A. R. SCHOENKY.

ROUNDING MACHINE.

APPLICATION FILED APR. 10, 1912.

1,040,433.

Patented Oct. 8, 1912.

3 SHEETS—SHEET 1.

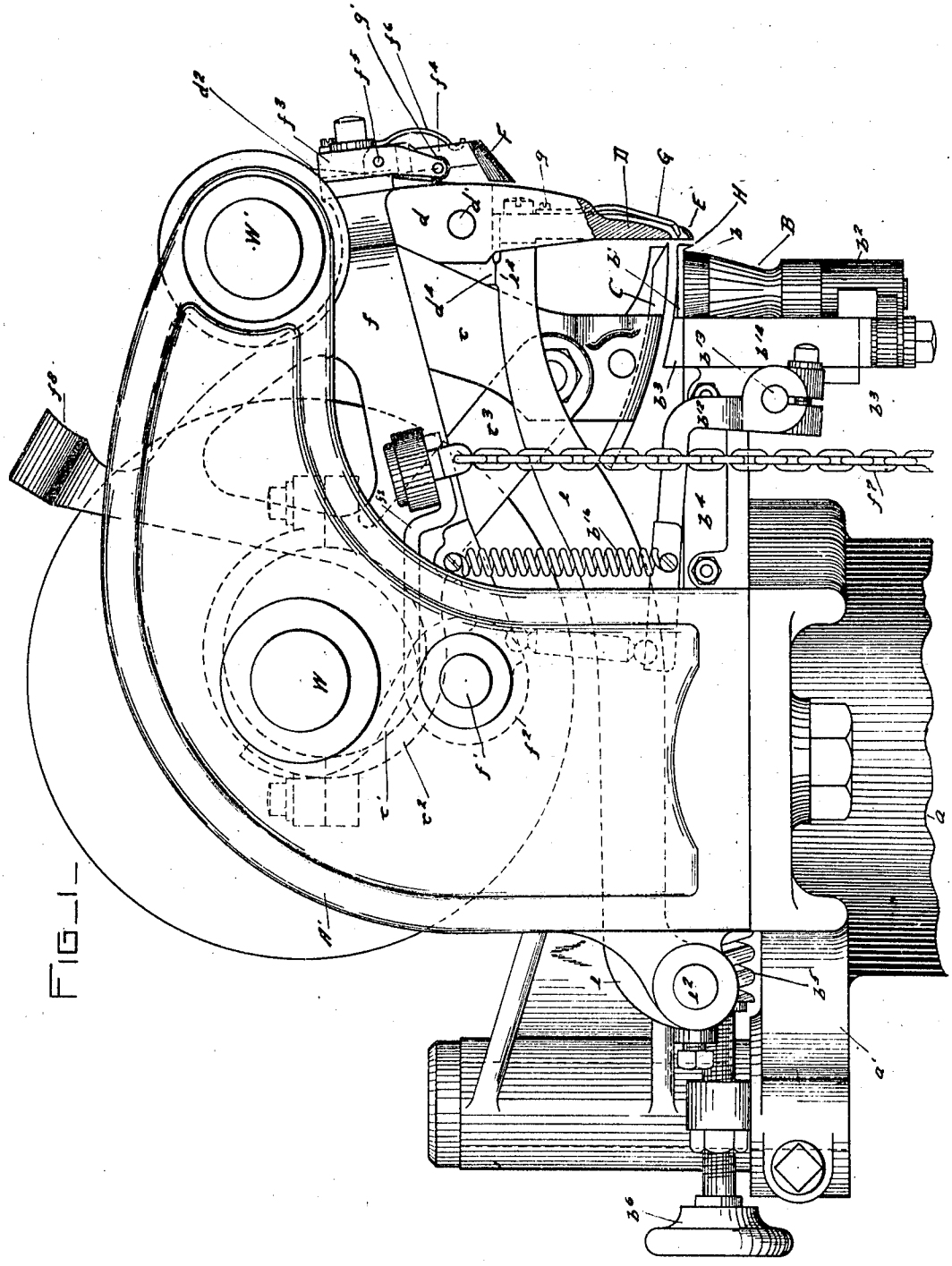

FIG. 1.

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M. Reid

Inventor:
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By his Attorneys,
Rogers, Kennedy & Campbell

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Fig. 2

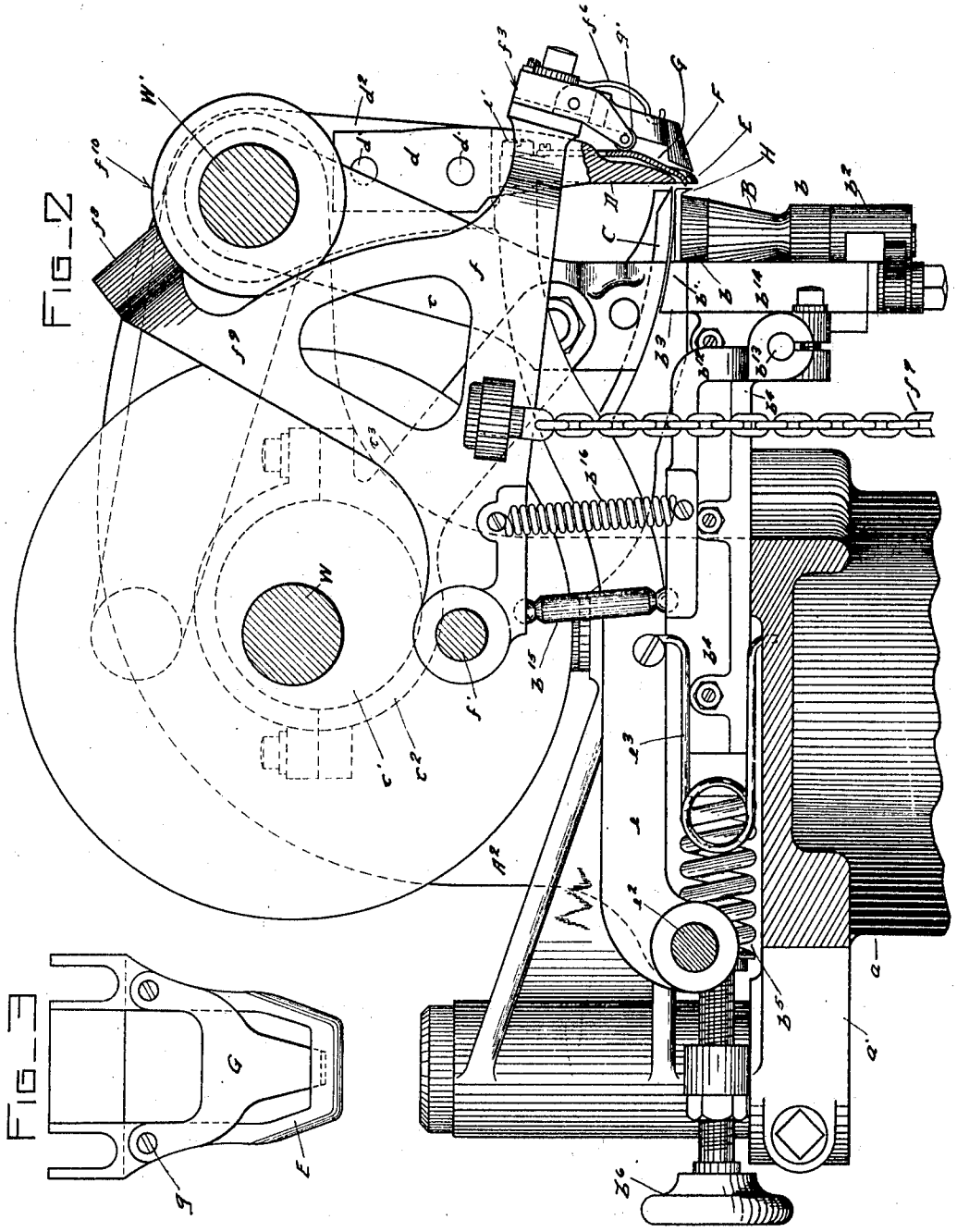

Fig. 3

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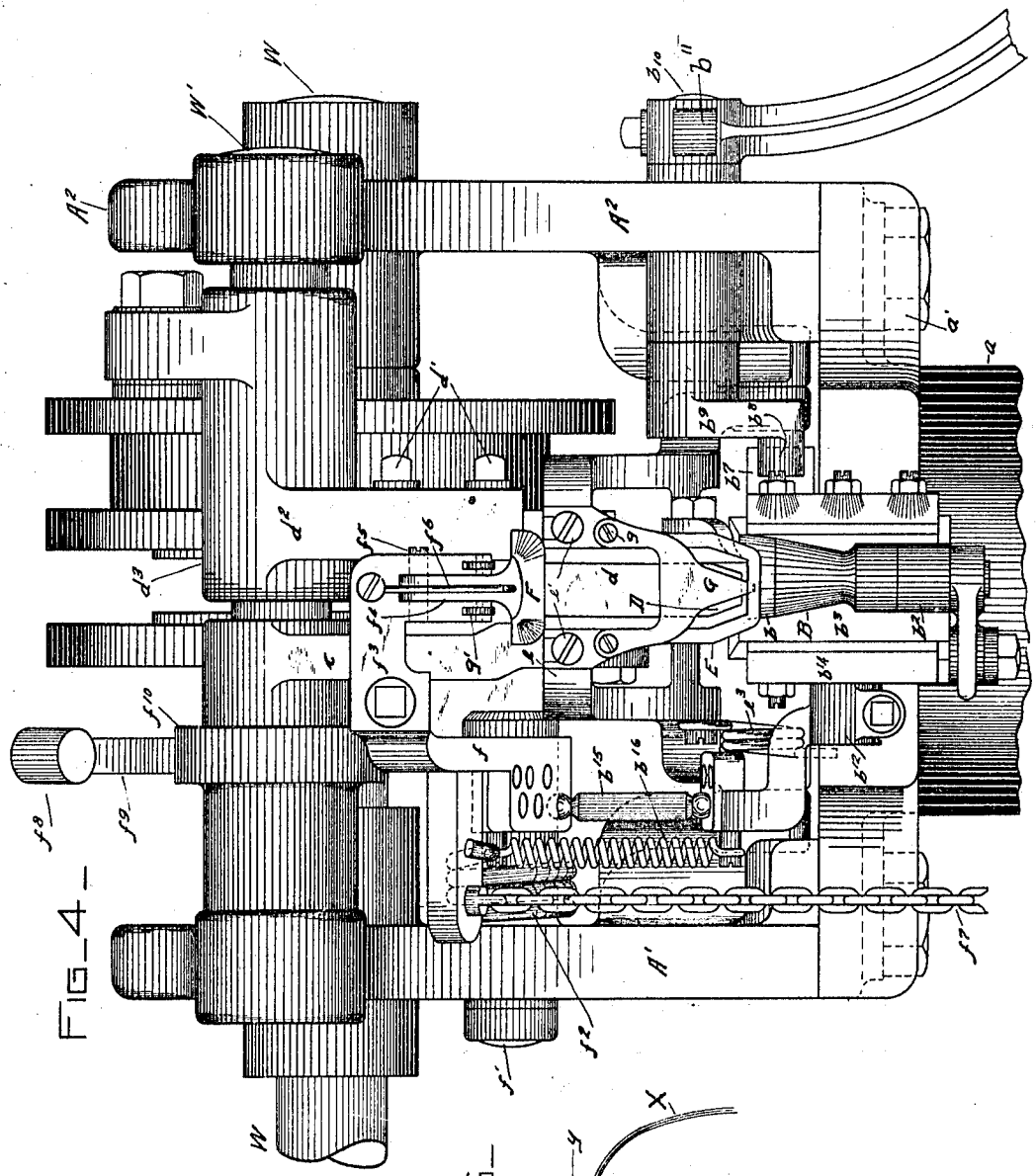

FIG. 4.

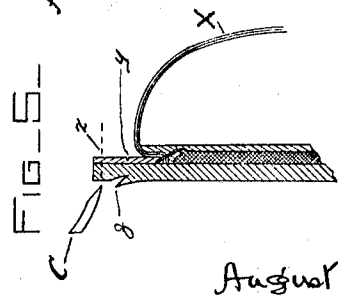

FIG. 5.

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UNITED STATES PATENT OFFICE.

AUGUST R. SCHOENKY, OF SOMERVILLE, MASSACHUSETTS, ASSIGNOR TO THE REECE SHOE MACHINERY COMPANY, OF BOSTON, MASSACHUSETTS, A CORPORATION OF MAINE.

ROUNDING-MACHINE.

1,040,433. Specification of Letters Patent. Patented Oct. 8, 1912.

Application filed April 10, 1912. Serial No. 689,925.

To all whom it may concern:

Be it known that I, AUGUST R. SCHOENKY, a citizen of the United States, residing at Somerville, in the county of Middlesex and State of Massachusetts, have invented certain new and useful Improvements in Rounding-Machines, of which the following is a specification, reference being had therein to the accompanying drawing.

My invention relates to machines for roughly trimming or rounding the extending edges of boot or shoe soles preliminarily to the final sole stitching operation thereon. For example, in the manufacture of a welt shoe the outsole is sometimes temporarily attached to the insole, upper and welt, while the upper is occupied by a wooden last, whereupon, before the stitching together thereof, the trimming or rounding of the outward extension (consisting of outsole and welt) is to be performed.

An object of the present invention is to perfect the operation of such a rounding or trimming machine, and to include therein novel functions tending to render the trimmed shoe in more perfect condition for the subsequent operation of stitching on a sole sewing machine, such for example as that referred to in my co-pending application Serial No. 680,356, filed Feb. 27, 1912.

Other objects and advantages will appear in the hereinafter following description or will be obvious to those skilled in the art.

My invention contemplates in a sole rounding machine in combination with the rounding or trimming means or tool and the mechanism for operating it, a guttering knife or tool constructed and located to cut a shallow groove around the top side of the extension (welt) above the outsole, near the edge thereof, for the line of stitching to be subsequently applied.

My invention also consists in the further combinations, details and construction of parts hereinafter described and illustrated.

I will first describe one form of sole rounding machine embodying my improvement, and will thereafter point out the novel features in the claims.

In the accompanying drawings forming a part hereof, Figure 1 is a left-hand elevation of the upper portion of a machine embodying my improvement. Fig. 2 is a left-hand elevation differing from Fig. 1 in that certain of the left-hand parts are removed to more clearly show the interior. Fig. 3 is a front elevation of a detail portion of the machine shown in Figs. 1 and 2 including tool for grooving or guttering the top side of the extending welt. Fig. 4 is a front elevation of the machine and parts shown in Figs. 1 and 2. Fig. 5 shows in cross-section a portion of a shoe on which are indicated operations adapted to be performed by the machine of Figs. 1 and 2.

Similar letters of reference designate corresponding parts in the several figures of the drawings.

The purposes of the present improvement may be partly explained by reference to Fig. 5 showing in cross-section an incomplete shoe and indicating operations adapted to be performed by the machine hereof. The main purpose of a machine of the present type is to trim or round the extending sole and welt, and this figure indicates the reciprocating trimming tool C which serves with each intermittent feed movement to trim off a portion of the leather along the line indicated at *x*. The shoe X is supposed to contain a last during the preferred operation of the present machine. The shoe outsole and welt are clearly indicated in the figure. It has been found that in the subsequent process of stitching together the outsole and welt, it is extremely desirable that there should be formed in advance of the line of stitching a slight groove or gutter in the welt, this serving to receive the line of stitching, thus not only facilitating the sewing operation, but improving the appearance of the shoe by avoiding extensive projection of the stitches above the surface of the welt. The formation of such gutter in the welt has not heretofore been satisfactorily performed, and when done upon the sole sewing machine, it has constituted an undesirable additional burden to the operation of that machine interfering with the accuracy and facility of the stitching operation.

I have conceived overcoming the objection mentioned by the present invention of a rough trimming or rounding machine which serves to simultaneously trim the sole and to form the slight groove or gutter on the top side of the welt, these two operations being performed by instruments which act simultaneously and in harmony so that an exact predetermined relation between the groove or channel on the one hand and the outer edge of the sole on the other hand is secured. At *y* is indicated such a groove or gutter as may be formed in the top side of the welt by a machine embodying my invention. As will hereinafter more fully appear, it is not desired that such welt gutter should extend entirely around the shoe, but on the contrary its formation is to be limited to the fore part of the shoe or else is to be limited to that part of the shoe wherein the position of the trim line *x* is determined not from the crease of the shoe but by a guide bearing against the last within the shoe upper.

It will be noted that a great advantage lies in the formation of the groove *y* in the present machine simultaneously with the trimming of the sole because this rough rounding machine is inherently one of heavy strong characteristics constructed for the heaviest kind of work and is well able to take up and to form both efficiently and accurately the making of the welt groove *y*, whereas the lighter and more delicate sole sewing machine with its coöperating awl and needle is thereby relieved of a burden for which it is not well adapted.

It should be mentioned that where it is desired to form a lip on the outsole opposite to the welt groove *y* for the reception and concealment of the lower connecting stitches, that can be done on the present machine as indicated at *z*.

Thus the present machine is capable of performing the three operations indicated by the cuts at *x*, *y* and *z*, fully preparing the shoe for the succeeding operation of sole sewing.

From the above it will be seen that I have devised not only a new machine, but a new mode of procedure, and I believe that I am the first to propose the method of manufacturing a welt shoe comprising the step of preparing it for the sole sewing operation, which step consists in rounding the sole with a trimming tool and simultaneously, as the rounding progress in producing a gutter around the welt in a given relation to the trimmed edge. This method more specifically considered comprises the features that the guttering of the welt takes place only around the fore part of the shoe, that such guttering takes place only while the shoe is being guided from its last, and that in addition to the trimming and the welt guttering a lip is formed by cutting the deep channel around the bottom edge of the sole simultaneously with the other operations.

Hereinafter I refer to the tool acting on the welt as a guttering tool since it depresses or cuts a mere gutter or shallow groove for the stitches to lie in; whereas the knife acting on the lower side of the sole is a channeling tool since it produces a deep groove by cutting as indicated to form a lip which may be opened out during or before stitching, and thereafter closed to conceal and protect the stitches. The former tool is a welt guttering tool, the latter an outsole channeling or lip-cutting tool.

In order to facilitate understanding the following detailed description of mechanism I will here state the order of description, which will be as follows. First, I will describe a clamping or supporting means which holds the shoe, or against which it bears during the trimming and other operations. Second, I will describe the tool and operating mechanism for feeding and progressively trimming or rough rounding the sole or extension, including the extending welt. Third, I will describe the guiding means which determines the line of trimming, which will be seen to comprise a crease guide and a last guide with a treadle for throwing one or the other into or out of operation. Fourth, I will describe the means for guttering the top side of the extension, that is to say forming a shallow groove around the welt near its edge, simultaneously with the progressive trimming or at least with the trimming around the fore part of the shoe. Fifth, I will describe a means for cutting a lip or channel or deep groove in the lower side of the outsole simultaneously with the trimming and guttering operations.

The special type and the details of these several instrumentalities are not essential to an embodiment of the present improvement and no limitation thereto is intended excepting as stated in the appended claims. Indeed in some cases the type and details will be understood by those skilled in the art, so that at times a general rather than a specific description may be hereinafter employed.

A convenient clamping or supporting means against which the shoe may bear during trimming is as follows: General portions of the machine frame are shown, for example, while A' and A^2 indicate the left-hand and right-hand overhanging arms which support the shafts and certain other parts. Other special frame portions will be indicated hereinafter by the references *a*, *a'*, etc. It will be understood that the machine may have a downwardly extend-

ing supporting post a, which is only partly shown, but which would ordinarily extend to the floor where it may be suitably secured and where it may be provided with operating treadles and other well understood parts of such a machine.

Referring to Fig. 2 which is a left-hand view, the front of the machine is at the right and the operator is supposed to take the shoe holding it substantially in the position indicated in Fig. 5 and placing it up into operating position with the bottom or outsole of the shoe pressing against the yielding and rotating support B, which, as seen, is opposed by guide and feed members hereinafter to be referred to. The portion b of the support B against which the sole actually contacts, is a rotating roll mounted on a central pin, which at its upper end is connected to a plate b', and at its lower end to a collar b^2, both of which are carried upon the upright bar b^3, which in turn is carried at the forward end b^{14} of a long horizontal slide bar b^4 suitably supported in the frame of the machine, so as to be capable of sliding backward and forward. The slide bar b^4 has a strong spring b^5 which is adjustable as to its compression by a screw b^6; said spring tending to yieldingly maintain the support B in the forward position indicated in the drawings, there being a suitable stop to determine such forward position.

To open up the parts for the reception of a shoe at the beginning of an operation, the upright bar b^3 and horizontal slide b^4 are pushed backwardly through a lug b^7, Fig. 4, formed upon portion b^{14}, and contacted by a lug b^8 upon an arm b^9 extending from a short shaft b^{10}, whose outer end is provided with a forwardly extending arm b^{11}, by which the shaft may be oscillated for throwing the arm and lugs to move back the support B, thereby enabling the operator to insert the extending sole and welt of the shoe between the support B and the opposing parts. The arm b^{11} may be depressed by a chain and treadle or otherwise.

A convenient trimming or rough rounding tool and operating mechanism may be as follows: I prefer a reciprocating form of tool C adapted to make successive cuts through the sole and welt as the latter are caused to advance under the guidance of suitable guides. Opposed to the trimming tool C is shown a member D, which may serve as an anvil against which the blows of the tool C are received, and may serve also as a supporting member coöperating with the support B, the work passing between them, and may serve also as one of the elements of the feeding mechanism for causing a step-by-step advance of the work.

To properly guide the trimming tool C in its reciprocating movements, it is shown mounted upon a heavy arm c extending upwardly to where at its upper end it has a hub or sleeve loosely mounted on the horizontal shaft W'. For reciprocating the trimming knife C, I prefer to mount upon the main or power shaft W an eccentric c' indicated in dotted lines, engaged by an eccentric strap c^2, having a projecting arm c^3 pivotally connected to the heavy arm c already mentioned. By this arrangement the rotation of the main shaft W causes the trimming tool's reciprocation.

Any convenient means for feeding the work forwardly may be employed. For example, the member D already mentioned may coöperate with the support B for this purpose. The member D is seen at the lower end of a vertical bar d, which is secured by bolts d', d' or the like to an arm d^2 extending from a sleeve or hub d^3 surrounding the shaft W', see Fig. 4. By any convenient means which will not be further described, the hub d^3 may be controlled to vibrate lengthwise of the shaft and also to oscillate about the shaft. By suitably proportioning the cams which effect this the member D may be given any desired movement within a small compass. For example, when the work is clamped between the support B and the member D, the latter may move bodily to the operator's left, thus feeding the work to the left, and may then swing out of contact with the work and back to the right again, reëngaging the work but in a new position preparatory to a succeeding movement to the left. The support B being rotary readily permits this step-by-step feeding. During the back movements of the member D the work is held by the support B coöperating with a guide E hereinafter to be referred to. By this arrangement the work is intermittently fed forward, for example, a quarter inch at a stroke, and the trimming knife C at each stroke chops or cuts to that extent progressively around the extending sole of the shoe.

I will now describe convenient guiding means appropriate for an embodiment of my invention. Preferably the guiding means will include two separate guides E and F. As shown herein, the guide E is a crease guide, while the guide F is a last guide intended to bear against the last or form contained in the shoe. The guide E is shown as a shank guide intended to be replaced around the fore part of the shoe by the guide F.

Referring first to the details of the crease guide E, this will be seen to be a U-shaped member, its central opening serving to accommodate the member D already referred to. The guide E is supported from an arm e, being secured thereto by attaching screws e'. The arm e extends rearwardly to where

it is mounted at e^2 to oscillate about a fixed axis. A spring e^3 beneath the arm e tends to press the latter upwardly so as to yieldingly maintain it in the position shown, a portion of it at e^4 bearing against the corner d^4 of the arm d^2, which acts as a stop.

Ordinarily while the shoe is being guided by the engagement of guide E in the crease of the shoe, said guide and the arm e are in their upper position shown, although for certain purposes it may be desirable to depress them, which can be done against the resistance of spring e^3.

The second guide or last guide which acts about the fore part of the shoe is normally inactive by reason of its being in the inoperative position shown in Fig. 1. The last guide F may be held in inoperative or elevated position in a yielding manner by means of a supporting arm f turning on short shaft f' and acted upon by spring f^2 arranged for convenience to surround the shaft f'. The guide F is shown connected at the front end of the arm f through a plate f^3, which extends from the arm f to the right as shown in Fig. 4, and a movable arm f^4 pivoted at f^5 to plate f^3 and extending downwardly to where at its lower end it carries the guide F. A spring f^6 bears upon the pivoted arm f^4 tending to hold it in the normal position shown, but permitting it to yield forwardly when its guiding operations so require.

For causing the descent of the last guide F from the inoperative position of Fig. 1 to the guiding position of Fig. 2, any convenient means may be employed, such for example as the chain f^7 extending from the arm f downwardly to a treadle or the like, which upon being depressed at the operator's will brings the last guide into play so that the shoe will be guided from the last instead of from the crease. For limiting the descent of the last guide a stop f^8 may be employed connected by a triangular extension f^9 from the guide carrying arm f, the stop f^8 being so located and constructed as to coöperate with a hub or collar f^{10} surrounding the shaft W' by contacting with the same as seen in Fig. 2, when the last guide is in proper operative position.

I have thus described a duplex guiding means comprising the crease guide E which normally guides the shoe from the crease, and the shiftable last guide which may be brought into play to force the shoe slightly farther down, and so shaped as to guide the shoe from the last rather than the crease. It will be understood that in certain types of shoes it is desirable in trimming the sole along the shank part to guide the work from the crease and to thereafter change the manner of guiding so that in trimming around the fore part of the shoe the extent of projecting sole is determined no longer from the crease but from the last or form of the shoe.

I will now describe a means for guttering the top side of the extension, that is to say the welt of the shoe, automatically and simultaneously with the progressive trimming of the sole edge. It will be understood that while the extending edge is being trimmed the work is clamped or supported between the rotatable support B on the one hand and the member D and guide E opposed thereto, while the trimming knife C reciprocates. The bottom of the outsole lies toward the support B, while the top side of the welt is contacting with and held by members D and E. If now in such a combination of parts we place between or approximate to the members D and E a guttering tool G adapted to be made to extend into the path of the work, as seen in Fig. 2, it will simultaneously with the trimming operation and as the latter progresses score or depress or cut in the top side of the welt a gutter or shallow groove, whose position relatively to the trimmed edge or other part of the shoe will be accurately determined, for example by locating the tool G in a fixed relation to the trimming knife C. Such an arrangement is here indicated, and we therefore have a machine which simultaneously and progressively both trims the sole edge and gutters the top of the welt near its edge.

I prefer that the guttering tool G shall not always be in cutting position as shown in Fig. 2, but shall be shiftable from cutting position to the noncutting position indicated in Fig. 1. A convenient mode of permitting this shifting is to construct the guttering tool or knife of a piece of flexible metal of substantial length. Thus the tool G is shown as consisting of a generally Y-shaped piece of metal when seen from the front, and its upper branches are secured as by screws g to the side portions of the U-shaped crease guide E. The guttering tool by this arrangement is not only afforded support but is rendered able to shift.

It is desirable that a gutter shall be cut around the welt only at the fore part of the shoe, and I have shown means for automatically effecting the shifting of the tool G into active position when passing around the fore part of the shoe, and out of active position when the shoe shank is being trimmed. This is accomplished in the present embodiment of my invention by a device moving with the guide F and acting upon the guttering tool to throw the latter into cutting position when the guide F is brought into guiding position. Thus whenever the operator guides the shoe by the last, he depresses a treadle to force the last guide F

downwardly from the position of Fig. 1 to the position of Fig. 2. Mounted upon each side of the last guide is a properly positioned roller g', which upon the descent of the guide F comes into contact with a projection or curved portion of the tool G, forcing it from the outward inactive position of Fig. 1 to the inward or cutting position of Fig. 2. Conversely whenever it is desired to discontinue guttering the welt, that is accomplished by allowing the guide F and the arm carrying it to rise, thus permitting the guttering tool to return to inoperative position as shown in Fig. 1. By this arrangement the treadle chain f' constitutes a controlling means for alternately or intermittently putting the respective guides into operation, and for also automatically putting the guttering or grooving tool G into and out of action.

Referring to Fig. 5, the work of the trimming knife C is indicated by the line x of trimming or cutting, while the work of the welt guttering tool G is indicated by the shallow groove or gutter y on the top side of the welt between the trim line x and shoe upper.

In order to form a lip around the bottom of the outsole by cutting a deep groove or channel, I have indicated a channel or lip cutting knife H, which is mounted for convenience at the front end of the plate b' already mentioned, beneath which the rotatable support B is located. It will be seen from Figs. 1 and 2 that the knife H is so shaped and located as to form a deep slanting cut, producing a decided lip in the bottom of the outsole. This cut and lip are clearly indicated at z in Fig. 5, the lip being such as to enable it to be widely opened during or before a subsequent stitching operation, and then closed for the protection of the stitches. The relative position of the lip forming knife H and the trimming knife C determines the distance of the channel from the edge. As the distance of the gutter y from the edge is also determined by the relative position of the guttering tool G and the trimming knife C, it is easily arranged that the gutter y shall be produced directly opposite the extremity of the cut z as shown in Fig. 5, which is the preferred arrangement. In this way the guttering knife G cooperates not only with the trimming tool but with the lip forming knife.

As an auxiliary expedient, though not *per se* forming any part of the present improvement, I will mention the adaptability of the lip forming knife H to shift slightly relatively to the trimming knife. Thus in Fig. 2 the knife H is a certain distance beneath the knife C, while the shoe is being guided by the last guide F, and at the same time the guttering tool G is in operation. This is the operation around the fore part of the shoe. Suppose it be desired on passing from the fore part of the shoe to the shank to displace the lip to a position slightly farther from the shoe edge, mechanism is indicated for accomplishing this as follows. b^{12} indicates a swinging arm turning about an axis or shaft b^{13}, mounted in the forward part b^{14} of the horizontal slide b^4 already mentioned. The vertical bar b^3 already mentioned, may be fitted to slide vertically, inclosed between the two sides of part b^{14}, and its movement may be effected by an interior connection such as a rack and pinion, so that by swinging the arm b^{12} the vertical position of the bar b^3 and of the support B and of the lip forming knife H may be determined. The rear end of swinging arm b^{12} is connected with the arm f which swings the last guide F. This connection consists of a link b^{15} having a ball and socket connection above and below, and a spring b^{16} holding the arm b^{12} up in secure engagement with link b^{15}. By such an arrangement the lifting of the last guide F upwardly from the position of Fig. 2 to the position of Fig. 1, permits the upward movement of link b^{15} and thereby of swinging arm b^{12}, the forward end of which causes a slight depression of bar b^3 and lip forming knife H to their position shown in Fig. 1.

The operation of the machine hereof will be well enough understood from the above description of the mechanism. Such operation consists essentially of a simultaneous progressive sole trimming, welt guttering and lip forming around the fore part of the shoe or when guided from the last, and a simultaneous sole trimming and lip forming without welt guttering at other times. In this I believe I have produced a new type of machine.

What I claim and desire to secure by Letters Patent is:

1. In a shoe rounding machine, means for simultaneously and progressively trimming the sole edge and guttering the welt top, and guiding means for guiding the shoe alternately by its crease and last during said operations.

2. In a shoe rounding machine, the combination of a trimming tool, a welt guttering tool, and mechanism for causing said tools to operate simultaneously progressively around the shoe.

3. In a shoe rounding machine, the combination of a trimming tool, a welt guttering tool, an outsole lip cutting tool, and mechanism for causing said tools to operate simultaneously progressively around the shoe.

4. In a shoe rounding machine, the combination of a trimming tool, a welt guttering tool, mechanism for causing said tools to

operate simultaneously progressively around the shoe, and means for guiding the shoe alternately by its crease and last during said operations.

5. In a shoe rounding machine, the combination of a trimming tool, a welt guttering tool, mechanism for causing said tools to operate simultaneously progressively around the shoe, means for guiding the shoe alternately by its crease and last during said operations, and automatic means for throwing said guttering tool into operation when guiding by the last and out of operation when guiding by the crease.

6. In a shoe rounding machine, the combination of a trimming tool, a welt guttering tool, mechanism for causing said tools to operate simultaneously progressively around the fore part of the shoe, and means for throwing said guttering tool out of operation when trimming the shank part of the shoe.

7. In a shoe rounding machine, the combination of a trimming tool and means for operating it to progressively trim the sole edge, a tool for simultaneously producing a gutter in the welt top around and near the edge thereof, and means for putting said guttering tool into and out of operation during the trimming.

8. In a shoe rounding machine, the combination of a trimming tool and means for operating it to progressively trim the sole edge, a tool for simultaneously producing a groove around and near the edge, guiding means for guiding the shoe alternately by its crease and the last during the trimming, and means whereby said grooving tool is put into action when and only when guiding by the last.

9. In a shoe rounding machine, the combination of a trimming tool and means for operating it to progressively trim the sole edge, a tool for simultaneously producing a groove around and near the edge, a guide for guiding the shoe by its crease, a guide for guiding it by the last, controlling means for alternately putting said guides into operation, and means actuated by said controlling means for putting said grooving tool into and out of action.

10. In a shoe rounding machine, the combination of a trimming tool and means for operating it to progressively trim the sole edge, a tool for simultaneously producing a groove around and near the edge, a guide for guiding the shoe by its crease, a guide for guiding it by the last, and means for shifting said last guide into guiding position and for simultaneously putting said grooving tool into action.

11. In a shoe rounding machine, the combination of a trimming tool and means for operating it to progressively trim the sole edge, a tool for simultaneously producing a groove around and near the edge, means for changing the manner of guiding the shoe as the trimming progresses around the fore part and for throwing said grooving tool into and out of action simultaneously with such change so that such groove will be formed only around the fore part of the shoe.

12. In a shoe rounding machine, the combination of a trimming tool and means for operating it to progressively trim the sole edge, a tool for simultaneously producing a groove around and near the edge, means for putting said grooving tool into and out of operation during the trimming, and a channeling tool for cutting a lip on the side opposite said grooving tool whether guiding by the crease or last.

13. In a shoe rounding machine, the combination of a trimming tool and means for operating it to progressively trim the sole edge, a tool for simultaneously producing a groove around and near the edge, guiding means for guiding the shoe alternately by its crease and the last during the trimming, means whereby said grooving tool is put into action when and only when guiding by the last, and a channeling tool for cutting a lip on the side opposite said grooving tool whether guiding by the crease or last.

14. In a shoe rounding machine, the combination of a trimming tool and means for operating it to progressively trim the sole edge, a tool for simultaneously producing a groove around and near the edge, a guide for guiding the shoe by its crease, a guide for guiding it by the last, controlling means for alternately putting said guides into operation, means actuated by said controlling means for putting said grooving tool into and out of action, and a channeling tool for cutting a lip on the side opposite said grooving tool whether guiding by the crease or last.

15. In a shoe rounding machine, the combination of a trimming tool and means for operating it to progressively trim the sole edge, a tool for simultaneously producing a groove around and near the edge, a guide for guiding the shoe by its crease, a guide for guiding it by the last, means for shifting said last guide into guiding position and for simultaneously putting said groove tool into action, and a channeling tool for cutting a lip on the side opposite said grooving tool whether guiding by the crease or last.

16. In a shoe rounding machine, the combination of a trimming tool and means for operating it to progressively trim the sole edge, a tool for simultaneously producing a groove around and near the edge, means for changing the manner of guiding the shoe as the trimming progresses around the fore

part and for throwing said grooving tool into and out of action simultaneously with such change so that such groove will be formed only around the fore part of the shoe, and a channeling tool for cutting a lip on the side opposite said grooving tool whether guiding by the crease or last.

17. In combination, means for trimming or rounding a shoe sole edge and means for grooving the welt thereof.

18. In combination, means for trimming or rounding a shoe sole edge, means for channeling the sole bottom, and means for grooving the welt thereof.

In testimony whereof I affix my signature in presence of two witnesses.

AUGUST R. SCHOENKY.

Witnesses:

FREDERICK J. DORGAN,

FREDERICK W. DAVISON.

Copies of this patent may be obtained for five cents each, by addressing the "Commissioner of Patents, Washington, D. C."