for determining the end of said bond, said automatic means locating the end of said bond substantially in transverse alinement with the point where the strip started on the insole, means controlled by said automatic means for stopping the operation of said unitary member, means pivoted above the support and actuated automatically by the stopping of said unitary member for penetrating the ribbed strip, said penetrating means serving thereafter to determine the lengthwise position of the insole and strip on the support relatively to said knife, automatic means for operating said knife, and means actuated automatically by the operation of said penetrating means, when positioning the insole, for unlocking said

knife and for simultaneously tripping the knife-operating means.

111. A machine for attaching ribbed strips to insoles to provide sewing ribs thereon having, in combination, a support for an insole, a single member movable relatively to the support for pressing a percemented ribbed strip of indefinite length against the insole to bond the strip thereto by the cement on the strip and for also feeding the combined insole and strip, means for actuating said single member, a knife for severing the ribbed strip at the end of its bond with the insole, means associated with the knife including a microswitch and a solenoid for operating said knife, a needle point for positioning the insole and strip lengthwise relatively to the knife after a sufficient length of strip has been bonded to the insole, and means actuated automatically by the movement of said needle point for closing the microswitch and thereby causing the solenoid to actuate the knife-operating means.

112. A machine for attaching ribbed strips to insoles to provide sewing ribs thereon having, in combination, a support for an insole, a member cooperating with the support and having a surface thereon for pressing a cement-coated ribbed strip of indefinite length against the insole to bond the strip thereto and for also feeding the combined insole and strip, continuously-operating means remote from the support for actuating said member, a knife adjacent to the support for severing the ribbed strip substantially at the end of its bond with the insole, means including a microswitch and a solenoid for operating said knife, means for seizing the strip after the desired length of strip has been bonded to the insole, said seizing means permitting the insole and strip to be moved subsequently on the support a distance equal to the length of the pressing surface of the pressing and feeding member, means actuated automatically by the positioning movement of the insole on the support after the strip has been attached for closing the microswitch and thereby causing the solenoid to operate said knife, means for automatically opening the microswitch after the knife has operated, and means for returning the knife to its inoperative position.

113. A machine for attaching ribbed strips to insoles to provide sewing ribs thereon having, in combination, a support for an insole, means cooperating with the support for pressing a cement-coated ribbed strip against the insole to attach the strip thereto and for also feeding the combined insole and strip, continuously-operating means connected to the pressing and feeding means for actuating said pressing and feeding means, said continuously-operating means acting to move the pressing and feeding means in a substantially elliptical path perpendicular to the plane of the insole on the support, a normally stationary guide for directing the ribbed strip to the insole, and means associated with the guide for moving said guide in timed relation to the operation of said pressing and feeding means.

114. A machine for attaching ribbed strips to insoles to provide sewing ribs thereon having, in combination, a support for an insole, means cooperating with the support for pressing a ribbed strip against the insole to force the strip thereon and for also feeding the insole and strip, continuously-operating means for moving the pressing and feeding means in a substantially

elliptical path normal to the insole to cause said pressing and feeding means to apply pressure intermittently to the insole and strip and simultaneously to feed said insole and strip at a speed which may alternatively be held uniform and may be varied progressively at the will of an operator, said feeding action applying the ribbed strip to the insole in lengths which are commensurate with the lengths of the feeding movements, a normally stationary guide for guiding the ribbed strip, and means pivotally connected to the guide for causing said guide to move in opposition to the pressing and feeding means and in timed relation thereto, thereby causing greater lengths of ribbed strip to be applied to the insole than would be applied by the feeding movement of the pressing and feeding means alone.

115. A machine for attaching ribbed strips to insoles to provide sewing ribs thereon having, in combination, a support for an insole, means cooperating with said support for pressing a ribbed strip against the insole and for also feeding the insole and strip, manually-controlled means for actuating the pressing and feeding means in a substantially elliptical path normal to the plane of the insole to cause the pressing and feeding means to apply pressure intermittently to the insole and strip and simultaneously to feed said insole and strip at a speed which may alternatively be maintained uniform and varied at the will of the operator, said feeding action applying the ribbed strip to the insole in lengths which are substantially equal to the lengths of the feeding movements, a normally stationary guide for the ribbed strip, means connected to said guide and actuated by said manually-controlled means for imparting to said guide an oscillating movement which is opposed to the elliptical movement of said pressing and feeding means and is in timed relation thereto, thereby causing the pressing and feeding means to feed and press greater lengths of the ribbed strip against the insole than it does when the guide is stationary, and means for varying the oscillating movement imparted to said guide.

116. A machine for attaching ribbed strips to insoles to provide sewing ribs thereon having, in combination, a support for an insole, a unitary member cooperating with said support for pressing a cement-coated ribbed strip intermittently against the insole to attach the strip thereto by the cement on the strip and for also feeding the combined insole and strip simultaneously with the pressing action, operator-controlled means for moving said unitary member in an elliptical path normal to the plane of the insole to apply substantially uniform pressure to the insole and strip but to feed them at a speed which is variable progressively at the will of the operator, the feeding action of said unitary member applying lengths of ribbed strip to the insole which are controlled by the feeding movements of said member, a normally stationary guide for guiding the ribbed strip toward the insole, and means for causing the feeding movements of said unitary member to move the guide in opposition to said feeding movements with a motion which is proportional to said movements and in timed relation thereto, thereby causing said member to apply greater lengths of ribbed strip to the insole than when the guide is stationary, said greater lengths being determined by the combined movements of said unitary member and said guide.

117. A machine for attaching ribbed strips to insoles to provide sewing ribs thereon having, in combination, a rotatable support for an insole, means movable relatively to said support for pressing a cement-coated ribbed strip intermittently against the insole on the support to attach the strip thereto and for simultaneously feeding the combined insole and strip, means for operating the pressing and feeding means, said operation causing the support to rotate through friction during the pressing and feeding action so that the length of ribbed strip applied to the insole during each feeding movement is commensurate with the length of said movement, means for controlling the rotation of said support, thereby changing the lengths of ribbed strip applied to the insole during the feeding movements, a normally stationary guide for guiding the ribbed strip to the insole, and means associated with the guide for causing said guide to move relatively to the support and pressing and feeding means and in opposition to the movements thereof, thereby further changing the lengths of ribbed strip applied to the insole during said feeding movements.

118. A machine for attaching ribbed strips to insoles to provide sewing ribs thereon having, in combination, a rotatable support for an insole, means cooperating with the support for pressing a ribbed strip intermittently against the insole and for simultaneously feeding the combined insole and strip, manually-controlled means for actuating the pressing and feeding means, said pressing and feeding means causing the support to rotate through friction during the pressing and feeding action so that the length of ribbed strip pressed against the insole during each feeding movement is substantially equal to the length of said feeding movement, friction means arranged to engage the support for retarding the rotation of said support during each feeding movement, thereby creating a drag on the support to cause a slightly greater length of strip to be pressed against the insole during each feeding movement than was applied before the support was retarded, a normally stationary guide for guiding the ribbed strip to the insole, means pivotally connected to the guide for causing said guide to move in opposite and in timed relation to the movement of said pressing and feeding means, thereby causing a still greater length of strip to be pressed against the insole during each feeding movement than was applied when the rotation of the support was merely retarded, and means for adjusting said last-named means to cause said guide to move different amounts.

119. A machine for making and attaching ribbed strips to insoles to provide sewing ribs thereon having, in combination, means including a first motor for forming strip material of indefinite length into a ribbed strip adapted to serve as a sewing rib on an insole, means adjacent to the forming means for attaching the ribbed strip to an insole and for feeding the combined insole and strip, means including a second motor for operating the attaching and feeding means, and means controlled by the strip for operating the first motor in accordance with the consumption of the strip by operation of the second motor.

120. A machine for making and attaching ribbed strips to insoles to provide sewing ribs thereon having, in combination, means for forming strip material into a ribbed strip, a first motor for operating the strip forming means, a support for an insole, a member cooperating with the sup-

port for attaching the ribbed strip to the insole and for also feeding the insole and strip, a second motor for actuating the attaching and feeding means, consumption of the formed strip by operation of the second motor causing operation of the first motor, and means for stopping the first motor when a predetermined length of strip has been formed.

121. A machine for operating upon insoles having, in combination, means for forming strip material of indefinite length into a preformed ribbed strip adapted to serve as a sewing rib on an insole, means connected to the strip forming means for operating said strip forming means, means adjacent to the strip forming means for attaching the ribbed strip to an insole and for feeding the combined insole and strip, means separate from said operating means for operating the attaching and feeding means, and means for controlling the relative operation of both of said operating means to insure that there will always be a sufficient amount of preformed ribbed strip on hand to supply the attaching and feeding means.

122. A machine for making and attaching ribbed strips to insoles to provide sewing ribs thereon having, in combination, means for forming strip material of indefinite length into a ribbed strip adapted to serve as a sewing rib on an insole, means for operating the strip forming means, means spaced from the ribbed strip forming means for attaching the ribbed strip to an insole and for simultaneously feeding the combined insole and strip at a speed which is variable progressively at the will of the operator, means for operating the attaching and feeding means in the manner indicated, and means controlled by the strip material itself for insuring that the strip forming means provides a sufficient amount of preformed ribbed strip to supply the attaching and feeding means irrespective of the speed at which the attaching and feeding means is operated.

123. A machine for making and attaching ribbed strips to insoles to provide sewing ribs thereon having, in combination, means for forming strip material of indefinite length into a ribbed strip adapted to serve as a sewing rib on an insole, means connected to the strip forming means for operating said means, means spaced from said strip forming means for attaching the ribbed strip to an insole and for also feeding the combined insole and strip, means associated with the strip attaching and feeding means for operating said attaching and feeding means, and means controlled by the rate at which the ribbed strip is used up by said attaching and feeding means for automatically controlling the operation of the means for operating the strip forming means.

124. A machine for making and attaching ribbed strips to insoles to provide sewing ribs thereon having, in combination, means operable to form a ribbed strip from strip material of indefinite length, means operable to attach the ribbed strip to an insole and to feed the combined insole and strip, and means dependent upon the operation of the attaching and feeding means for controlling the operation of the strip forming means.

125. A machine for making and attaching ribbed strips to insoles to provide sewing ribs thereon having, in combination, means operable to form a ribbed strip from a strip of material of indefinite length, means operable to attach the

ribbed strip to an insole after the ribbed strip has been formed and to feed the combined insole and strip, and means controlled by the strip material after it has been formed for automatically starting and stopping the strip forming means irrespective of whether the strip attaching and feeding means is operating.

126. A machine for making and attaching ribbed strips to insoles to provide sewing ribs thereon having, in combination, means for forming strip material into a ribbed strip adapted to serve as a sewing rib on an insole, means associated with the strip forming means for operating said means, a member spaced from said strip forming means for attaching the ribbed strip to an insole and for feeding the combined insole and strip, continuously-operating means for actuating said attaching and feeding member, and means for automatically starting the operation of the strip forming means when a predetermined length of ribbed strip has been used up by the attaching and feeding member, and for automatically stopping the operation of said strip forming means when the ribbed strip formed by said forming means reaches a predetermined amount.

127. A machine for making and attaching ribbed strips to insoles to provide sewing ribs thereon having, in combination, means for forming a ribbed strip from a single strip of pre-coated tape of indefinite length, means for attaching the single tape ribbed strip to an insole and for simultaneously feeding the insole and strip, means associated with the ribbed strip forming means for operating said means, means separate from said operating means for operating the attaching and feeding means, and means responsive to the rate at which the attaching and feeding means operates for starting and stopping the strip forming means.

128. A machine for making and attaching ribbed strips to insoles to provide sewing ribs thereon having, in combination, means for forming a ribbed strip from a single strip of material of indefinite length coated on at least one side with pressure-responsive cement, unitary means spaced from the ribbed strip forming means for pressing the cement-coated side of the ribbed strip against an insole to bond the strip thereto and for also feeding the combined insole and strip, means for operating the strip forming means, operator-controlled means for actuating said unitary means associated with the strip forming means and pivoted means controlled by the ribbed strip itself for automatically controlling the operation of said operating means, said pivoted means acting to start and stop said operating means irrespective of the operation of said operator-controlled means.

129. A machine for making and attaching ribbed strips to insoles to provide sewing ribs thereon having, in combination, means for forming a ribbed strip from a strip of material of indefinite length coated on at least one side with pressure-responsive cement, a member for pressing the cemented side of the ribbed strip intermittently against the cement-coated insole to bond the strip thereto and for simultaneously feeding the combined insole and strip, continuously-operated means connected to the pressing and feeding member for actuating said member, means separate from said continuously-operated means for operating the strip forming means, manually-controlled means connected to the continuously-operated means for causing said continuously-operated means to actuate said press-

ing and feeding member, and automatic means for starting and stopping the separate operating means and thereby controlling the operation of said strip forming means, the operation of said automatic means being controlled by the ribbed strip itself after it has been formed but before it has been attached to the insole.

130. A machine for making and attaching ribbed strips to insoles to provide sewing ribs thereon having, in combination, power-operated means for forming a ribbed strip from strip material of indefinite length, power-operated means separate from that for forming the strip for pressing the formed strip upon an insole and feeding the insole, means under control of the length of the formed strip for stopping the power-operated means for forming the strip after a predetermined length of ribbed strip has been formed, and means responsive to shortening of the length of the ribbed strip by operation of the pressing and feeding means to start the power-operated means for forming the ribbed strip.

131. A machine for operating on work pieces having, in combination, means for supporting a work piece in a predetermined position, a unitary member for operating upon the work piece and for simultaneously feeding the same relatively to the supporting means, constantly rotating eccentrics remote from the operating and feeding means, pivotal connections from one of said eccentrics to said member for imparting operative

movements thereto, pivoted connections from the other eccentric to said member for imparting feed movements thereto, and operator-controlled means for progressively varying the feed movement imparted to said member.

ALFRED S. CLARK.

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1,661,383	Osgood	Mar. 6, 1928
1,774,498	Ashworth et al.	Sept. 2, 1930
1,820,460	Jones	Aug. 25, 1931
1,820,496	Riviere	Aug. 25, 1931
1,944,515	Karle	Jan. 23, 1934
1,958,233	Card	May 8, 1934
2,077,797	Holmes	Apr. 20, 1937
2,125,043	Card	July 26, 1938
2,142,332	Ridderstrom	Jan. 3, 1939
2,326,119	Bertrand	Aug. 10, 1943
2,383,560	Paulsen	Aug. 28, 1945
2,427,240	Vachon	Sept. 9, 1947
2,494,578	Paulsen	Jan. 17, 1950
2,502,615	Clark	Apr. 4, 1950
2,503,029	Conner	Apr. 4, 1950