

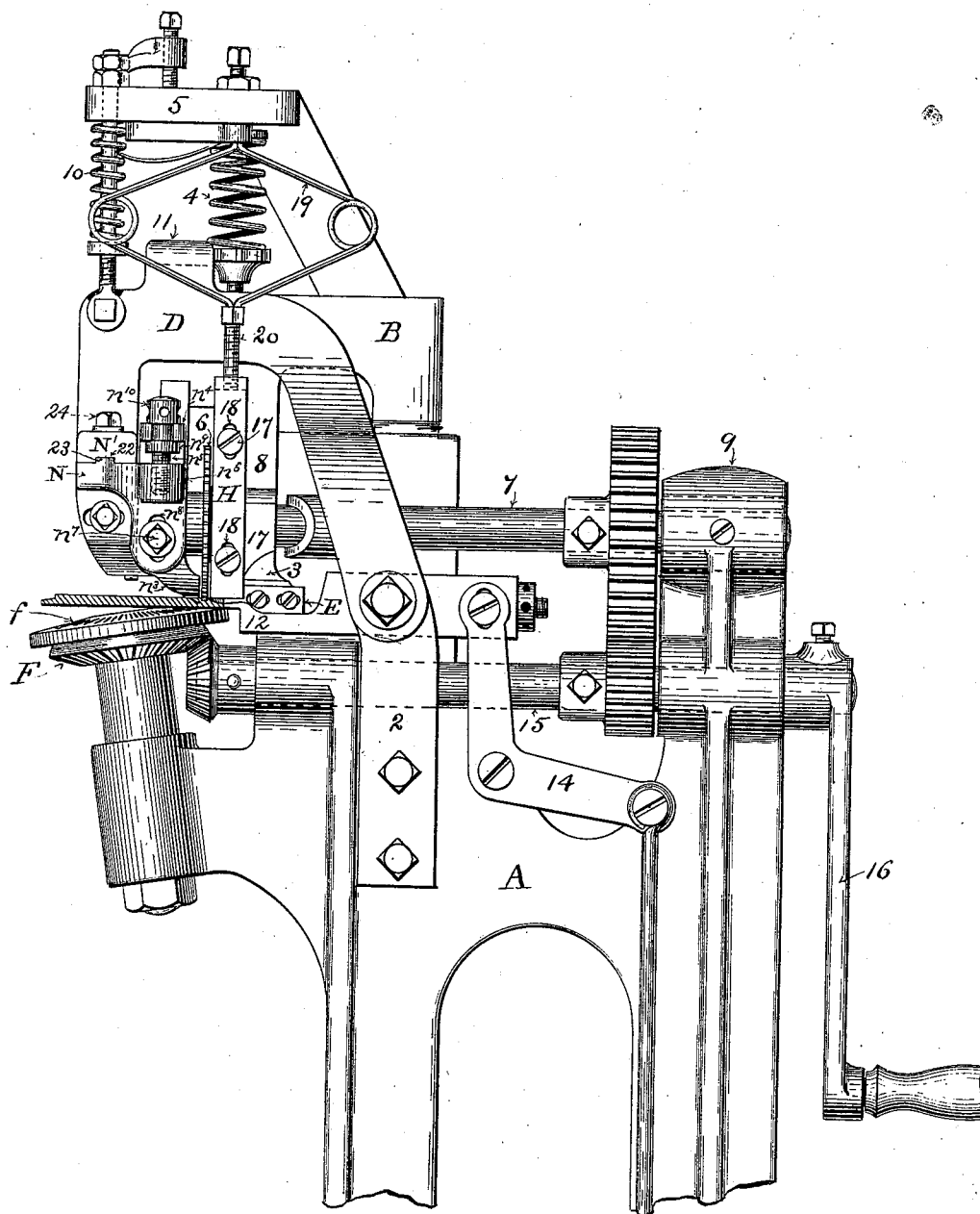
(No Model.)

4 Sheets—Sheet 1.

F. E. BECKMAN.
SOLE CHANNELING MACHINE.

No. 550,402.

Patented Nov. 26, 1895.



WITNESSES:

Chas. L. Gooding
John F. Nelson

Fig. 1.

INVENTOR:

Frank E. Beckman
By his Attorney
Benjamin Phillips

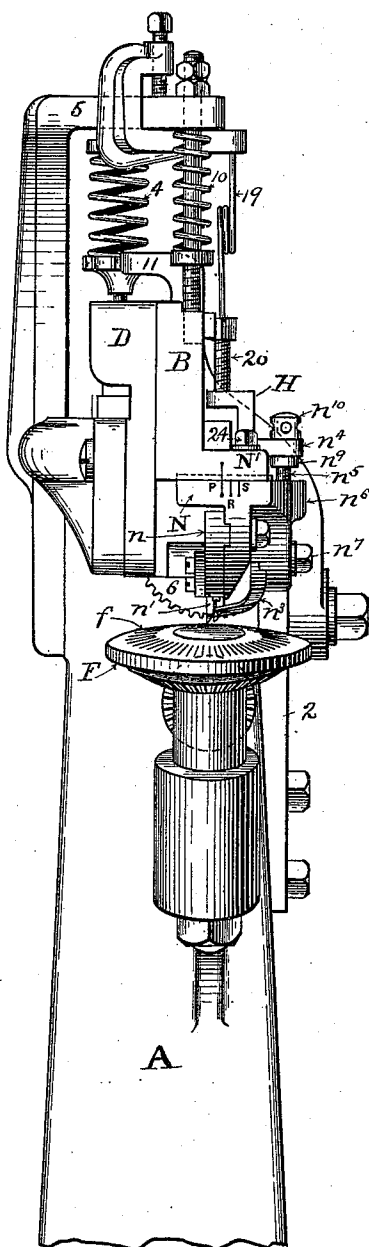
(No Model.)

4 Sheets—Sheet 2.

F. E. BECKMAN.
SOLE CHANNELING MACHINE.

No. 550,402.

Patented Nov. 26, 1895.



WITNESSES:

Chas. L. Gooding.
John F. Nelson

Fig. 2.

INVENTOR:

Frank E. Beckman
By his Attorney
Benjamin Phillips

(No Model.)

4 Sheets—Sheet 3.

F. E. BECKMAN.
SOLE CHANNELING MACHINE.

No. 550,402.

Patented Nov. 26, 1895.

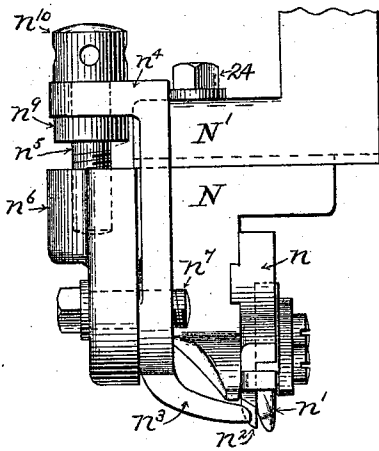


Fig. 3.

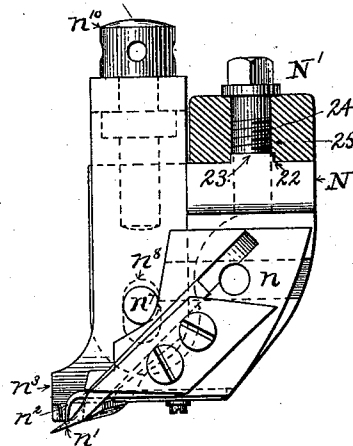


Fig. 4.

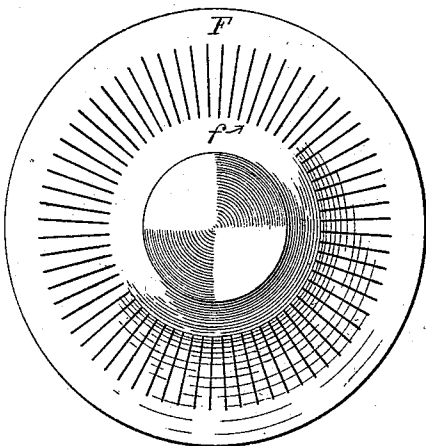


Fig. 6.

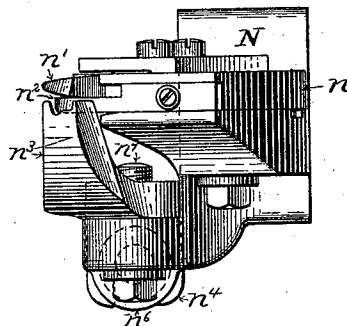


Fig. 5.

WITNESSES:

Chas. V. Fording
John F. Nelson

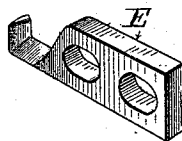


Fig. 7.

INVENTOR:

Frank E. Beckman
By his Attorney
Benjamin Phillips

(No Model.)

4 Sheets—Sheet 4.

F. E. BECKMAN.
SOLE CHANNELING MACHINE.

No. 550,402.

Patented Nov. 26, 1895.

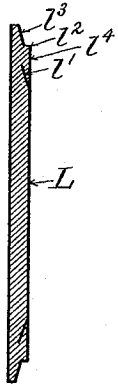


Fig. 11.

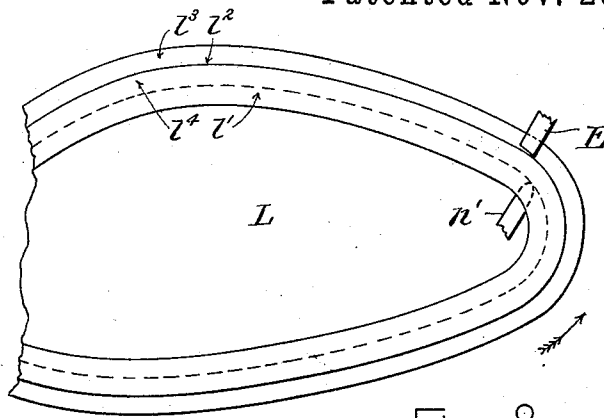


Fig. 8.

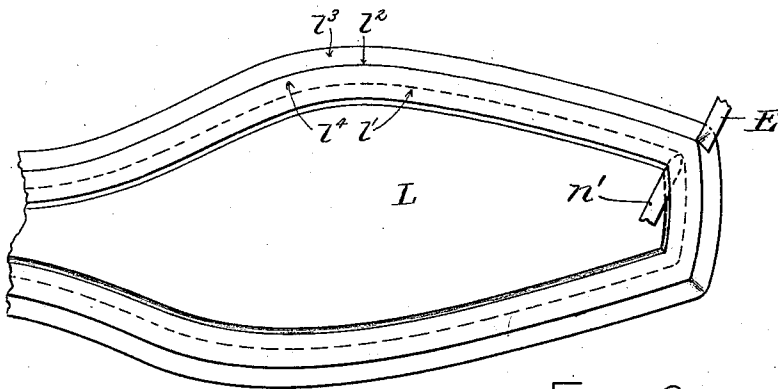


Fig. 9.

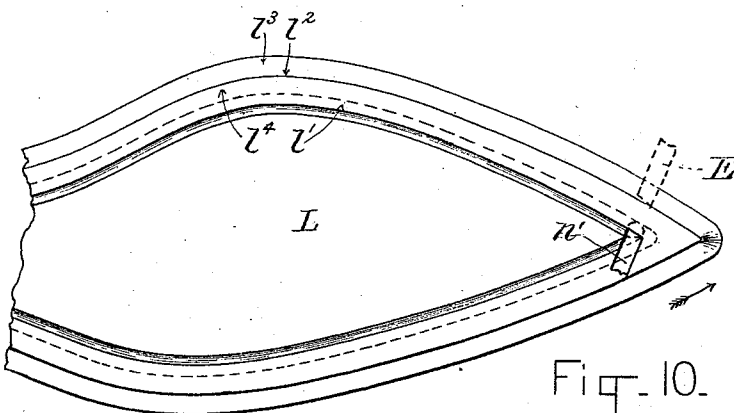


Fig. 10.

WITNESSES:

Chas. L. Fording,
John F. Nelson

INVENTOR:

Frank E. Beckman
By his Attor
Benjamin Phillips

UNITED STATES PATENT OFFICE.

FRANK E. BECKMAN, OF LYNN, MASSACHUSETTS.

SOLE-CHANNELING MACHINE.

SPECIFICATION forming part of Letters Patent No. 550,402, dated November 26, 1895.

Application filed April 17, 1895. Serial No. 546,036. (No model.)

To all whom it may concern:

Be it known that I, FRANK E. BECKMAN, a citizen of the United States, and a resident of Lynn, in the county of Essex and Commonwealth of Massachusetts, have invented a new and useful Improvement in Sole-Channeling Machines, of which the following, taken in connection with the accompanying drawings, is a specification.

10 The invention relates to improvements in machines of the above class, and it is embodied in the structure hereinafter described and shown.

15 The object of this invention is to increase the efficiency of machines of this class and to facilitate their operation upon soles of different shapes, as hereinafter more fully described.

20 This invention is illustrated in the accompanying drawings, in which—

Figure 1 is a side elevation of a machine embodying this invention. Fig. 2 is a front elevation of same; Fig. 3, a rear elevation of an improved channel-knife carrier embodying mechanism for lateral adjustment of the channel-knife. Figs. 4 and 5 are respectively a reverse side elevation and bottom plan view of same. Fig. 6 is a detached view of corrugated work-table. Fig. 7 is a perspective view of shoulder-knife. Figs. 8, 9, and 10 are bottom plan views of different shapes of sole, showing diagrammatically the relative lateral position of the knives as set for operating thereon. Fig. 11 is a transverse section of a sole, showing the relative position of the channel and shoulder.

Similar letters and figures of reference refer to similar parts throughout the several views.

40 Referring to the drawings, A represents a frame suitable to support the working parts of the machine. Upon the frame A is mounted the vertically-movable cross-head B, the vertical movement of which is controlled by a suitably-placed spring (not shown) in the usual manner. Also mounted upon the frame A is the vertical swinging bent lever D, commonly called the "channel-knife" lever. As shown in the drawings, the channel-knife lever D is pivotally secured to the bracket 2 on the frame A and extends upward, forward, and downward to bring the channel-knife,

which is supported thereby, into the proper relative position with respect to associated parts. The vertical movement of channel-lever D is controlled by a spring 10, arranged to bear upon a bracket 5, rigidly secured to the frame A, and by a lug 11, which projects over the cross-head B and is arranged to come in contact therewith.

60 In the cross-head B is mounted the shoulder-knife carrier 3, in which is secured the shoulder-knife E, and which has a limited vertical motion independently of the cross-head B, controlled by the spring 4, which bears upon the bracket 5 on frame A, and by a treadle and suitable connections. (Not shown.)

The reference-numeral 6 represents a toothed feed-wheel of the type usually found in machines of this class, and which is mounted upon and rotated by the shaft 7, which has a bearing adjacent to the wheel 6 in an arm 8, depending from the cross-head B, and a bearing remote from the wheel 6, as shown at 9, in the frame A, provision being made in the bearing 9 for a slight vertically-swinging movement of the shaft 7.

The edge-guide is shown at 12 and is longitudinally adjustable, being controlled by a suitable foot-treadle by means of the bell-lever 14.

The reference-numeral 15 represents the driving-shaft, which is geared to the work-table hereinafter described, and also to the shaft 7, which rotates the feed-wheel 6. The shaft 15 is rotated by the usual operating-lever 16, and is provided with suitable bearings in the frame A.

The form and arrangement of the parts hereinbefore described are similar to the form and arrangement of similar parts in the machine known in the trade as the "Goodyear Channeller," and the foregoing brief description thereof has been given only for the purpose of enabling a person skilled in the art to fully understand the novel features which embody my invention.

The work-table is represented at F, and, as shown in the drawings, consists of the usual form of oblique rotary table actuated in the usual manner by the shaft 15. The said table F is provided with a series of substantially radial corrugations *f*, surrounding said table

F, adjacent to its periphery. As the table F is revolved, the corrugated portion thereof is turned under the feed-wheel 6 and, engaging with the bottom of the sole to be channeled, co-operates with the toothed wheel 6 to feed the sole to the channel and shoulder cutting knives. I desire to say in this connection that I do not consider my invention limited to the specific form of work-table shown in the drawings, as the same, with slight modifications involving no departure therefrom, can be applied to other forms of rotary work-table.

H represents my improved presser-foot, which is arranged to bear upon the edge of the sole being channeled on the same side of the feed-wheel 6 as the shoulder-knife E and to press the edge of the sole against the table F.

Before describing the form and arrangement of the presser-foot H, I desire to say that machines of this class as heretofore constructed have been provided with a presser-foot at each side of the feed-wheel, one arranged to bear upon the sole adjacent to the channel-knife and determine the depth of the cut, and the other to bear upon the edge of the sole adjacent to the shoulder-knife and press the edge of the sole down onto the work-table.

The presser-feet above referred to may be respectively termed the "channel-knife" presser-foot and the "shoulder-knife" presser-foot.

As heretofore constructed and arranged, the channel-knife presser-foot has been secured to the channel-knife lever D and the shoulder-knife presser-foot to the head B; but neither has heretofore been capable of vertical movement during the operation of the machine independently of the movement of the working part of the machine to which it was attached. By my present invention I provide for a vertical movement of the shoulder-knife presser-foot during the operation of the machine independent of the movement of the head B. I further provided means for securing pressure upon said presser-foot independent of the working parts of the machine, and I further arrange to limit said independent vertical movement and secure a further vertical movement with the head B.

The mechanism by which the foregoing result is secured is described as follows: The presser-foot H is secured to the arm 8, which depends from the head B, as before stated, by means of the bolts 17 17, provided with projecting heads and extending through the elongated holes 18 18 in the presser-foot H, the above arrangement being such that the presser-foot H is held laterally in position and is free to reciprocate vertically independently of the movement of the head B. It will be further noted that when the presser-foot H has moved upward or downward to bring the bolts 17 in contact with the ends of the elongated bolt-holes 18 18 its independent verti-

cal motion in the same direction is stopped, but the presser-foot H is still movable vertically in the same direction with the head B. To secure an independent pressure upon the presser-foot H, I have provided a spring 19, which bears against the frame A or other fixed support and against the presser-foot H. In practice the spring 19 consists of a common bent spring, which I secure to the bracket 5 and to the presser-foot H conveniently by means of an adjustment-screw 20, by means of which the pressure of spring 19 may be regulated.

The advantage which I claim for the above construction is that a uniform feather is left by the shoulder-knife around the edge of the sole channeled, what is termed the "feather" being the strip from the shoulder to the edge of the sole, as represented at 1³, Figs. 11, 10, 9, and 8. In machines of this class using a toothed feed-wheel, such as shown at 6, the teeth of such wheel are projected into the sole during the feeding operation a distance which is variable and depends upon the hardness of the stock, and since in former constructions the presser-foot followed the vertical movement of the feed-wheel when the feed-wheel is lifted by a hard place in the sole the presser-foot is also lifted and allows the edge to rise (the tendency of the shoulder-knife being to force the edge up) and the knife takes a deeper cut and leaves a thinner feather.

In the operation of a machine provided with my improved presser-foot the presser-foot H is not raised by any slight motion of the head B, such as would be occasioned from the raising of the feed-wheel, as above suggested, but retains its position being held with an independent pressure upon the edge of the sole, and the thickness of the feather is therefore kept uniform. As arranged, the presser-foot H may be raised from the work with the head B. I desire also to say that I do not consider this feature of my invention limited to the details of mechanism shown, as it is evident that many variations in the form and arrangement thereof can be made by one of ordinary skill in the art, at the same time retaining all its essential features.

I will now describe the mechanism shown, whereby I secure a lateral adjustment of the channeling-knife and a convenient and simple mechanism for vertically adjusting its presser-foot.

N represents what I have termed the "channel-knife carrier," in which is mounted the knife-block *n*, which carries the channeling-knife *n'*, the lip-trimming knife *n*², and the channel-knife presser-foot *n*³.

The channel-knife carrier N is secured to the laterally-projecting shoulder N', projected from the lever D, and provision is made for the lateral adjustment of the carrier N along the shoulder N' conveniently as follows: A groove 22 is formed upon the under side of the shoulder N', which is engaged by a similarly-shaped block 23 on the upper side of the

carrier N. A bolt 24, having a projecting head, extends through a laterally-extending elongated bolt-hole 25 in the shoulder N' into the block 23 and carrier N and supports the carrier N, the arrangement being such that the bolt 24 may be loosened and the carrier N placed in the desired lateral position by moving the bolt 24 along the elongated bolt-hole 25. The bolt 24 may then be set up and the carrier N clamped and firmly held in such position. It will be noted that the lateral adjustment of the carrier N adjusts laterally the knife-block *n* and the knives *n'* and *n''* carried thereby, effecting a change in the relative lateral position of the channel-knife *n'* and the shoulder-knife E. The knives *n'* and E being almost entirely concealed by associate parts of the machine, to determine their relative position with any degree of accuracy by inspection of the knives themselves is a matter of considerable difficulty and involving considerable loss of time. To remove such objection, I have provided a scale, placed in convenient position for observation, and suitable connections, whereby the relative lateral position of the channeling and shoulder cutting knives is indicated thereon. As shown in the drawings, the scale is formed upon the face of the carrier N and the reading-point placed upon the shoulder N', (see Fig. 2;) but I desire to say that such arrangement is not essential and that the same may be modified, and the scale, if desired, placed in another position upon the machine, without departing from the essential nature of my invention. As the scale is shown in the drawings, its graduation is such that when the point marked "P" is opposite the reading-point, as shown in Fig. 2, the channel-knife is at the right of the shoulder-knife and the knives in the proper relative position (laterally) to most successfully operate upon a sole having what is termed in the trade a "pointed" or "round toe," a form which is shown in Fig. 8. To channel a "square-toe" sole, so called, a form of which is shown in Fig. 9, the point marked "S" is brought opposite the reading-point, bringing the channel-knife to the left of the shoulder-knife. To channel a sole with a very pointed toe—such, for example, as is shown in Fig. 10, which is known in the trade as the "razor" toe—the knives are commonly operated separately, the operator passing the sole through the machine twice, once to cut the channel, the shoulder-knife being raised out of operative position, and a second time to form the shoulder, the channel-knife being held out of the way. To accurately form the channel and shoulder with reference to each other by the successive operations above referred to, it is essential that the knives be laterally in alignment to enable the operator to properly guide the work, and the point marked "R" is brought opposite the reading-point.

It will be noted that the letters P, R, and S shown upon the scale are the initial letters

of the trade names of the different styles of sole, and I find it convenient in practice to place these letters or some other easily-understood symbols of similar significance upon the scale to facilitate the adjustment and avoid errors therein.

In Figs. 8, 9, and 10 L represents the sole; *l'*, the channel; *l''*, the "between substance," so called; *l'''*, the shoulder, and *l''''* the feather. The channel and shoulder-knives are represented diagrammatically by *n'* and E, and the direction of the feed is shown by the arrow-head.

From an inspection of Figs. 8 and 9 it will readily be seen by one of any skill in the art that with the knives set as shown and the feed in the direction shown when the toe is turned neither of the knives *n'* or E will cut into the between substance *l''*, but *l''* will remain of uniform width around the sole, a result of great importance in this class of machines.

In Fig. 10 the knives *n'* and E are shown laterally in line for the reason hereinbefore set forth.

I will now describe my improved form and arrangement of mechanism for adjusting the channel-knife presser-foot.

Upon the presser-foot *n''* or a rigid projection therefrom is formed a shoulder *n'''*, through which extends a bolt *n''''*, the lower portion of which is threaded and engages in a correspondingly-threaded bearing in the carrier N or a suitable boss *n''''''* thereon. The presser-foot *n''* is held in position laterally by a bolt *n''''''*, which has a threaded bearing therein and extends through a vertically-elongated bolt-hole *n''''''''* in the carrier N. The bolt *n''''''* is provided with a projecting head, which bears against the carrier when the bolt *n''''''* is set up. The bolt *n''''* is provided with a collar *n''''''* below the shoulder *n'''* and a projecting head *n''''''''* above the same. The head *n''''''* is conveniently a capstan-head, or otherwise provided with convenient means of rotation.

The above-described arrangement is such that the bolt *n''''* may be loosened and the presser-foot *n''* moved up or down by turning the bolt *n''''*, and when the desired adjustment is secured the bolt *n''''* may be again set up and the presser-foot *n''* clamped and held firmly in position. It will be noted that in the above arrangement the screw 5 performs the function of a micrometer adjustment-screw.

The operation of my invention having been sufficiently described in connection with the description of the several features thereof, I therefore claim as novel and desire to secure by Letters Patent—

1. In a sole channeling machine, the combination with a fixed support, of a vertically movable head, an independently movable presser foot mounted on the head, and means engaging said fixed support and presser foot, for applying pressure to the foot, substantially as described.

2. The combination with associated parts of a sole channeling machine, of a vertically movable head supporting the feed wheel, a presser foot carried by said head and capable of a limited vertical motion independently of said head, and mechanism independent of said head for securing pressure upon said presser foot, substantially as described.

3. The combination with associated parts of a sole channeling machine, of a suitable supporting frame, a vertically movable head mounted upon said frame and carrying the feed wheel, a presser foot mounted on said movable head and capable of vertical motion independently thereof and a spring arranged to bear on the supporting frame and presser foot whereby an independent pressure is secured on the presser foot, substantially as described.

4. In a sole channeling machine, the combination with a shoulder knife, of a channeling knife and laterally adjustable presser foot, and means for changing the relative

lateral position of the shoulder knife and channeling knife, substantially as described. 25

5. The combination with associated parts of a sole channeling machine, of a suitable channeling knife, a presser foot, a laterally movable carrier for said knife and foot, and clamping means for clamping said carrier when brought into the desired position, substantially as described. 30

6. In a sole channeling machine, the combination with the associated parts of the machine, of a channeling knife, a presser foot, a laterally adjustable carrier for the knife and foot, and means for vertically adjusting the foot independent of the knife, substantially as described. 35

Witness my hand this 15th day of April, 1895, in the presence of two attesting witnesses. 40

FRANK E. BECKMAN.

Witnesses:

BENJAMIN PHILLIPS,
A. E. WHYTE.