

No. 673,028.

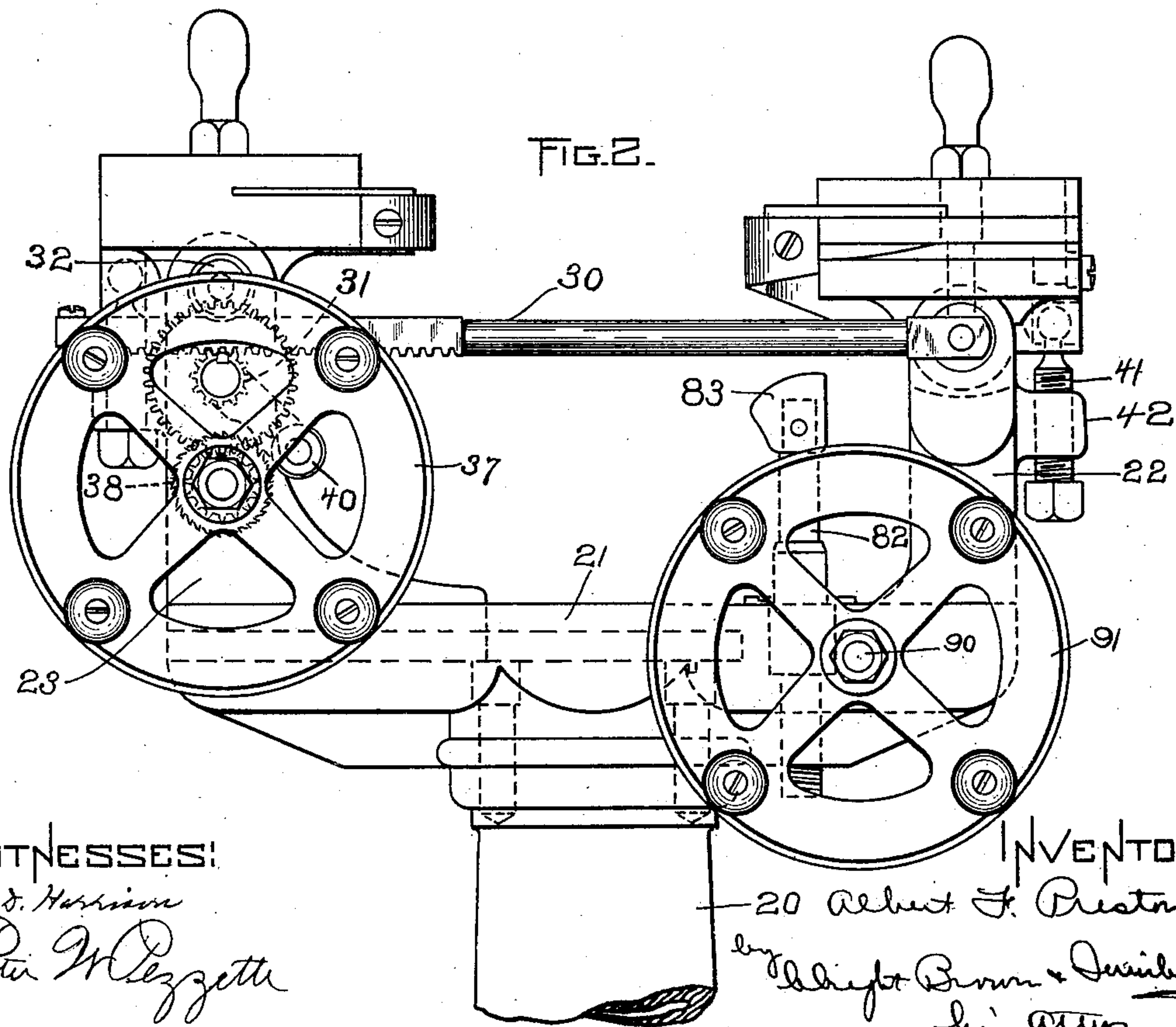
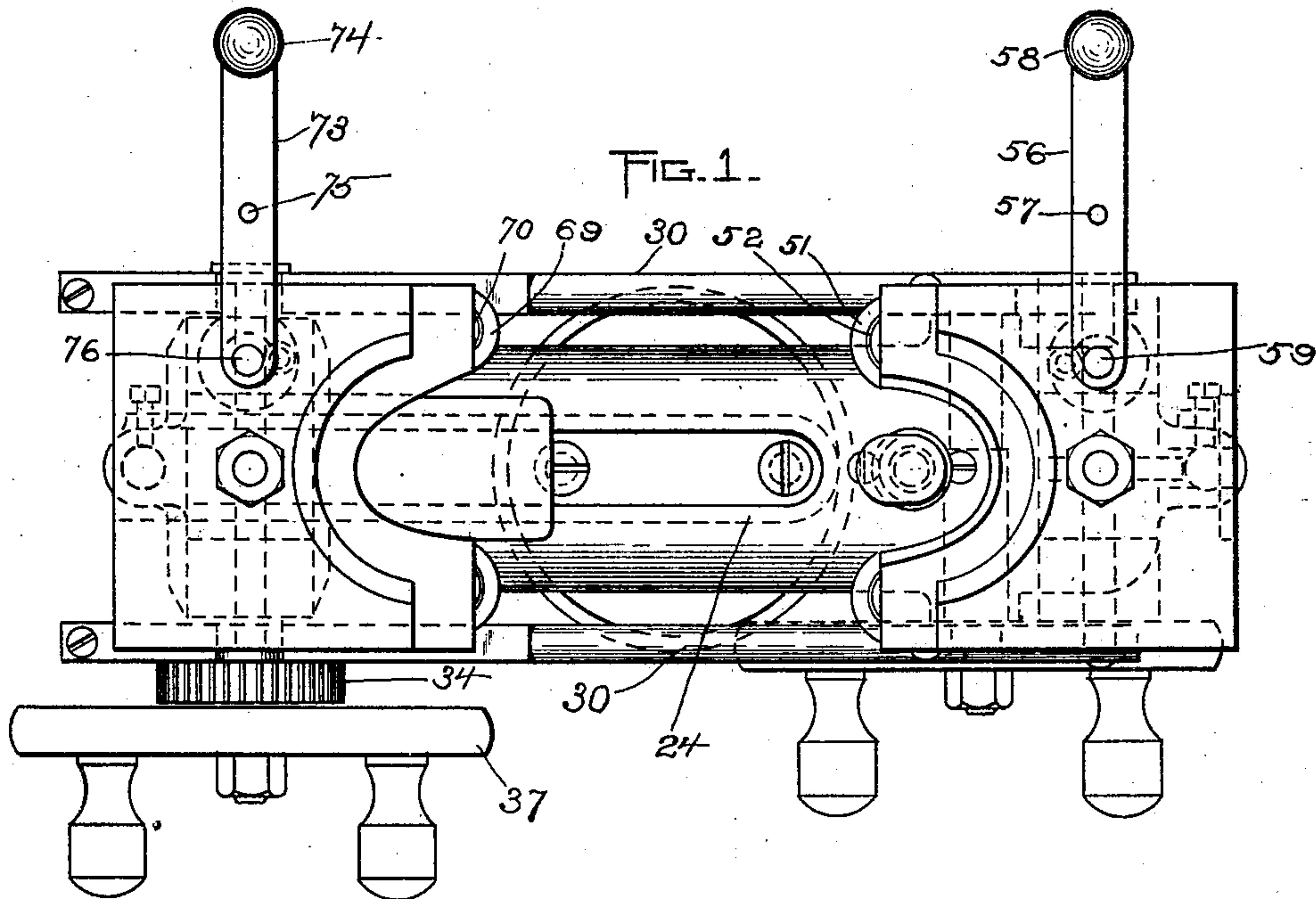
Patented Apr. 30, 1901.

A. F. PRESTON.  
LASTING MACHINE.

(Application filed Jan. 9, 1900.)

(No Model.)

4 Sheets—Sheet 1.



WITNESSES:

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Peter W. Lezzette

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(No Model.)

4 Sheets—Sheet 2.

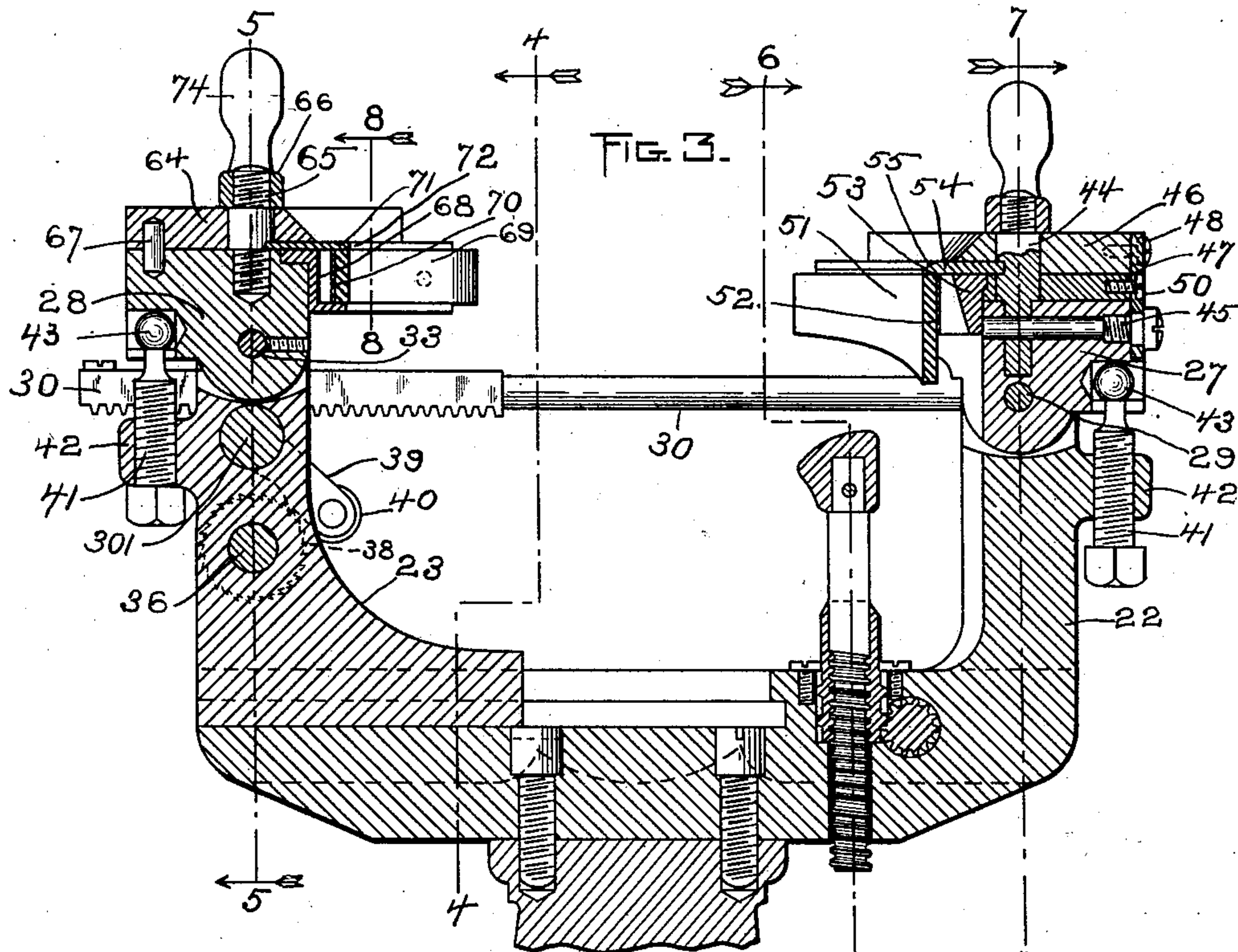
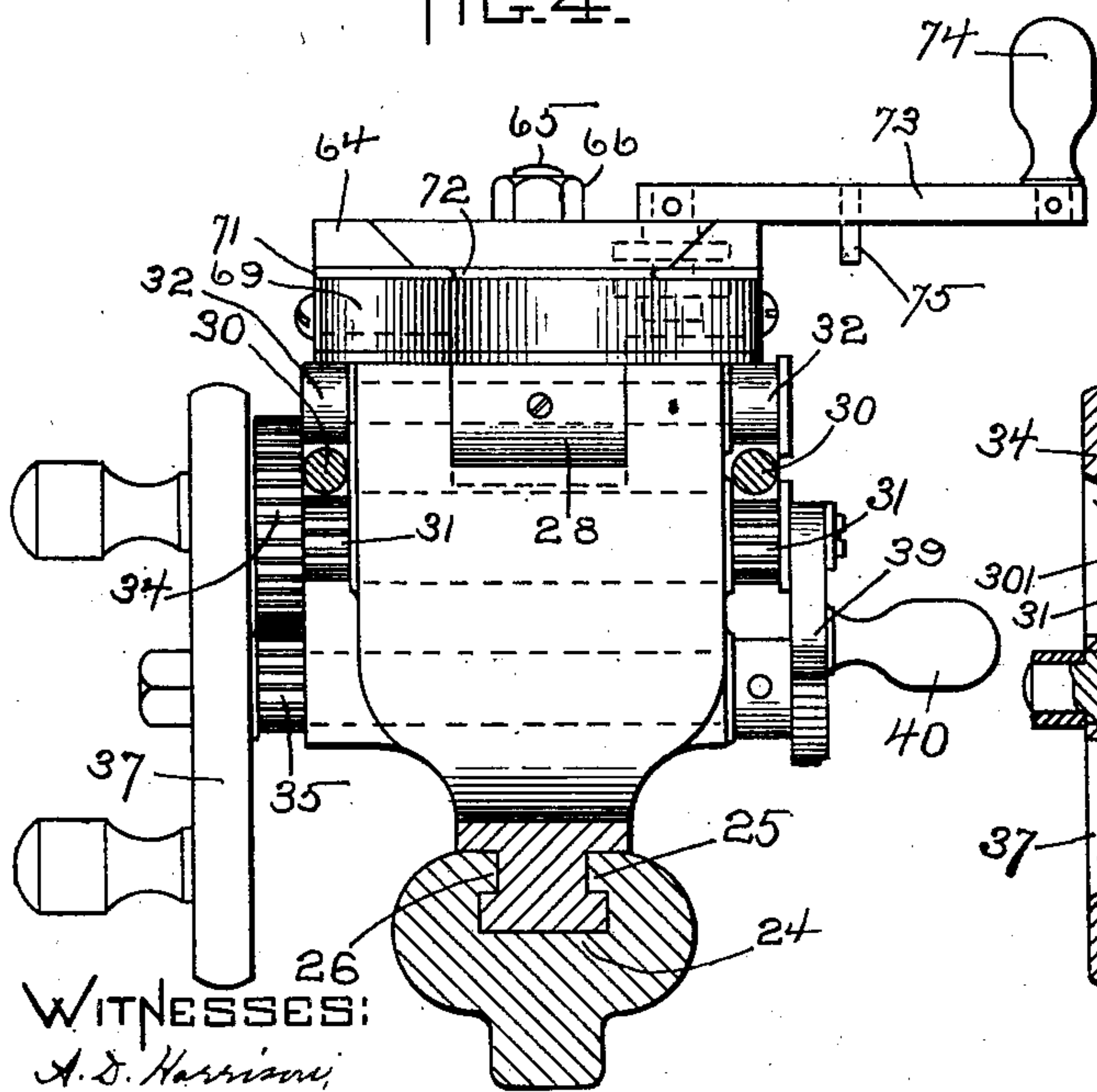


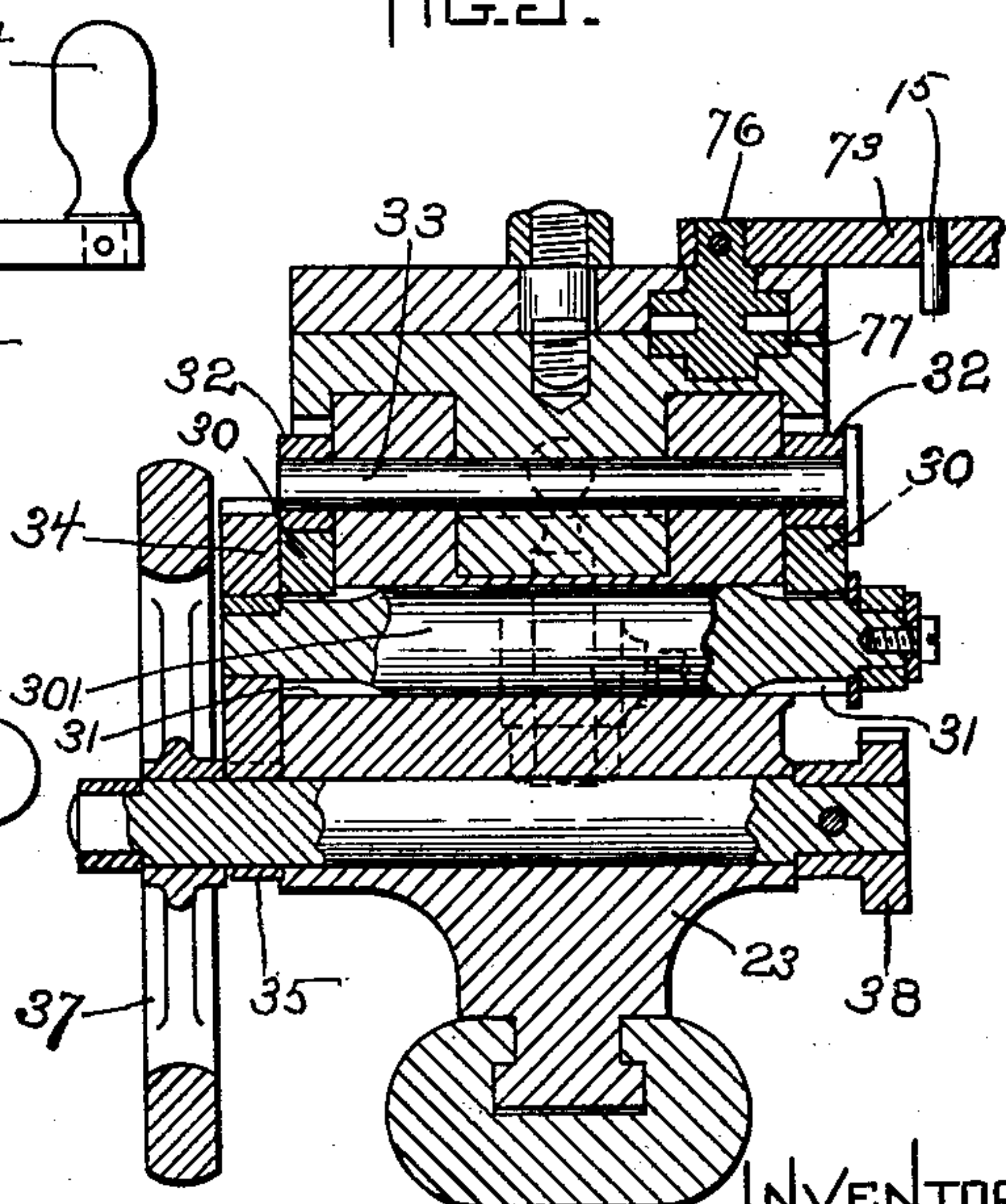
FIG. 4.

FIG. 5.



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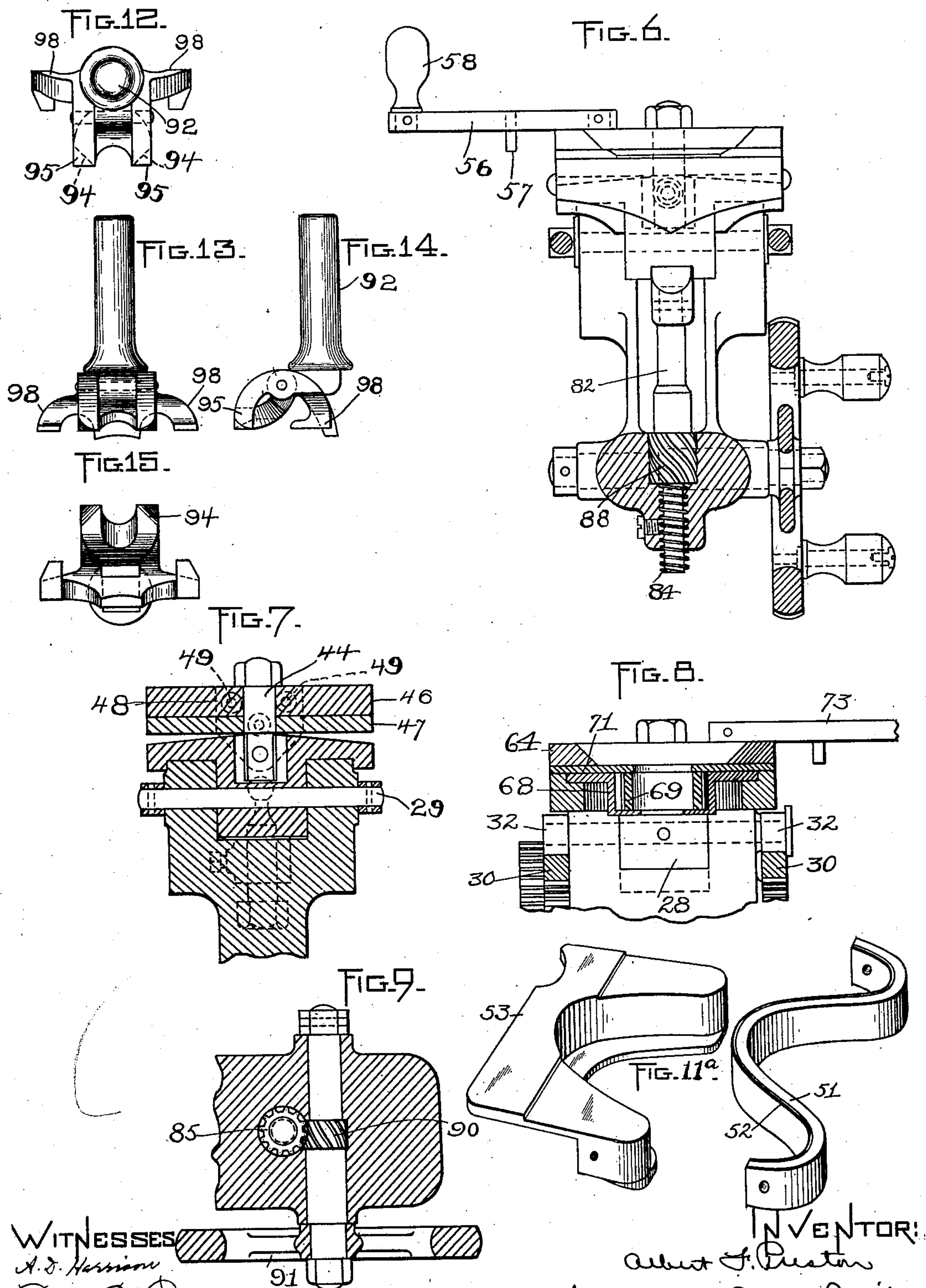
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(Application filed Jan. 9, 1900.)

4 Sheets—Sheet 3.

(No Model.)



WITNESSES

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No. 673,028.

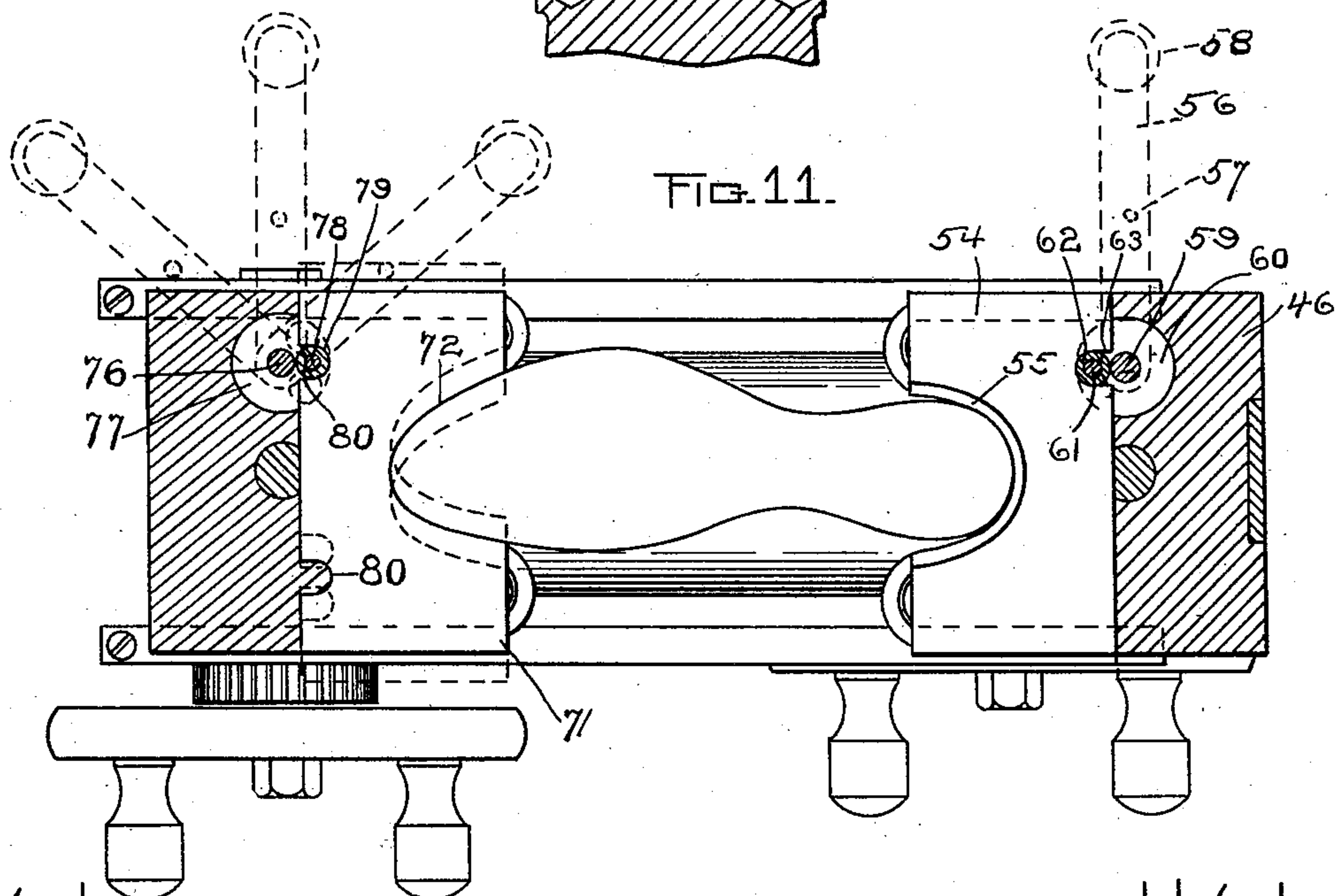
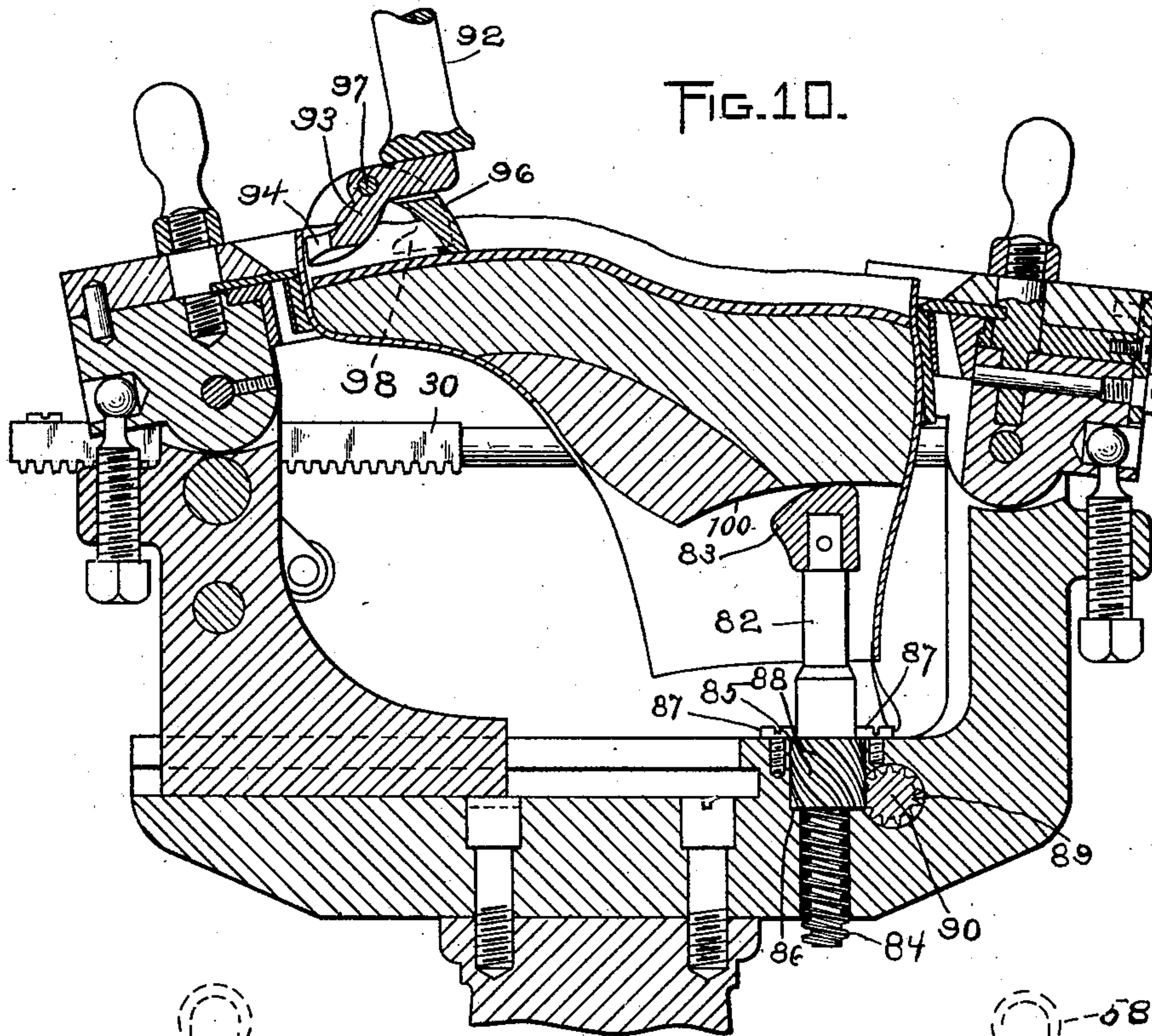
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(Application filed Jan. 9, 1900.)

(No Model.)

4 Sheets—Sheet 4.



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# UNITED STATES PATENT OFFICE.

ALBERT F. PRESTON, OF BOSTON, MASSACHUSETTS.

## LASTING-MACHINE.

SPECIFICATION forming part of Letters Patent No. 673,028, dated April 30, 1901.

Application filed January 9, 1900. Serial No. 835. (No model.)

*To all whom it may concern:*

Be it known that I, ALBERT F. PRESTON, of Boston, in the county of Suffolk and State of Massachusetts, have invented certain new and useful Improvements in Lasting-Machines, of which the following is a specification.

This invention has relation to lasting-machines of the type wherein wipers are used at the toe and heel for drawing the upper taut over the insole, which is secured to the last; and it has for its object to provide certain improvements therein for the simplification of the machines, for ease and facility in manipulation, as well as for rapidity in operation, of the same, and also for accomplishing better results than heretofore. In the employment of this class of machines the upper is placed upon the last and the insole is tacked upon the bottom thereof. Then after the upper has been "pulled over" the last is placed in the machine and the wipers are operated to draw the upper firmly longitudinally of the last and at the same time inward across the sole of the same, the edges of the upper being secured in place by tacks or by a tape, according to the individual preference of the manufacturer. To expedite the operation of the toe-wipers and remove wrinkles from the upper, a device is employed frequently to grip the upper at that point and hold it yieldingly while the toe-wipers are operating to increase the tension upon the upper.

The present invention relates not only to the machine itself, but to the devices last mentioned, which are used in connection with the machine.

Referring to the accompanying drawings, on which similar reference characters indicate similar parts or features, as the case may be, wherever they occur, Figure 1 represents in plan view a machine embodying my invention. Fig. 2 represents a side elevation of the machine. Fig. 3 represents a longitudinal section through the same. Figs. 4, 5, and 6 represent cross-sections on the lines 4 4, 5 5, and 6 6, respectively. Fig. 7 represents a cross-section on the line 7 7 of Fig. 3. Fig. 8 represents a section on the line 8 8 of Fig. 3. Fig. 9 represents a section through the machine on a horizontal plane and shows the shaft which adjusts the post or rest for the last. Fig. 10 represents a longitudinal section through the

machine with the heads in position for the wipers to operate upon the shoe, the previous figures having shown the heads upright in an inoperative position. Fig. 11 illustrates the operation of the wipers. Fig. 11<sup>a</sup> illustrates a band and its carrier, the two parts being separated. Figs. 12, 13, 14, and 15 illustrate in detail the retarder or device for engaging the upper at the toe during the lasting operation.

In the embodiment of the machine illustrated upon the drawings, 20 indicates a stand-ard upon which is secured a bed-plate 21, having two carriers 22 23, of which one is movable toward and from the other. The carrier 22 is formed on or rigidly secured to the bed-plate, which has a groove 24 to receive the carrier 23, whereby it may slide back and forth, said carrier being held in place by gibs 25, which take into the grooves 26, as shown in Fig. 4. Upon these carriers are mounted tilting heads, which support the wipers, the bands, and the band-carriers, said heads being indicated at 27 28. (See Fig. 3.) The head 27 is pivoted to the carrier 22 by a pivot-pin 29 passing through lugs or ears therein, said pin being utilized to receive the rack-bars 30 30, which move the sliding carrier toward or from the stationary carrier. Upon examination of Fig. 7 it will be seen that said rack-bars are connected to the end of the pin 29 by pins. The said rack-bars have depending teeth, and they are engaged with pinions 31 31, formed on a shaft 301, journaled in the carrier 23, being held in engagement by rolls 32 on the end of a pivot-pin 33, which pivots the head 28 to the carrier 23. (See Figs. 3 and 5.)

On the end of the shaft 301 is a gear-wheel 34, intermeshing with a pinion 35, formed on a shaft 36, journaled in the carrier 23, said shaft being provided with a hand-wheel 37, by which it may be rotated. It will be seen that by turning said hand-wheel 37 the movable carrier will be slid toward or from the stationary carrier. On the opposite end of the shaft 36 is a ratchet 38, with which a spur on a dog 39 may be moved into engagement by a handle 40, as shown in Figs. 3 and 4. When the movable carrier is moved toward the stationary carrier, the dog 39 is moved into the position shown in the last-mentioned figure, whereby it prevents the shaft 36 from rotating reversely, and consequently pre-



vents backward movement of the sliding carrier.

The pin 33 is secured in place by a screw extending into the head 28, as clearly illustrated. The two heads 27 and 28 are adjustable about the pins 29 and 33, said adjusting means comprising screws 41 41, passed through lugs 42 42 on the carriers 22 and 23, and having spherical heads 43 lying in cylindrical apertures in said heads. As thus far described, the machine does not differ materially from that shown in my earlier patent, No. 597,247, dated January 11, 1898.

The lasting device at the heel end of the machine is so constructed that the wiper may swing about an axis longitudinally of the last to accommodate itself to the heel-seat, which is frequently on a plane at an angle to the plane of the sole. The head 27 is therefore beveled from the center to the sides, as shown in Fig. 7, and it is provided with an aperture to receive a tilting pin 44, which is fulcrumed upon a screw-pin 45, passed into the rear of the head, as shown in Fig. 3. Said tilting pin is passed through a top plate 46 and an intermediate plate 47, secured together by an end plate 48, through which screws 49 49 are passed into the top plate and a screw 50 into the intermediate plate. This end plate 48 is fulcrumed upon the head of the screw-pin 45. By this construction it will be seen that the top and intermediate plates swing with the tilting pin. The said plates are provided with a semicircular recess or concavity on their inner ends, as best shown in Fig. 1, spaces being provided between them to receive the wiper and the band-carriers. The band is indicated at 51 and consists of a strip of leather backed by a metallic spring 52, bent into semicircular form and having its ends attached to the ends of the carrier 53. Said carrier is of the shape shown in Fig. 11<sup>a</sup>, and it is provided with flanges at its sides and ends which project into seats provided for it between the plates 46 and 47. It will be seen, however, that the band is free from engagement with the band-carrier except at its extreme ends, whereby it is free to accommodate itself to the conformation of the heel of the last, so that the same band and band-carrier may be employed for different shapes and sizes of shoes. They are freely removable, being held in place only by their frictional engagement with the parts which support them. Above the band-carrier is placed the wiper, which consists of a single plate 54, having a substantially semicircular recess, the edges which form the same being beveled, as at 55. The width of the recess is substantially that of the heel of the last, so that the opposite parts of the edge are operated alternately. The wiper has but one movement, and that is back and forth in the plane of the heel, at substantially right angles to the longitudinal lines thereof, it sliding in the recess provided for it between the plate 47 and the band-carrier 53 and the plate 46. The wiper is oper-

ated by the following devices: A lever 56, having a stop-pin 57 and a handle 58, is secured to a stud-shaft 59, projecting downward through the plate 46, and in a recess between the last-mentioned plate and the intermediate plate 47 is a disk 60, rigidly secured to said shaft. The disk 60 carries a pin 61, upon which is a roller 62, the pin and roller projecting into a notch or recess 63 in the rear end of the wiper 54, so that when the handle 56 is rocked to one side or the other from the position shown in dotted lines in Fig. 11 the wiper will be swung transversely of the longitudinal lines of the sole.

The device for wiping the upper at the toe includes the head 28, as previously stated, upon which is secured a top plate 64, held in place by a screw-bolt 65, on which is a nut 66. To hold the plate against rotary movement, there is a dowel-pin 67, projecting into apertures in the head and the plate, as shown in Fig. 3. The plate and head are cut away to receive the band-carrier and the wiper, said band-carrier being indicated at 68 and having a flange to fit in said recess. Said band-carrier is constructed substantially like that at the heel, except that the recess therein approximates the shape of the toe of the shoe to be lasted. The band consists of the leather strip 69, backed by a metallic spring 70, said band and carrier being secured at their extremities to the band-carrier, so that there is a free space between them and the inner wall of the recess in the band-carrier, whereby said band is capable of accommodating itself to the toe of the shoe. Said band-carrier and band are freely removable, being held in place by the frictional engagement of the flange on the carrier with the head.

The wiper is indicated at 71, and it consists of a single plate arranged in a space between the top plate 64 and the head, being provided with a recess or curved edge 72, which is beveled or slightly curved, so that it is operable when either face of the wiper is upward. The recess or edge 72 approximates the shape of the toe of the last, the two opposing halves of the edge being at a distance substantially equal to the width of the sole at the toe. The wiper is operated by a lever 73, having a handle 74 and a stop-pin 75, which strikes against the head to limit the swinging movement of the lever. The said lever is rigidly secured to a shaft 76, journaled in the top plate and having rigidly secured to its lower edge a disk 77, arranged in a recess in the head. Said disk carries a pin 78, on which is a roller 79, said pin and roller being adapted to enter either of two recesses 80 81 in the wiper, according to the face of the wiper which is uppermost. By swinging said lever as shown in dotted lines in Fig. 11 the wiper may be reciprocated at substantially right angles to the median line of the sole.

I prefer to construct the wiper 71, as described, so that it may be withdrawn from the recess formed between the top plate and the



head, whereby it may be reversed, for in such way I am enabled to last a right or a left shoe with the same wiper. As shall be subsequently described, the last, with the upper thereon and the insole secured in place, is put in the machine with the toe and heel bearing against the bands, as shown in Fig. 10, and consequently for the purpose of supporting the last I provide a support and jack, which consists of a post 82, having a head 83 pinned upon the top thereof. The post is screw-threaded, as at 84, at its lower end, and upon it is secured a nut 85, lying in a recess or cup-shaped depression 86 in the bed. The nut is held against upward movement by screws 87, whose heads overlap a shoulder formed thereon. The exterior of the nut is provided with worm-threads 88, with which is engaged a worm 89, formed or secured on a shaft 90, extending into the bed and journaled therein, there being a hand-wheel 91 on the projecting end of the shaft. By turning said hand-wheel the post may be raised or lowered, as will be readily understood.

In addition to the mechanism thus far described I employ a device for temporarily engaging the upper at the toe and pulling it initially longitudinally of the last, said device operating as a "retarder" and "holddown" during the actuation of the wipers. Said device is shown in Fig. 10 and in Figs. 12 to 15, inclusive. It consists of a handle 92, with a forwardly-projecting member 93, which is bifurcated to provide two gripping-jaws 94. The movable jaws are indicated at 95, and they are substantially semicircular in shape, being connected at their rear ends by a cross-bar 96. Said cross-bar forms an abutment or holddown to rest upon the sole of the last. The jaws are fulcrumed in the member 93 by a pivot-pin 97, and they are provided with laterally and downwardly extending arms 98, which operate as stops and which are adapted to rest upon the top of the wiper, outside of the upwardly-extending edges of the upper. The gripping-faces 94 of the jaws on the member 93 are inclined, as shown in Fig. 12, so that they lie substantially parallel to the edges of the toe.

I shall now proceed to describe the operation of the machine: The insole and upper are placed upon the last, and the edges of the upper, at the sides of the toe, are gripped between the jaws of the retarder or holddown device, which is gripped by the right hand, the shoe being held in the left hand. The handle is pressed downward and at the same time rocked backward away from the toe of the shoe, so as to pull the upper taut longitudinally of the last and at right angles to the plane of the sole. Then the heel of the last is pressed against the band, and the support is raised or lowered until the insole is just slightly below the plane of the heel-wiper. The shoe is then lowered down until the stops 98 rest upon the wiper at the toe end of the machine. The hand-wheel 37 is then ro-

tated to force the movable carrier toward the stationary carrier, this operation wiping the upper at the toe and heel over the insole longitudinally of the last, the last being jacked by the curved top 100 thereof sliding on the head 83. The upper during this operation slips between the edges or jaws of the retarding device. The dog 39 is then rocked into position to prevent the movable carrier from moving in a backward direction, and the retarder is released from the upper. Then the handle 58 is rocked first in one direction and then in the other several times to wipe the edges of the upper at the heel transversely across the top of the insole, this flattening the heel, so as to provide a perfect heel-seat, and obviating the subsequent employment of a hammer for hammering down the upper. Then the handle 74 at the toe end of the machine is rocked to wipe the edges of the upper over the top of the insole at the toe, this being done several times to properly flatten the upper. The said handle is rocked far enough to bring the upper firmly against the edge of the channel of the insole. Then by means of a hand tacking-tool the edges of the upper at the toe and heel are tacked to the insole, and, if desired, the edges along the side of the shoe may be drawn over and tacked into place, or the sides of the upper may be tacked into place before the toe and heel are lasted.

There are a number of advantages incident to the employment of a machine such as I have described which it is unnecessary to explain at length, for they will be apparent to those skilled in the art of lasting shoes. In the first place, the part or abutment 96, which rests upon the sole of the shoe, in connection with the stops which rest upon the top of the wiper, operate when the gripping edges grasp the upper to "square" the shoe or bring the sole thereof parallel to the plane of the wiper at the toe, the wiper at the heel swinging automatically to accommodate itself to the heel of the particular shoe which is being lasted. The first operation of the machine is to draw the upper longitudinally of the last, whereby the upper is not displaced or drawn to one side of the median line of the last, this being also prevented by gripping the upper at two points, one on each side of the toe. Then when the wiper at each end of the shoe is actuated the upper is engaged along a continuous line and can be forced at right angles to the said line inward until the upper is pressed against the channel. This is an important feature of the machine, for in the wipers as heretofore constructed the upper was engaged at points progressing farther and farther from the extreme end of the toe or heel, the edge of the upper being forced toward the middle portion of the sole and causing the formation of wrinkles unevenly distributed along the feather-edge, whereas in the present machine, the upper being wiped over the insole at right angles to its line of conformation, there is no



more fullness in the stock at one point than at another.

Another advantage incident to the present invention is that the wiper at the toe and heel is not formed in two parts connected by a joint, as in previous machines, and consequently the upper is not marred by the joint becoming worn and pinching the leather in the crack at the joint. In the present machine the operating edge is continuous.

The extreme ends of the bands are attached to the sides of the carrier and so that the front portions of the band project beyond the ends of the carrier. Consequently when the shoe is grasped between the bands by moving one of the heads toward the other the bands can yield longitudinally as well as laterally to permit the ends of the sole to lie under the wipers for wiping the upper over the insole at those points. This I consider an important feature of the invention.

It will be understood that I do not limit myself to the details of construction which I have seen fit to illustrate and describe and that they may be varied to suit particular requirements.

Having thus explained the nature of the invention and described a way of constructing and using the same, although without attempting to set forth all of the forms in which it may be made or all of the modes of its use, I declare that what I claim is—

1. A lasting-machine having toe and heel wiping devices, means for causing said devices to engage and wipe over the upper at the ends of a last simultaneously, and mechanism for moving each of said devices in a rectilinear path transversely to the median line of the sole for the purpose of wiping over the upper at the sides of the last adjacent the ends.

2. A lasting-machine having toe and heel wiping devices, means for moving one of said devices toward the other to wipe over the upper at the ends of the last, and mechanism for moving each of said devices in a rectilinear path at a right angle to the first-mentioned path of movement, to wipe over the upper at the sides of the last adjacent the ends.

3. A lasting-machine having a wiper for the upper at the end of the partially-formed shoe, said wiper consisting of a single plate adapted to wipe over both edges of the upper at the said end, in combination with means for moving said wiper laterally.

4. A lasting-machine having wiping devices for wiping over the upper at the end and partially along the sides at the end of the partially-formed shoe, means for moving said devices rectilinearly at a right angle to the median line of the sole to wipe the edges of the upper across the insole, and means for moving the wiping devices longitudinally of said sole.

5. A lasting-machine having wiping devices for the upper at the end and partially

along the adjacent sides of the partially-formed shoe, and means for moving said devices bodily transversely of the median line of the sole in the same direction to wipe the edges of the upper across the insole.

6. A lasting-machine having wiping devices for the upper at the end of the partially-formed shoe, means for moving said devices longitudinally of the shoe to draw the upper taut and wipe it at the extremity of the shoe, and means for moving said devices rectilinearly transversely of the path of the first movement to wipe the edges of the upper at the sides near said extremity across the insole.

7. A lasting-machine having a wiper consisting of a single plate with a concave edge approximating the shape of the end of the partially-formed shoe, and means for moving said plate from side to side.

8. A lasting-machine having a wiper consisting of a single plate with a concave edge approximating the shape of the end of the partially-formed shoe, means for causing the wiper to wipe the edge of the upper at the said end longitudinally over the edge of the insole, and means for moving said wiper transversely of the median line of the sole to wipe the upper over the side edges of the insole.

9. A lasting-machine having wiping devices with opposing operative edges, and means for bodily moving said devices alternately in opposite directions transversely of the last whereby said operative edges operate alternately to wipe the edges of the upper over the insole.

10. A lasting-machine having a wiper for the toe and a wiper for the heel, each wiper having a concave operative edge, means for causing said wipers to approach and recede from each other longitudinally of the machine, and means for moving said wipers bodily transversely of the machine.

11. A lasting-machine having an end wiper with an operative edge approximating the shape of the end of the shoe, and means for bodily moving said wiper transversely to alternately wipe the upper over the opposite sides of the insole, comprising a lever, and mechanism connecting said lever with the said wiper.

12. A lasting-machine having a carrier with rigid forwardly-projecting arms, a band secured to the outer sides of said arms and extending into the space between the arms, said band engaging said arms only at the outer sides thereof, and yielding material inserted between the front ends of the arms and the band, whereby the band is capable of yielding under the pressure of the partially-formed shoe.

13. A lasting-machine having a carrier with rigid forwardly-projecting arms, a band secured to the outer sides of said arms and extending into the space between the arms, and resilient material inserted between the band



and carrier to hold said band yieldingly away from and in front of the ends of said arms, substantially as described.

5 14. A lasting-machine having a toe-wiper formed of a plate having a concave edge conforming substantially to the contour of the end of the last, said plate being reversible to accommodate right and left shoes.

10 15. A lasting-machine having end wipers, and a device having jaws for gripping the upper, an abutment to rest on the sole and arms to engage said end wipers, for the purpose described.

15 16. A device of the character specified comprising a handle, one or more jaws rigid with

the handle, one or more movable jaws coacting with the first-mentioned jaws and having a rearwardly-extending portion to engage the surface of the sole, and arms projecting laterally from said movable jaws to engage a 20 portion of the lasting-machine and serve as a gage to determine the extent to which the partially-formed shoe is held down by the device.

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

ALBERT F. PRESTON.

Witnesses:

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C. C. STECHER.