(No Model.) 4 Sheets—Sheet 1.

H. BRIGGS.

ROUGH ROUNDING AND CHANNELING MACHINE.

No. 463,967. Patented Nov. 24, 1891.

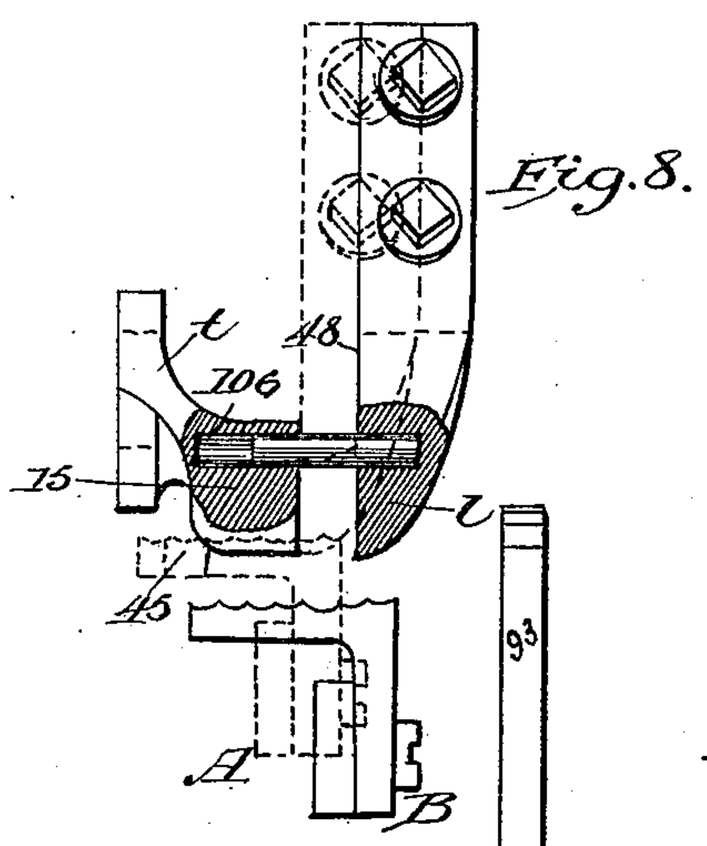

Fig. 8.

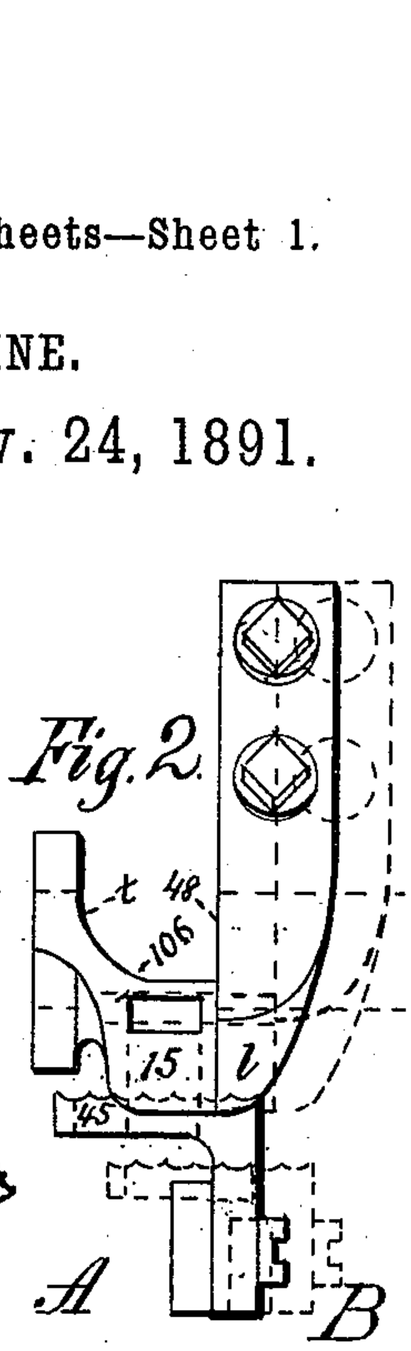

Fig. 3.

Fig. 2.

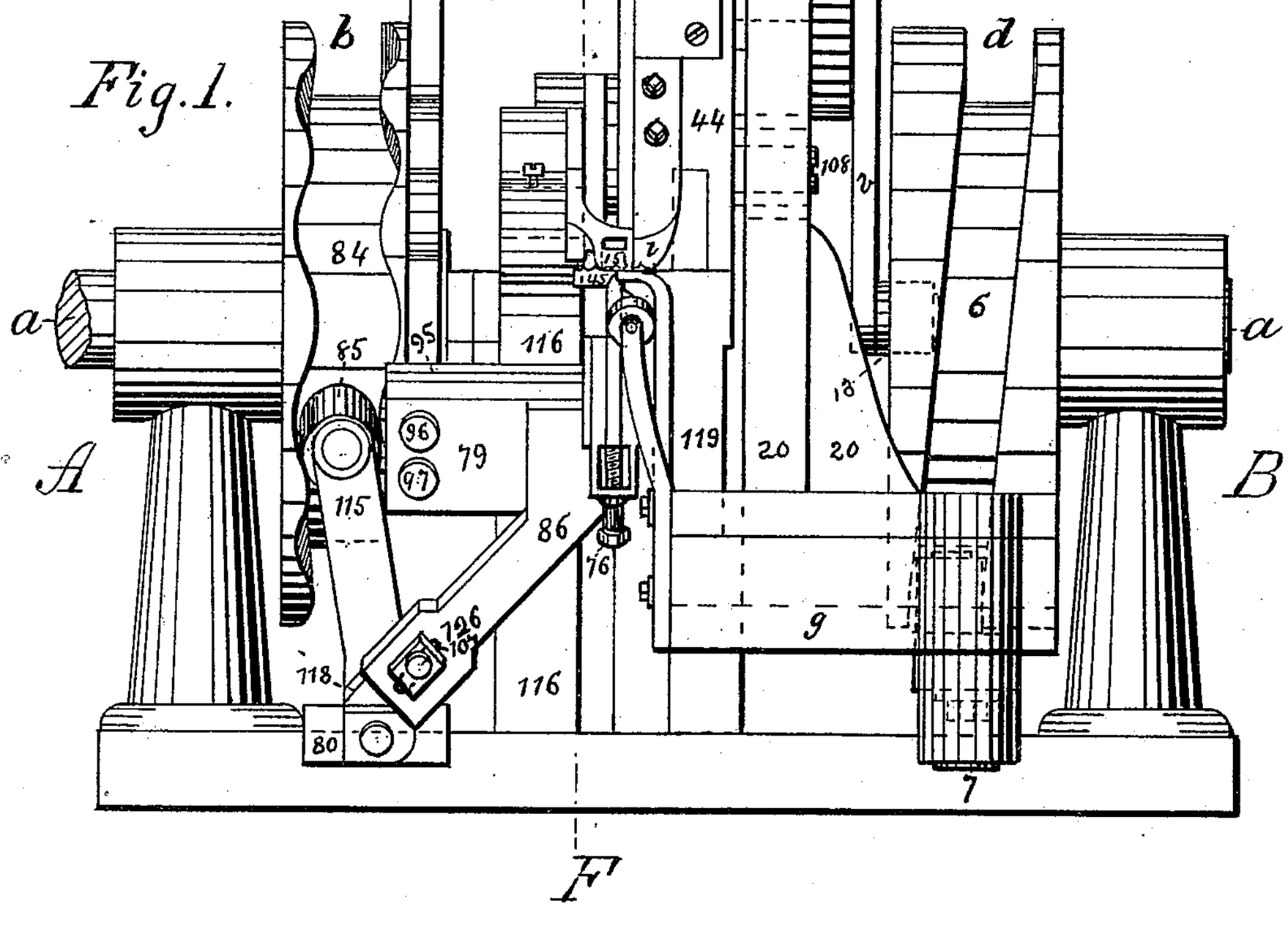

Fig. 1.

Witnesses
A. C. Snyder
Edwd L. Perkins

Inventor
Henry Briggs
By his Attorney
C. Henry Corey

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H. BRIGGS.

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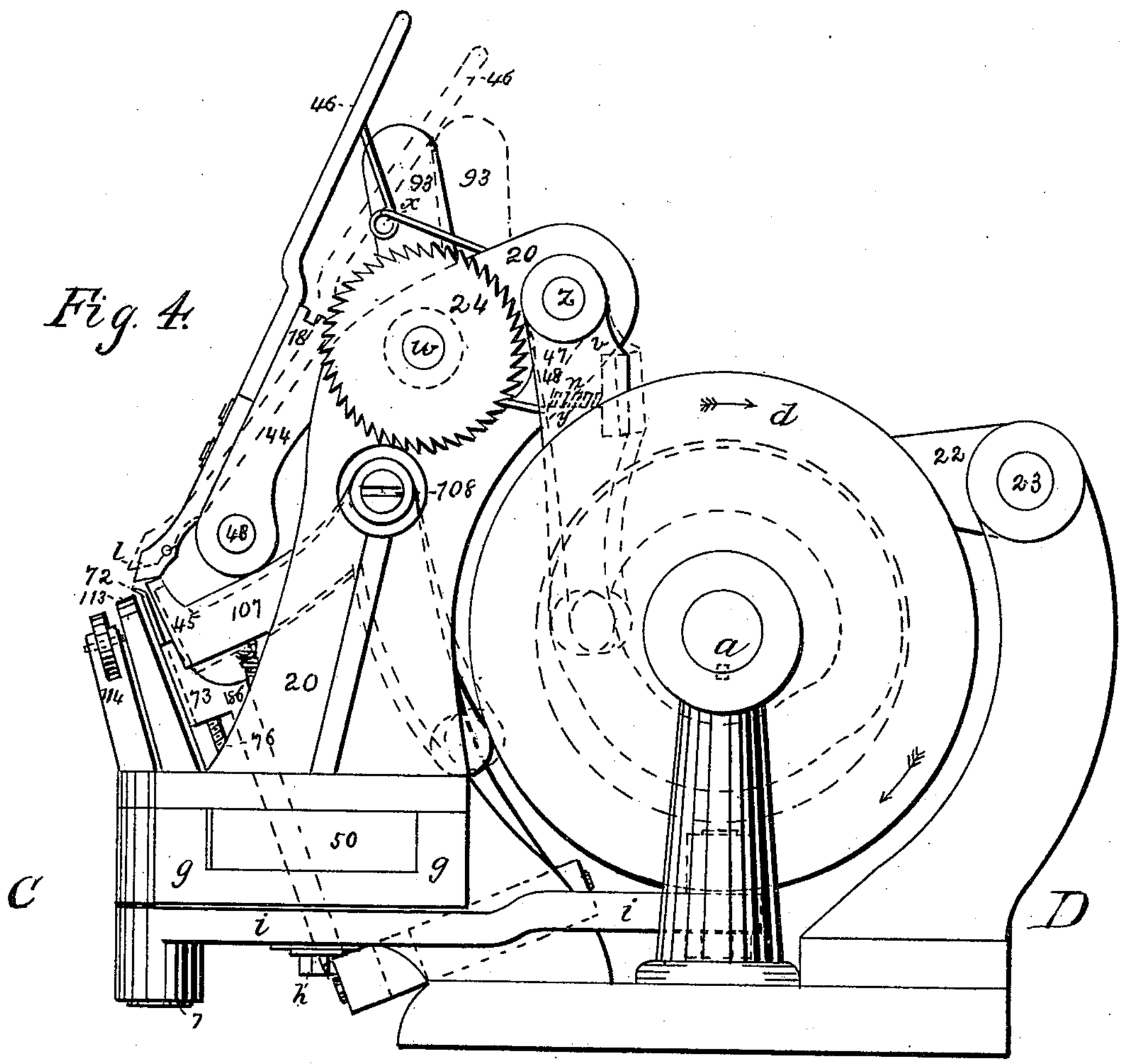
Fig. 4.



Witnesses
A. C. Snyder
Edwd L. Perkins

Inventor
Henry Briggs
By his Attorney
C Henry Roney

(No Model.) 4 Sheets—Sheet 3.

H. BRIGGS.

ROUGH ROUNDING AND CHANNELING MACHINE.

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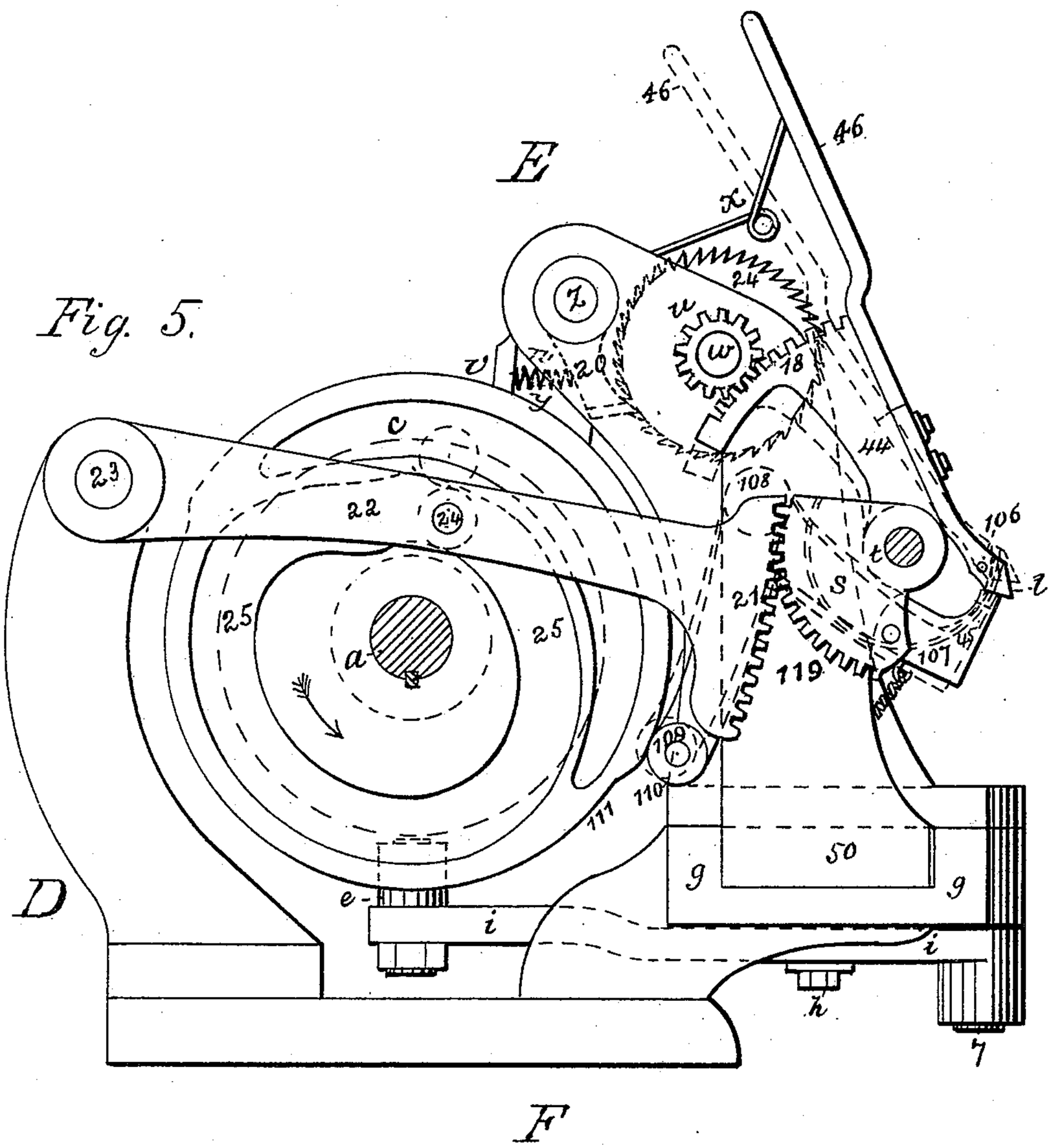
Fig. 5.



Witnesses
A. C. Snyder
Edwd L. Perkins

Inventor
Henry Briggs

By his Attorney
C. Henry Storey

(No Model.) 4 Sheets—Sheet 4.

H. BRIGGS.

ROUGH ROUNDING AND CHANNELING MACHINE.

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Fig. 6.

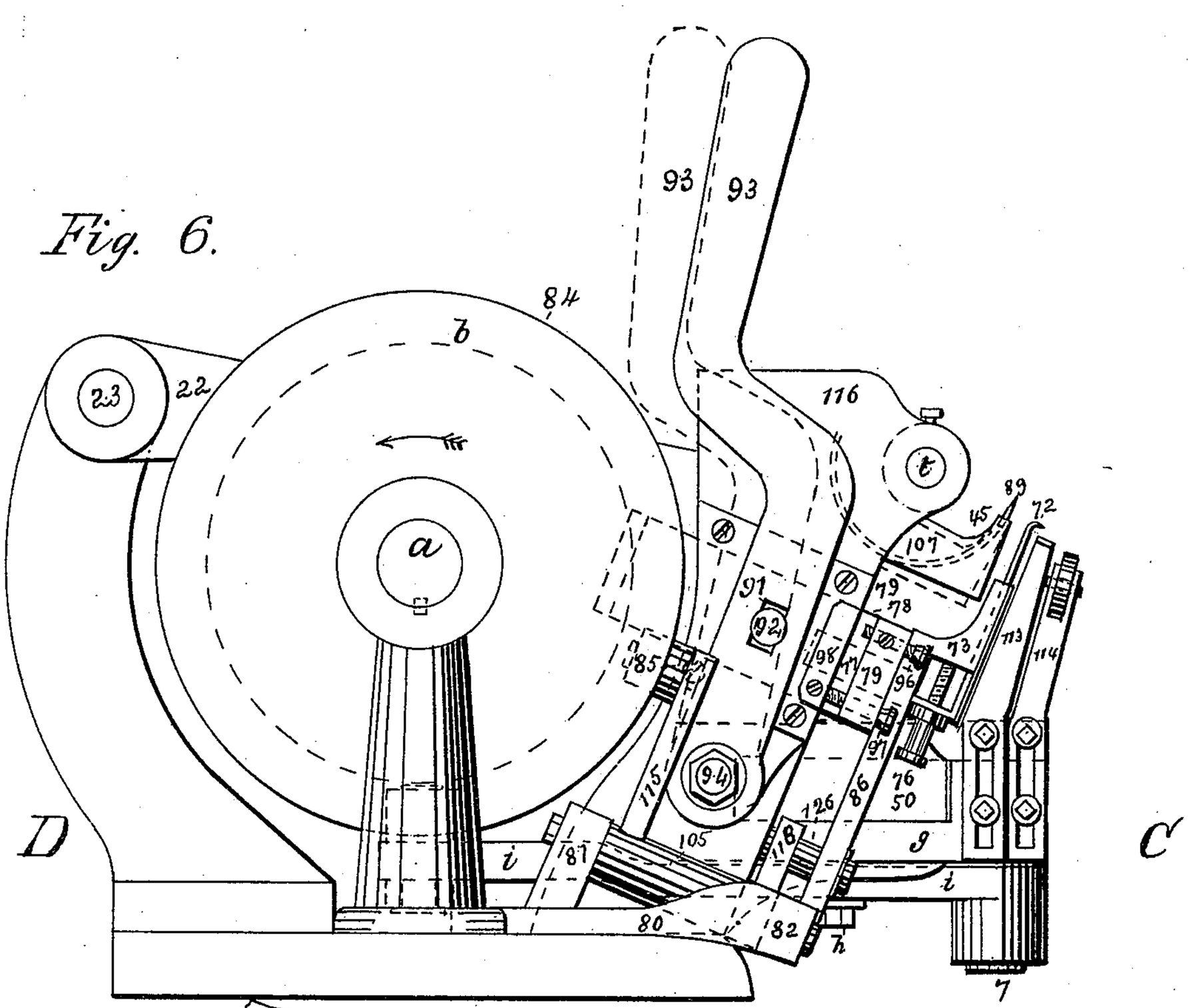
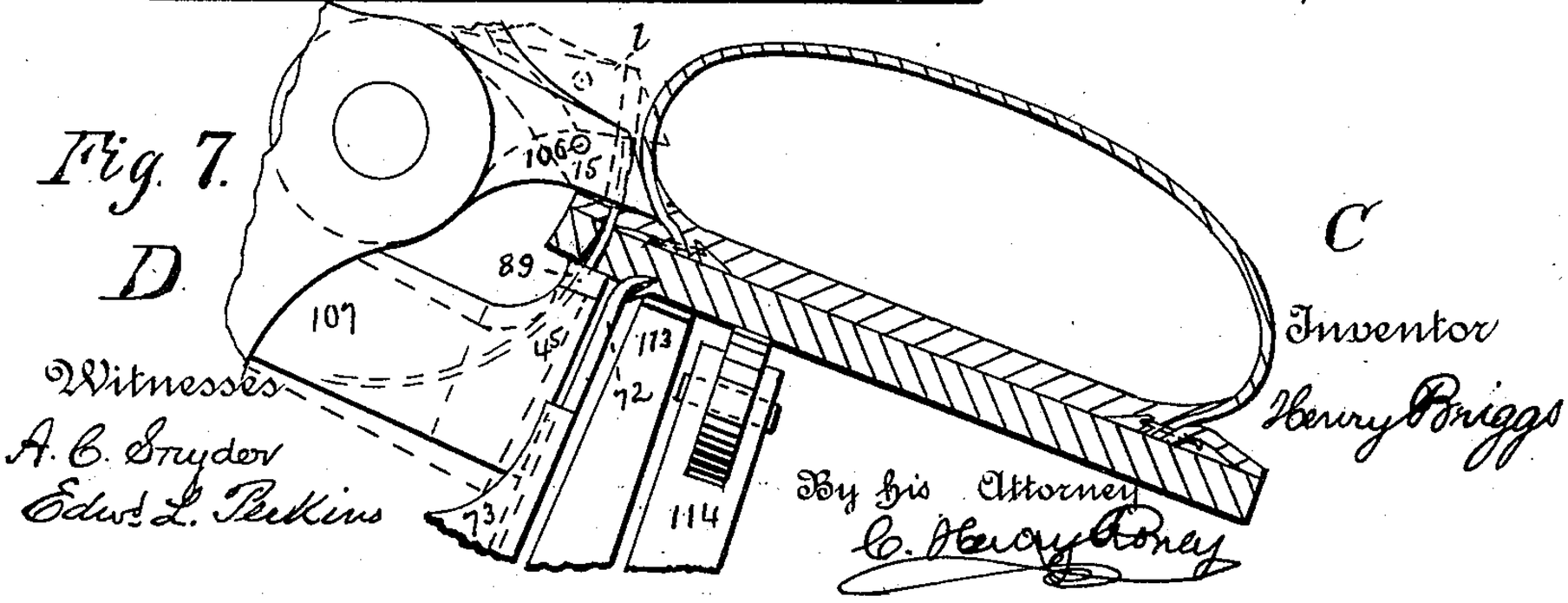


Fig. 7.



Witnesses
A. C. Snyder
Edwd L. Perkins

Inventor
Henry Briggs

By his Attorney
C. Henry Corey

UNITED STATES PATENT OFFICE.

HENRY BRIGGS, OF NEW YORK, N. Y., ASSIGNOR TO THE GOODYEAR SHOE MACHINERY COMPANY, OF HARTFORD, CONNECTICUT.

ROUGH-ROUNDING AND CHANNELING MACHINE.

SPECIFICATION forming part of Letters Patent No. 463,967, dated November 24, 1891.

Application filed June 24, 1891. Serial No. 397,302. (No model.)

To all whom it may concern:

Be it known that I, HENRY BRIGGS, a citizen of the United States, and a resident of the city, county, and State of New York, have invented certain new and useful Improvements in Rough-Rounding and Channeling Machines, of which the following is a specification.

My invention relates to improvements in machinery to "rough-round" and "channel" boot or shoe soles while upon the shoe and with the last in or out of the shoe. I attain this object by the device shown in the accompanying drawings, in which—

Figure 1 shows a front elevation of my machine as in operation, with the feed-clamp 1 forward (toward A) and locked and the four-motion drop-feed 45 also forward toward A; Fig. 2, a detail of throat-plate and gage 15, feed-clamp 1, and four-motion drop-feed 45 in front elevation, the solid lines showing them locked in contact, as in Fig. 1, the two latter being forward, (toward A,) the dotted lines showing the two latter back (toward B) with the four-motion drop-feed 45 down; Fig. 3, a vertical transverse view of throat-plate and gage 15, C D looking from B toward A of Fig. 1; Fig. 4, an end view of Fig. 1 looking from B toward A of Fig. 1; Fig. 5, a vertical transverse section on line E F of Fig. 1 looking from A toward B of Fig. 1; Fig. 6, an end view of Fig. 1 looking from A toward B of Fig. 1, omitting parts 15, 20, 24, 44, 46, and *x*; Fig. 7, a vertical transverse section of the fore part of a shoe while being rough-rounded and channeled in this machine, looking from A toward B of Fig. 1; Fig. 8, a detail of throat-plate and gage 15, sliding pin 106, feed-clamp 1, and four-motion drop-feed 45 in front elevation, the solid lines showing the feed-clamp 1 drawn back toward B, the four-motion drop-feed 45 also down and back, (toward B,) the dotted lines showing the two latter fed forward toward A, with the four-motion drop-feed 45 also up.

Similar letters and figures denote similar parts throughout the several views.

This machine is designed to rough-round and channel boot or shoe soles while upon the shoe, and with the last either in or out of the shoe, while the work operated upon is being automatically fed through the machine.

In previous machines of this class the feed movement has been defective in its operation in some parts of the process. For instance, when the sole operated on has no material in places outside of the cut made by the edge-trimming or oscillating cutting-blade the four-motion feed-blade or feed-awl heretofore used will not have any material to enter, and consequently will not be able to feed the sole operated upon forward or against the edge-trimming or oscillating cutting-blade and channeling-knife, necessitating this feeding being performed by hand. By my invention this mechanical defect is overcome and the shoe and sole are fed forward automatically to the channeling-knife 72 and edge-trimmer or oscillating cutting-blade 89 by a positive feed-motion 45 and feed-clamp 1. The principal objects to be attained in this part of the process of the manufacture of boots or shoes are that the edge of the sole operated upon shall be rough-rounded to an equal and uniform width from the inseam, and that the channel shall be cut at any varied distance desired from the rough-rounded edge of the sole, as in the shank the channel is required to be at a greater distance from the rough-rounded edge than in the fore part of the sole.

My invention consists of a frame carrying a main rotating shaft *a*, having upon it hubs or cams *b c d* to correctly actuate the various parts of the machine to feed, rough-round, and channel the soles of boots or shoes while upon the boot or shoe and with the last in or out of the boot or shoe. A vertically and horizontally adjustable channeling-knife 72, having a vibratory motion, is supported and operated by the knife holder or carriage 73, mounted on and supported by the upper part of the vibrating arm 86. This channeling-knife 72 and its holder or carriage 73 and vibrating arm 86 are vertical, or nearly so, and supported by the pivot or fulcrum 77 as a center. This vibrating channeling-knife 72 and its holder or carriage 73 are mounted on the vibrating arm 86 and are capable of being raised and lowered by the screw-thread and adjusting-screw 76 to cut the channel in the sole to the depth required. The vibrating arm 86 is mounted on the slide-block 78 by its pivot or fulcrum 77 extending into the slide-block 78, which extends through the grooved block 79, permitting lateral adjust-

ment of the slide-block 78 and channeling-knife 72 to the required distance from the edge of the sole to be channeled. The groove for the slide-block 78 is cut in the rigid part or standard 116 of the frame of the machine. The slide-block 78 carries a stud 92, which is embraced by the slot 91 in the hand-lever 93, pivoted at 94 to a rigid part of the machine, so that the slide-block 78, vibrating arm 86, knife holder or carriage 73, and channeling-knife 72 may be moved laterally by the hand-lever 93.

The slide-block 78 is a T-shaped piece, the arm 79 containing two stop-screws 96 and 97, screw 96 screwing through arm 79 and stopping against arm 98 of plate 95, the other screw 97 passing through arm 79 of slide-block 78 and screwing into arm 98 of plate 95 to regulate the lateral adjustment of the slide-block 78, vibrating arm 86, knife holder or carriage 73, and vibrating channeling-knife 72.

A bracket 80, attached to the lower part of the frame of the machine, supports a rock-shaft 105, pivoted in two lugs 81 and 82 of the bracket 80. One arm 115 of this rock-shaft 93 carries a cam-roller 85, geared into the groove 84 of the cam-wheel *b*. The other end 118 of the rock-shaft 105 carries a swivel-block 126, geared into a slot 107 in the vibrating arm 86, vibrating this arm 86 on its fulcrum or pivot 77.

The part of my machine intended for rough-rounding the sole at the same time that the channel is being cut consists of the oscillating cutting-blade 89, having its cutting-edge parallel to its axis of oscillation and passing through the long slot forming the throat of the four-motion drop-feed 45, through the "work," and through the throat or slot of the throat-plate and gage 15, and operating, in connection with the edge of the throat of the throat-plate and gage 15, to form a scissor-cut, separating or rough-rounding the sole as it is fed forward (from B toward A) by the four-motion drop-feed 45 and feed-clamp 1. This throat-plate and gage 15 and feed-clamp 1 are connected by a pin or pivot 106, projecting from the side of the feed-clamp 1 and sliding in a slot in the throat-plate and gage 15, which permits a lateral movement also of the feed-clamp 1. My oscillating cutting-blade 89 is attached to a carrying-segment *s*, which is mounted to turn about the bolt *t*, the head of the bolt acting against one side of the segment *s*. This segment *s* and oscillating cutting-blade 89 are oscillated by the rack 21 at the end of a lever 22, pivoted at 23, a pin or roller 24 entering a cam-groove 25 in the disk or cam *c*. The four-motion drop-feed 45 is attached to one arm 107 of a bell-crank pivoted at 108 to the upright portion of the feed-slide 50, the other end 109 of the bell-crank having a roller 110, bearing against the periphery of the cam *c*, having a depression 111 to allow the feed end to drop at the proper time. The lower portion 50 of the feed-slide works in guideways *g*, attached to a rigid part of the frame of the machine, and has a stud *h*, geared in a slot in a lever *i*, one end of said lever *i* oscillating on a pivot or fulcrum 7, attached to a rigid part of the machine, the other end carrying a cam-roller *e*, geared into the groove 6 in the cam-wheel *d*. The upright arm 119 of the feed-slide 50 carries the swing-piece or lock-segment 44, pivoted at 48. This lock-segment 44 carries on its upper side the hand-lever 46 and feed-clamp 1. The throat-plate and gage 15 is pivoted at *t* on the rigid standard 116. The lock-segment 44 has on its upper end teeth 18, which gear into the pinion *u*, pivoted at *w* on the rigid part or standard 20, through which the pivot *w* passes, and carries on its other end the ratchet-wheel 24. The throat-plate and gage 15 and feed-clamp 1 are pressed down on the work by a spring *x*, acting at one end against the hand-lever 46 and at the other end against the standard 20. The throat-plate and gage 15 and feed-clamp 1 act in combination as the gage for the work operated on, as well as forming a clamp with the four-motion drop-feed 45. The "lock" consists of the ratchet-wheel 24, the two pawls 47 and 48, their pressure-springs *n* and *y* to operate in connection with them, and the cam-lever *v*, pivoted at *z* on the rigid part 20 of the frame of the machine, this cam-lever *v* having a roll 13 geared into the cam-wheel *d*.

The work-support consists of two adjustable rests 113 and 114, having slotted uprights, which may be adjusted to accommodate any style of round or flat boot or shoe sole, as different styles of lasts vary in their shape of bottom. The rest 113 has a flat surface on its upper end, which comes in contact with and supports the sole. The distance which the vibrating channeling-knife 72 projects above this flat surface gives the depth of channel required. The other work-support 114 has a roller at its upper end, the height of which may be adjusted to suit the pitch of any shape of sole operated upon.

In Figs. 1, 2, 3, 4, 5, 6, and 7 the solid lines show the position of the parts of the machine as in operation with the four-motion drop-feed 45 up and forward, (toward A,) the throat-plate and gage 15 and feed-clamp 1 also locked and forward, (toward A,) the oscillating cutting-blade 89 being up at the end of its stroke. The four-motion drop-feed 45 then moves down and backward, (toward B,) the lock of the feed-clamp 1 and throat-plate and gage 15 unlocks, and the feed-clamp 1 next moves backward, (toward B.) The oscillating cutting-blade 89 now drops. At the same time the channeling-knife 72 and its hand-lever 93 are in position for the channeling-knife 72 to commence cutting the channel at the proper distance from the edge of the sole in the "shank," the dotted lines showing the position of the hand-lever 93 when adjusting the channeling-knife 72 to cut the channel in the fore part of the sole.

The operation of this machine is as follows: To insert the work, the hand-lever 46 is pressed back (toward D) to the position shown by the dotted lines, thus raising the feed-clamp 1 and throat-plate and gage 15, permitting the work to be inserted between the work-supports 113 and 114 and the throat-plate and gage 15 and feed-clamp 1 until the inseam is against the edge of the two latter parts, the bottom of the sole resting on the guards or work-supports 113 and 114. The hand-lever 46 is then released and forced by the spring *x* toward the solid lines, (toward C,) pressing the feed-clamp 1 and the throat-plate and gage 15 against the upper side of the sole of the boot or shoe operated on. The machine is now put in motion, the lock of the clamp-feed 1 and throat-plate and gage 15 now locks, and the four-motion drop-feed 45 now rises, clamping the work. The four-motion drop-feed 45 and feed-clamp 1 are next moved forward (from B toward A) by the feed-motion 50, carrying the work clamped between them from B toward A. The oscillating cutting-blade 89 now moves upward through the four-motion drop-feed 45, and the sole is operated on, the throat-plate and gage 15 separating or rough-rounding the edge of the sole. The lock of the feed-clamp 1 and throat-plate and gage 15 next unlocks, the four-motion drop-feed 45 drops down, and its backward movement from A toward B takes place, while the throat-plate and gage 15 with the work remain stationary. Next the oscillating cutting-blade 89 drops down, leaving the machine in the position it was in when the work was inserted. The spring *x* presses the hand-lever 46, so as to keep the feed-clamp 1 and throat-plate and guide 15 pressed down on the upper part of the sole and automatically adjusts them for any variation in the thickness of the sole operated on.

When the machine is started, the vibrating channeling-knife 72 is also put in motion, actuated by the cam-wheel *b*, and continues to operate while the four-motion drop-feed 45, feed-clamp 1, and oscillating cutting-blade 89 are in action, the distance of the channel from the edge of the sole being regulated by moving the hand-lever 93. By a repetition of these motions the boot or shoe sole is rough rounded and channeled. When the operation is finished on the sole operated upon, the machine is stopped in the position described when ready to insert the work. The hand-lever 46 is then pressed back, (toward D,) raising the feed-clamp 1 and throat-plate and guide 15, releasing the sole, which is then removed from the machine, which is now ready for the insertion of the next sole to be operated upon.

If preferred, the pin or pivot 106 may be attached to the throat-plate and gage 15, and pass into a slot in the feed-clamp 1, or it may be a loose pin or pivot or bolt passing through both parts 15 and 1, of sufficient length to permit the lateral movement of the feed-clamp 1, as previously described.

In Fig. 3 at 89 I have shown a side view of my oscillating cutting-blade grooved on the upper side, an end view showing it, as at 89′, at the end of the face and sides for the purpose of removing the "chips" or waste material in sections in place of in a continuous strip as removed by a flat-edged oscillating cutting-blade which may also be used in this machine; but I prefer to use the grooved oscillating cutting-blade shown.

What I claim, and desire to secure by Letters Patent, is—

1. In a rough-rounding and channeling machine, the pivoted throat-plate and gage, in combination with and actuated by the sliding pin and clamp-feed and mechanism for operating them, substantially as shown and described.

2. In a rough-rounding and channeling-machine, the combined lock-clamp feed, sliding pin, and pivoted throat-plate and gage, in combination with the four-motion drop-feed and mechanism for operating them, substantially as shown and described.

3. A rough-rounding and channeling machine provided with the oscillating cutting-blade 89, having its axis parallel with its axis of oscillation, a work-support, and a four-motion drop-feed, with a combined lock-feed clamp, sliding pin, and throat-plate and gage, in combination with a vertically-vibrating adjustable channeling-knife and mechanism for operating the cutting-blade, four-motion drop-feed, lock-clamp feed, sliding-pin, pivoted throat-plate and gage, and channeling-knife, substantially as shown and described.

4. In a rough-rounding and channeling machine, the adjustable rests 113 and 114, constituting a support for the work, and mechanism for the channeling-knife and rough-rounding cutting-blade, substantially as shown and described.

In testimony that I claim the foregoing as my invention I have signed my name, in presence of two witnesses, this 6th day of June, 1891.

HENRY BRIGGS. [L. S.]

Witnesses:
C. HENRY RONEY,
ARTHUR C. SNYDER.