

R. F. McFEELY.  
TACKING MECHANISM.  
APPLICATION FILED APR. 17, 1911.

1,129,882.

Patented Mar. 2, 1915.  
5 SHEETS-SHEET 1.

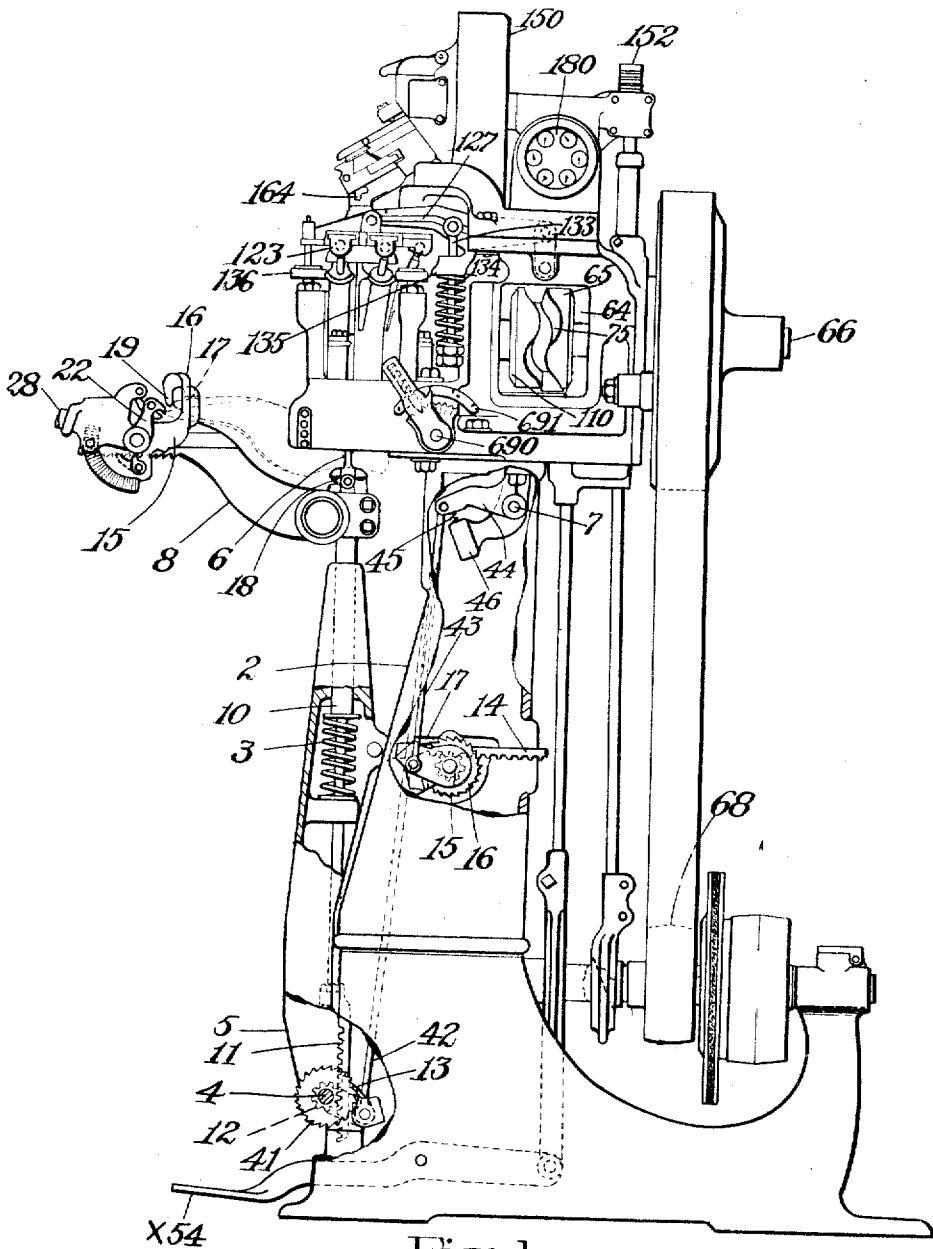


Fig. 1

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5 SHEETS-SHEET 2

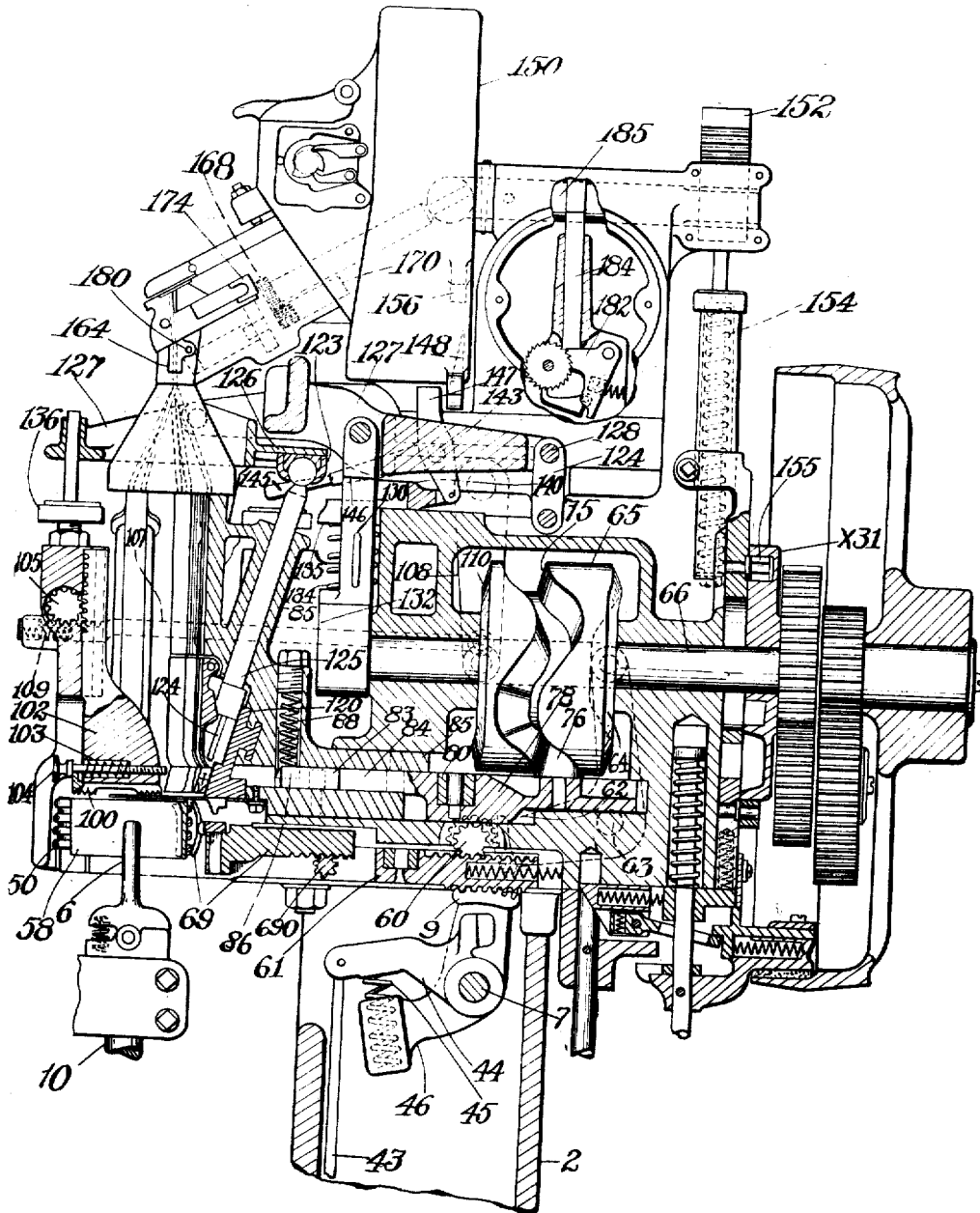


Fig. 2.

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**1,129,882.**

5 SHEETS—SHEET 3.

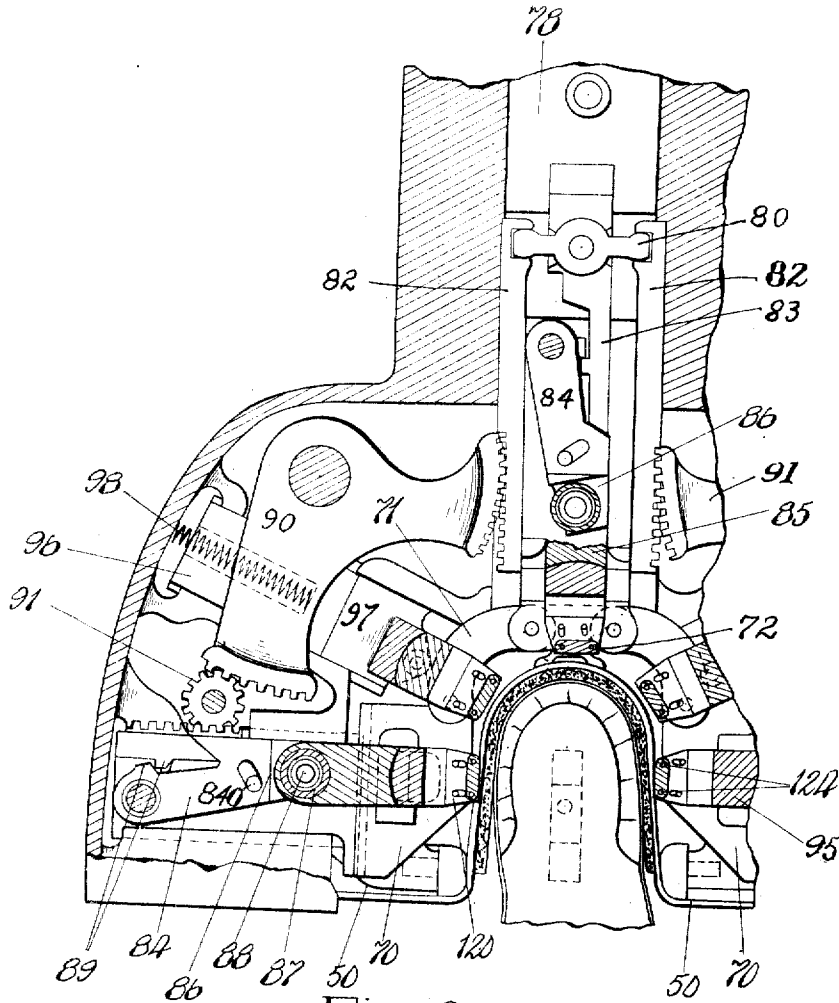


Fig 3

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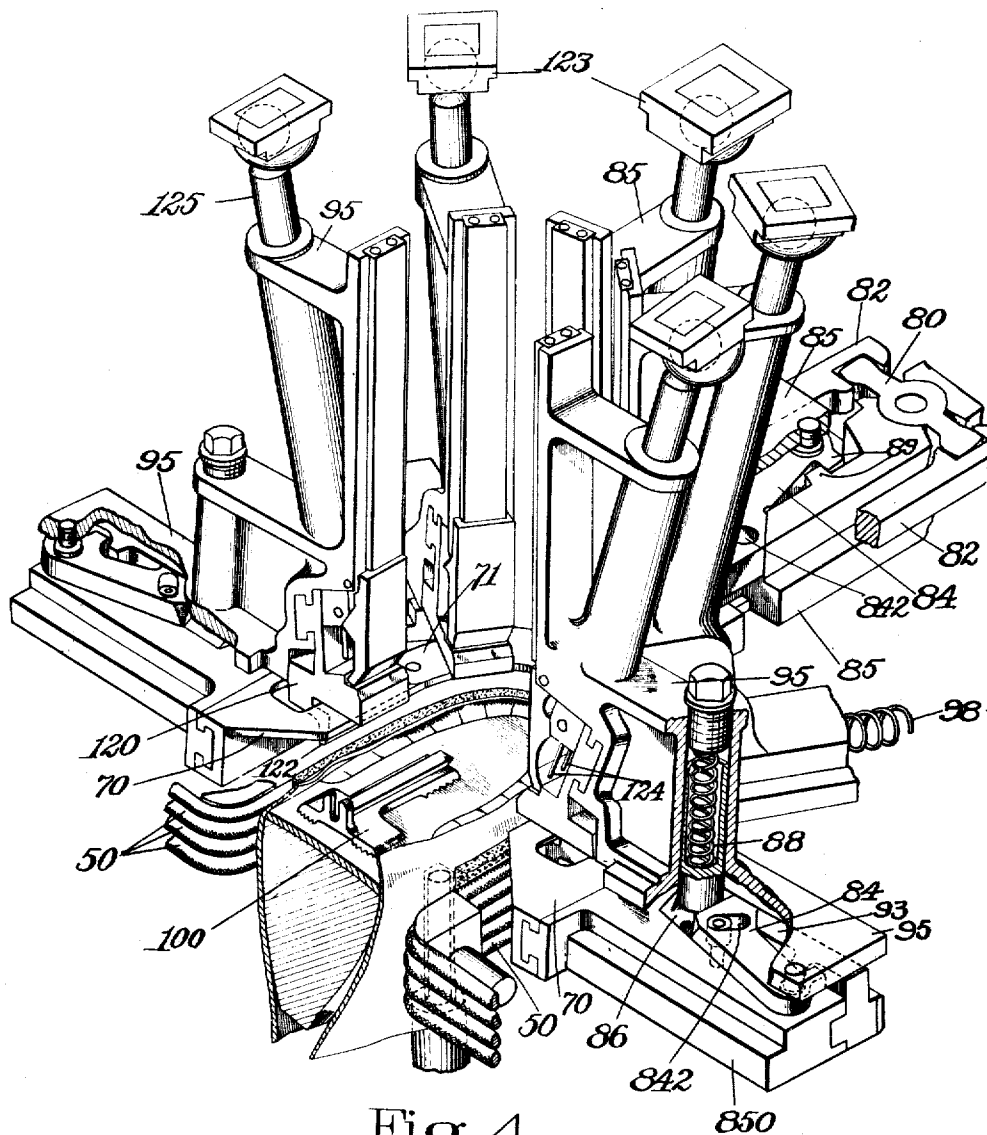


Fig. 4.

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5 SHEETS-SHEET 5.

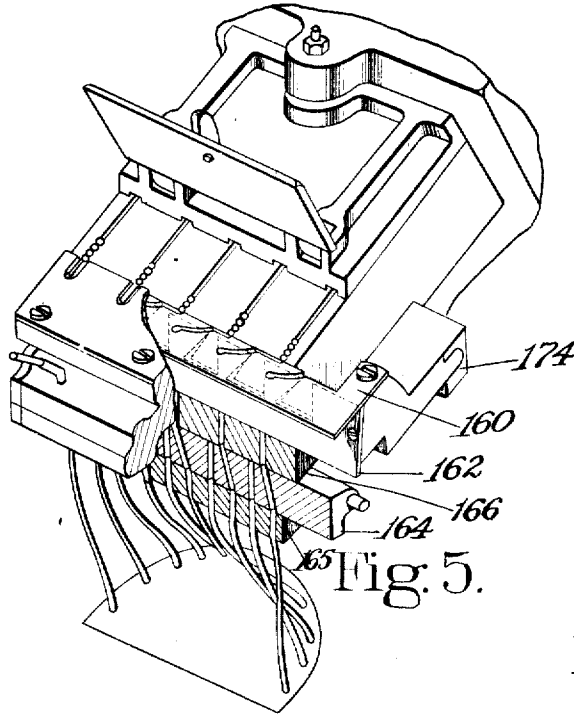


Fig. 5.

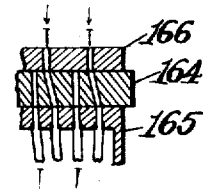


Fig. 6

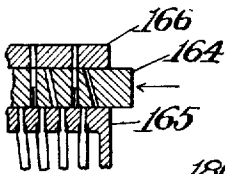


Fig. 7.

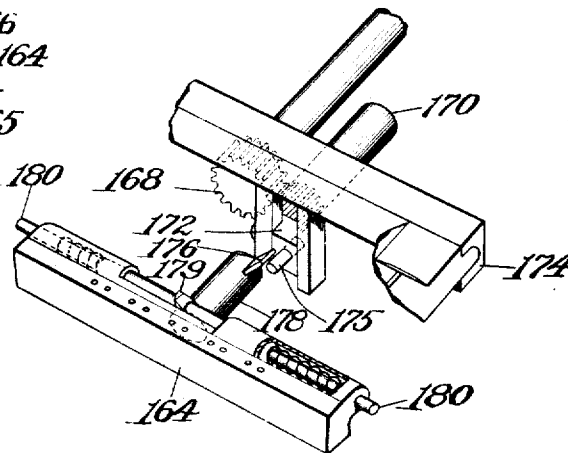


Fig. 8

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# UNITED STATES PATENT OFFICE.

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## TACKING MECHANISM.

1,129,882.

Specification of Letters Patent.

Patented Mar. 2, 1915.

Application filed April 17, 1911. Serial No. 621,514.

*To all whom it may concern:*

Be it known that I, RONALD F. McFEELY, a citizen of the United States, residing at Beverly, in the county of Essex and State of Massachusetts, have invented certain Improvements in Tacking Mechanisms, of which the following description, in connection with the accompanying drawings, is a specification, like reference characters on the drawings indicating like parts in the several figures.

This invention relates to machines for use in the manufacture of boots and shoes and particularly to fastening inserting machines. The invention is illustrated as embodied in gang tacking mechanism of an assembling and automatic heel seat lasting machine more fully disclosed in my application Serial No. 512,901, filed August 14, 1909 of which the present application is a continuation as to subject-matter common to the two cases.

The object of this invention is to improve nailing or tacking mechanisms herein designated as "tacking" mechanisms and particularly to provide a gang tacking apparatus adapted to meet the requirements of heel seat work in automatic or semi-automatic machinery.

An important feature of the invention consists in the combination with two or more drivers of a tack supplying mechanism and actuating means arranged to cause the supplying mechanism to separate a succession of tacks and deliver them between two operations of the drivers.

A gang tacking machine for heel seat work is required to drive a large number of tacks notwithstanding the fact that a given number of tacks inserted by such a machine as the present one has as great holding power as a larger number of tacks inserted one at a time. To provide a machine with a number of raceways and separating devices equal to the number of tacks to be driven would render the machine cumbersome and expensive. I have discovered that the required results can be obtained by an arrangement and construction by which the tack supplying devices are caused to operate a plurality of times during a cycle of the machine in which the drivers operate once. In devising a machine embodying this feature of the invention there was encountered

the condition that for the best results the delivery of tacks to all the drivers should be simultaneous.

A further feature of the invention is to be recognized in provision for separating successive series of tacks and holding one or more series in transit until the full charge is ready and then delivering at substantially the same time the tacks separated at different times. As the machine is shown one series of tacks is separated and falls into a receiving plate and then substantially simultaneously with the separation of a second series of tacks the receiving plate is moved to bring its tack filled openings into alignment with one series of conductors and to place a second series of openings in alignment with the separator and with a second series of conductors so that the second series of tacks is discharged nearly simultaneously with the first series. A desirable feature of the construction provides for two complete reciprocations forth and back of the separator derived from a single rotation of its actuator.

The machine is provided with a shoe support and with power mechanism which positions or otherwise prepares the shoe to be operated upon and then automatically comes to rest to allow inspection and adjustment of the shoe. It sometimes occurs that examination discloses that the shoe will not be properly fastened by the continued operation of the machine but requires to be taken out and its parts rearranged or the preparatory operations, such as lasting the upper materials, need to be repeated.

A feature of this invention contemplates the provision of novel mechanism by which the driving of the tacks can be suspended until a later cycle of the machine's operation. Another and very important feature of the invention consists in means for suspending the separation and delivery of a second charge of tacks while a charge already delivered is awaiting delivery as above explained. These features are embodied in manually operated means for preventing the descent of spring actuated drivers and in means for locking an oscillating actuator against a sufficient movement, in the direction in which it is yieldingly actuated, to effect separation of any tacks. This locking means is controlled by a hand lever which,

after having set the stops, can be reversely moved to cause the driving and feeding of the tacks at any time before the end of the machine's cycle.

5 A further feature of the invention consists in means for effecting the withdrawal of the stops automatically during the preparatory operations of the next cycle so that without special attention from the operator  
10 the shoe will be fastened during the repeated operation of the machine on it.

Another feature of this invention consists in the combination with a plurality of tackers, or gang tacker members, which are arranged for movement inwardly over an end  
15 portion of a shoe bottom toward tacking position in converging lines until arrested in positions determined by the size and position of the shoe, of a back stop adjustable  
20 for large and small shoes to determine the positions in which the tacks shall be inserted, or the spacings between the rear end tacks and the side tacks. By setting the stop, and therefore the shoe, farther back for a large  
25 shoe, the side tacks can always be made to come at the correct relation to the breast line of the heel seat.

The several features of the invention, including certain details of construction and combinations of parts will appear more fully  
30 from the following description of the invention in connection with the accompanying drawings and will then be pointed out in the claims.

35 Figure 1 is a side elevation of an illustrative embodiment of the invention; Fig. 2 is a vertical longitudinal section; Fig. 3 is a plan view of the devices for holding the shoe for the heel seat tacking operation;  
40 Fig. 4 is a perspective view of the tack driving apparatus; Fig. 5 is a perspective view of the tack supplying mechanism; Figs. 6 and 7 are successive sectional views of the tack delivering mechanism; Fig. 8 is a perspective view illustrating the operating  
45 means for the tack delivering mechanism.

The machine comprises a base 2 upon the top of which is mounted the head carrying the tacking mechanism together with mechanism for preparing the shoe for the tacking  
50 operation and to the side of which near the front is pivoted at 4 the part of the shoe support or jack carrying the shoe assembling and upper pulling apparatus. The jack  
55 post 5 can swing outwardly to clear the last thereon from the machine for giving access to all sides of the shoe in applying the last to the heel pin and assembling and adjusting the upper materials and the innersole  
60 in proper relation. The arm 8 trends upwardly from the spindle 10 and in its forward portion, which is bent outwardly and then back again around the toe portion of the shoe, has a horizontal guideway located  
65 directly below the last in which a block 15

is adjustable lengthwise of the shoe. This block comprises an overhanging arm 16 which has a rest 17 for engaging the bottom of the last or the innersole thereon, the toe end of the last being held up by a spring 18  
70 acting upon the heel pin, and a rest 19 for engaging the end face of the last when the block has been adjusted to the right position in the arm 8 for the particular shoe in hand. The block 15 supports pivotally the upper  
75 pulling device 22 which has an operating handle rod 28. The rests 17 and 19 constitute convenient means for positioning the innersole lengthwise on the last bottom if the innersole is unattached to the last as it  
80 is in the manufacture of many shoes. The jack includes a spring 3 which as shown in Fig. 1 is strong enough to uphold the spindle 10 with the shoe thereon and when the upper has been satisfactorily pulled toward  
85 and fitted to the last the jack post is swung inwardly, within the heel band and against a suitable back stop 69 the shoe being depressed to permit it to go under the heel bottom rest 100 which will be described.  
90 The lower end of the spindle 10 is formed as a rack 11 which engages a pinion 12 on the shaft 4 upon which the jack post is pivoted. This shaft 4 also has a rigidly attached ratchet wheel 41 which is engaged by  
95 a pawl on the lower end of a rod 42 to turn the shaft 4 and its pinion 12 in the direction for uplifting the spindle 10 and the shoe from the power shaft during the operation of the machine for purposes which will be  
100 described. A similarly constructed but horizontally arranged rack bar 14, pinion 15, ratchet wheel 16, and pawl 17, connection is provided between the jack post and a rod 43 for inswinging the jack and the shoe from  
105 the power shaft, and these rods are connected to bell-cranks 44 mounted on a fixed pivot rod 7 as shown in Figs. 1 and 2. The outer ends of the cranks 44 rest upon springs 45 in the outer arm of a bell-crank 46 the upper  
110 arm of which is a segment 9 which, through suitable connections later described, receives motion from the power shaft. This upward movement of the rods is transmitted to them by the independently yielding  
115 springs 45 and turns the ratchets in the direction to uplift the spindle and shoe and to pull them backwardly into the machine.

The mechanism into which the shoe is thrust backwardly for positioning and holding the work for the tacking operation includes a plurality of separately movable  
120 parallel cords, bands, or the like 50 arranged to extend about the heel portion of the shoe from the shank on one side to the shank on the other side. A lining 58 of leather, rubber, felt or other suitable material is arranged within the bands 50 and distributes the pressure of the bands without interfering with their relative conforming move-  
125  
130

ment to adapt them to the contour of each last when they are put under tension to assist in holding the upper materials in position to be fastened. This is effected through a toothed angle 62, see Fig. 2, fulcrumed at 63 and having a roll in engagement with the rear cam face 64 of the cam block 65. This cam block is carried by the cam shaft 66 which is driven through a clutch and connections to the lower pulley shaft 68 which driving parts are or may be substantially like those shown and claimed in United States Letters Patent No. 791,686, of June 6, 1905. This clutch mechanism need not be here further described than to state that it is actuated by a treadle X54 to cause the machine to be started and that the cam disk X31 has suitably formed and located rises to cause the machine automatically to come to rest at predetermined times which will be later noted. The slide 61, which through suitable connections, not shown, closes the heel band 50, is actuated from the cam face 64 by the angle lever 62 and pinion 60 and is toothed on its lower face as shown in Fig. 2 to engage the upper arm 9 of the angle lever 46 before described by which the shoe is lifted and pulled back into the machine and is locked there to receive the heel seat lasting operation. The back stop 69 is adjustably mounted in position to limit the backward movement of the shoe into the elastic heel band which is effected by the connection to the jack post 35 through the rod 43. This insures a predetermined positioning of the shoe lengthwise with relation to the operating parts of the machine. The back stop is forked to center the shoe laterally independently of the band 40 and thus assist in positioning the shoe laterally with relation to the tacking mechanism. The back stop is shown in Fig. 2 as formed on a rack bar adjustable by a shaft 690 having a handle at the side of the machine with a pawl in it to engage a locking ratchet 691, Fig. 1, which has marked on it graduations indicating the proper adjustment for different sizes. The ratchet can be adjusted to position the graduations for different groups of sizes, such as men's, women's or children's sizes.

The tackers, of which there are five each equipped to drive two tacks, are shown best in Fig. 4 where the rear end one is indicated at 85 and the front ones at 95. These tackers are arranged for movement yieldingly in converging lines over the heel seat, from an open position, Fig. 3, in which the heel is fully uncovered to a tack inserting position that is determined by the size and position of the shoe. The tackers, or more specifically the swiveled tack blocks 120 thereof, have each a depending feeler or gage 122 to engage the side face of the shoe, or the counter clamping band thereon, and

limit their inward movement with relation to the previously clamped shoe. The movement of the tackers is obtained from the cam block 65 before mentioned as having the cam face 64 for actuating the jack to present the shoe in position to be tacked. This cam block has a cam path 75, Fig. 2, in which stands a roll 76 on a slide 78, Figs. 2 and 3. The slide carries a wedge 83, the incline being formed on the left hand side of its end face as shown in Fig. 1. This wedge has a forwardly pushing engagement with a reversely inclined face of an arm 84 that can turn on a pivot depending from the tacker 85 but is normally restrained from such turning movement by a heavy spring 88 that rests down upon an incline 86 on the arm which must wedge the spring up in order that the arm can turn instead of accompanying the pusher slide 83 in the full stroke of the latter. This spring 88 provides for relief of the tacker after the gage 122 has met the shoe.

For actuating the side tackers 95 inwardly an equalizer 80 connects the slide 78 with two rack bars 82, Figs. 3 and 4, from which movement is transmitted by angle levers 90 and pinions 91 to wedge slides 93 that are like 83 and have pushing engagement with other arms 84 pivoted on the under sides of the tackers 95 and associated with relief springs 88 as described for the tacker 85. The corner tackers intermediate the end and side tackers 85 and 95 are connected only indirectly with the driving mechanism and are normally pressed inwardly by strong springs 98 as far as permitted by the engagement of a roll 97 thereon, Fig. 3, with the outer face of a link 71. These links, one at each corner of the heel, connect the rear tacker, or an upper wiping device 72 that is connected with the under face of that tacker, with side wipers 70 that are directly below the side tackers 95 and have holes through which the gages 122 depend to engage the side face of the shoe. The play permitted by the enlargement of these holes and the rolling contact of the rolls 97 with the links 71 allow relative movement of the wipers and tackers, particularly lengthwise of the shoe. It will be understood that the tackers move in predetermined paths provided by their guideways in the machine head. The spacing between the pairs of tacks will, however, vary according to the size of the shoe and its longitudinal position in the machine because the intermediate tackers move obliquely toward the side tackers and operate more or less close thereto according to the width of the shoe while the space between the intermediate and rear end pairs of tacks is varied according to how far back into the machine the shoe extends. This is controlled by the adjustable back gage 69. The movement of

the wipers is different and is relative to the side tackers because the side wipers are advanced lengthwise of the shoe by their connections 71 with the rear end wiper. It may be here explained that the actuation of the wipers toward the shoe is effected by the arms 84 through slots 842 in which rise studs 840 from a subslide 850 in the end of which a wiper is carried. This is indicated in plan in Fig. 3 and in perspective in Fig. 4. This connection 840, 842 insures the advance of the wipers with the tackers and slightly ahead of them until the engagement of the gages 122 arrests the advance of the tackers and compels the arms 84 to swing laterally against resistance of springs 88. The shape of the cam slots 842 is such as to effect retraction of the wipers from under the tackers far enough to allow the tacks to be driven into stock previously covered by the wipers. Interengaging shoulders 89 on the wedge slide 83 and arm 84 insure the return of the arm to normal position and the wipers to normal relation to the tackers at the end of each cycle.

The shoe bottom rest controls the vertical position of the shoe which is lifted against it by the connection, earlier described, with the power mechanism. The shoe bottom rest 100 is formed as shown in Fig. 4 to contact with the shoe bottom at a plurality of points including points at opposite sides of the innersole near the heel breast line to position the shoe as to transverse inclination of the heel bottom and to clamp the insole down firmly upon the last bottom near its opposite edges. This bottom rest is movable endwise in a guideway formed in the lower face of a block 102 and is pressed forwardly therein by a spring 103 against an adjusting screw 104. This allows the rest to accompany the shoe backwardly into the machine in the indrawing movement effected by the rod 43. The block 102 which carries the bottom rest is guided for vertical movement in the machine head and has rack teeth engaged by a pinion 105 coupled by a rack rod 107 to a lever 108 which is fulcrumed at its upper end and is held by a spring 109 acting on the rack rod, against a cam face 110 formed on the front end of the cam block 65. This cam face is formed with relation to the cam track 75 for the bottom rest to be raised after the tackers have advanced over upon the shoe bottom whereby the upper is caused to be firmly compressed upon the last bottom to form a firm smoothly prepared surface to be tacked. The lifting of the shoe is effected by the formation of the face 64 of the cam, movement being transmitted through the strong spring 45 located in the jack lifting mechanism which has been put under tension when the jack was initially raised. The cam face 110 is also formed to depress the bottom rest again

after the tacks are driven, as will be described, and before the wipers are finally retracted. This is to depress the shoe from the wipers and to relieve the pressure of the wipers and prevent them from dragging over the lasted and tacked uppers in their final retraction. The cam face 64 will preferably be formed to relieve the upholding pressure of the shoe at this time.

The tackers 85 and 95 support the tack blocks 120 of which there are five mounted in said tackers as shown in Figs. 3 and 4 to have a small amount of angular movement in a horizontal plane. These blocks have projections extending downwardly through slots in the wipers and carrying feelers or gages 122 arranged to engage the side of the shoe, or the counter clamping bands and thereby limit the inward movement of the tackers and also determine the position with relation to the edge of the shoe at which the tacks shall be inserted. The gages also effect the necessary turning of the tack blocks in their slides to position at substantially the same distance from the edge each of the two tacks which the blocks are arranged to carry. The tack pockets in the blocks 120 are inclined so as to drive the tacks toward the center of the heel and the drivers 124 are similarly inclined. This arrangement provides that the ingoing tacks which are simultaneously driven all the way around the heel seat shall by reason of their inclination draw the upper inwardly from the edge of the last. These tacks are driven in front of the wipers into a portion of the upper materials which therefore is not at the moment of driving held down in lasted position and the indrawing effected by the inclined tacks is therefore particularly advantageous because it takes up or reduces the slack that otherwise would be liable to exist between the line of tacks and the edge of the wipers. A single driver rod 125 carries two drivers 124 and the turning movement of the tack block 120 takes place about the axis of that rod which is connected by a slide block 123 and a ball joint to the driver plate 126 guided to move in right lines in the machine head. The driver plate is the broadened front end of a lever 127 fulcrumed at 128 upon a link 129 and having a depending hinged link 130 the foot of which rests upon a cam 132 on the front end of the cam shaft 66. This cam serves to lift the driver lever and the drivers against the tension of springs 134 suspended by rods 133, Fig. 1, from the lever to be compressed against a shelf 135 on the frame preparatory to actuating the driver lever downwardly to insert the tacks when the cam permits said springs to close. Adjustable stops 136 on the frame limit the down stroke of the drivers and determine the extent to which the tacks shall be driven.

A forked slide block 140, see Fig. 2, resting on the machine frame is adapted to be advanced by a T lever pivoted at 143 and having a handle arm 145, into a position under shoulders 146 on the lever-raising link 130 and prevent the descent of the lever for driving the tacks if, after the operator has had opportunity to examine the shoe in the machine, fastening of the upper is not desired for any reason. The slide block may be manually retracted to permit the driving of the tacks in a later portion of the machine's cycle, or if the shoe is not properly prepared for fastening and must be submitted to a second cycle of the machine's operation the block may be left until a suitable time in the next cycle when it will be automatically retracted by the engagement of a wedge 148 which is shown as carried by the rotating tack hopper 150 with the upper arm 147 of the lever. The tacks are fed by mechanism later to be described from the hopper 150 which is oscillated by a rack bar 152 through a spring 154 from a cam track 155 in the side of the cam X<sup>31</sup> on the cam shaft 66. These parts do not in themselves form a part of this invention and may be of previously known construction. The hopper has a stud 156 between which and the wedge 148 the arm 147 is set when the slide block 140 is advanced to obstruct the descent of the drivers. This stud prevents the oscillation of the hopper through a great enough angle to effect the separation and feeding of a second set of tacks until the set which is waiting to be driven has been inserted and if the cycle of the machine is completed without driving the waiting set then the feeding mechanism is rendered ineffective for that cycle but the wedge 148 forces the tack stopping devices to normal position in time to permit delivery of the withheld tacks for the next cycle. The block 140 and the arm 147 constitute connected means for controlling the feeding and the driving of the tacks. By the use of these devices the machine can be made to repeat its cycle as many times as may be required with the tacking mechanism each time ineffective and thus a particularly stubborn shoe be lasted in by successive operations of the wipers and finally tacked when it is in satisfactory condition. The tacks which gravitate down the raceway grooves, Fig. 5, from the hopper are separated by a slide 160 with which moves a notched gate 162 and are delivered through the oblique slots and eyes in said plate as described in my prior United States Letters Patent No. 1,002,421, granted September 5, 1911. There are five raceways and the separating mechanism is arranged to be reciprocated twice in each cycle of the machine to deliver ten tacks, which is the number the machine is designed to drive at one

time. To this end a receiving plate 164 is provided which is guided for endwise movement between the conductor or tack tube anchor plate 165 and a cap plate 166. The receiving plate has ten pockets arranged in two series alternating and so positioned that when the first series is in receiving position the points of the tacks will rest upon the anchor plate and will not be discharged into the tack tubes until the receiving plate has been moved to put the second series of pockets in receiving position in time to take the tacks from the second actuation of the separating devices. At this time the first set of tacks will be discharged into the tubes and the second set will fall directly through the receiving plate into the tubes as shown in Fig. 6, so that the two sets of tacks fall into the tubes which lead them to their holders in the tackers, Fig. 2, at nearly the same time. This concentrates the tack delivering period and leaves the remainder of the time occupied by the cycle of the machine for other operations. One series of tack pockets is arranged oblique to the other so that the extent of movement of the receiving plate to position all its pockets in alignment with the tubes in the conductor plate and discharge the tacks may be different from the spacing between the tubes in the conductor plate. A different number of tacks may be fed in any multiple of the number of the raceway grooves. For actuating the separating devices to take from the raceways two charges of tacks in each cycle the pinion 168 which formerly directly reciprocated the separating devices meshes with a pinion 170 of half the number of teeth which has a crank connected to the block 172 in the depending fork of the separator driving bar 174 and from which that bar and the separating devices receive a complete reciprocation from the oscillatory movement of the pinion 168 and the hopper in one direction and a second complete reciprocation from the oscillatory movement in the other direction. The crank block has a stud 175 arranged to contact at times with an arm 176 on a shaft 178 that has a tooth 179 having a yielding connection with the delivery slide by means of spring plungers 180 as shown in Fig. 8. This arrangement is such that as the stud 175 turns downwardly and to the left in Fig. 8 it leaves the arm 176 and the delivery slide 164 at rest in what may be considered to be the discharging position of the slide until the stud nearly completes its rotary stroke when it will reach a position to contact with the upper side of the arm 176 and move the delivery slide into its first receiving position shown in Fig. 7, in time to take the first set of tacks discharged from the oblique slots and eyes of the separating plate 160. On the reverse oscillation of the pinion 168 and

the hopper the stud will leave the arm 176 again and not contact with it until it approaches the Fig. 8 position whereupon it will turn the arm and move the delivery slide to the left in the figures to discharge the first set of tacks into the tubes Fig. 6 and receive the second set from the separator plate, as shown in Fig. 6.

An indicator is often used with machines of this type for the purpose of recording the amount of work done and in Figs. 1 and 2 an indicator 180 which may be of any usual form is shown as built into the machine head so that it cannot be tampered with. The actuating lever 182 of the indicator is connected by a plunger 184 with an eccentric portion of the shaft 185 of the hopper which, it will be recalled is locked by the arm 147 to prevent it from being actuated whenever the machine is caused to repeat its operations on a shoe. By this arrangement the indicator is caused to record the number of shoes operated upon as distinguished from the number of cycles through which it is caused to run.

In the use of this machine for heel seat tacking the shoe is placed on the spindle 6 and the block 15 adjusted to cause the stop 19 to position the toe end of the insole flush with the toe end of the last and to cause the stop 17 to clamp the insole down upon the last bottom at the toe. The pincers are then caused to tension the upper forwardly and cause the upper to press upon the heel end face of the insole and bow it down into the shank. With the shoe thus assembled the jack is tipped back into the machine, being depressed to place it under the bottom rest 100. This rest engages the insole at about the heel breast line near opposite edges and also at the middle of the heel and pressing it down into the shank of the last, clamps it against the heel seat face of the last and prevents it from buckling as the tackers advance over it during the tacking operation. The treadle X<sup>54</sup> is then depressed to start the machine which operates first to draw the shoe firmly back into the machine and raise the shoe, the sole rest sliding back with the shoe, and to wrap the counter embracing band tightly around the heel portion of the shoe. The machine may then come to rest to permit examination of the shoe to make sure that it is properly presented for the operation of the machine. When the operation of the machine is resumed or continued the cam block 75 imparts movement to advance the tackers, preferably at a relatively slow speed, over the shoe bottom. In this movement the tackers and the wipers on their lower faces bend inwardly and break down the stock toward position to be fastened. The tackers then retreat and the bottom is raised by the action of cam face 110 and the jack is raised by the action of

the cam face 64 and the spring 45. The tackers then advance again over the raised shoe and, acting through the wipers, press the upper down more firmly upon the margin of the insole and then partially retract the wipers, by the cam slots 842, to uncover the tacking line. While the tackers are over the shoe the jack will be hard pressed upwardly to compact upon the last bottom the stock that is to be fastened. This may occur as a momentary pressure just before the wipers are partially retracted to uncover the tacking line, it being obvious that the precise timing in this respect is determined and can be varied by the shaping of the cam face 64. The machine may advantageously pause, either by a dwell in the cams or by coming to a full stop, when the stock has been thus prepared for the tack inserting operation. This will give the operator opportunity to see if the work is in all respects properly prepared to be fastened. In case he finds that it is not ready to be fastened he will manipulate the hand lever 145 to render the tack drivers and the tack supplying devices inoperative, this adjustment of lever 145 also operating incidentally to suspend actuation of the register 180. The completion of the cycle will then cause the machine to release the jack so that the upper can be rearranged in any necessary respect. Then a repetition of the machine's operation will subject the shoe to a second preparatory treatment and will also withdraw automatically the driver and hopper stops that were positioned by hand lever 145. During any uninterrupted cycle the tack separating devices will make two reciprocal actions, the five tacks first separated being delivered into and retained temporarily by the receiving plate 164 as in Fig. 7 and then, when the second five tacks are about to be dropped to the receiving plate that plate is moved to allow the first tacks to be discharged from it and to allow the second tacks to fall directly through it as in Fig. 6. After the drivers have inserted the tacks by reason of the cam 132 turning to a point at which the springs 134 can impel the driver lever 127 downwardly the drivers are lifted and all the parts are returned to starting position, the retreat of the tackers being preceded however by a depression of the shoe caused by relaxing the lifting pressure on the jack applied by cam face 64. During the initial position of the retracting movement of the tacker and wiper actuating means the cam slots 842 serve, if the upward pressure of the shoe is suitably relieved, by movement of arms 84 toward the positions occupied by them in Fig. 3, to advance the wipers again to their normal relation to the tackers and to carry the wipers over the tacking line again for further smoothing down the tacked stock.

Having explained the nature of this invention and fully described a machine embodying it in the best form now known to me, I claim as new and desire to secure by Letters Patent of the United States:

1. A machine of the class described having, in combination, mechanism arranged to separate a definite number of tacks at each actuation thereof, a gang tacker, and means for actuating the separating mechanism a plurality of times during each cycle of the machine in which the tacker is actuated once, and a receiving plate to hold the earlier separated tacks and deliver them simultaneously with the separation and delivery of the last separated tacks.
2. A machine of the class described having, in combination, mechanism arranged to separate a definite number of tacks at each actuation thereof, a gang tacker, and means for actuating the separating mechanism a plurality of times during each cycle of the machine in which the tacker is actuated once, and a receiving plate to hold the earlier separated tacks and constructed and arranged to permit the delivery of the last separated tacks directly through it and to effect the delivery of the first charge of tacks when it is prepared for the direct delivery of the last charge.
3. A machine of the class described having, in combination, mechanism arranged to separate a definite number of tacks at each actuation thereof, a gang tacker, and means for actuating the separating mechanism a plurality of times during each cycle of the machine in which the tacker is actuated once, a receiving plate provided with a plurality of series of tack holes arranged to take charges of tacks from the separating mechanism, a conductor plate arranged to arrest the earlier separated tacks and hold them in the receiving plate, and means for repositioning the receiving plate and the tacks therein coincidently with the separation of the last charge of tacks to permit the delivery of all the tacks into the conductor plate.
4. A machine of the class described having, in combination, mechanism arranged to separate a definite number of tacks at each actuation thereof, a gang tacker, and means for actuating the separating mechanism a plurality of times during each cycle of the machine in which the tacker is actuated once, a receiving plate provided with a plurality of series of tack holes arranged to take charges of tacks from the separating mechanism, a conductor plate arranged to arrest the earlier separated tacks and hold them in the receiving plate, and means for repositioning the receiving plate to permit the delivery of the tacks therein and to permit the direct delivery of the last charge of tacks through it to the conductor plate.
5. A machine of the class described having, in combination, the oscillatory hopper, the reciprocatory separating devices, means for actuating the hopper once in each cycle of the machine's operation and means driven from said actuating mechanism to impart to the separating devices two complete reciprocations for each oscillation of the hopper.
6. A machine of the class described, having, in combination, tack separating devices, a tack receiving plate and connected mechanism for reciprocating the separating devices and the plate constructed and arranged to impart a reciprocatory movement in one direction only to the plate for each complete reciprocation of the separating devices.
7. A machine of the class described having, in combination, tack separating devices, a tack receiving plate and connected mechanism for reciprocating the separating devices and the plate including the crank 172 and slide 174 operatively connected with said devices, the stud 175, shaft 178 having the arm 176 in the path of the stud and operatively connected with the plate, substantially as and for the purpose described.
8. A machine of the class described, having, in combination, a plurality of drivers, a raceway, tack delivering means and actuating mechanism arranged to cause the delivering means to segregate a tack and hold it and then segregate another tack and deliver both tacks simultaneously with the segregation of the second one.
9. A machine of the class described having, in combination, mechanism for feeding and driving fastenings, and manually controlled means adapted to be set during a cycle of the machine's operation to delay the feeding of the fastening while the machine proceeds in operation past the normal feeding period, said machine having means for automatically resetting said manually controlled means to cause the feeding of a fastening for the next cycle of the machine's operation.
10. A machine of the class described having, in combination, mechanism for feeding and driving fastenings, and manually controlled means adapted to be set during a cycle of the machine's operation to delay the driving of the fastening while the machine proceeds in operation past the normal driving period, said machine having means for also automatically delaying the feeding of a second fastening while the driving is delayed and means for automatically resetting said manually controlled means to cause the driving and feeding of fastenings in the next cycle of the machine's operation.
11. A machine of the class described having, in combination, a yieldingly actuated hopper, a separator driven by said hopper,

mechanism for driving fastenings, and manually controlled means adapted to be set during a cycle of the machine's operation to prevent sufficient movement of the hopper to cause it to operate the separator and to delay the driving of the fastening while the machine proceeds in operation past the normal separating and driving periods.

12. A tacking mechanism having, in combination, a tack supplying means comprising a rotatable hopper and tack separating devices operated by the hopper; tack inserting means including tack holders to which tacks are delivered by said tack supplying means, and tack drivers; power driven mechanism for operating the supplying means and the inserting means; and means under control of the operator for preventing the drivers from inserting tacks from the holders and preventing the separating devices from being operated to deliver more tacks to the holders while the power driven mechanism runs through its cycle.

13. A machine of the class described having, in combination, automatically operating mechanism for driving fastenings, and manually controlled means adapted to be set during a cycle of the machine's operation to delay the driving of the fastening while the machine proceeds in operation past the normal driving period, said machine having provision for automatically resetting said manually controlled means to cause the driving of the fastening in the next cycle of the machine's operation.

14. A machine of the class described having, in combination, a plurality of tackers arranged for movement inwardly over an end portion of a shoe bottom toward tacking position in converging lines and adapted to be arrested in that movement in positions determined by the size of the shoe, and means separate from the tackers for determining automatically the longitudinal position of the shoe with relation to said lines of movement for governing the location of the driven tacks.

15. A machine of the class described having, in combination, a plurality of tackers arranged for movement inwardly over the shoe bottom toward tacking position in converging lines and adapted to be arrested in that movement in positions determined by the size of the shoe, an adjustable back stop, and means operating automatically to position the shoe against the back stop.

16. A machine of the class described having, in combination, a plurality of tackers arranged for movement inwardly over the shoe bottom toward tacking position in converging lines and adapted to be arrested in that movement in positions determined by the size of the shoe, an unyielding back stop, means for adjusting it including provision for indicating correct adjustment for shoes

of different sizes, and means for positioning the shoe against the back stop.

17. A machine of the class described having, in combination, a plurality of tackers arranged for movement inwardly over the shoe bottom toward tacking position in converging lines and adapted to be arrested in that movement in positions determined by the size of the shoe, an unyielding back stop, means for adjusting it including means for indicating correct adjustment for shoes of different sizes, said indicating means being adjustable for different groups of sizes, and means for positioning the shoe against the back stop.

18. A gang heel seat fastening machine having, in combination, a gang of tackers, a shoe support, and power mechanism for drawing the shoe support into the machine and raising it to the working position, a height gage to limit the rise of the shoe; and means acting to advance the tackers, raise the gage and the shoe until the stock is compressed between the last bottom and the tackers and then to cause the tackers to insert the fastenings all in time relation.

19. A gang heel seat fastening machine having, in combination, a gang of tackers, a shoe support, and power mechanism for drawing the shoe support into the machine and raising it to the working position and for advancing the tackers together inwardly over the heel seat, then raising the shoe support to compress the stock between the last bottom and the tackers and then actuating the tackers to fasten the shoe stock.

20. In a machine of the class described, a gang tackler comprising a plurality of tack blocks arranged around the end of a shoe and mounted for relative angular movement about separate axes extending substantially perpendicular to the plane of the shoe bottom and provided with feelers to engage the side faces of the shoe for causing the blocks to be positioned in accordance with the contour of the shoe end.

21. A gang heel seat fastening machine having, in combination, a gang of tackers, a shoe support, and power mechanism for drawing the shoe support into the machine and raising it to the working position, for advancing the tackers together inwardly over the heel seat and for actuating the tackers to do their work.

22. In a machine of the class described, heel seat tacking means comprising a tackler for the end of the heel, tackers for the opposite sides of the heel and independently yielding means for actuating the end and side tackers inwardly over the shoe bottom to tacking position whereby the relation of the end and side tackers can be varied by varying the position of the shoe lengthwise in the machine.

23. A heel seat tacking machine having,

in combination, a plurality of tackers movable in converging lines across the edge of the shoe to tacking position, each tacker being arranged to insert two tacks and comprising a tack block and having a stop to engage the side of the shoe and movable laterally in an arc in the tacker by such engagement to position it for insertion of each of the tacks at the same distance from the shoe edge.

24. A heel seat tacking machine having, in combination, a plurality of tackers movable in converging lines across the edge of the shoe to tacking position, means for actuating said tackers to tack inserting positions, means for relatively changing the positions of the tackers and the shoe vertically after the tackers reach inserting position to compress the stock, and means for causing the tackers to insert tacks into the compressed stock.

25. A heel seat tacking machine having, in combination, a plurality of tackers movable in converging lines across the edge of the shoe to tacking position, means for repeatedly actuating said tackers toward tacking position in the same cycle of the machine, and means for causing them to insert tacks at the end of one only of such actuations.

26. A heel seat tacking machine having, in combination, an end tacker, side tackers and corner tackers intermediate the end and side tackers, all movable in converging lines toward tacking position, separately yielding means for actuating the tackers inwardly, and a back gage to determine ad-

justably the longitudinal position of the shoe in the machine according to its size whereby the tackers are stopped at different points in their converging paths and the spacing of fastenings driven by adjacent tackers is varied.

27. A heel seat tacking machine having, in combination, an end tacker and side tackers yieldingly actuated in converging paths toward inserting position, and a back gage adjustable prior to the operation of the machine into one or another definite position in which it is maintained during the operation of the machine to determine the longitudinal position of the shoe in the machine and vary the spacing between the fastenings inserted by the end tacker and the side tackers.

28. In a machine of the class described, heel seat tacking means comprising a tacker for the end of the heel, tackers for the opposite sides of the heel, independently yielding means for actuating the end and side tackers inwardly over the shoe bottom to tacking position, and an adjustable back stop to determine the lengthwise position of the shoe whereby the side and end tackers can be spaced relatively according to the length of the shoe.

In testimony whereof I have signed my name to this specification in the presence of two subscribing witnesses.

RONALD F. McFEELY.

Witnesses:

CHARLES H. HOYT,  
BARTHOLOMEW T. McDONOUGH.

Corrections in Letters Patent No. 1,129,882.

It is hereby certified that in Letters Patent No. 1,129,882, granted March 2, 1915, upon the application of Ronald F. McFeely, of Beverly, Massachusetts, for an improvement in "Tacking Mechanisms," errors appear in the printed specification requiring correction as follows: Page 3, line 5, after the word "angle" insert the word *lever*; page 4, line 77, for the word "tackers" read *slides*; and that the said Letters Patent should be read with these corrections therein that the same may conform to the record of the case in the Patent Office.

Signed and sealed this 21st day of September, A. D., 1915.

[SEAL.]

J. T. NEWTON,  
*Acting Commissioner of Patents.*