

No. 625,737.

Patented May 30, 1899.

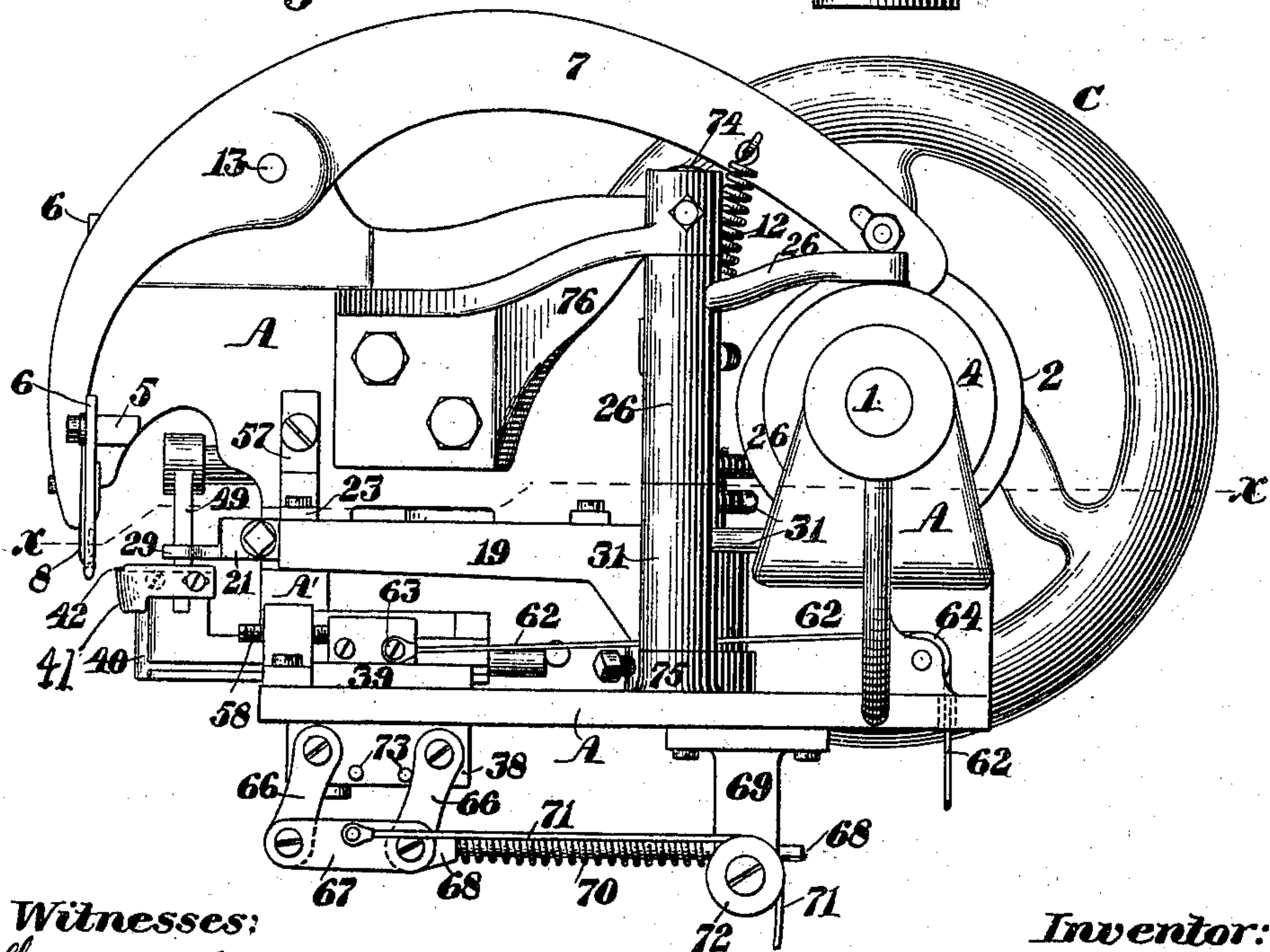
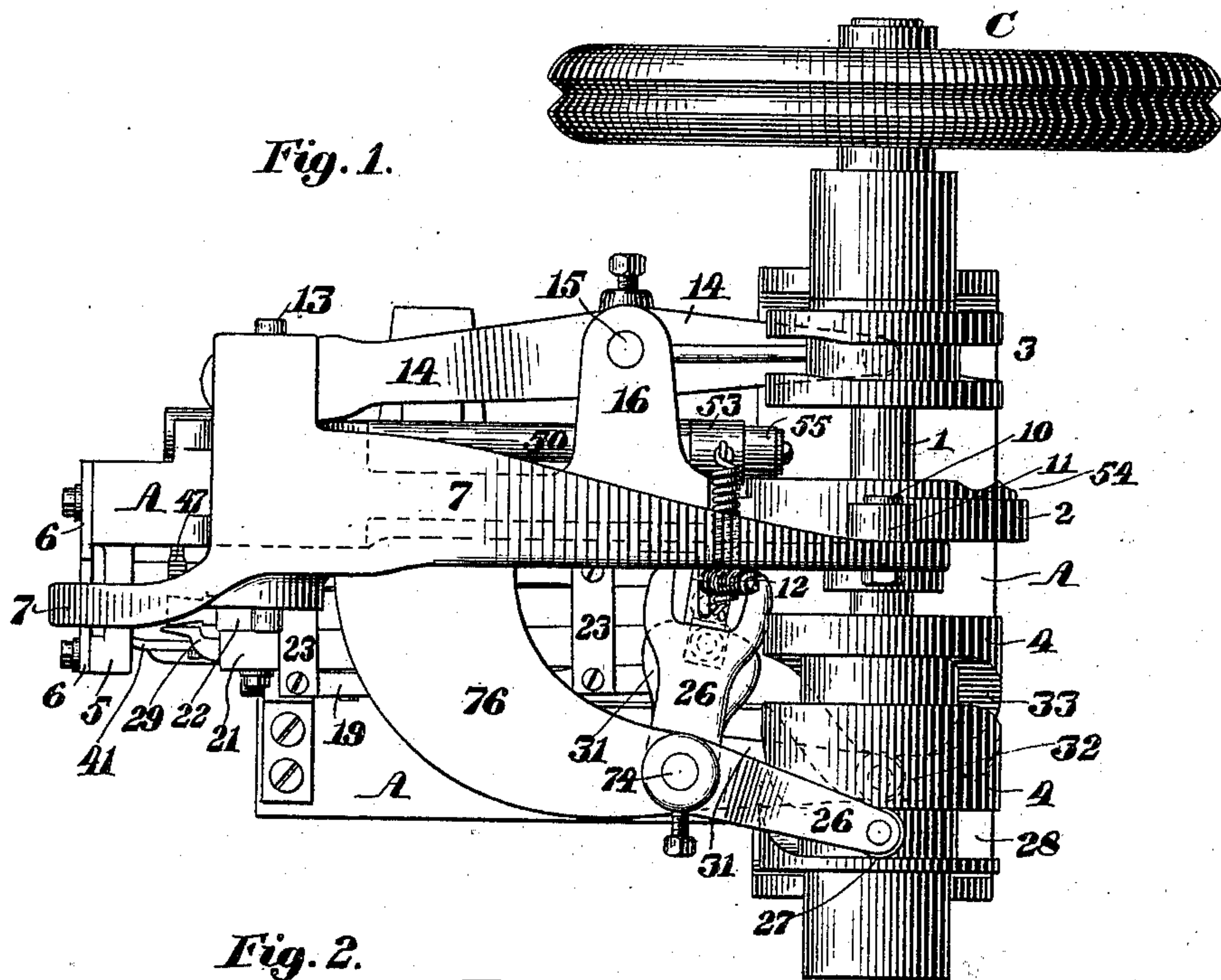
J. E. BERTRAND.

SOLE ROUGH ROUNDING AND CHANNELING MACHINE.

(Application filed Mar. 8, 1899.)

(No Model.)

3 Sheets—Sheet 1.



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3 Sheets—Sheet 2.

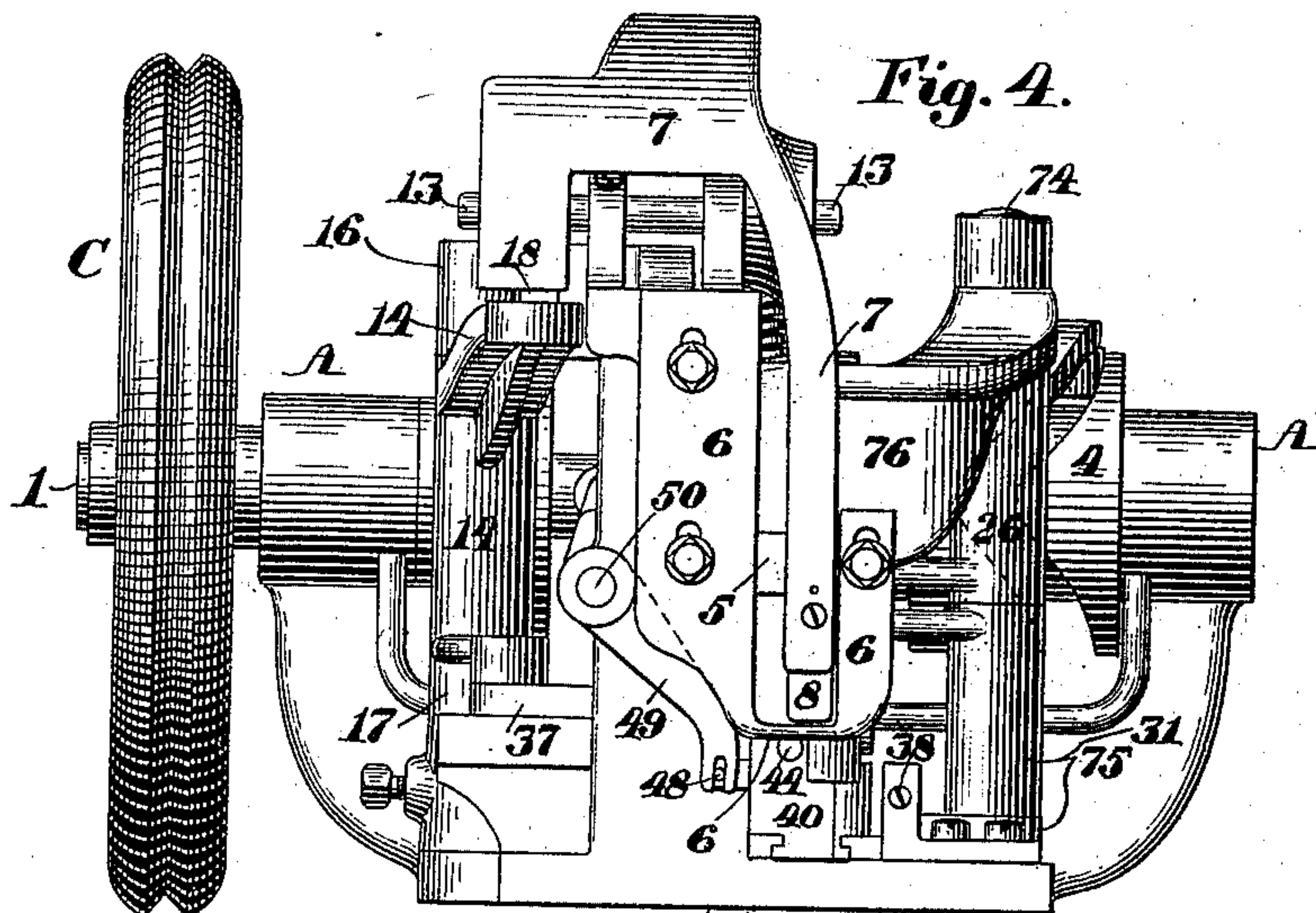


Fig. 4.

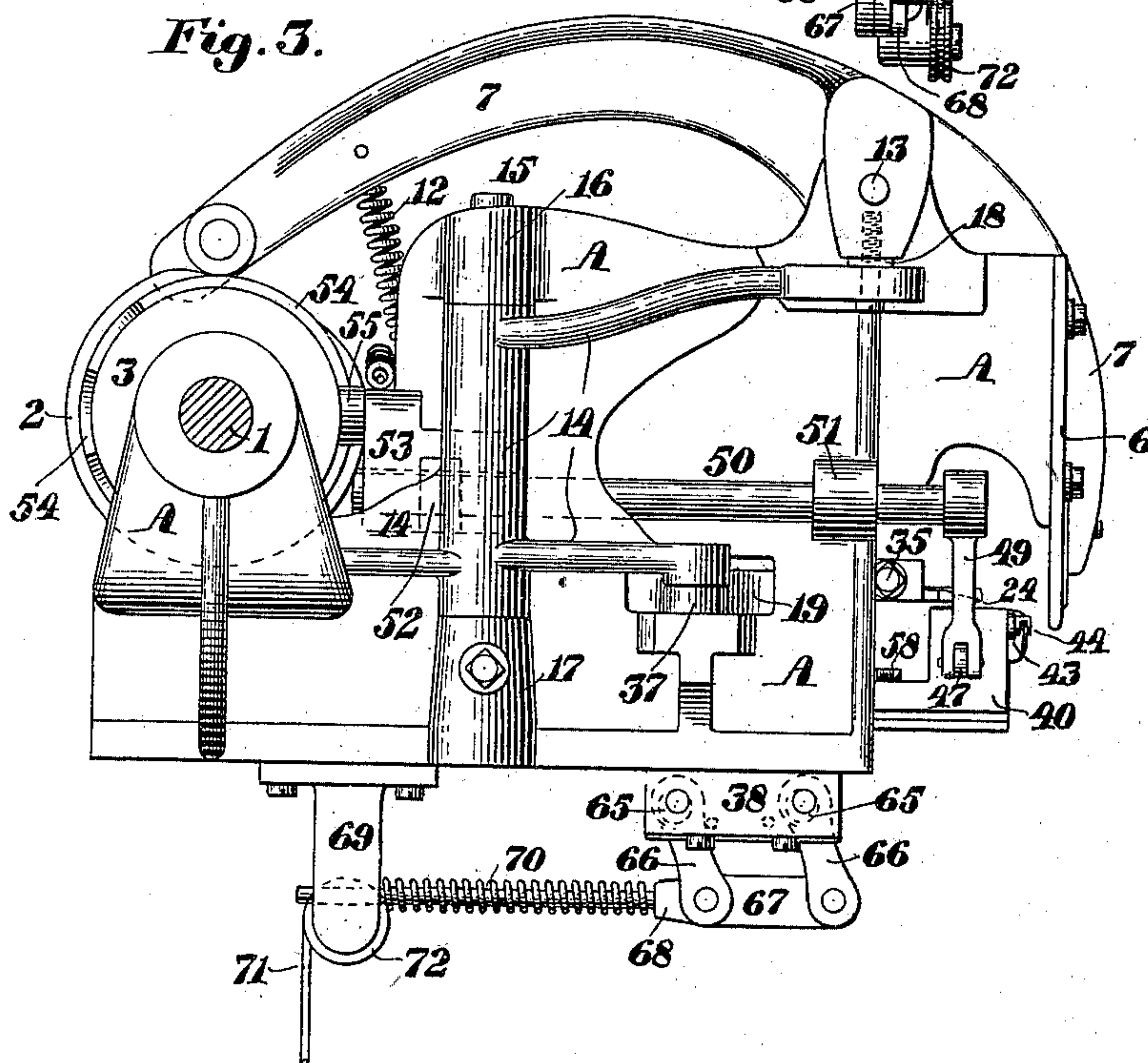


Fig. 3.

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3 Sheets—Sheet 3.

Fig. 5.

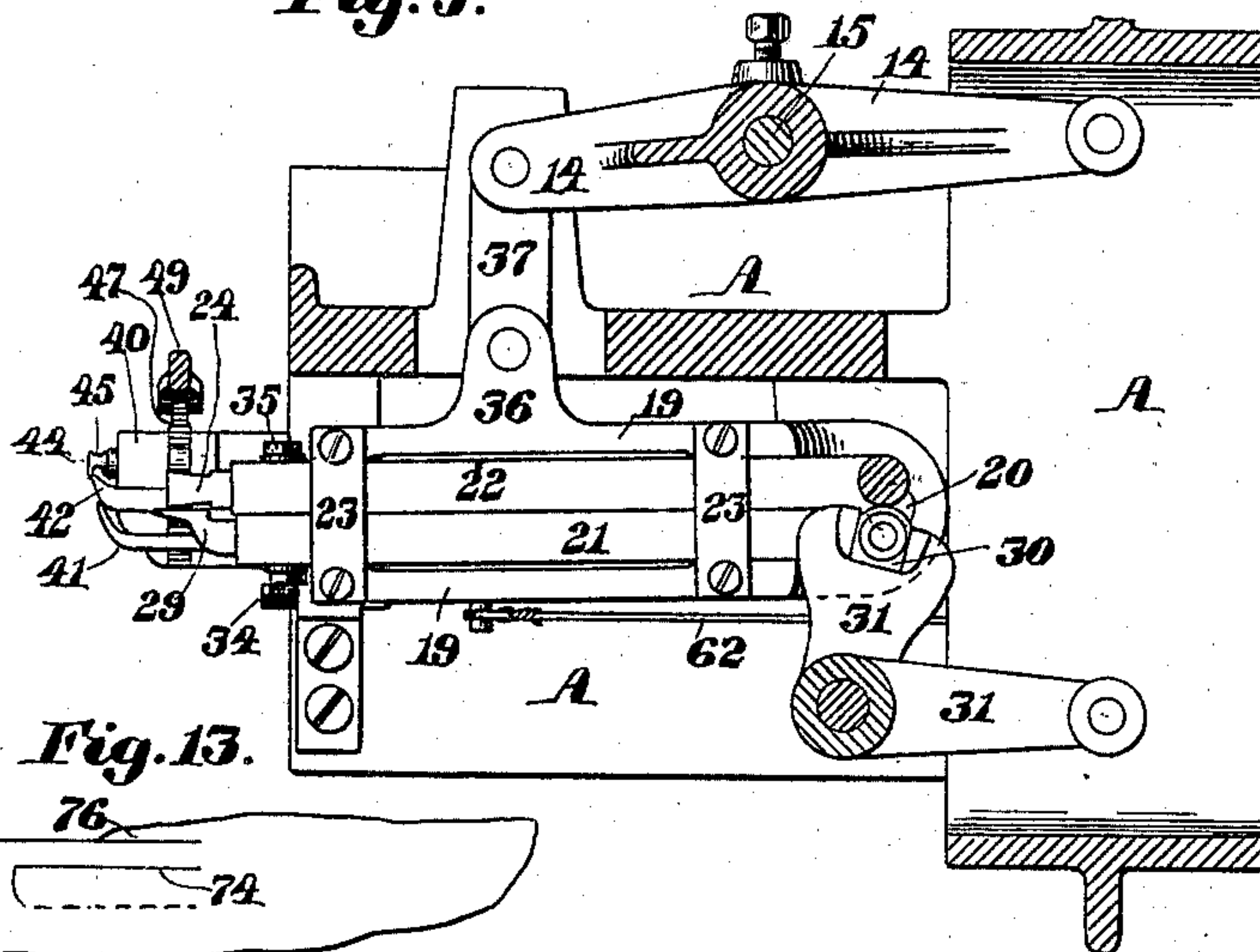


Fig. 14. Fig. 13.

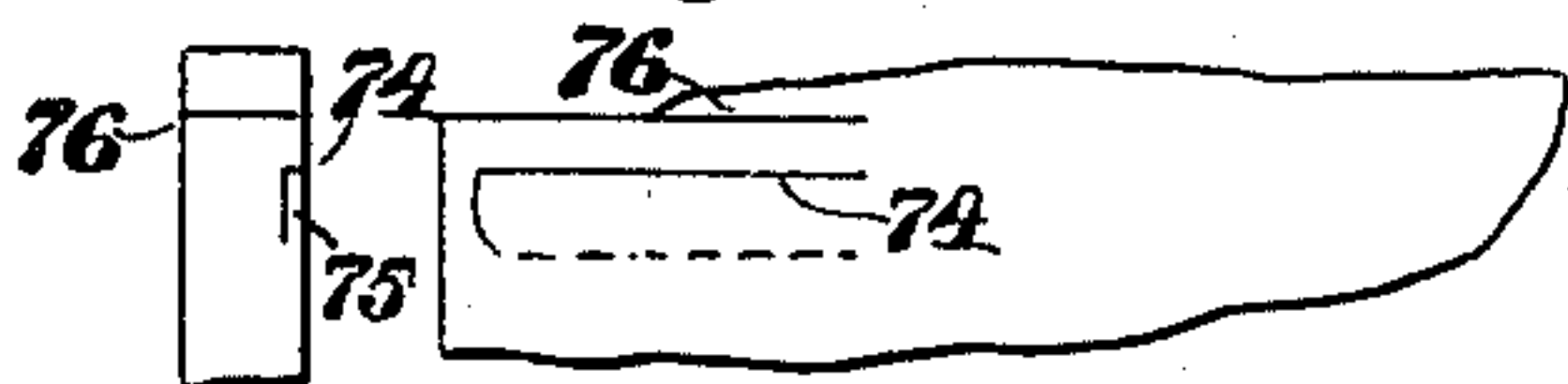


Fig. 6.

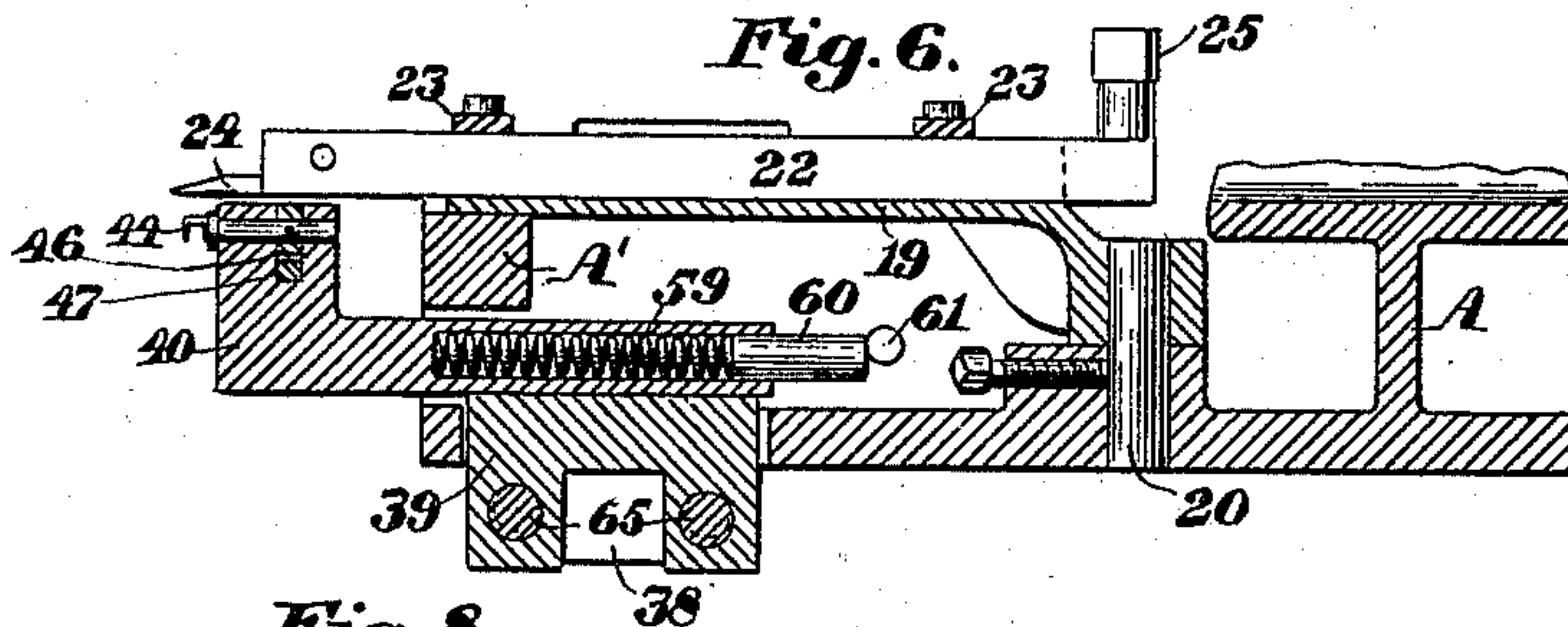


Fig. 8.

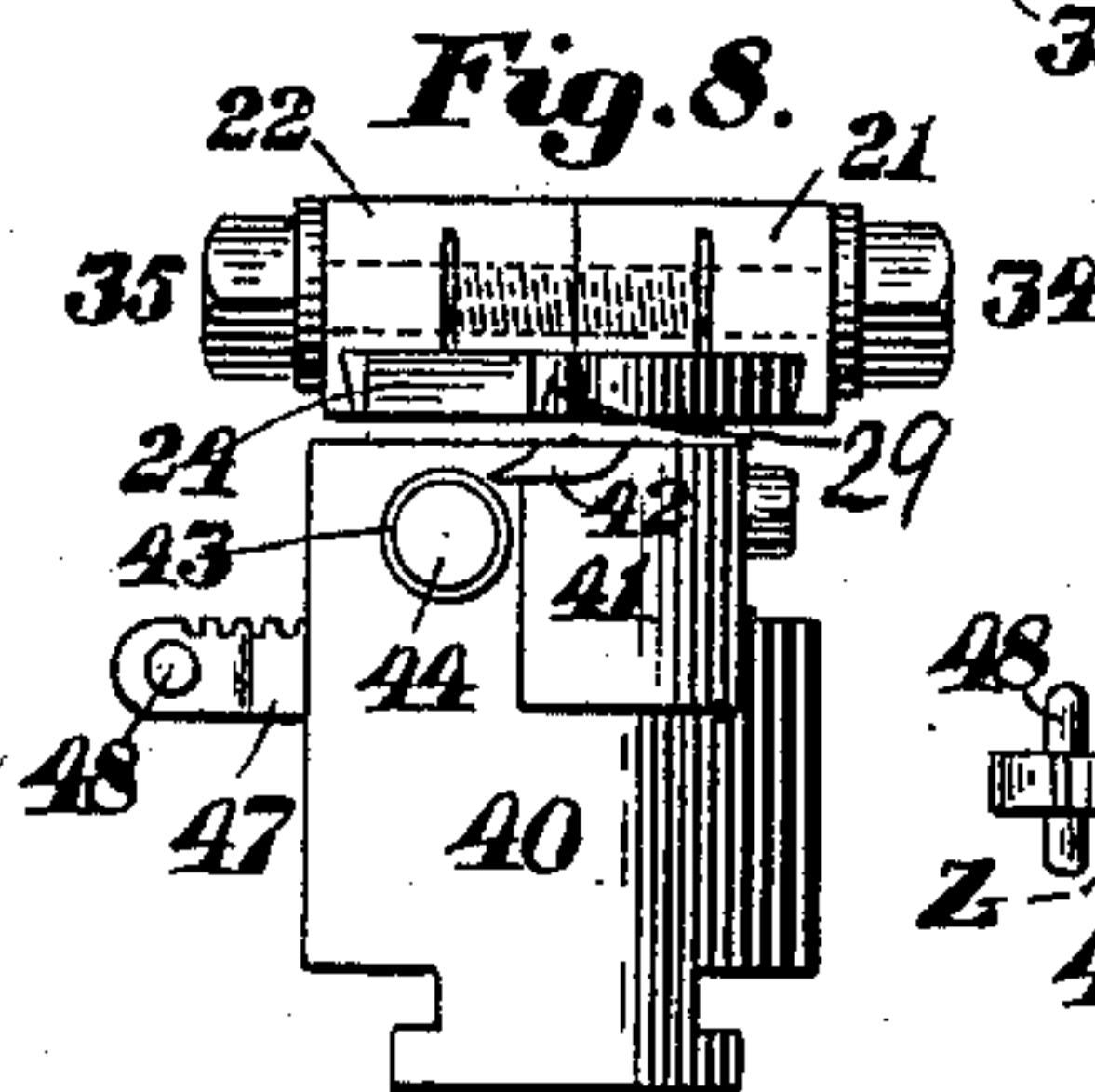


Fig. 7.

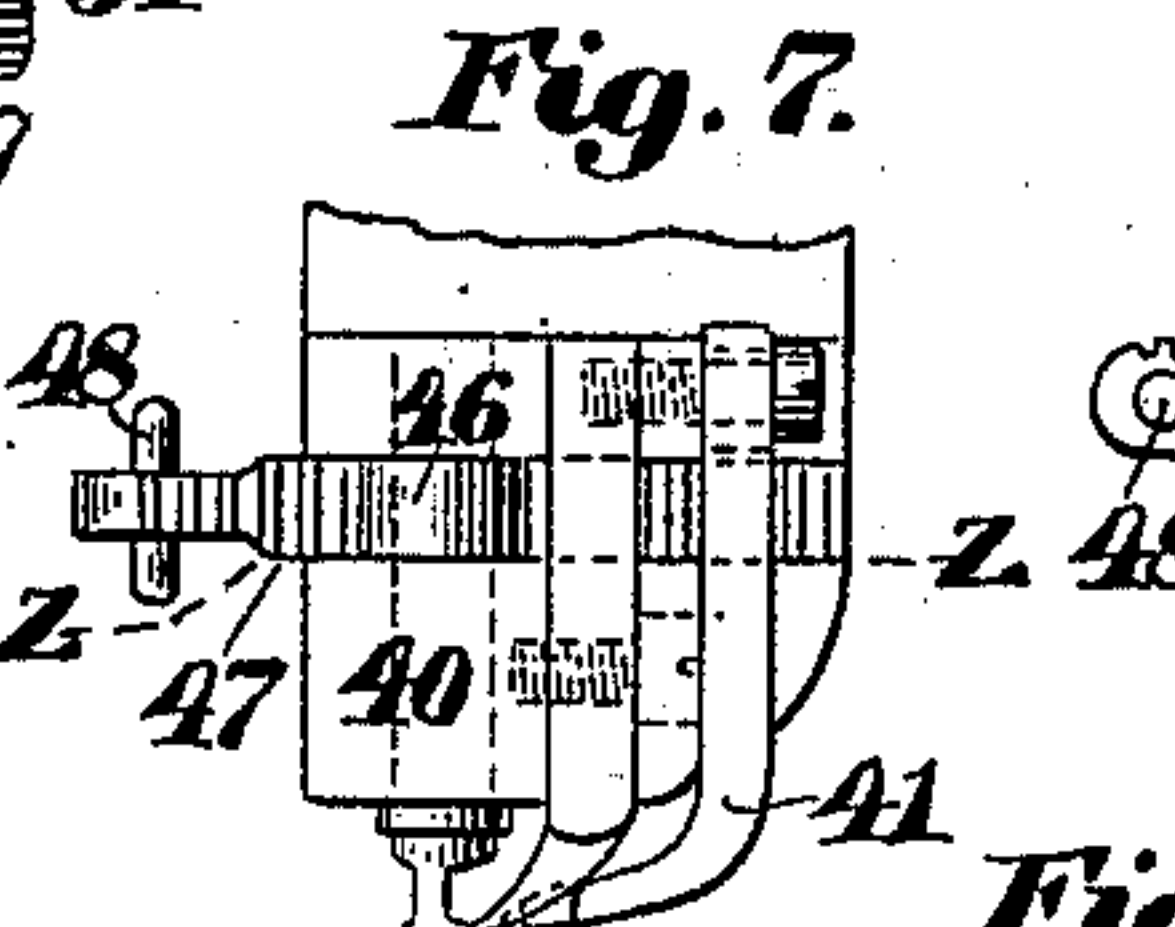


Fig. 9.

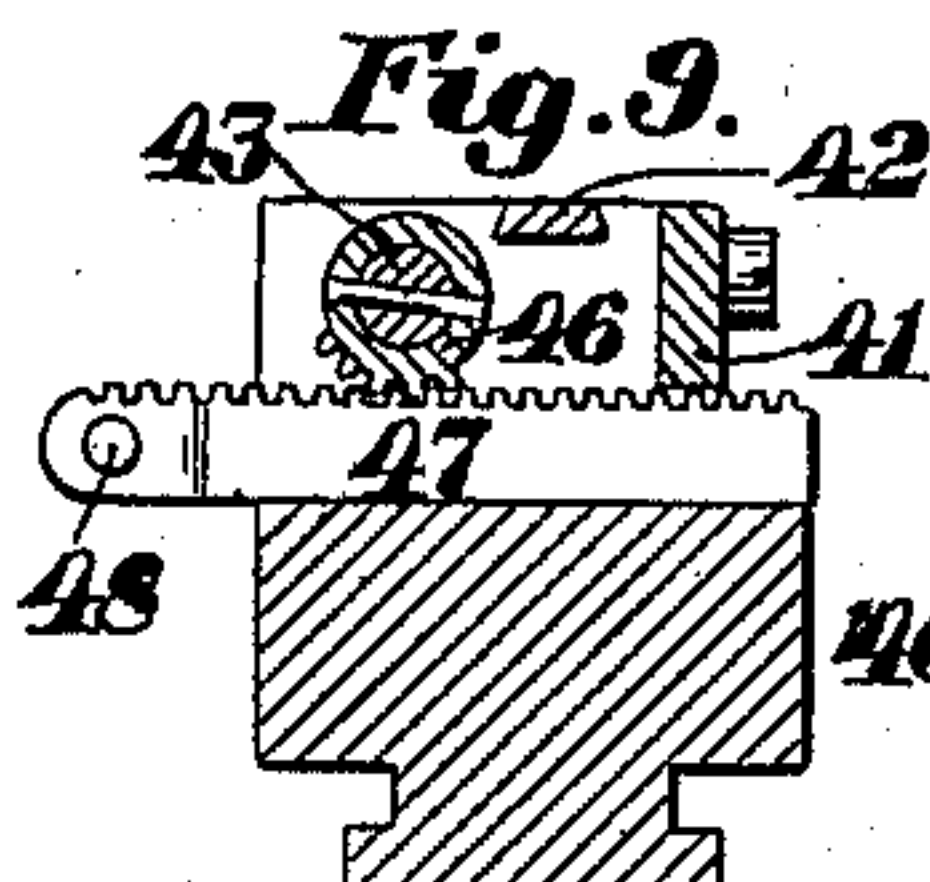


Fig. 12.

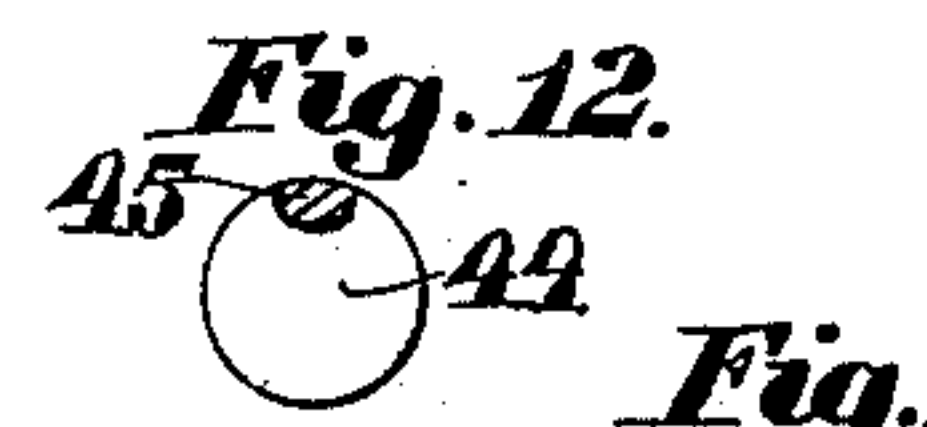


Fig. 10.

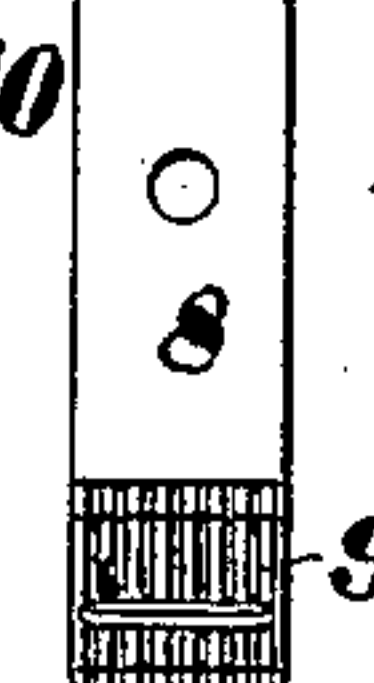
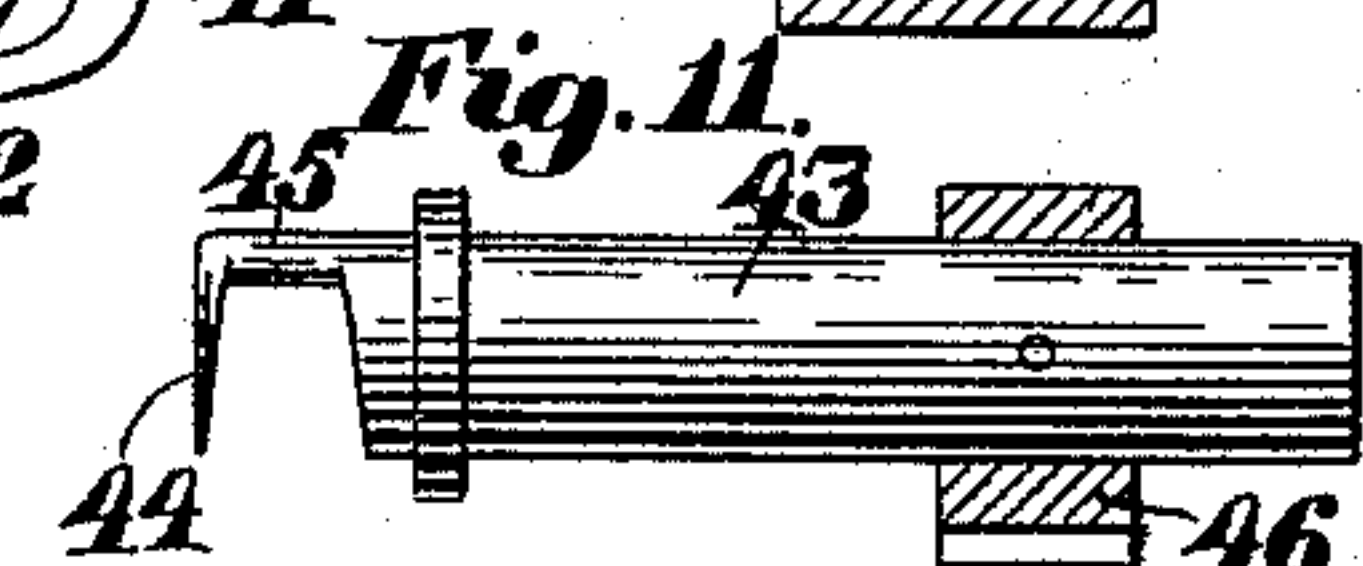


Fig. 11.



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UNITED STATES PATENT OFFICE.

JOSEPH ELI BERTRAND, OF BOSTON, MASSACHUSETTS, ASSIGNOR TO THE
BAY STATE SHOE MACHINERY COMPANY, OF SAME PLACE AND PORT-
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SOLE ROUGH-ROUNDING AND CHANNELING MACHINE.

SPECIFICATION forming part of Letters Patent No. 625,737, dated May 30, 1899.

Application filed March 8, 1899. Serial No. 708,227. (No model.)

To all whom it may concern:

Be it known that I, JOSEPH ELI BERTRAND, of Boston, in the county of Suffolk and State of Massachusetts, have invented certain new and useful Improvements in Sole Rough-Rounding and Channeling Machines, of which the following, taken in connection with the accompanying drawings, is a specification.

My invention relates to sole rough-round-
ing and channeling machines, is an improve-
ment upon the invention described in another
application of mine filed February 16, 1899,
Serial No. 705,639, and it consists in certain
novel features of construction, arrangement,
and combination of parts, which will be read-
ily understood by reference to the description
of the accompanying drawings and to the
claims hereto appended and in which my in-
vention is clearly pointed out.

Figure 1 of the drawings is a plan of a ma-
chine embodying my invention. Fig. 2 is a
right-side elevation. Fig. 3 is an elevation
of the opposite side. Fig. 4 is a front eleva-
tion. Fig. 5 is a sectional plan, the cutting
plane being on line xx on Fig. 2. Fig. 6 is a
partial vertical section of the parts shown in
Fig. 5 and showing the channel-cutter and the
rough-rounding cutter and its carrying-bar in
elevation. Fig. 7 is a plan of the front portion
of the nose of the machine with the channel-
cutters and the gage. Fig. 8 is a front ele-
vation of the same parts with the trimming
or rough-rounding cutter, the feed-point, and
the cutter and feed-point carrying bars. Fig.
9 is a vertical section on line zz on Fig. 7.
Fig. 10 is an elevation of the inner face of
the combined feed and cutting plate or anvil
against which the trimming-cutter acts. Figs.
7, 8, 9, and 10 are drawn to an enlarged scale.
Figs. 11 and 12 are respectively a side eleva-
tion and a transverse section of the oscillat-
ing channel-cutter, drawn to a still larger
scale; and Figs. 13 and 14 are respectively an
elevation and an end view of a portion of a
sole, illustrating the trimming and channel
cuts.

In the drawings, A is the frame of the head
of the machine, constructed and arranged to
be mounted upon a column or bench. (Not
shown.) The frame A has mounted in suit-
able bearings formed therein the shaft 1,
upon which are mounted the cam-disk 2 and

the cylinder-cams 3 and 4 between said bear-
ings, and the driving-wheel C on the project-
ing end thereof, as shown.

To the front end of the upwardly-project-
ing plate-like portion of the frame A and the
bracket 5 is secured the U-shaped pendent
guide-plate 6, and also has pivoted thereto
the crescent-shaped lever 7, to the front end
of which is secured the feed-plate 8, the in-
ner face of which has set therein the plate 9
of soft metal, the inner face of which is ser-
rated or roughened to insure a good hold upon
the surface of the rand or sole to feed the
work, as shown in Fig. 10. The rear end of
the lever 7 has set therein the stud 10, upon
which is mounted the truck 11, upon which
the face-cam formed upon the periphery of
the cam-disk 2 acts to vibrate said lever 7 ver-
tically, said truck being kept in contact with
said cam by the tension of the spring 12. The
lever 7 is mounted upon the pivot-pin 13, so
as to be movable laterally or lengthwise of
said pin to assist in feeding the work.

A three-armed lever 14 is mounted upon a
vertical pivot-pin 15, secured in a fixed po-
sition in the ears or bosses 16 and 17, formed
on the frame A, as shown in Figs. 3 and 4.
The rearwardly-projecting arm of the lever
14 carries at its rear end a cam-truck, which
is acted upon by the path of the cylinder-cam
3 to vibrate said lever 14, and the upper for-
wardly-projecting arm of said lever is con-
nected at its front end with the lever 7 by a
swiveling block 18 to impart the necessary
lateral movement to said lever 7 upon the pin
13 for feeding the work.

An arm 19 is pivoted to the frame A at its
rear end by the vertical pin 20, rests at its for-
ward end upon a supporting portion A' of the
frame A, and is provided in its upper side with
a longitudinal groove, in which are mounted
so as to be movable endwise therein the
bars 21 and 22, which are held in place in said
groove by the caps 23, and the bar 22 has se-
cured to its front end the trimming-cutter 24
and to the upper side of its rear end the swiv-
eling block 25, which is engaged by the forked
arm of the elbow-lever 26, the other arm of
which carries a cam-truck 27, which is acted
upon by the cam-path 28 of the cylinder-cam
4 to vibrate said lever and impart to said bar
22 an intermittent reciprocation, as shown in

Figs. 4 and 5. The bar 21 has set in its front end the feed point or spur 29 and in the upper side of its rear end a stud, upon which is mounted the swiveling block 30, which is engaged by the forked arm of the elbow-lever 31, the other arm of which carries a cam-truck 32, which is acted upon by the cam-path 33 of the cylinder-cam 4 to vibrate said lever and impart to said bar 21 an intermittent reciprocation in the direction of its length. The front ends of the bars 21 and 22 are partially bifurcated and provided on their undersides with dovetailed grooves to receive the feed-point 29 and the trimming-cutter 24, respectively, which are clamped firmly in said grooves by the clamping-screws 34 and 35, respectively, as shown in Fig. 8.

The arm 19 is provided with the laterally-projecting ear 36, to which is pivoted one end of the link 37, the other end of which is pivoted to the front end of the lower forwardly-projecting arm of the lever 14, by the vibration of which the arm 19 and bars 21 and 22 have imparted thereto a lateral vibratory motion in unison with the lateral motion of the lever 7 and feed-plate 8 for the purpose of feeding the work.

The base-plate of the frame A has formed upon its underside two downwardly-projecting ears 38, between which said plate has cut through it a rectangular opening in which is mounted, so as to be vertically movable therein, the block 39, having an inverted-T-shaped groove formed in its upper side, in which is fitted, so as to be movable endwise therein, the nose-piece 40, upon which are adjustably secured in fixed positions the gage-plate 41 and the cutter 42, and also has mounted in a suitable bearing therein the short shaft 43, the axis of which is at right angles to the line of feed of the work and has formed upon its front end the circular cutter 44, concentric with said shaft, but connected thereto by the eccentric neck 45, as shown in Figs. 11 and 12, said cutter having a knife-edge extending from one side of the neck 45 around to the opposite side thereof. The shaft 43 has firmly secured thereon the toothed segment 46, with which the teeth of the rack 47 engage, as shown in Fig. 9. The rack 47 has set in its end the laterally-projecting pin 48, with which the forked end of the lever 49, secured upon the front end of the shaft 50, engages to impart to said rack a reciprocating movement, and thereby cause an oscillating movement to be imparted to said cutter 44 to cut the channel. The shaft 50 is mounted in bearings in the ears 51 and 52 formed upon the frame A in such a manner that it is free to be moved endwise and oscillated about its axis therein, and has fitted upon its rear end the arm 53, the hub of which is divided and embraces the ear 52 to prevent forward and rearward movement of said arm when the shaft 50 is moved endwise in unison with the movements of the nose-piece 40, said arm, however, being connected to said shaft by a

spline and groove, so that said shaft is compelled to move about its axis in unison with said arm, to which a series of rapid vibrations is imparted during about one-third of each revolution of the shaft 1 by the face-cam 54, formed upon the side of the cam-disk 2, acting upon the truck 55, carried by said arm 53, as shown in Figs. 1 and 3, said truck 55 being held in contact with said cam 54 by the spring 56.

A block or stand 57 is secured to the frame A above the forward cap-plate 23 to prevent any possibility of the front ends of the arm 19 and bars 21 and 22 being forced upward during the cutting or feeding of the material.

The nose-piece 40 is limited in its forward movement by the adjustable stop-screw 58, toward which it is pressed by the spring 59, inclosed in a chamber in said nose-piece and acting against a shoulder on the follower 60, the rear end of which abuts against the pin 61, as shown in Fig. 6. The nose-piece 40 is moved to the rear for the purpose of placing the work in position by means of the cord or chain 62, secured to the screw-stud 63, and after passing over the pulley 64 is connected to a treadle near the floor, but not shown.

The block 39 rests upon two eccentrics 65, which have bearings in the ears 38 and have secured thereon the radius-arms 66, the movable ends of which are connected by the link 67, to one end of which is pivoted one end of the rod 68, the other end of which extends through a bearing in the stand 69, between which and a shoulder on said rod is the spring 70, the tension of which moves the lower ends of said arms 66 toward the front of the machine. The link 67 has set therein a stud, to which is connected one end of the cord or chain 71, which passes to the rear over the pulley 72 and is connected at its other end to a treadle near the floor, but not shown, by means of which the link 67 and the lower ends of the arms 66 may be moved to the rear against the tension of the spring 70, and thus turn said eccentrics, so as to raise the block 39 and nose-piece 40 to reduce the distance of the channel from the rough-rounded edge of the sole, the movements of the radius-arms 66 being limited in both directions by the stop-pins 73. The cutter 24 has a straight cutting edge with its flat side downward, as shown in Figs. 6 and 8.

The guide-plate 6 enters the angular space between the rand and upper of the boot or shoe and serves to guide the same as it is fed through the machine, said plate bearing against the rand below the lower end of the feed-plate 8 and for some distance to either side thereof, as shown in Fig. 4.

The operation of my invention is as follows: The several parts of the machine being in the positions shown in Figs. 1, 2, 3, and 4, the operator retracts the nose-piece 40 by placing his foot upon the treadle connected thereto by the cord or chain 62, then places the tread-surface of the sole against the gage-

plate 41, with the lower ends of the guide-plate 6 bearing against the upper in proximity to the rand, and then releases said treadle, when the reaction of the spring 59 causes a forward movement of said nose-piece and a clamping of the sole edge between the guide-plate 6 and the gage-plate 41. If power be applied to the wheel C to revolve it in the direction indicated by the arrow on Fig. 2, the first effect produced is a forward movement of the bar 21 and feed-point 29 till said feed-point enters the sole and presses the welt into firm contact with the plate 9, caused by the action of the cam-path 33 upon the lever 31. When the forward movement of the feed-point is completed and while said feed-point remains in the sole, the forward ends of the arm 19, the bars 21 and 22, and the cutter 24 and the lever 7, with the feed-plate 8, are moved toward the left by the action of the cam 3 upon the lever 14 to feed the work, which being pressed against the cutting edge of the stationary cutter 42 as it is fed forward a section of a shallow incision or slit 74 at right angles to the tread-surface of the sole is formed therein, as shown in Figs. 13 and 14. During the same time that the work is being fed the cam 54 is acting upon the truck 55 to oscillate the shaft 50 and cause a series of rapid reciprocations of the rack 47 and a corresponding series of oscillations of the cutter 44, which cuts an incision 75 parallel, or nearly so, to the tread-surface of the sole and extending from the incision 74 toward the center of the sole, a distance nearly equal to the diameter of said cutter 44, as shown in Figs. 13 and 14. When the movement of the arm 19 toward the left ceases and the feed of the work is completed, the action of the cam-path 28 upon the lever 26 causes the bar 22 and cutter 24 to be moved forward to force said cutter through the sole and welt into contact with the plate 9, thereby cutting a section of the trimming incision 76. (See Figs. 13 and 14.) The continuation of the revolution of the cam-shaft 1 causes the cutter 24 and the feed-point 29 to recede to their rear-most positions, while the plate 8 moves toward the front, and then the said feed-point, cutter, and feed-plate are moved toward the right to the positions occupied at the start, the work being prevented from being moved backward by being clamped between the guide-arm 6 and the gage-plate 41, these operations being repeated at each revolution of the cam-shaft 1.

The distance of the channel from the rough-rounded edge of the sole may be varied by a partial rotation of the eccentrics through the medium of the cord 71, the link 67, the levers 66, and the spring 59. The elbow-levers 26 and 31 are mounted upon a common vertical pin 74, set in a fixed position in the boss 75 and the bracket 76, as shown in Figs. 1, 2, 3, and 4.

I claim—

1. In a rough-rounding machine, the combination of a yielding nose-piece and a gage-

plate carried thereby; a stationary guide-plate cooperating with said nose-piece to clamp the sole edge; a reciprocating and laterally-movable feed-point; a reciprocating and laterally-movable rough-rounding or trimming knife; and a feed-plate constructed and arranged to move toward and from said feed-point and laterally in unison therewith.

2. In a rough-rounding and channeling machine, the combination of a stationary guide-plate; a yielding nose-piece and a gage-plate cooperating therewith to clamp the work; an endwise-reciprocating and laterally-movable feed-point; an endwise-reciprocating and laterally-movable trimming-cutter; a feed-plate constructed and arranged to move toward and from said feed-point and cutter, and laterally therewith; a fixed cutter carried by said nose-piece, and arranged to cut a shallow incision in the sole at right angles to the tread-surface thereof as the work is fed past it; an oscillating disk-like cutter, also carried by said nose-piece and arranged to cut an incision from said shallow incision toward the center of the sole, parallel or nearly so to the tread-surface thereof; means for imparting to said disk-like cutter a series of rapid oscillations, during the time that the work is being fed; and means for imparting intermittent reciprocations and lateral movements to said feed-point, said trimming-cutter and the feed-plate.

3. The combination of the pivoted grooved arm 19; the bars 21 and 22 fitted to and movable endwise in the groove in said arm; the cutter 24, the elbow-levers 26 and 31, the cam 4, the paths 28 and 33, the lever 14 connected to said arm 19; the cam 3; the lever 7; the feed-plate 8; the cam 2 for vibrating said lever and the swiveling block 18 connecting said lever 7 to an arm of the lever 14, all constructed, arranged and operating substantially as described.

4. In a machine for channeling and rough-rounding the soles of boots and shoes while on the last, the combination of a vibrating and laterally-movable feed-plate arranged to engage the welt; a normally-fixed but adjustable U-shaped guide-plate arranged to bear against and support the welt upon both sides of and below said feed-plate and against the upper to guide the shoe; a reciprocating and laterally-movable feed-point; cooperating with said feed-plate to feed the work and a reciprocating and laterally-movable trimming-cutter cooperating with said feed-plate to trim a section of the sole after each feeding movement is completed.

In testimony whereof I have signed my name to this specification, in the presence of two subscribing witnesses, on this 4th day of March, A. D. 1899.

JOSEPH ELI BERTRAND.

Witnesses:

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GEO. E. MITCHELL.