

(No Model.)

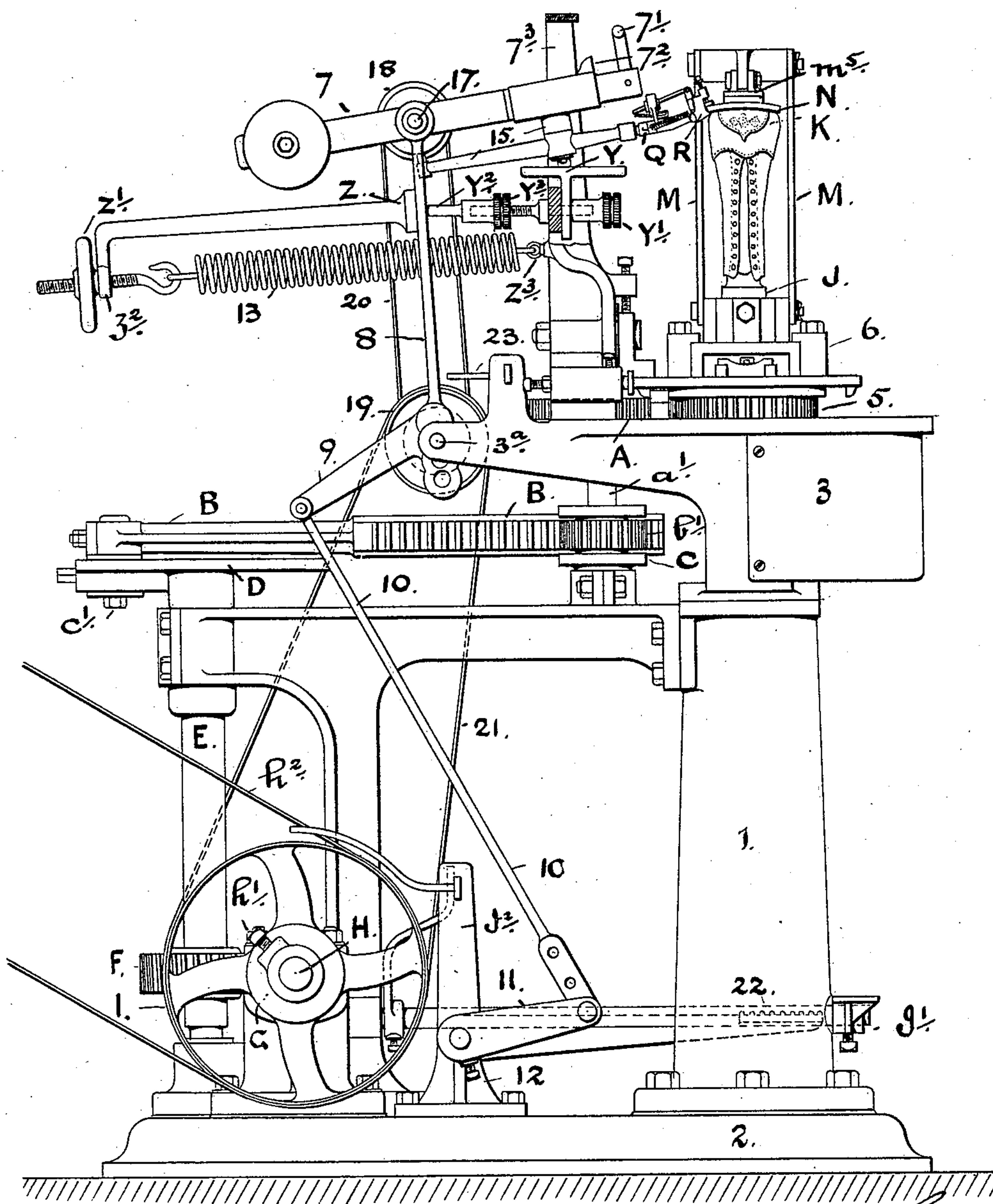
4 Sheets—Sheet 1.

J. M., J., A. J. & S. A. GIMSON.
SOLE AND HEEL TRIMMING MACHINE.

No. 433,782.

Patented Aug. 5, 1890.

FIG. 1.



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(No Model.)

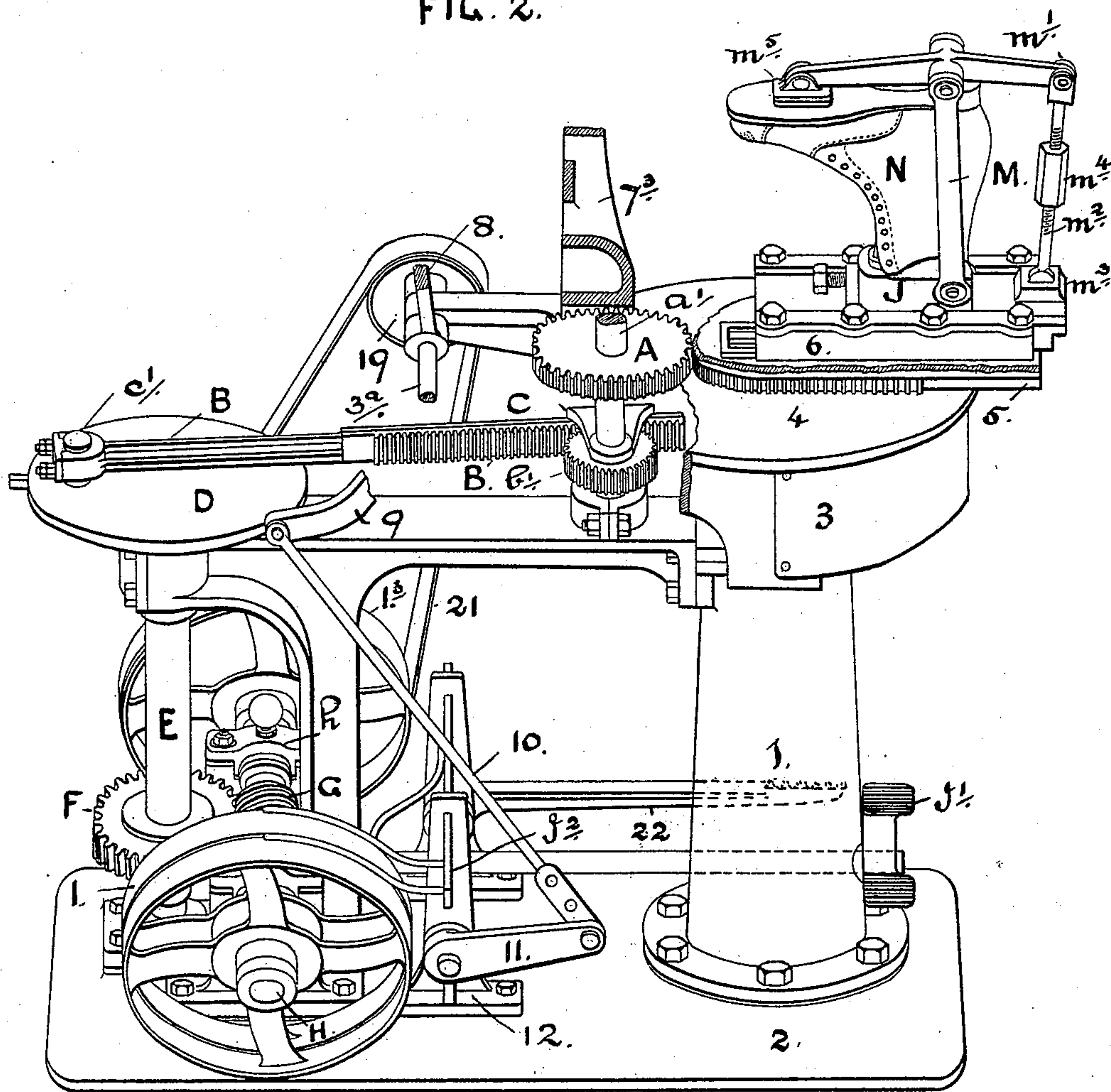
4 Sheets—Sheet 2.

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FIG. 2.



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(No Model.)

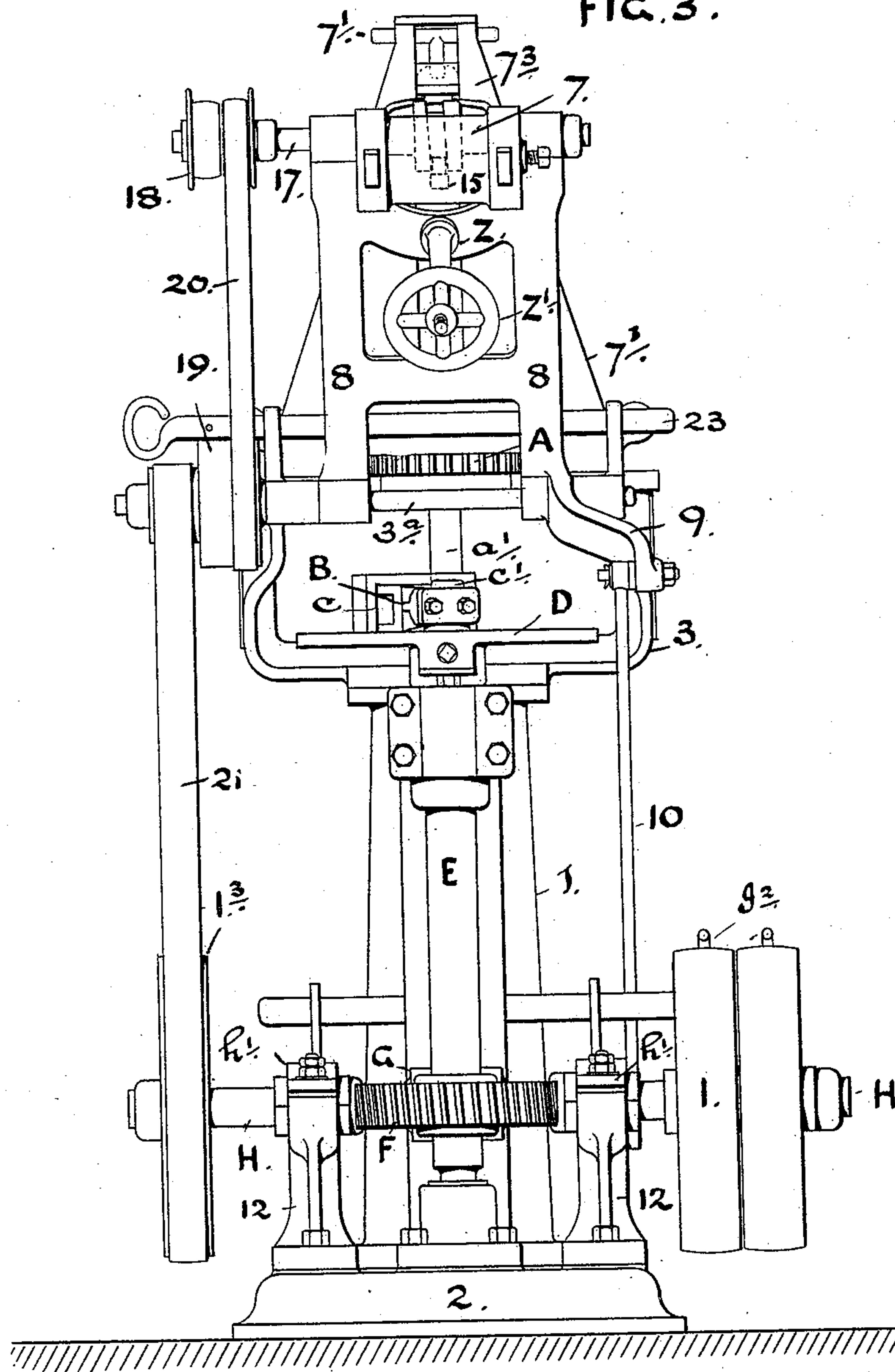
4 Sheets—Sheet 3.

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FIG. 3.



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4 Sheets—Sheet 4.

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FIG. 5.

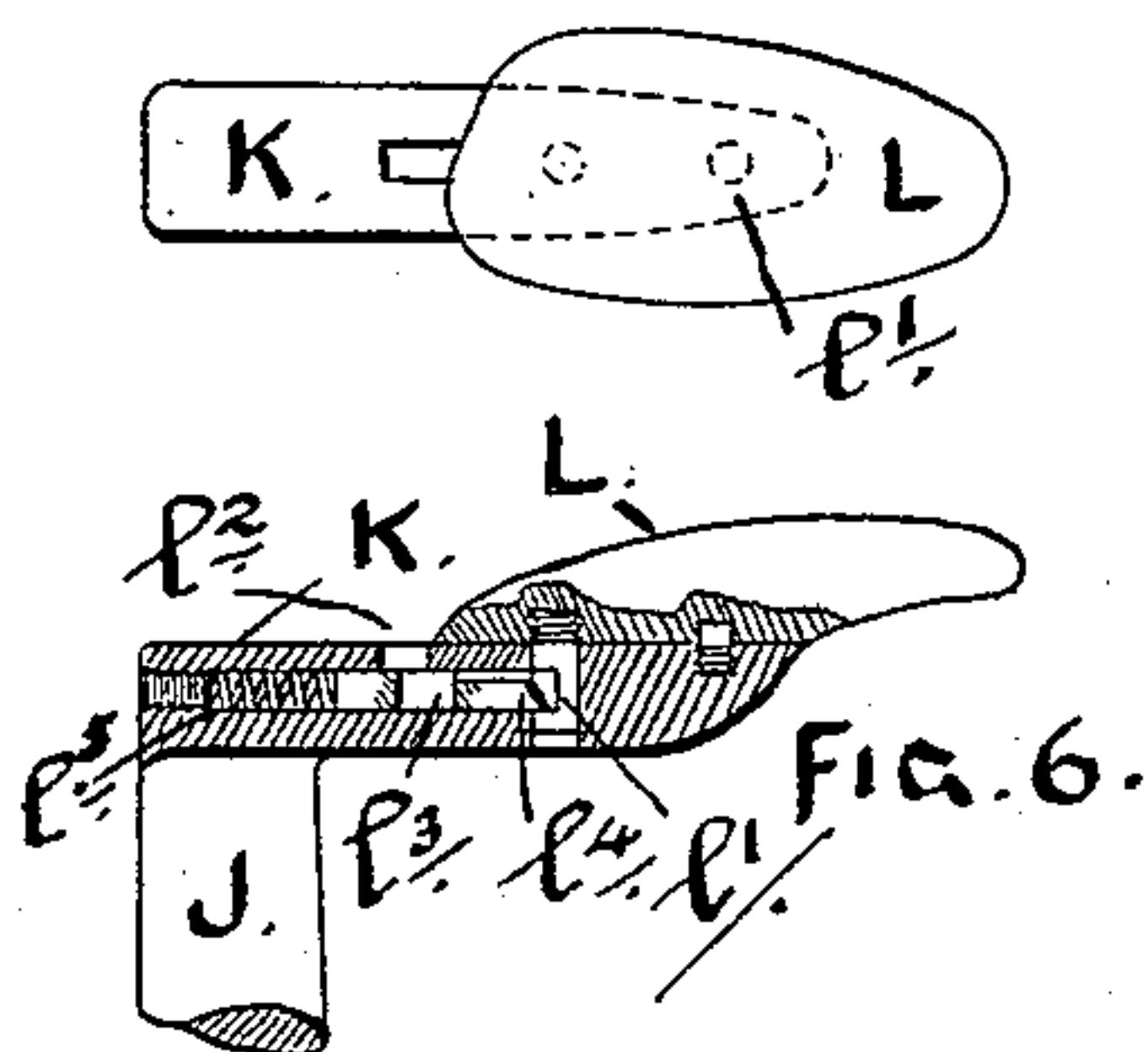


FIG. 4.

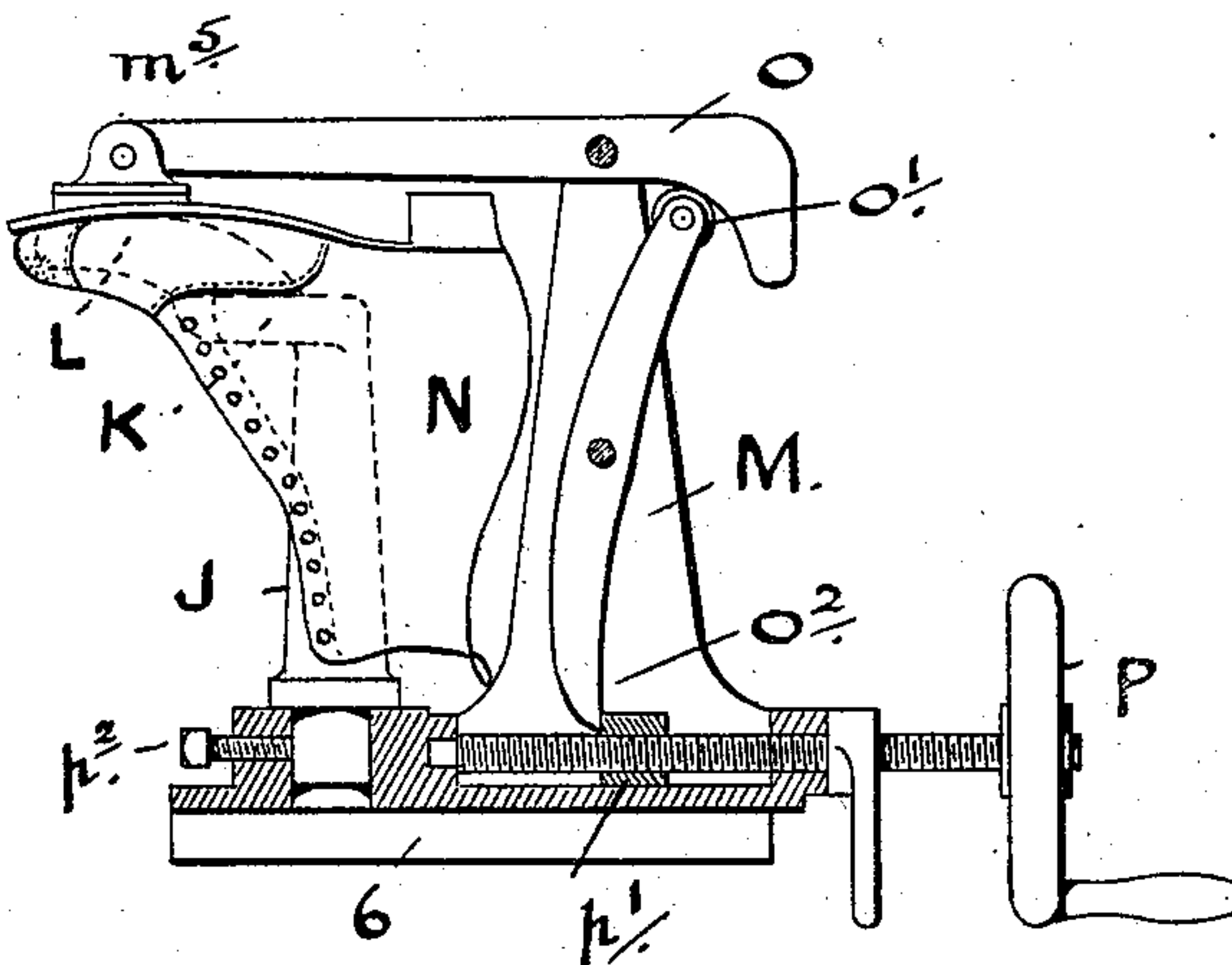


FIG. 7.

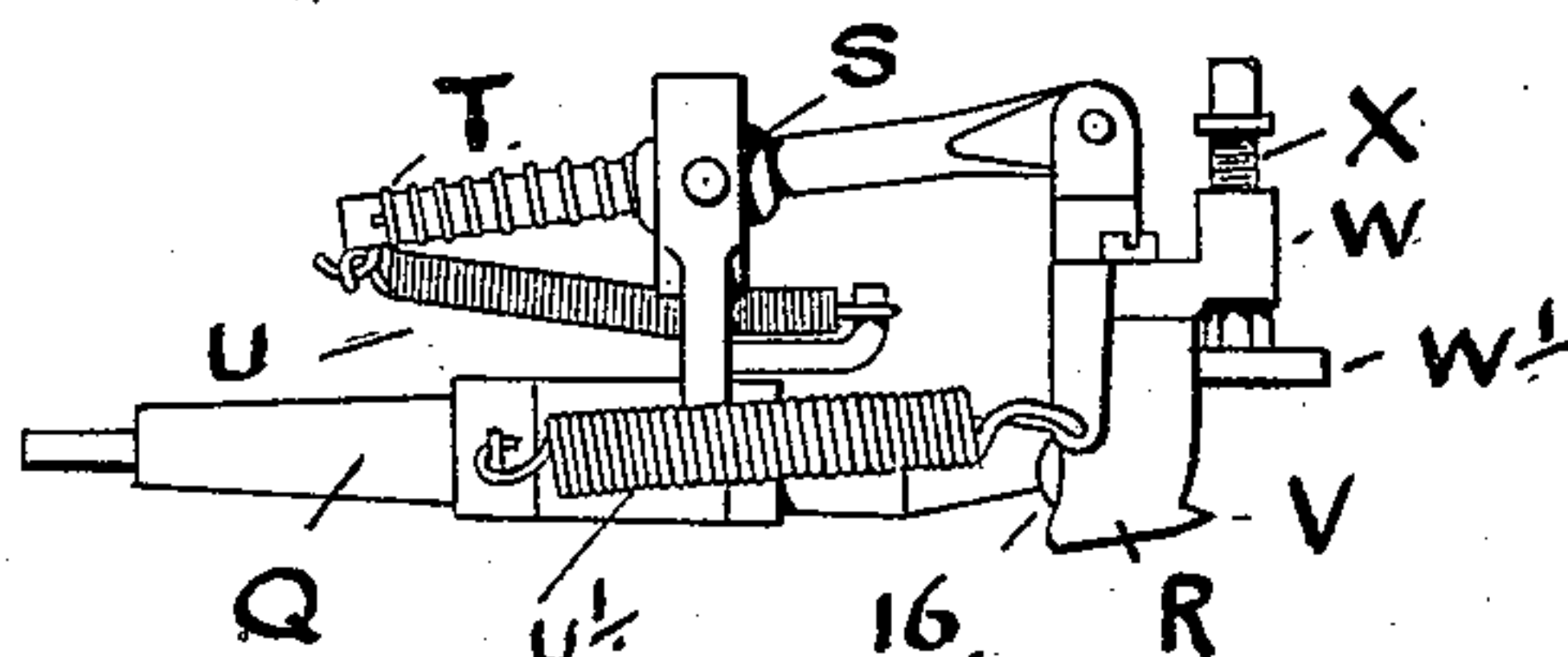
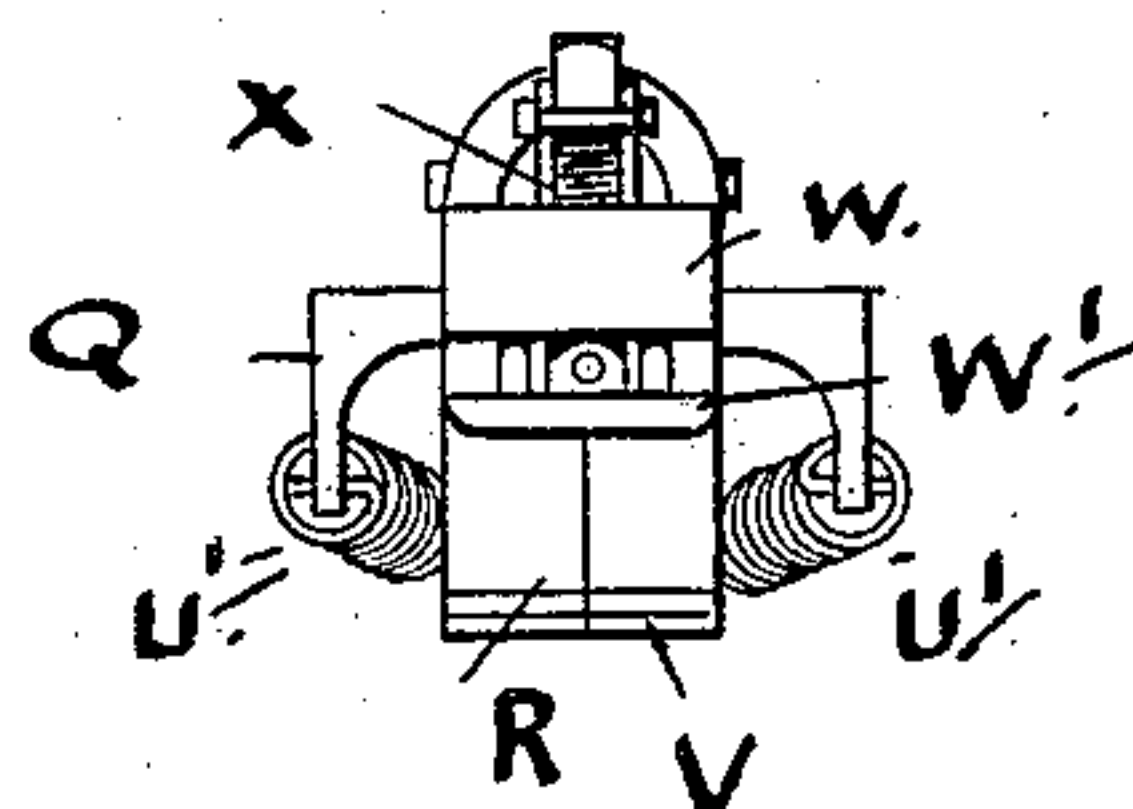


FIG. 8.



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UNITED STATES PATENT OFFICE.

JOSIAH MENTOR GIMSON, JOSIAH GIMSON, ARTHUR JAMES GIMSON, AND
SYDNEY ANSELL GIMSON, OF LEICESTER, ENGLAND.

SOLE AND HEEL TRIMMING MACHINE.

SPECIFICATION forming part of Letters Patent No. 433,782, dated August 5, 1890.

Application filed February 6, 1889. Serial No. 298,931. (No model.) Patented in England August 16, 1888, No. 11,810.

To all whom it may concern:

Be it known that we, JOSIAH MENTOR GIMSON, JOSIAH GIMSON, ARTHUR JAMES GIMSON, and SYDNEY ANSELL GIMSON, engineers, all of the firm of Gimson & Co., of the Engine Works, Vulcan Street, Leicester, in the county of Leicester, England, in the United Kingdom of Great Britain and Ireland, have invented certain Improvements in Edge Setting and Paring Machines, of the class commonly known as "Southall's Edge-Setter," for automatically finishing boots and shoes, (for which a patent has been granted to us in Great Britain, No. 11,810, bearing date as of the 16th day of August, 1888,) of which the following is a specification.

This invention relates to improvements in edge setting and paring machines, and refers to the combination of the several mechanical appliances hereinafter specified and shown by reference-letters in the several drawings annexed.

The objects of our improvements consist, first, in the mechanical means employed to cause a double rack having a semicircular end to reciprocate and carry the boot-holding device and last-stand, such reciprocating movement causing the edges of the fore part or sole, and also the waist of a boot or shoe placed on the last, to move by and in immediate contact with the edge setting or paring tool employed; secondly, the boot-holding appliances hereinafter specified; thirdly, to facilitate the adjustment and regulation of the edge-setting tool relatively to the varying angle at which the edge of the fore part or sole of a boot or shoe is paired, and to regulate the setting-iron to suit the varying thickness of sole, or soles of an uneven thickness; also, that in providing a stop to regulate the swinging frame 8 we keep the edge of the tool from slipping out of the welt and damaging the upper-leather during the edge setting and burnishing operation.

It will be well known that in that class of goods which is studded with nails and known as "hob-nails" a difficulty has always arisen in finishing by automatic machinery; but by the combination of the several contrivances forming the subject of this our invention

this is entirely overcome, and the means by which our objects are attained will be seen by reference to the several figures of the drawings, in which—

Figure 1, Sheet 1, is a side elevation of the complete machine. Fig. 2, Sheet 2, is a perspective view, partly in section, showing the machine with the top gear cut away above the double rack 5, the edge of which we have cut away to show the racked or semicircular end thereof geared to the pinion A, and above the rack-bar B, all looking downward. Fig. 3, Sheet 3, is a rear view, in elevation, of the entire machines; Fig. 4, Sheet 4, a view, partly in section, of one form of boot-holder M, the grip m^5 being held to the tread of the sole by the roller o' coming down the angular end of the arm O. When the hand-wheel P is turned, the nut p' moves forward and pushes the tail end of the lever o^2 outward, this movement being reversed to liberate the grip m^5 when it is desired to take the boot from off the last, the screw p^2 keeping the post J or last-stand in position. Fig. 5, Sheet 4, is an upper plan view of the sole-plate L, secured to the angle end K of the post J by a screw or pin l' or its equivalent. Fig. 6, Sheet 4, is a sectional cut-off view of the post J and sole-plate L, the plates being removed in this case by the insertion of a key into the holes l^2 and l^3 to force back the bolt l^4 and spring at back l^5 , which releases the pin l' , screwed into the sole-plate. Fig. 7, Sheet 4, is a side view of the edge-setting tool Q; and Fig. 8, Sheet 4, is a front view of same, showing the expanding iron, which is regulated to set soles of uneven thickness.

Similar letters refer to like parts throughout the several views.

The pedestal 1 is screwed down onto the base or bottom frame 2, and carries the rear part of the frame and slotted table 3 and slide 4. Upon this is placed the double rack 5, having a semicircular end, the straight sides of which (see Fig. 2) are made long enough for the largest size of boots to be effectually operated upon. Into the said rack is geared the pinion A, fixed upon the vertical spindle a' . This pinion is moved by the rack-bar B, working horizontally into the sec-

ond pinion b' , fixed at the lower end of the spindle a' , the rack-bar B being guided and held to the pinion by the rocking bracket C, the free end of the rack being adjustably attached to the crank-disk D by the pin c' entering a slot, when by a regulating-screw it is set at a distance from the center to obtain the requisite length of motion, the said disk being fixed upon the upper end of the second vertical spindle E, the lower end of which carries the pinion F, gearing with the worm G on the short horizontal shaft H, set at right angles in the bearings h' and driven from the pulley I, arranged at one end of the said shaft. The shifting of the main driving-belt h^2 (shown in Fig. 1) to stop or set the machine in motion is effected by the operator depressing one of the foot-treadles I' , when the belt-fork I^2 will slide in the direction desired in its holder. Motion is then imparted to the rack 5, upon which is fitted the last-stand 6. Into this stand is put the vertical post J, carrying at its top the angle-piece K. Upon this is fitted the loose fore part or sole-plate L, having a pin or pins projecting on its under side to fit in the hole or holes in the angle-piece or screwed onto the angle-piece at l' , when the last is complete, and it is an easy matter to put the boot thereon or take it off again. All sized plates are used to suit the size of boot required to be operated upon by the device as illustrated in Fig. 6. The sole-plate is released by the operator inserting a key into the slots l^2 and l^3 and pressing back the bolt l^4 , against the end of which the circular or coiled spring l^5 presses. Then the plate can be lifted off. By this novel construction of last without a heel it is necessary to use one form of the boot-holders shown in Figs. 1, 2, and 4, the grip m^5 holding the boot or shoe firmly upon the last. The one shown in Figs. 1 and 2 takes its bearing from the center or boss of the upper horizontal lever fitting in the arms M, one end of the lever being linked at m' to a screwed rod m^2 , fitted at its lower ball end into the socket m^3 , when by screwing or moving the nut m^4 the pivoted block or grip m^5 is pressed firmly onto the tread of the sole of the boot N. The one shown in Fig. 4, m^5 , is pressed onto the tread of a boot or shoe by the upper arm taking its bearing at O at the end of the upright, being held down by the roller O' , fitted in the upper end of the lever O^2 , which is moved by the operator turning the hand-wheel P in such a direction that the nut p' , working on the screw in the bed of the holder, moves the lower end of the lever O^2 . The post J is secured in its proper position by the set-screw p^2 . The contrivance, for holding, supporting, and moving the edge setting or paring tool are illustrated in Figs. 1, 2, and 3. It will be observed that at the front of the weighted lever 7 is a handle $7'$ set vertically on the front end thereof, which is used to pull the swinging frame 8 forward, as shown in Fig. 1, when the inclined lip 7^2 is brought through

to the front of the head of the machine 7^3 and the tool placed in the proper position. The tool-holder or vibrating angular arm 15 is held in a bracket projecting from the under side of the lever 7, while the inner end works in a groove between collars (see Fig. 3) on the shaft 17, which causes the front part holding the edge setting or paring tool to vibrate a little, the lip of the tool Q being at once placed in the welt of the boot or shoe N, as shown in Fig. 1. The arm 15 is guided for this purpose by sliding on the T-shaped block Y, which is set to the desired height by turning the milled-headed screw Y' . At the back of this is a stop Y^2 , which, by regulating the screw-cap Y^3 , keeps the swinging frame at the proper distance and from coming farther forward, so that there is no danger of the tool leaving the edge of the sole or injuring the upper, and the tool is readily placed and kept in the welt.

The swinging frame is kept toward the head of the machine, that any regulated pressure can be brought to bear upon the boot during the edge setting or paring operation by the arm Z, screwed in the back of the swinging frame 8, which carries at its outer end the hand-wheel Z' , mounted in the screwed end or hook Z^2 , which tightens or slackens the circular spring 13, secured to the head of the machine on the hook Z^3 . The revolving shaft 17 is operated by the friction-pulleys 18 and 19, which carry the belts 20 and 21, the latter being put at its lower end over the pulley 13. (See Fig. 3.) To stop or start the said shaft the belt 20 is shifted from the friction-pulleys in the direction required by manipulating the sliding fork 23. The swinging frame 8 is pivoted at the rear of the table 3 on the rod 3^a , and the lever 9 connected thereto. The outer end of the lever carrying the connecting-rod 10, at the bottom of which is attached the crank-lever 11, fixed in the bracket 12 on the base of the machine, the swinging frame and the contrivances connected therewith are raised for controlling the edge setting or paring tool, to place it in its working position before commencing the edge setting or paring operation by the operator depressing the foot-treadle 22. (Shown through the pedestal 1 in dotted line in Figs. 1 and 2.)

The edge-setting tool Q (shown in Fig. 7) has the set-iron R, carried on the ball end of the spindle 16, the upper part of the tool carrying the rocking guide-spindle S, on which is placed the spring T in conjunction with the spring U, secured at the lower end of the spindle and the side springs U' . By the aid of these contrivances the setting-iron is kept with an even pressure to the edge of the fore part or sole of the boot or shoe at any angle, the springs compensating for any irregularities of angle.

We vary the depth of set-iron to suit the varying thickness of sole by using a double iron with the lip V projecting, so that it fits

between the upper and sole in the setting or burnishing operation. At the upper end of the set-iron is the plate W, in which is fitted the adjustable plate W', which fits closely on one side of the burnishing-edge of the set-iron, and its distance from the lip V is regulated by the screw X. Thus we obtain a ready means for adapting the width of the set-iron to the width of sole.

It will be well understood by those experienced in the art that the heels of boots and shoes may be pared or burnished by inserting an ordinary paring or burnishing tool into the vibrating arm 15 and reversing the last-stand J, that the back shall come under the tool, and dispensing with the sole-plate L and putting a plate shaped to the top piece of the heel upon the end of the angle-piece K, so that the grip m^5 will then come onto the heel by the same means as used for the fore part or sole hereinbefore specified.

We are aware that prior to our invention a patent was granted to Charles H. Helms, No. 212,311, of June 25, 1878, for trimming sole-edges by a circular movement of the last-holder derived from a circular rack gearing with a pinion to turn the boot to the tool; but we do not use or claim anything appertaining to this. By the aid of a straight rack we cause the reciprocating movement to a circular-ended rack having straight sides to turn the boot or shoe to the paring or burnishing tool automatically. We are also aware of the patent granted to Messrs. Guild and Hall for dressing the heels of boots or shoes, No. 23,245, of March 15, 1889, which is not claimed in our invention. To show the state of the art to which this invention appertains, we will refer to the patent of Richard E. Lambert for cutting heels, No. 108,605, of 1870; also, the reissue to J. M. Thornton and G. E. French for a heel trimming and polishing machine, No. 6,100, of 1874, and of the patent of Benjamin F. Wheeler, No. 259,253, of 1882, for a non-automatic sole-trimmer; also, a patent of Gliddens, of May 29, 1883, in which a fore-

part last is shown, but which is not of the character herein shown.

Be it understood that the several combinations contained in this our automatic machine, as illustrated and described in the foregoing specification, do not form the subject of the several patents before alluded to.

We are aware that a rack has been used in boot-finishing machines, but not in the manner as herein shown and described; and

What we claim, and wish to secure by Letters Patent, is—

1. The combination, in a machine as herein described, of the following mechanism: the reciprocating double rack 5, the rack-bar B, rocking guide C, and pinion a' carried therein, the crank-disk D on spindle E, carrying the pinion F, which gears with the worm G on the driving-shaft H, as herein specified.

2. The combination, in the machine herein described, of the vertical post J and fork K, sole-plate L, boot-holder M, screw-threaded rod m^2 , and grip m^5 , superposed upon the double rack 5, and last-stand 6, in the manner set forth.

3. In the machine herein described, and in connection with the tool-holder or vibrating arm 15, the edge-setting tool Q, provided with springs T, U, and U', rocking guide-spindle S, plate W, the adjustable plate W' on the setting-iron R, and the regulating-screw X, for the purpose herein specified.

4. In the machine of the character herein described, in connection with the vibrating arm 15 and tool Q, the T-shaped block Y, set-screw Y', stop Y², and attached to the swinging frame 8, the arm Z, hand-wheel Z', and spring Z², all substantially as set forth.

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