

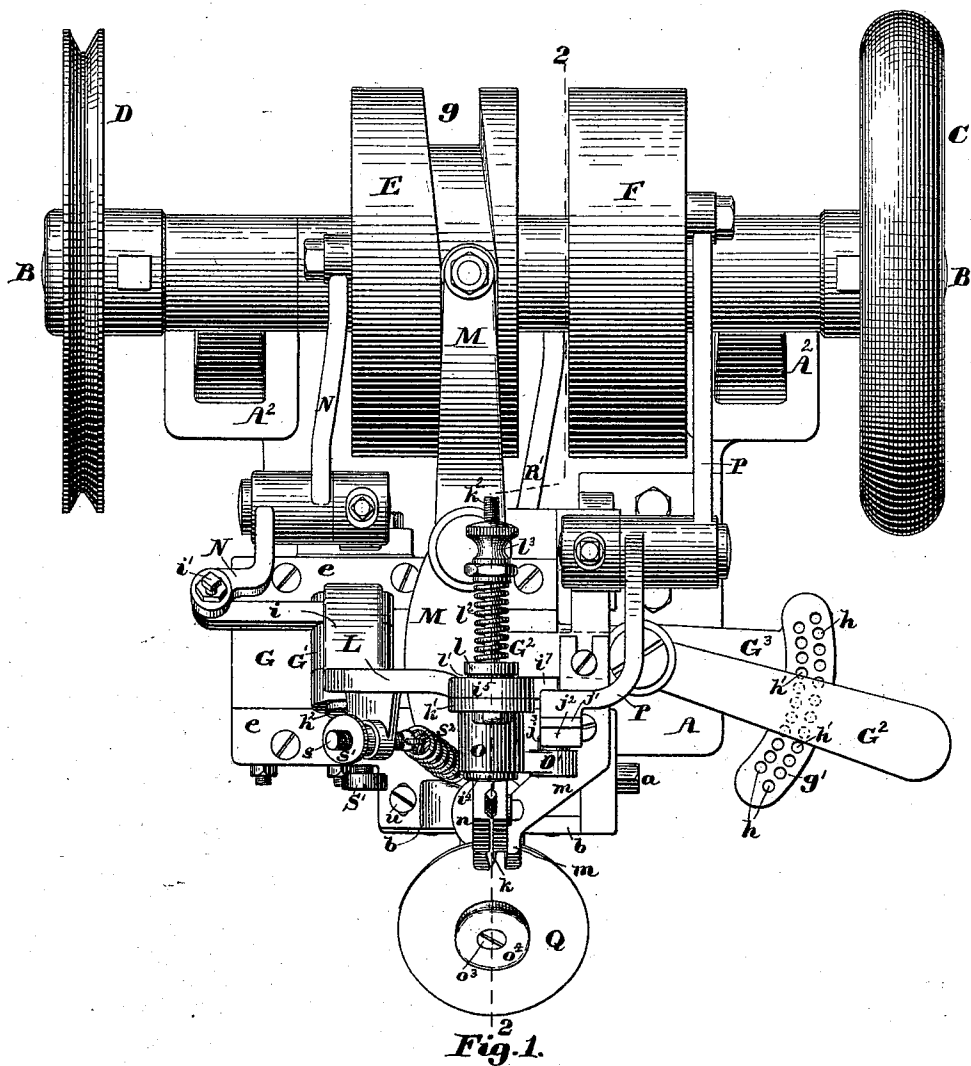
(No Model.)

5 Sheets—Sheet 1.

J. B. HADAWAY.  
STITCH SEPARATING AND INDENTING MACHINE.

No. 543,012.

Patented July 23, 1895.



Witnesses:

Walter E. Lombard.  
Hudson F. Fletcher.

Inventor:

John B. Hadaway,  
by N. D. Lombard  
Attorney.

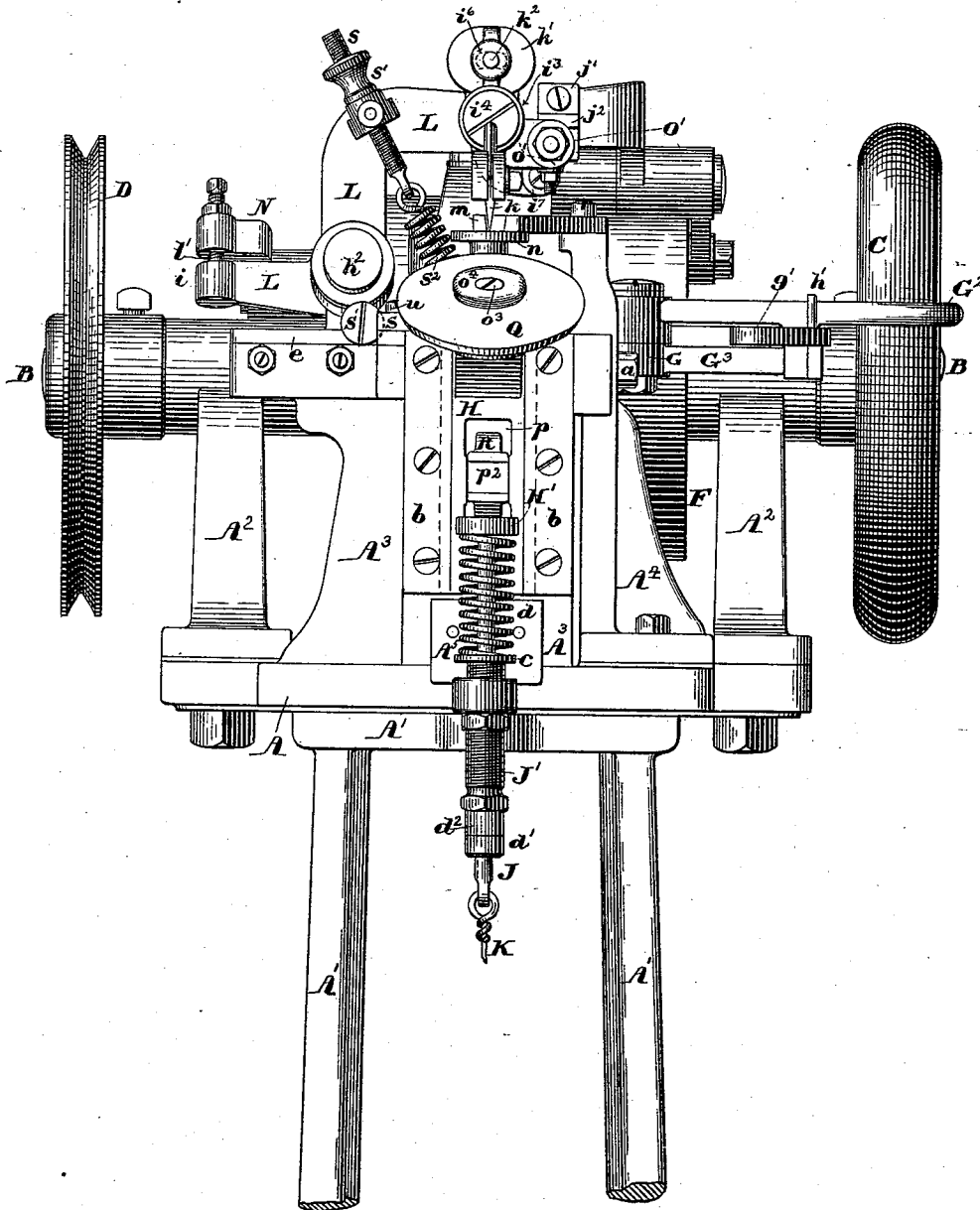
(No Model.)

5 Sheets—Sheet 2.

J. B. HADAWAY.  
STITCH SEPARATING AND INDENTING MACHINE.

No. 543,012.

Patented July 23, 1895.



*Fig. 2.*

*Witnesses:*

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*A. Theodore Fletcher*

*Inventor:*

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*Attorney.*



(No Model.)

5 Sheets—Sheet 4.

J. B. HADAWAY.  
STITCH SEPARATING AND INDENTING MACHINE.

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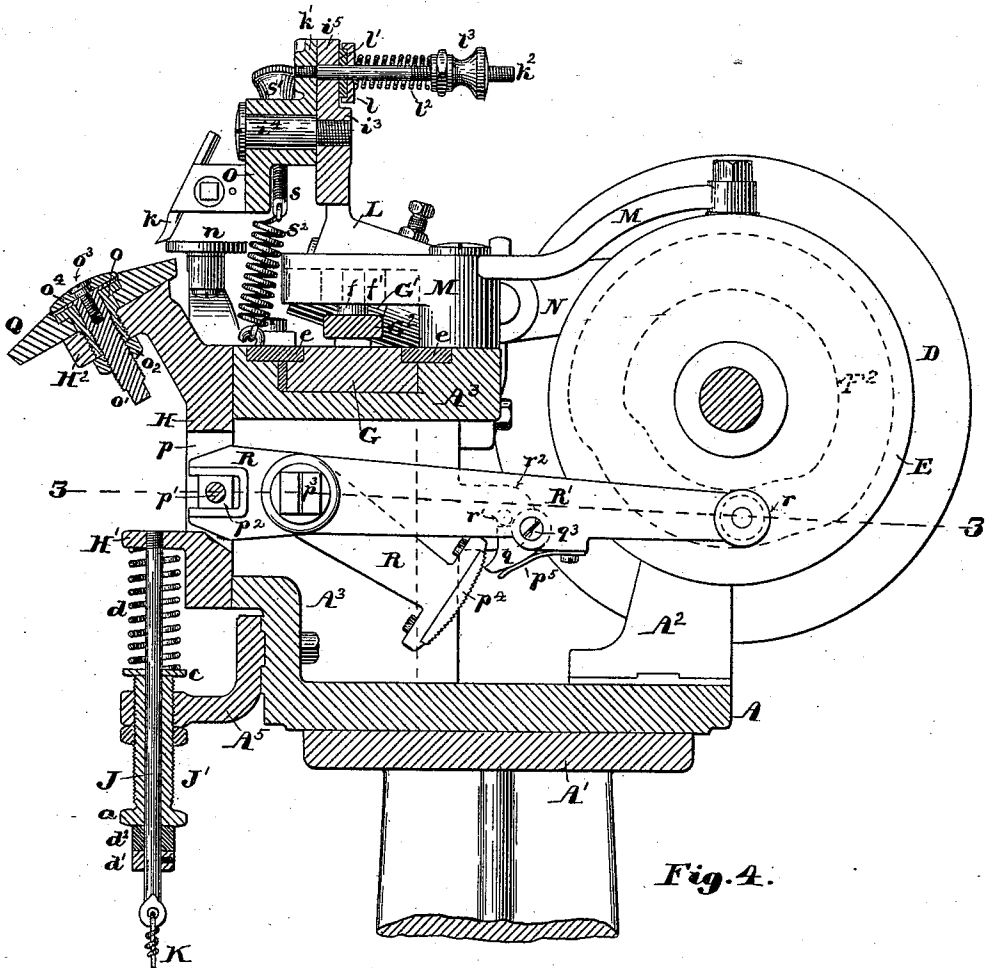


Fig. 4.

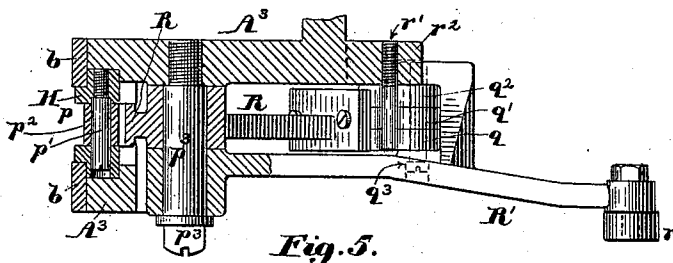


Fig. 5.

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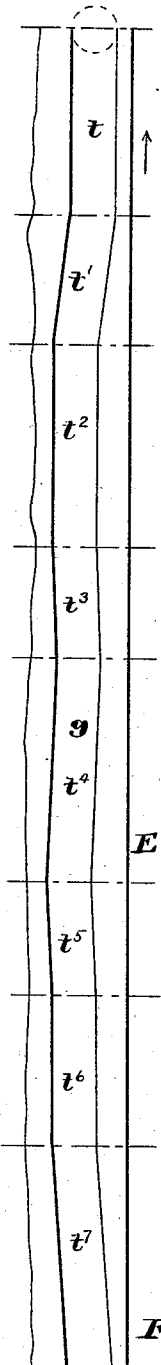


Fig. 6.

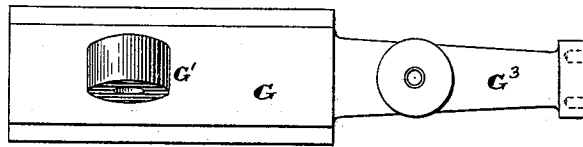


Fig. 7.

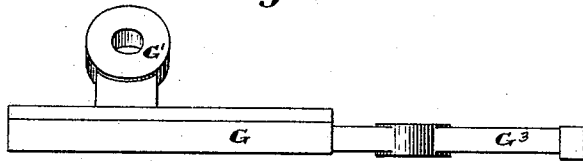


Fig. 8.

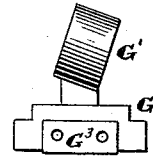


Fig. 9.

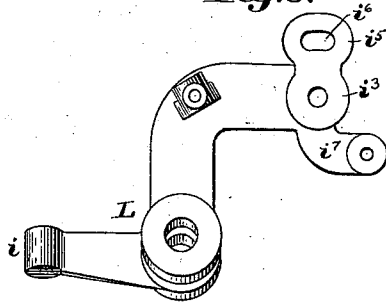


Fig. 11.

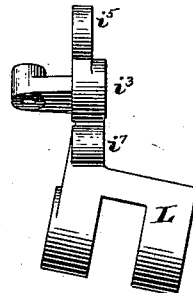


Fig. 12.

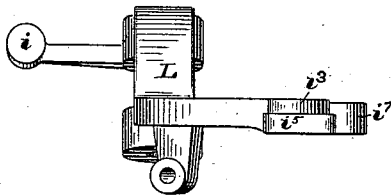


Fig. 10.

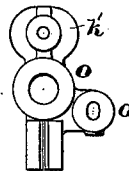


Fig. 15.

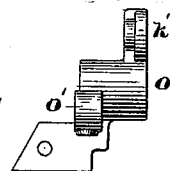


Fig. 14.

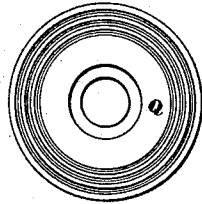


Fig. 18.



Fig. 19.

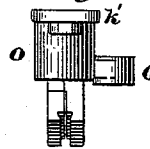


Fig. 13.

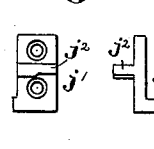


Fig. 16.

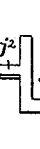


Fig. 17.

Witnesses:

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# UNITED STATES PATENT OFFICE.

JOHN B. HADAWAY, OF BROCKTON, MASSACHUSETTS.

## STITCH-SEPARATING AND INDENTING MACHINE.

SPECIFICATION forming part of Letters Patent No. 543,012, dated July 23, 1895.

Application filed February 26, 1895. Serial No. 539,751. (No model.)

*To all whom it may concern:*

Be it known that I, JOHN B. HADAWAY, of Brockton, in the county of Plymouth and State of Massachusetts, have invented certain new and useful Improvements in Stitch-Separating and Indenting Machines, of which the following, taken in connection with the accompanying drawings, is a specification.

My invention relates to stitch-separating and indenting machines and is an improvement upon the inventions described in Letters Patent No. 521,978, granted to me June 26, 1894, and in another application of mine filed September 29, 1894, Serial No. 524,533; and it consists in certain novel features of construction, arrangement, and combination of parts, which will be readily understood by reference to the description of the accompanying drawings, and to the claims hereto appended and in which my invention is clearly pointed out.

Figure 1 of the drawings is a plan of a machine embodying my invention. Fig. 2 is a front elevation. Fig. 3 is a side elevation looking toward the left of Figs. 1 and 2. Fig. 4 is a vertical section on line 2 2 on Fig. 1 and showing the parts at the left of said line in elevation. Fig. 5 is a partial horizontal section on line 3 3 on Fig. 4. Fig. 6 is a development on a flat plane of the periphery of the cam for operating the feed-lever. Figs. 7, 8, and 9 are respectively a plan, a side elevation, and an end view of the feed-slide. Figs. 10, 11, and 12 are respectively a plan, a front elevation, and a side elevation of the tool-stock. Figs. 13, 14, and 15 are respectively a plan, a side elevation, and a front view of the tool-stock carrying lever. Figs. 16 and 17 are respectively a front elevation and a side elevation of the contact-plate secured to the front end of the presser-lever, and Figs. 18 and 19 are respectively a plan and a section of the main disk of the tower work-support.

The object of my present invention is to provide for greater variations in the length of stitches, both above and below the intended or desired length, and render the machine capable of selecting the spaces between such widely-varying stitches with even greater certainty than either of the machines hereinbefore referred to, and to this end I construct the machine as illustrated in the accompany-

ing drawings, in which A is the bed of the machine-head, preferably mounted upon a column A', only a small part of the upper portion of which is shown in the drawings. 55

The bed A has secured thereto the upwardly-projecting stands A<sup>2</sup> A<sup>2</sup>, in bearings in which is mounted the shaft B, having mounted upon one end thereof the hand-wheel C, upon its other end the grooved driving-wheel D, and between its two bearings the cam-wheels E and F, as shown. The bed A is also provided with the upwardly-projecting stand A<sup>3</sup>, formed preferably in one piece with said bed and having formed in its upper end a groove to receive the reciprocating feed-slide G and in its front side a vertical groove or bearing for the vertically-movable bar H, and said bed also has secured to its upper surface the stand A<sup>4</sup>, which extends upward therefrom and is provided with a forward and downward arm, which is secured by the bolt *a* to the stand A<sup>3</sup>, as shown in Figs. 1, 2, and 3. 60 65 70

The vertically-movable bar H is held in its bearing in the stand A<sup>3</sup> by the removable cap-plates *b b* and has secured thereto the pendent rod J, which passes through the tubular adjusting-screw J', fitted to a threaded bearing in the stand A<sup>5</sup>, secured to the front of the stand A<sup>3</sup>, as shown in Figs. 2, 3, and 4. 75 80

The rod J is surrounded by the spring *d* and washer or collar *c* between the upper end of the adjusting-screw J' and the ear H', projecting from the front of the bar H, which tends to move the bar H upward when the operator's foot is removed from the treadle, (not shown,) which is connected by the link or connecting-rod K to the lower end of said rod J for the purpose of depressing the bar H and the work-support carried thereby to facilitate the placing and removal of the work. 85 90

The rod J has adjustably secured thereon, near its lower end, the collar *d'*, and has fitted thereon, between said collar and the lower end of the screw J', the rubber cushion *d*<sup>2</sup>, as shown. 95

The horizontally-reciprocating feed-slide G is secured in its bearing by the cap-plates *ee* and has formed thereon the inclined upwardly-projecting ear G', to which is pivoted the tool-stock-carrying lever L, as shown. 100

So far the machine is constructed and arranged substantially the same as the machine

described in my before-cited Letters Patent, except that the stands  $A^2$ ,  $A^4$ , and  $A^5$  are detachably secured to the bed  $A$  instead of being formed in one piece therewith.

5 The slide  $G$  has pivoted thereto the hand-lever  $G^2$ , carrying at its inner end the pin  $f$ , upon which is mounted the rectangular block  $f'$ , which is fitted to and movable in a slot in the under side of the short arm of the feed-  
10 lever  $M$ , the opposite arm of which lever carries a cam-truck, which fits into and is acted upon by the path  $g$ , formed in the periphery of the cam-wheel  $E$ , to vibrate said lever and reciprocate the feed-slide  $G$  a greater or less  
15 distance, according to the position of the block  $f'$  relative to the fulcrum of said lever  $M$ .

The slide  $G$  is provided at one end with the extension  $G^3$ , to the outer end of which is secured the segmental plate  $g'$ , in which are  
20 formed two series of holes  $h$  to receive stop-pins  $h'$  to determine the position of and lock the hand-lever, substantially as in another application of mine, filed September 25, 1894, Serial No. 524,018.

25 The lever  $L$  is pivoted at  $h^2$  to the ear  $G'$  and is provided with the horizontal arm  $i$ , the movable end of which is engaged by the adjustable contact-pin  $i'$ , set in the front end of the trip-lever  $N$ , the opposite end of which is acted  
30 upon by a cam-path  $i^2$  in the outside vertical face of the cam-wheel  $E$ , which path is shown only in dotted lines in Fig. 3, for the purpose of raising the separating and indenting tool from contact with the work at the proper  
35 time. The other arm of the lever  $L$  extends upward and then horizontally and has formed at its end the hub  $i^3$ , in the center of which is set the pin  $i^4$ , upon which is mounted the tool-stock  $O$ , as shown.

40 The lever  $L$  has an oval ear or upward extension  $i^5$  just above the hub  $i^3$ , which has a curved slot  $i^6$  cut through its center, the front faces of the hub  $i^3$  and ear  $i^5$  being in the same vertical plane and serving as a frictional surface to hold the tool-stock  $O$ , and said lever  
45 is also provided with the extension  $i^7$ , in the hub of which is set a stud carrying a roll  $j$ , upon which the lower end of the steel-plate  $j'$ , secured to the front end of the presser-lever  $P$ , acts to depress the indenting-tool when  
50 the point of said tool has been properly located between two stitches. The rear end of the lever  $P$  carries a truck which is fitted to and acted upon by the path  $F'$  in the side of  
55 the cam-wheel  $F$ , as shown in Figs. 1 and 3.

The tool-stock  $O$  has its lower portion constructed to hold the tool  $k$ , substantially as in my former patent, and is pivoted to the hub  
60  $i^3$  by the pin  $i^4$  in substantially the same manner as in said patent; but the upper portion of said stock is of different construction in that it is provided with a flat pad-like ear  
65  $k'$ , fitted to form frictional contact with the ear  $i^5$  of the lever  $L$  and has screwed into its center, through the slot  $i^6$  of said ear  $i^5$ , the rearwardly-projecting rod  $k^2$ , upon which is fitted, at the rear of said ear  $i^5$ , the cham-

bered metal washer  $l$ , in which is set a leather disk  $l'$ , which is pressed against said ear by the spring  $l^2$ , the tension of which is regulated  
70 by the adjustable thumb-nut  $l^3$ , as shown in Figs. 1, 3, and 4.

The stand  $A^4$  has adjustably secured to its upper end the upper work support or table  $m$ , substantially as in my prior patent before  
75 cited, and  $n$  is a gage-wheel against which the edge of the shoe-sole bears while the operation of separating or pricking up the stitches is being performed.

$Q$  is the lower work-support in the form of  
80 a frusto-conical disk, mounted in an inclined position upon and revoluble about the tubular threaded stud  $o$ , set in the inclined ear  $H^2$ , projecting from the upper end of the bar  $H$  and having a plurality of annular grooves  
85 formed in its upper surface, as shown in Figs. 18 and 19. The tubular stud or bushing  $o$  has a female screw-thread formed therein and has fitted thereto the bolt  $o'$ , having its lower end  
90 squared to receive a wrench, by which it may be adjusted up or down therein, and is provided with the clamping-nut  $o^2$ , by which it may be clamped in the desired adjusted position.

The upper end of the bolt  $o'$  has set therein  
95 the screw-stud  $o^3$ , upon which is mounted, so as to be revoluble thereon, the supplementary or auxiliary work-support  $o^4$ , by adjusting which to a greater or less height the angle of the tread-surface of the shoe-sole to be acted  
100 upon may be varied in order to present the work to the separating and indenting tool in the proper position to produce the desired effect thereon, according to the varying shapes of the upper surface of the sole edge in dif-  
105 ferent classes of work. This construction and arrangement of the lower work-support is an important feature of my present invention.

The bar  $H$  has a slot  $p$  cut through it and has set therein, so as to span said slot, a pin  
110  $p'$ , upon which is mounted the block  $p^2$ , fitted to and engaged by the forked forward end of the locking-lever  $R$ , pivoted at  $p^3$  to the stand  $A^3$ , and having secured to its rear end the steel segmental ratchet-plate  $p^4$ , with which  
115 one of the pawls  $q$ ,  $q'$ , and  $q^2$  engages to lock said lever and the work-support in the position to clamp the work between the upper and lower work-supports.

The pawls  $q$ ,  $q'$ , and  $q^2$  are mounted upon a  
120 common fulcrum-pin  $q^3$ , set in the lever  $R'$ , fulcrumed at its front end upon the stud  $p^3$  and carrying at its rear end the truck  $r$ , which is fitted to and acted upon by the path  $F^2$ , formed upon the inner face of the cam-wheel  
125  $F$ , said path being shown only in dotted lines in Fig. 4. By this construction and arrangement of the locking mechanism I am enabled to obtain a finer adjustment of the lower  
130 work-support with an increased leverage and a coarser and consequently stronger tooth on the ratchet-plate, which is a very important advantage.

The pawls  $q$ ,  $q'$ , and  $q^2$  vary in length a frac-

tion of the length of a tooth of the ratchet-plate  $p^4$ , and they are pressed toward the ratchet-plate  $p^4$  by the springs  $p^5$  and are disengaged therefrom by coming in contact with the pin  $r'$ , set in the ear  $p^2$ , projecting to the rear from the stand  $A^3$ , all as shown in Figs. 4 and 5.

The lever  $L$  has set in an ear projecting therefrom the threaded stud  $s$ , provided with the check-nut  $s'$ , and has connected to its lower end one end of the spring  $s^2$ , the opposite end of which is connected to a fixed part of the machine, substantially as in my prior patent before cited.

The plate  $j'$ , secured to the front end of the presser-lever  $P$ , is provided near the middle of its height with the forwardly-projecting lip or lug  $j^3$ , having a curved or cam-shaped under surface, the full or thick part of said lug acting as a stop to limit the upward movement of the truck  $j^3$ , mounted on a stud set in the laterally-projecting arm  $O'$  of the tool-stock  $O$ , and thus maintain the indenting-tool in a substantially-perpendicular position when the front end of the presser-lever is in its depressed position and the indenting-tool is forced into the work.

The path  $g$  of the cam-wheel  $E$  is of a peculiar construction for the purpose of imparting to the feed-slide  $G$  and the parts carried thereby a double reciprocation of varying lengths of movement, in order to the more accurately locate the spaces between the stitches, when the variation is extreme, both above and below the regulation length. The formation of said path is as follows: Assuming that the cam-shaft revolves in the direction indicated by the arrow on Fig. 3, and that the cam is started to rotate from the position shown in Fig. 1 and indicated by the center of the stud upon which the cam-truck carried by the rear end of said lever is mounted, the first fifty degrees of the rotation of said cam is a standstill or rest  $t^1$ , so far as concerns any movement of the feed-lever. The next thirty-five degrees is a throw  $t^2$ , toward the left of Fig. 1, of three-fourths of the full vibration of the rear end of said lever. The next fifty-five degrees is a rest  $t^2$ . The next thirty degrees is a throw  $t^3$ , toward the right, equal to one-fourth of the full vibration of said lever. The next sixty degrees is a throw  $t^4$ , toward the left, equal to one-half the entire vibration of the rear end of said lever, and thus completing the movement of said lever in that direction and the travel of the slide  $G$  toward the right. The next thirty degrees is a throw  $t^5$ , toward the right, of a distance equal to one-fourth of the entire vibration of the rear end of said lever. The next forty degrees is a rest  $t^6$ , and the remaining sixty degrees is a throw  $t^7$  of the other three-quarters of the movement in the same direction, when the feed-lever and feed-slide will be in the same position as at starting, and a single revolution of the cam will have been completed. This construction of the path  $g$  of the cam-wheel

$E$  is clearly illustrated in Fig. 6 of the drawings.

The edge-gage wheel  $n$  is mounted upon the stand  $S$ , secured to the top of the stand  $A^3$  by means of the bolts  $u u$ , which pass through slotted holes in the foot of said stand, so that said stand may be adjusted toward or from the front of the machine to a limited extent.

$S'$  is an adjusting-screw threaded in a lug or ear on the cap-plate  $e$  and engaging by its head with a notch in the edge of the foot of said stand, as shown in Figs. 1 and 2, so that by slackening the bolts  $u u$  and turning the screw  $S'$  in or out the stand  $S$  may be easily adjusted to the desired point, when the bolts  $u u$  are again screwed down to clamp said stand firmly in position.

The operation of my invention is as follows: The parts being in the positions shown in the general views of the drawings—that is, with the front end of the trip-lever raised to its uppermost position, the front end of the presser-lever in its lowermost position, the rear end of the lock-lever in its highest position, with its pawls thrown out of engagement with the teeth of the ratchet by coming in contact with the pin  $r'$ , and the feed-slide at the extreme of its movement toward the left—if the cam-shaft be revolved in the direction indicated by the arrow on Fig. 3 during the first fifteen degrees of movement of said shaft the several parts remain at rest to allow time to turn or swing the shoe, so as to maintain the shoe at all times with the portion of the sole for the time being to be acted upon parallel with the line of movement of the feed-slide. The next thirty-five degrees of rotation of said shaft causes the front end of the presser-lever to be raised to its extreme height, depresses the rear end of the pawl-lever  $R'$ , causing the pawl to engage the ratchet-teeth of the lever  $R$  and raise and lock the lower work-support and moves the front end of the trip-lever  $N$  to its lowermost position at a speed corresponding to the upward movement of the front end of the presser-lever, so that the truck  $j^3$ , carried by the tool-stock, will be maintained in contact with or in close proximity to the under surface of the thicker part of the lug  $j^3$  on the presser-lever, and the truck  $j$  is in contact with the lower end of the plate  $j'$ . The next thirty-five degrees of rotation causes the feed-slide and the parts carried thereby to be moved toward the right a distance equal to the length of the regulation or standard stitch for the job in hand, which movement is equal to three-fourths of the entire movement of said slide in that direction, the separating or indenting tool having been previously raised out of the work and the work having been clamped between the upper and lower work-supports. During the next five degrees of rotation the front end of the trip-lever  $N$  is raised to its extreme upward position, thereby allowing the tension of the springs  $s^2$  to move the long arm of the lever  $L$

and the tool-stock and tool carried thereby downward, so that the point of the tool will enter the space between two stitches if the stitch just passed over by said tool is of the standard length; but if said stitch is shorter or longer than the standard length the point of the tool will rest lightly upon the stitch. During the next thirty degrees of rotation the feed-slide is moved toward the left a distance equal to one-third of the length of the standard stitch or one-quarter of the full movement of said slide in one direction, and if the point of the separating-tool is between two stitches said tool and its stock will assume a slightly-inclined position toward the left, the resistance to the movement of the point of said tool presented by the raised stitch overcoming the friction between the pad  $k'$  and the ear  $v^5$  caused by the tension of the spring  $l^2$ ; but if the stitch passed over in the movement toward the right is less than the standard length the point of the tool when it descends will rest upon the second stitch from the starting-point, and when the feed-slide is fed toward the left, as above described, the point of said tool will drop into the space between the two stitches when it arrives at the proper point. During the next sixty degrees of rotation the feed-slide is moved toward the right a distance equal to two-thirds the length of the standard stitch or one-half the whole movement of said slide toward the right and completing its movement in that direction, during which movement the separating-tool will assume a position inclined toward the right if its point has previously dropped into a space between two stitches; but if the stitch passed over by said tool in its first movement toward the right and the point of said tool when it descended rested upon said long stitch this last movement toward the right would cause said tool to drop into the space between the end of the stitch and the one next to the right thereof. During the next thirty degrees of rotation the feed-slide and the tool-stock-carrying lever L will be moved toward the left a distance equal to one-third the length of the standard stitch, or one-quarter its complete stroke in one direction, thus completing the test for the location of the space between the two stitches, and if the stitch previously passed over by the tool in moving toward the right is longer than the standard stitch the separating-tool will be slightly inclined toward the left when the last-mentioned movement of the feed-slide toward the left is completed, the truck  $j^3$  being then beneath the cut-away or thinner portion of the lug  $j^2$  of the plate  $j'$ , so that the tool-stock O may be moved about its pivot-pin  $v^4$  by reason of the resistance to the movement of the point or working end of the separating-tool presented by the stitch in advance thereof and overcoming the friction between the pad  $k'$  of the tool-stock and the ear  $v^5$  of the lever L. During the last one hundred and twenty degrees of the rotation the presser-lever will have had

its front end depressed one-half of its entire stroke, and in the next fifteen degrees of the rotation the front end of the presser-lever will complete its downward stroke and force the separating-tool into the work to clearly define the space between the two stitches and indent the sole or welt by the action of the lower end of the plate  $j'$  upon the truck  $j$ , carried by the lever L, without the lug  $j^2$  coming in contact with the truck  $j^3$ . In the next twenty-five degrees of rotation the rear end of the lever R' is raised to the extreme of its upward movement, thereby disengaging the pawls from the ratchet-teeth on the lever R and unlocking the lower work-support, and in the remaining sixty degrees of the rotation the feed-slide and the parts carried thereby are moved toward the left a distance equal to the length of the standard stitch or three-quarters its entire stroke in one direction, and feeds the work a distance equal to the length of the stitch that is in advance of the point of the separating-tool, whether it be of the standard length or longer or shorter than the standard, thus bringing all of the parts of the machine into the same positions they occupied at the commencement of the operation, and a complete cycle of operations will have been completed and the shoe advanced one stitch, which operations may be repeated at each revolution of the cam-shaft, it being understood that before commencing the operations above described the operator had placed the sewed shoe in position between the work-supports Q and M, with the tread-surface of the sole resting upon the work-supports Q and  $o^4$ . The tool-stock O is pressed against the lever L by the tension of the spring  $l^2$ , so as to cause friction sufficient between said parts to hold said tool-stock in the same position relative to said lever until moved therefrom by force applied to the operating end of the tool or to the truck  $j^3$ , carried by the arm O', to move said stock about its pivotal connection to said lever.

What I claim as new, and desire to secure by Letters Patent of the United States, is—

1. In a machine for separating or "pricking up" the stitches on boot and shoe soles the combination of a work support; a vertically and laterally movable separator for locating the intervals between the stitches whether of uniform or varying lengths; means for imparting to said tool a plurality of lateral movements to locate the interval between the stitches, and another lateral movement to feed the work; and means for frictionally holding said separator in the position to which it is vibrated in either direction, till moved by a resistance applied to its working end.

2. In a machine for separating the stitches on boot and shoe soles the combination of a work support; a vertically and laterally movable separator for locating the intervals between the stitches whether of uniform or varying lengths; means for imparting to said tool a plurality of lateral vibratory movements to locate the intervals between the

stitches, and another lateral movement to feed the work; means for frictionally holding said separator in the position to which it is vibrated, in either direction, till moved from said position by a resistance applied to its working end and means for forcing said separator between the stitches when the point of said separator has located itself between two stitches.

3. In a machine for separating the stitches on a boot or shoe sole, the combination of a work support; a horizontally reciprocating slide; a separating tool carried by said slide and movable vertically relative thereto; a cylinder cam provided with the path  $g$  having the throws and standstills as set forth; a cam lever operated by said path and connected to said slide, whereby said separator is moved toward the right a distance equal to the length of the standard stitch, then toward the left a distance equal to one third of the length of said standard stitch, then toward the right a distance equal to two thirds the length of the standard stitch and then toward the left a distance equal to one third the length of said standard stitch to locate the interval between and then toward the left a distance equal to the length of the standard stitch to feed the work; means for frictionally holding said separator in the position to which it is vibrated, in either direction, till moved from said position by a resistance applied to its working end; means for depressing said separator, to cause it to rest lightly upon the work, after the first movement thereof toward the right; and means for forcing said separator between the stitch, when its point has been located between two stitches, and just preceding the movement toward the left for feeding the work.

4. In a machine for separating the stitches on boot and shoe soles the combination of the feed slide; the tool stock carrying lever provided with the truck  $j$ ; the tool stock provided with the arm  $O'$  and the truck  $j^2$ ; the separating tool  $k$ ; a spring for depressing the tool stock; a lever connected at one end to said slide; the cylinder-cam path  $g$  having the throws and rests as set forth and arranged to act upon and vibrate said lever; a lever and cam for raising said tool stock and tool; the lever  $P$  provided with the plate  $j$  on its front end with the cam-shaped lug  $j^2$  constructed and arranged to act upon the trucks  $j$  and  $j^2$  as set forth; and a cam for vibrating said lever  $P$ .

5. In a machine for separating the stitches on boot and shoe soles the combination of a

horizontally reciprocating slide; a vibrating lever carried by said slide; a tool stock pivoted to said lever, means for frictionally holding said tool stock in the position to which it is vibrated, in either direction, till moved from said position by a resistance applied to its working end; a separating tool for locating the intervals between the stitches, whether of uniform or varying lengths, carried by said stock.

6. In a machine for separating the stitches on boot and shoe soles, the combination of a horizontally reciprocating slide; the lever  $L$  pivoted thereto and provided with the slotted ear  $i^2$ ; the tool stock  $O$  pivoted thereto and carrying the separating tool  $k$ , and provided with the friction pad or upward extension  $k'$ ; the rod  $k^2$  set in said pad and extending through the slotted ear  $i^2$  of the lever  $L$ ; the frictional washer  $l, l'$ ; the spring  $l^2$ ; and the thumb nut  $l^3$ .

7. In a machine for separating the stitches on boot and shoe soles the combination of a revoluble main lower work support having a frusto-conical upper surface provided with a plurality of annular grooves formed in said conical upper surface near its peripheral edge, said support being mounted upon an inclined axis; a fixed upper work support to bear upon the welt of the boot or shoe; and a gage to bear against the sole edge.

8. In a machine for separating the stitches on boot and shoe soles the combination of a main lower work support as  $Q$  having a frusto-conical upper surface and mounted upon an inclined axis; and an auxiliary support as  $O^4$  revolubly mounted upon a bearing in axial line with the main support and adjustable to and from said main support.

9. The combination in a stitch separating machine of a vertically movable bar having an outwardly and downwardly projecting arm or ear; a tubular stud set in said inclined ear; a frusto conical disk mounted upon and revoluble about said tubular stud; a threaded bolt fitted to and adjustable endwise in said tubular stud; a screw stud set in the upper end of said bolt; and an auxiliary supporting disk mounted upon and revoluble about said screw stud.

In testimony whereof I have signed my name to this specification, in the presence of two subscribing witnesses, on this 9th day of February, A. D. 1895.

JOHN B. HADAWAY.

Witnesses:

N. C. LOMBARD,  
WALTER E. LOMBARD.