

No. 684,359.

Patented Oct. 8, 1901.

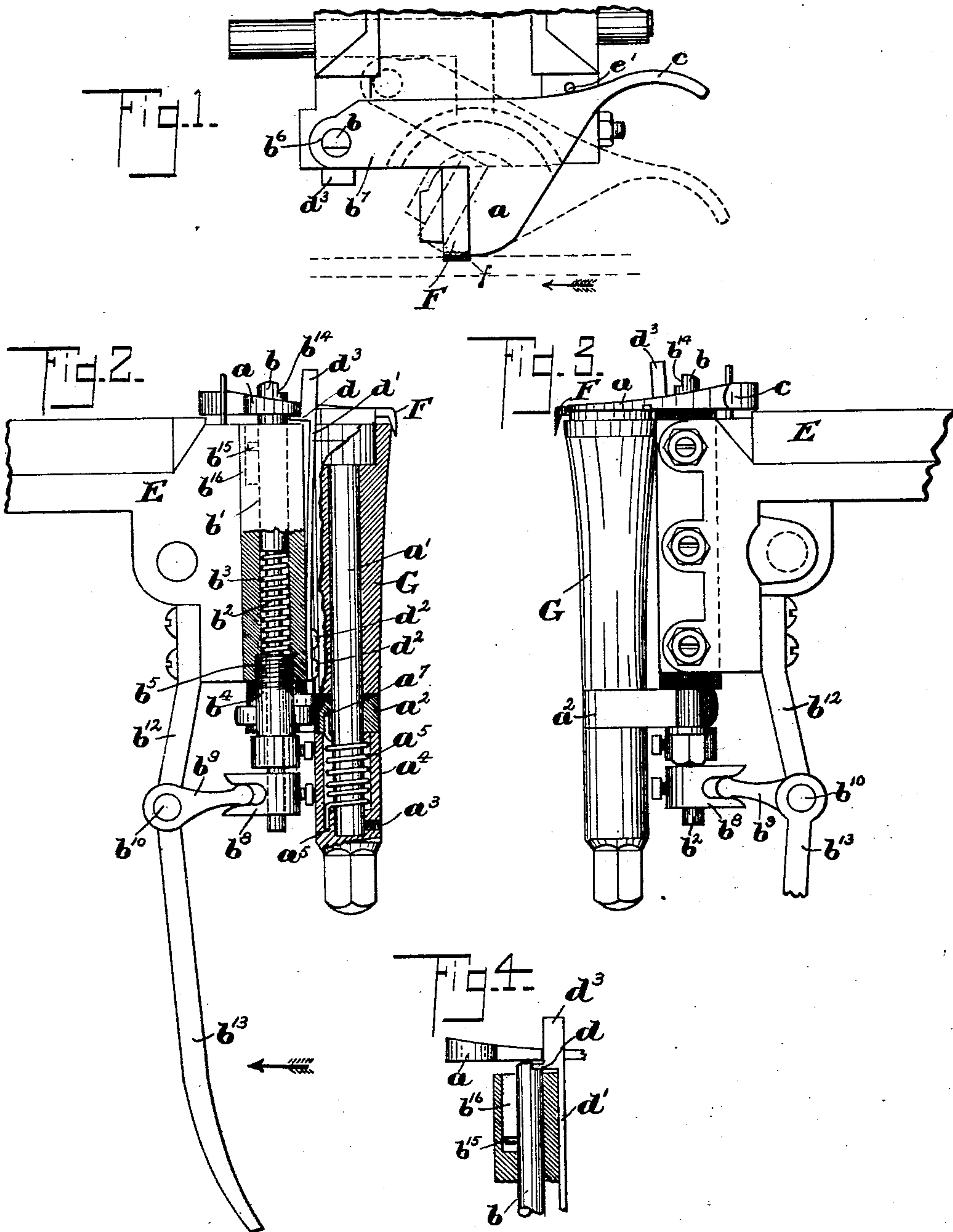
C. L. EATON.

ROUGH ROUNDING AND CHANNELING MACHINE.

(Application filed Feb. 14, 1901.)

(No Model.)

2 Sheets—Sheet 1.



WITNESSES.

E. M. Turkington.
Attest

INVENTOR.

Clarence L. Eaton,
By his attorney
J. H. Anderson

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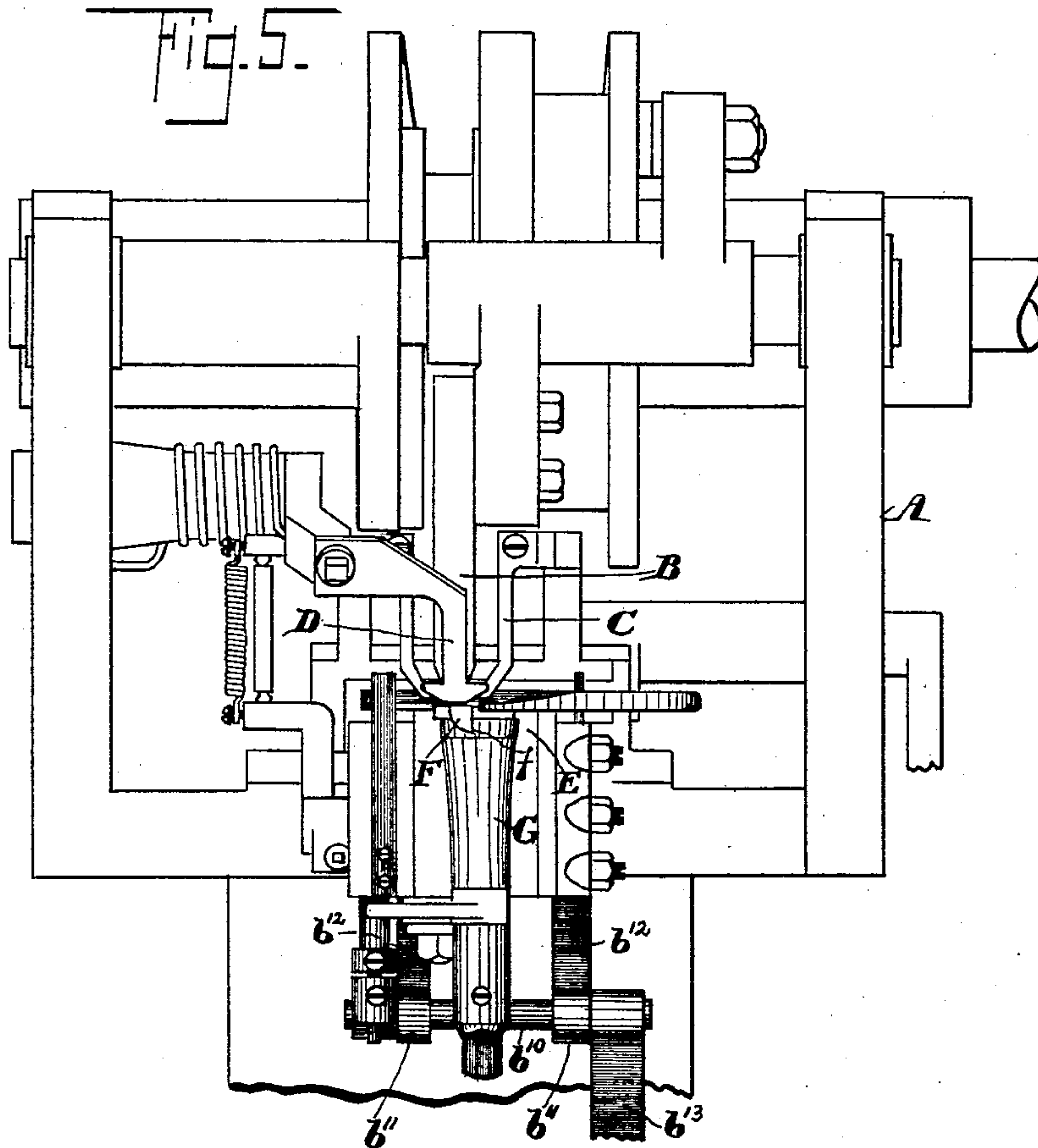


FIG. 6.

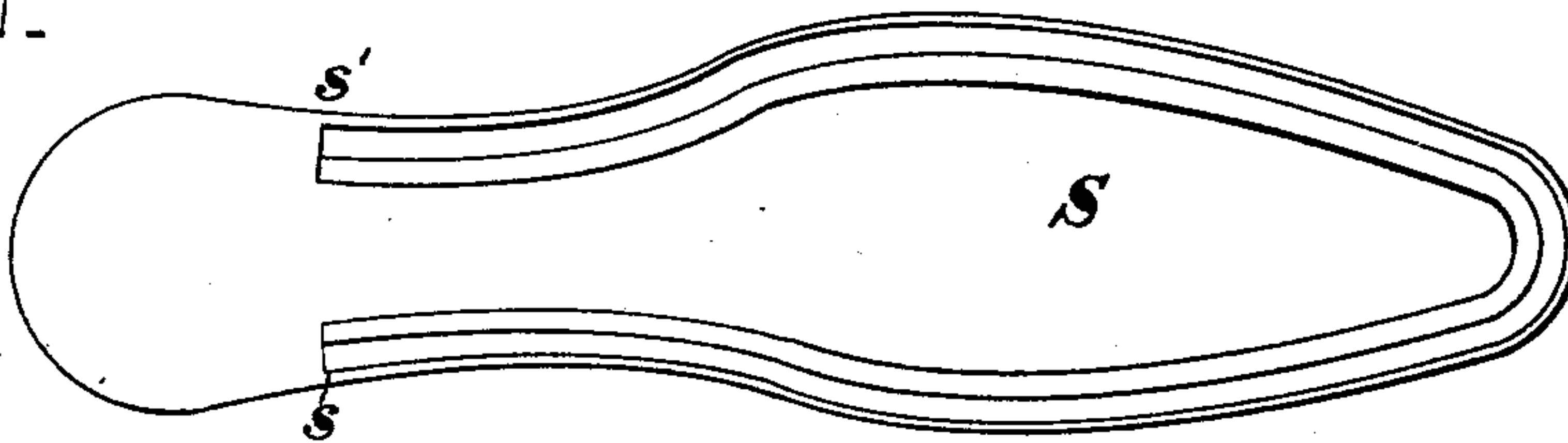
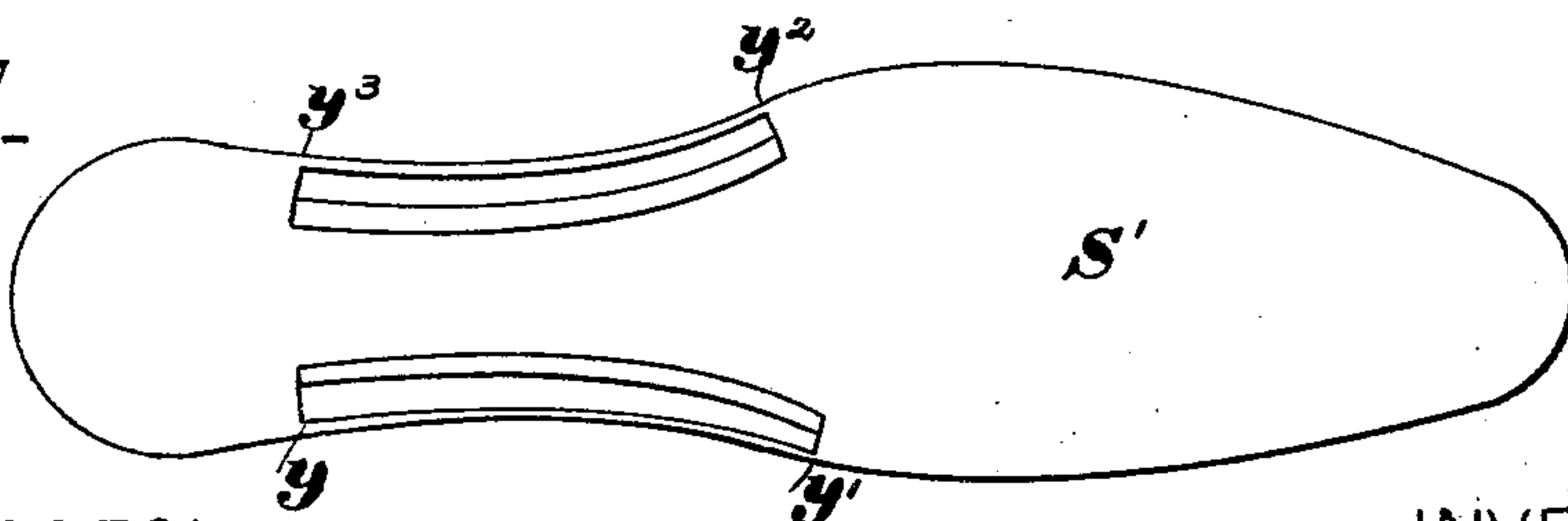


FIG. 7.



WITNESSES:

C. M. Turkington
Whe Diamond

INVENTOR.

Clarence L. Eaton
By his Attorney
T. H. Anderson

UNITED STATES PATENT OFFICE.

CLARENCE LAMBERT EATON, OF ROCHESTER, NEW YORK, ASSIGNOR TO
UNITED SHOE MACHINERY COMPANY, OF PATERSON, NEW JERSEY, AND
BOSTON, MASSACHUSETTS.

ROUGH-ROUNDING AND CHANNELING MACHINE.

SPECIFICATION forming part of Letters Patent No. 684,359, dated October 8, 1901.

Application filed February 14, 1901. Serial No. 47,211. (No model.)

To all whom it may concern:

Be it known that I, CLARENCE LAMBERT EATON, a citizen of the United States, residing at Rochester, in the county of Monroe and State of New York, have invented certain new and useful Improvements in Rough-Rounding and Channeling Machines; and I do hereby declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it appertains to make and use the same.

The present invention relates to machines for trimming and channeling the soles of boots and shoes while on the last, such machines being generally known in the art as "rough-rounding and channeling machines."

It is now customary in the manufacture of welted boots and shoes to trim the edge of the sole to the contour of the bottom of the last and cut the channel in the tread-face of the sole to receive the stitches of the outseam after the sole has been "laid," as it is termed—that is, after the sole has been given its approximate shape under pressure and secured temporarily to the lasted shoe by cement—for the reason that the shape of the sole and the location of the channel with relation to the edge of the sole can be more accurately gaged and determined than is possible by the use of a previously rounded and channeled sole. This operation of trimming the edge of the shoe-sole to the desired shape and size and the forming of the channel in the tread-face of the sole is performed by a single machine and at a single operation, said machine being known as a "rough-rounding and channeling machine" and the operation as "rough-rounding and channeling." It is of course obvious that the sole must be trimmed or "rounded" along its entire edge—around the heel, as well as along the shank and around the fore part—while it is only necessary and, in fact, desirable to cut the channel in most forms of shoes along the shank and around the fore part, leaving the heel free from a channel, and in some types of shoes it is desirable to cut the channel along the shank only, thus when the outsole is attached leaving the stitches of the outseam upon the tread-surface of the sole along the ball and toe portion, this manner of uniting the sole

to the welt being known in the art as "stitching aloft." The most common form of rough-rounding and channeling machine now in use comprises a reciprocating or oscillating rounding-knife, which coöperates with a suitable cutting-block in trimming the edge of the sole and a rapidly-vibrating channeling-knife.

The object of the present invention is to so construct the machine that the channeling-knife may be readily and quickly thrown into and out of operation at the will of the operator, thus enabling him to cause the machine to cut the channel along that part of the shoe-sole in which a channel is desired and to leave certain parts thereof free from a channel and to produce this desired operation of the channeling-knife without affecting the operation of the rounding-knife.

To the above ends the present invention consists of the devices and combinations of devices which will be hereinafter described and claimed.

In the accompanying drawings the present invention is shown as embodied in what is known as the "Goodyear universal rounding and channeling machine," constructed substantially as disclosed in Letters Patent of the United States issued to W. C. Meyer and Z. T. French on the 22d day of March, 1898, No. 600,883; but it is to be understood that the present invention is not restricted in its application to any particular form of rough-rounding and channeling machine.

In the drawings, Figure 1 shows in plan view a portion of the machine, showing the channeling-knife carrier in full lines with the channeling-knife in position to make its cut and in dotted lines in its inoperative position. Fig. 2 shows in side elevation a portion of the forward part of the movable block, which supports and imparts the rapid vibrating movement to the channeling-knife, certain of the parts being shown in section to better illustrate the present invention. Fig. 3 is a side elevation of the parts shown in Fig. 2, taken from the opposite side. Fig. 4 shows a detail of the operating parts. Fig. 5 shows a front elevation of the head of the machine with my invention applied thereto. Fig. 6 shows in plan view a rounded shoe-sole, show-

ing the channel cut along the shank and around the ball and toe part with the heel free from a channel. Fig. 7 shows a similar view of a rounded shoe-sole channeled along the shank portion only.

Similar reference characters will be employed throughout the specification and drawings to designate corresponding parts.

In the drawings, A is the frame or head; B, the plate which bears against the welt and against the rear face of which the rounding-knife acts; C, the crease-gage; D, the last-gage; E, the laterally-reciprocating block or holder for the channeling-knife; F, the channeling-knife, and G the loosely-turning sole-rest against which the tread-face of the sole is held during the operation of the machine. All of the foregoing parts except as hereinafter described may be and preferably are constructed and arranged to operate substantially like the corresponding parts in the machine of the patent hereinbefore referred to, and a description thereof in this specification is deemed unnecessary.

As is well known to persons skilled in this art, the shoe to be operated upon is held up by the operator with the sole pressed against the sole-rest G, with the crease-gage C fitting in the crease between the upper and welt, which brings the projecting edge of the sole to be trimmed off against the inner face of the plate B in position to be acted upon by the rounding-cutter, and with the margin of the tread-face of the sole resting upon the channeling-knife F. While the shoe is thus supported the machine is operated, and while the shoe is fed along by the feeding mechanism the rounding-knife is oscillated and the channeling-knife rapidly vibrated, thus trimming the edge of the sole and cutting the channel. In most of the rounding and channeling machines of the prior art this rounding and channeling takes place entirely around the sole, and neither operation can be performed independently of the other. As hereinbefore stated, it is desirable at times to be able to round or trim the sole without channeling, as around the heel, and in some classes of shoes around the ball and fore part. In the machine of the drawings I have so mounted the channeling-knife that at the will of the operator it can be thrown out of and into operation, and thus produce the desired result.

As shown in the drawings, the channeling-knife F is supported in a block or plate a , secured to the upper end of a spindle a' , mounted to freely turn in a bearing a^2 , projected from the front at the lower end of the reciprocating knife-holder E. Upon the spindle a' is mounted the sole-rest G, as in the machine of the patent hereinbefore referred to. A turning of the spindle a' turns the plate or head a so as to cause it to occupy either the position shown in full lines, with the channeling-knife F in position to act upon the shoe-sole, or to the position shown in dotted

lines, Fig. 1, in which position the channeling-knife F will be moved to the left and backward, in which position it cannot act upon the sole.

In the illustrated embodiment of the present invention I have provided a suitable spring to throw the channeling-knife F out of operation and a latch to retain the same in operation, the arrangement in the machine of the drawings being as follows: The lower end of the spindle a' is projected below the bearing a^2 , and fitted thereto by means of a set-screw a^3 is a tubular sleeve a^4 , within which is received the coiled spring a^5 , one end of which is seated in a recess a^6 in the sleeve a^4 and the opposite end of which is seated in a recess a^7 in the bearing a^2 . By loosening the set-screw a^3 the sleeve a^4 may be turned until the desired tension of the spring a^5 has been secured, when the set-screw a^3 may be set up, maintaining the adjustment of the spring thus produced. The tendency of the spring a^5 is to turn the spindle a' to place the channeling-knife F out of operative position, as shown in dotted lines, Fig. 1. For the purpose of retaining the knife in its operative position I have provided a latch, shown as a vertically-reciprocating bolt b , arranged in a bearing b' , formed in the forward end of the reciprocating block E. The bolt b is connected with a rod b^2 , which passes down through the bearing b' and within said bearing is surrounded by a coiled spring b^3 , the upper end of which engages the bolt b and the lower end of which rests upon a threaded sleeve b^4 , tapped into a threaded opening b^5 in the reciprocating knife holder or block E. The bolt b at its upper end is arranged to engage an aperture b^6 , formed in a laterally-projecting arm b^7 of the plate a , as shown clearly in Figs. 1 and 2 of the drawings. So long as the bolt b is maintained in its elevated position in engagement with the aperture b^6 the channeling-knife will be held in its operative position. For the purpose of quickly removing the bolt b from engagement with the aperture b^6 , and thus permitting the spring a^5 to swing the channeling-knife into its inoperative position, I have provided the lower end of the rod b^2 with a forked block b^8 , which is engaged by a short lever b^9 , attached to one end of a shaft b^{10} , which is mounted to turn in suitable bearings b^{11} , formed at lower ends of arms b^{12} , depending from the knife block or holder E. At the opposite end of the shaft b^{10} is secured a long lever b^{13} , which extends downwardly and preferably slightly forwardly in convenient reach of the hand of the operator.

From the foregoing it will be noted that an inward movement of the lever b^{13} toward the frame of the machine, or as indicated by the arrow in Fig. 2, will rock the shaft b^{10} and the lever b^9 and through the rod b^2 draw down the bolt b against the resistance of the spring b^3 , and when said bolt shall have been depressed to the position shown in Fig. 4 it will

release the arm b^7 of the plate, and thus permit the spring a^5 to turn the spindle a' in its bearings and position the channeling-knife as shown in dotted lines, Fig. 1. For the purpose of returning the channeling-knife to its operative position the plate a is provided with a thumb-piece c , which may be engaged by the operator and thrown back until the aperture b^6 is again engaged by the bolt b , a suitable stop, shown as a pin e' , being provided against which the rear edge of the plate a is arranged to engage in order to insure the correct and accurate positioning of the channeling-knife without the exercise of any undue care on the part of the operator. The bolt b is arranged to be held in its depressed position until the channeling-knife shall have been moved by the operator into said operative position, when said bolt will be automatically released to engage the aperture b^6 and lock the channeling-knife in its operative position. To secure the above-suggested result, the upper end of the bolt b is provided with a notch or shoulder b^{14} , which is arranged to be engaged by an arm d , projected from the upper end of a spring-shank d' , which is secured by means of screws d^2 to the front of the knife-block E. Above the arm d is a vertical projection d^3 , which is arranged to be engaged by the front edge of the laterally-projecting arm b^7 of the plate a , whereby the arm d will be moved away from the bolt b , releasing said bolt and permitting the spring b^3 to raise the same to engage the aperture b^6 . For the purpose of preventing the bolt b from turning in its bearing b' it is provided with a suitable spline b^{15} , which engages a slot b^{16} , formed in the inner face of the bearing b' .

The operation of the machine is as follows: Assuming that the parts are in the position shown in full lines in the drawings and assuming that it is desired to produce the rounded and channeled sole S, as shown in Fig. 6 of the drawings, the operation of rounding and channeling will begin at the point marked s and will continue from said point until the point on the opposite shank s' shall have been reached, at which time the operator will throw the lever b^{13} inward in the direction of the arrow shown in Fig. 2, and thus depressing the bolt b permit the channeling-knife to be thrown into the dotted-line position, when the rounding of the shoe-sole will continue to the point of commencement; but inasmuch as the channeling-knife while in this position cannot come in contact with the sole the heel of same will not be channeled. In operating upon another sole the operator can quickly throw the channeling-knife into position shown in full line. In producing the sole S' the operator may commence at the point y with the channeling-knife in operative position, when the rounding and channeling of the sole will proceed to the point y' , at which time the channeling-knife will be thrown out of operation, leaving the rounding-knife only operative until

the point y^2 shall have been reached, at which point the channeling-knife is again brought into operation and the opposite side of the shank rounded and channeled until the point y^3 shall have been reached, at which point the channeling-knife is again thrown out of operation and the rounding of the heel proceeds as before.

In the machine of the drawings, f is the cutting edge of the channeling-knife, and the feed of the work is in the direction of the arrow shown in Fig. 1, the cut of the channeling-knife being made against the "feed," as it is called.

It will be noted that in the movement of the channeling-knife from an operative to an inoperative position it is not "lifted," as it is termed in the art—that is, pulled out of the channel in a line perpendicular to the tread of the sole—but that it is moved sidewise away from the sole and in the direction of the feed of the work, whereby there is no tendency to tear out the channel-flap, such arrangement being an important feature of my invention.

Having described the construction and mode of operation of my invention, I claim as new and desire to protect by Letters Patent of the United States—

1. In a rough-rounding and channeling machine, the combination with a rounding-knife, of a channeling-knife, movable into and out of operation substantially in the plane of the bottom of the sole, substantially as described.

2. In a rough-rounding and channeling machine, the combination with a rounding-knife, of a channeling-knife movable into and out of operation, the movement out of operation being substantially in the plane of the bottom of the sole and in the direction of the feed, substantially as described.

3. In a rough-rounding and channeling machine, the combination with a rounding-knife, of a channeling-knife movable into and out of operative position, a spring for moving said knife out of operative position and a latch for retaining it in operative position, substantially as described.

4. In a rough-rounding and channeling machine, the combination with a channeling-knife movable into and out of operative position, of a spring for moving said knife, a latch for retaining said knife against the force of the spring and means under the control of the operator for actuating said latch, substantially as described.

5. The combination with a channeling-knife, of the spindle supporting said knife and mounted to turn so as to move said knife into and out of operative position, a spring for turning said spindle and a latch for preventing the turning of the spindle, substantially as described.

6. The combination with a channeling-knife, of a carrier therefor, movable to place the knife into and out of operative position, a spring to move the carrier in one direction, a latch to restrain the carrier from movement,

means under the control of the operator to withdraw the latch to permit the spring to move the carrier, means to retain the latch withdrawn and means to automatically release the latch to engage the carrier when the carrier is returned, substantially as described.

7. In a rough-rounding and channeling machine, the combination with a channeling-knife, of a spindle having a plate at its upper end and supporting said knife, a spring to turn said spindle in one direction to place the knife in its inoperative position, a spring-

actuated sliding bolt arranged to engage an aperture in the plate to retain the knife in its operative position, and a lever and suitable connections for withdrawing the bolt, substantially as described.

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

CLARENCE LAMBERT EATON.

Witnesses:

WILLIAM S. MCILRATH,
ELIZABETH J. REEDER.