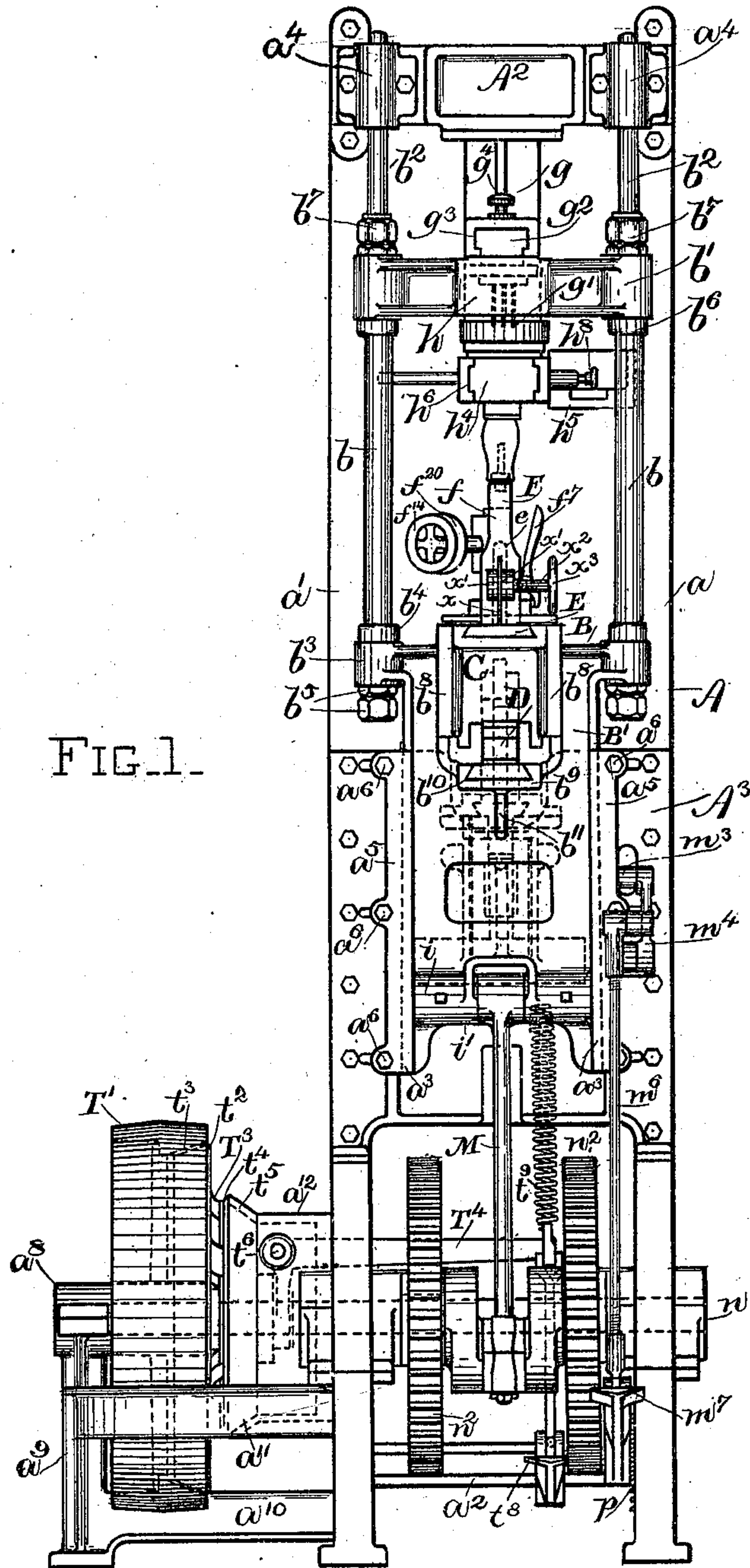


983,852.

E. E. WINKLEY.  
HEEL NAILING MACHINE.  
APPLICATION FILED OCT. 8, 1896.

Patented Feb. 7, 1911.

4 SHEETS—SHEET 1.



WITNESSES.

Fred V. Hart.  
George W. Beadle.

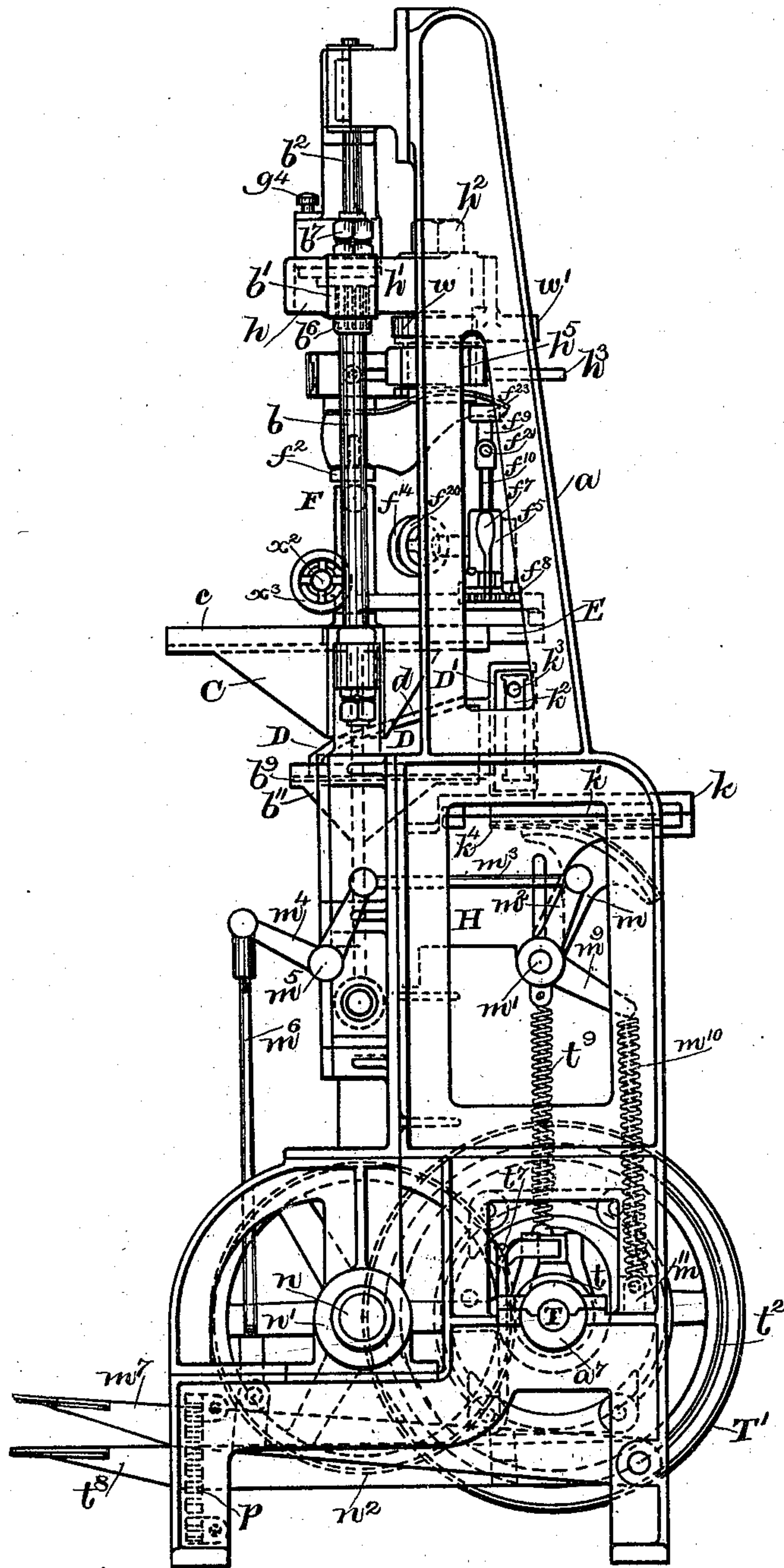
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4 SHEETS-SHEET 2.



WITNESSES -

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FIG. 2 -

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4 SHEETS—SHEET 3.

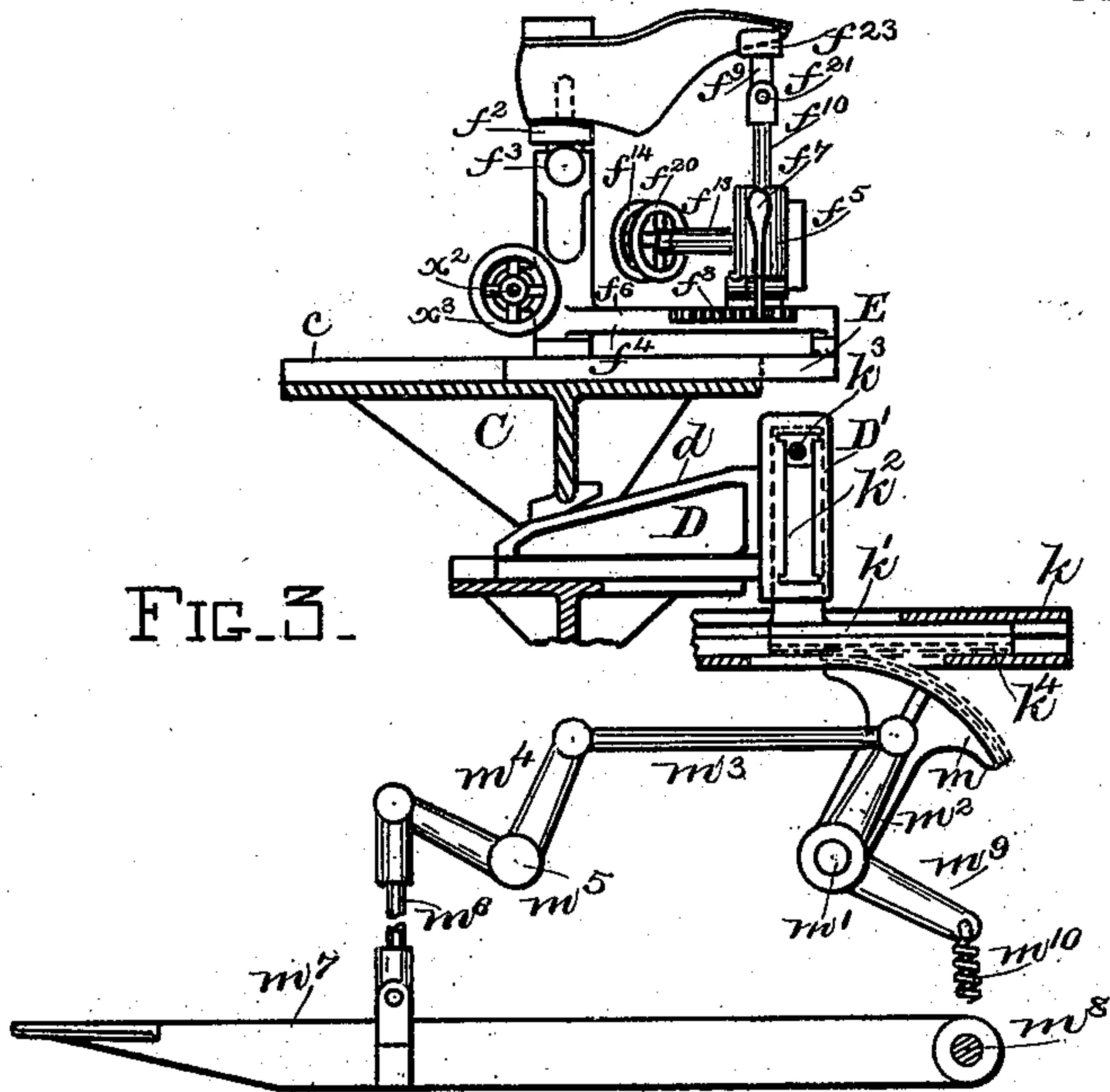


FIG. 3.

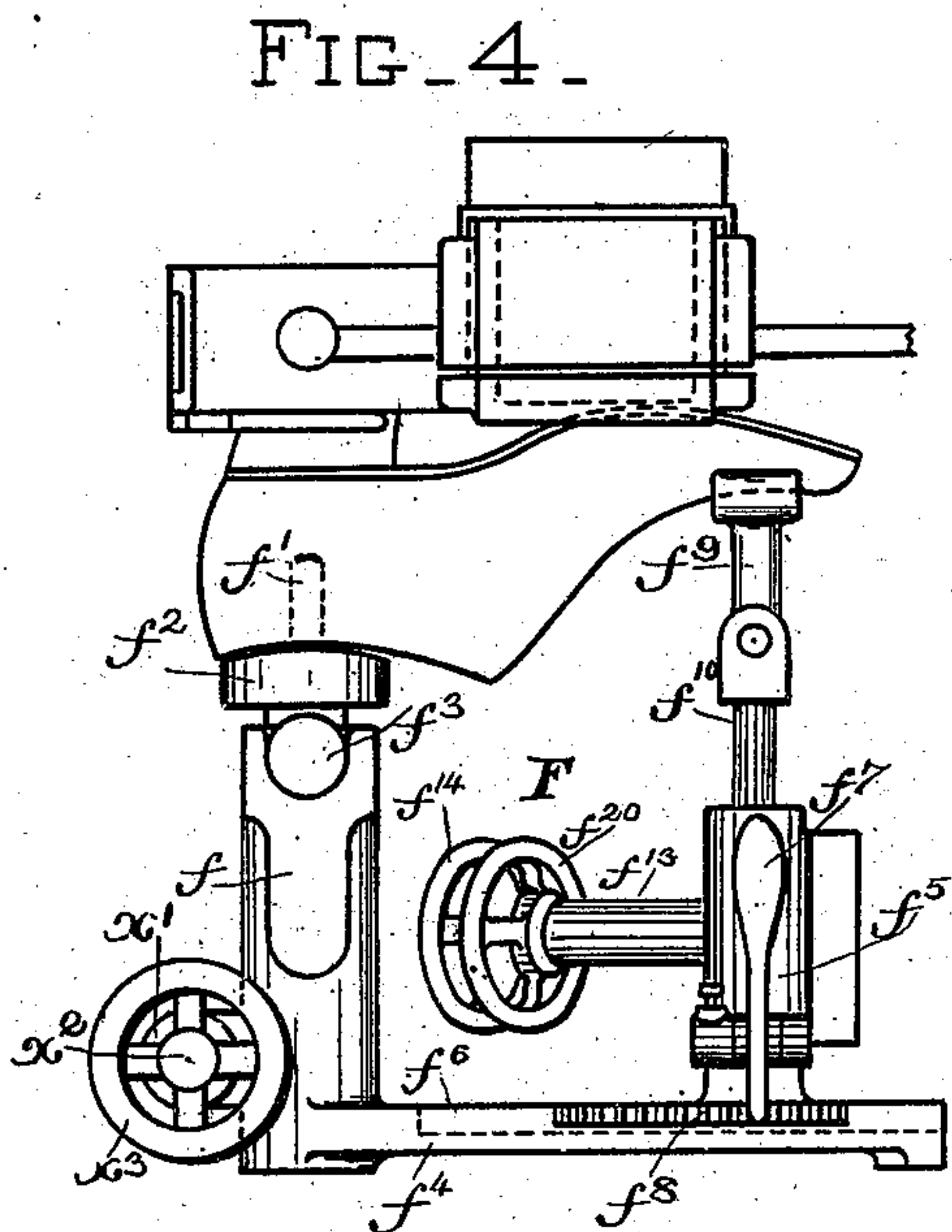


FIG. 4.

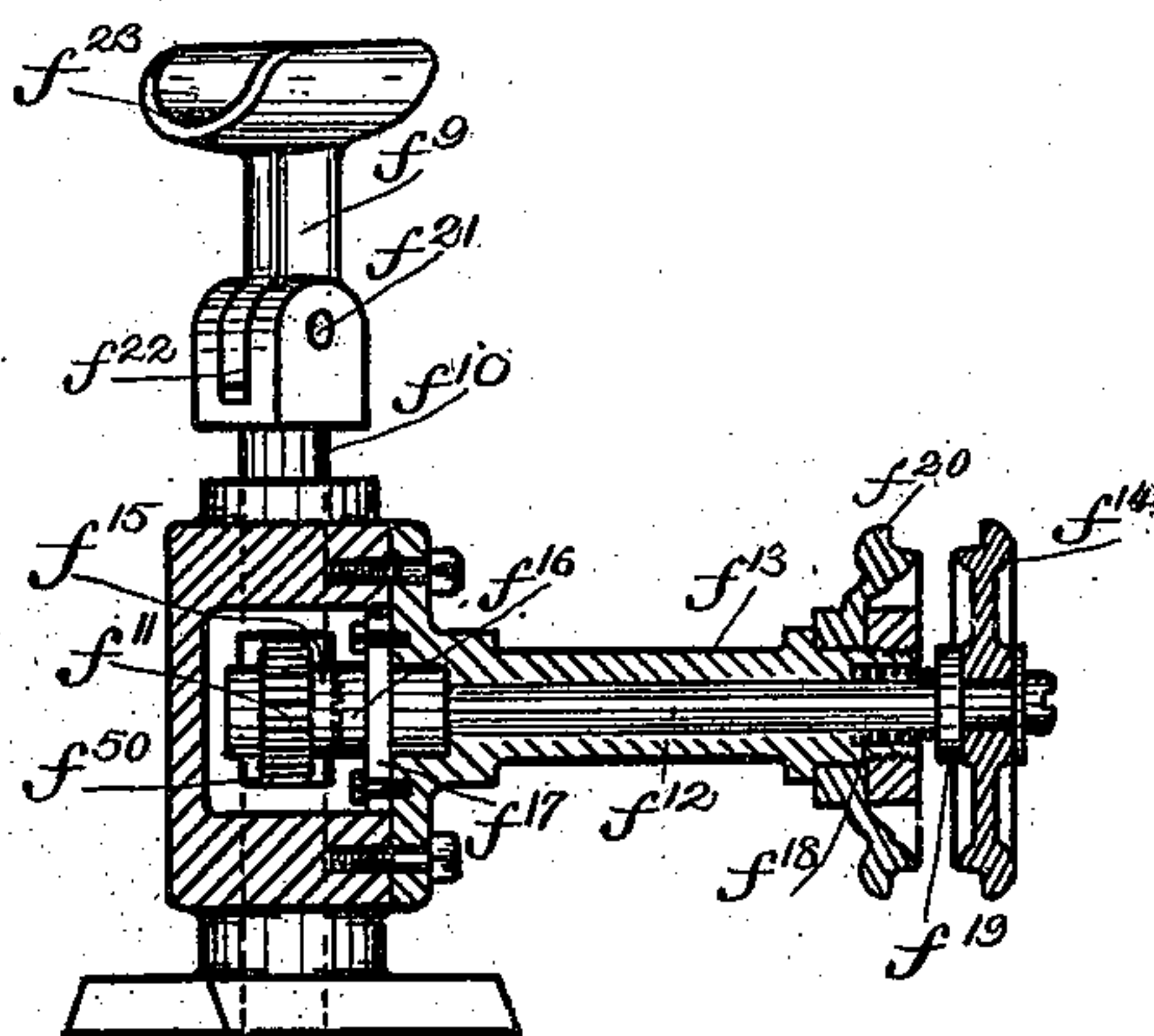


FIG. 5.

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4 SHEETS—SHEET 4.

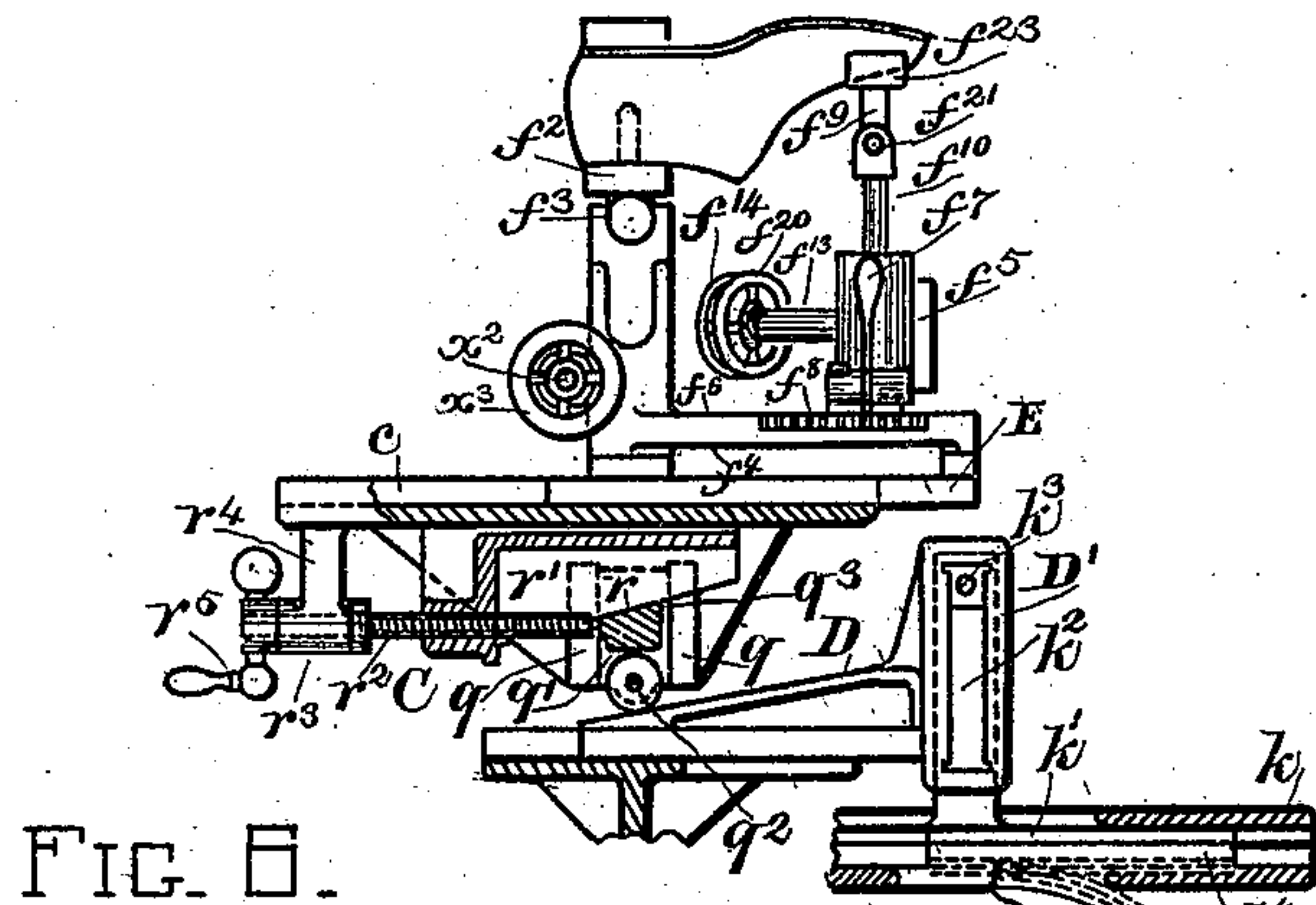


FIG. 6.

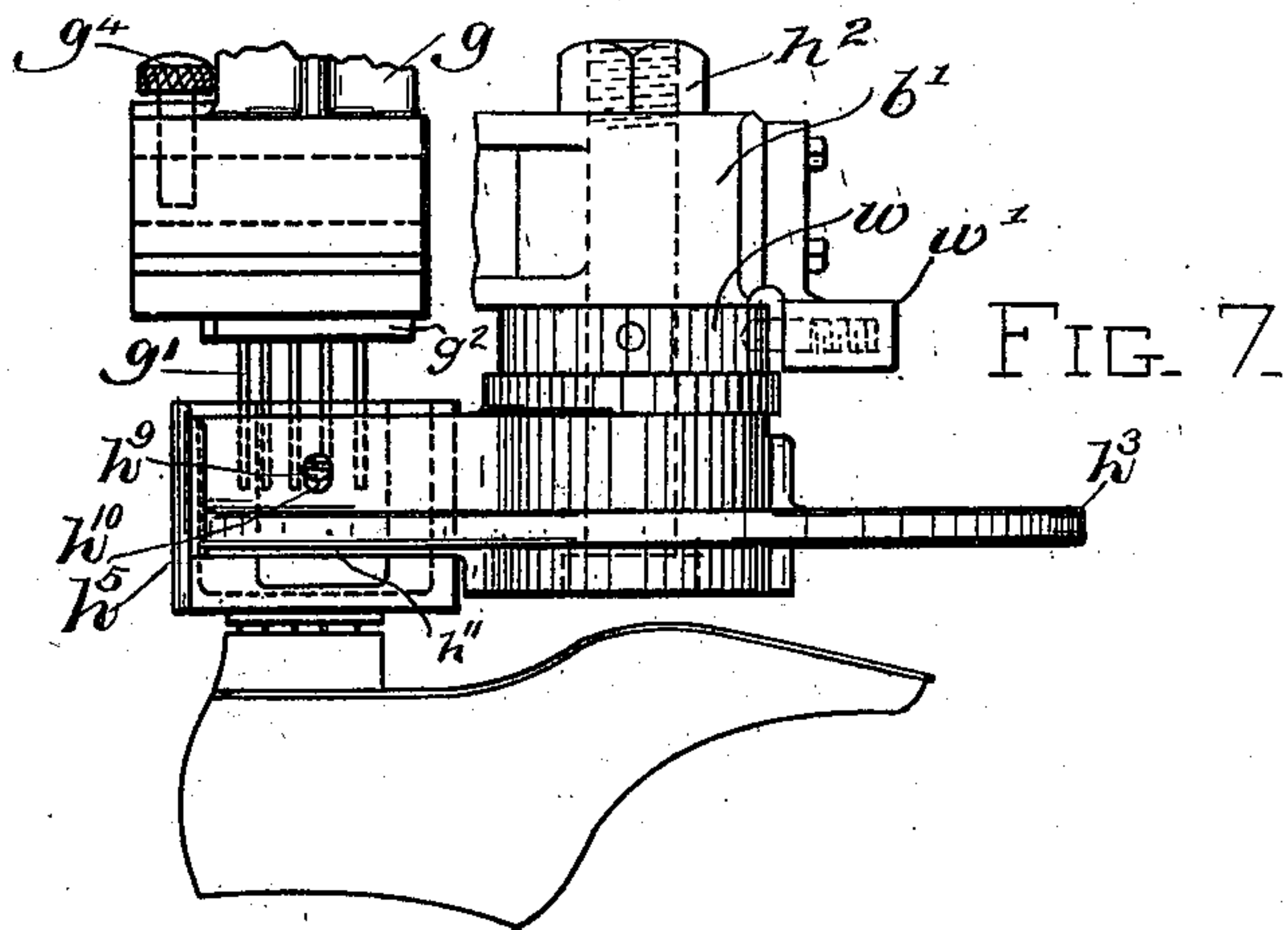
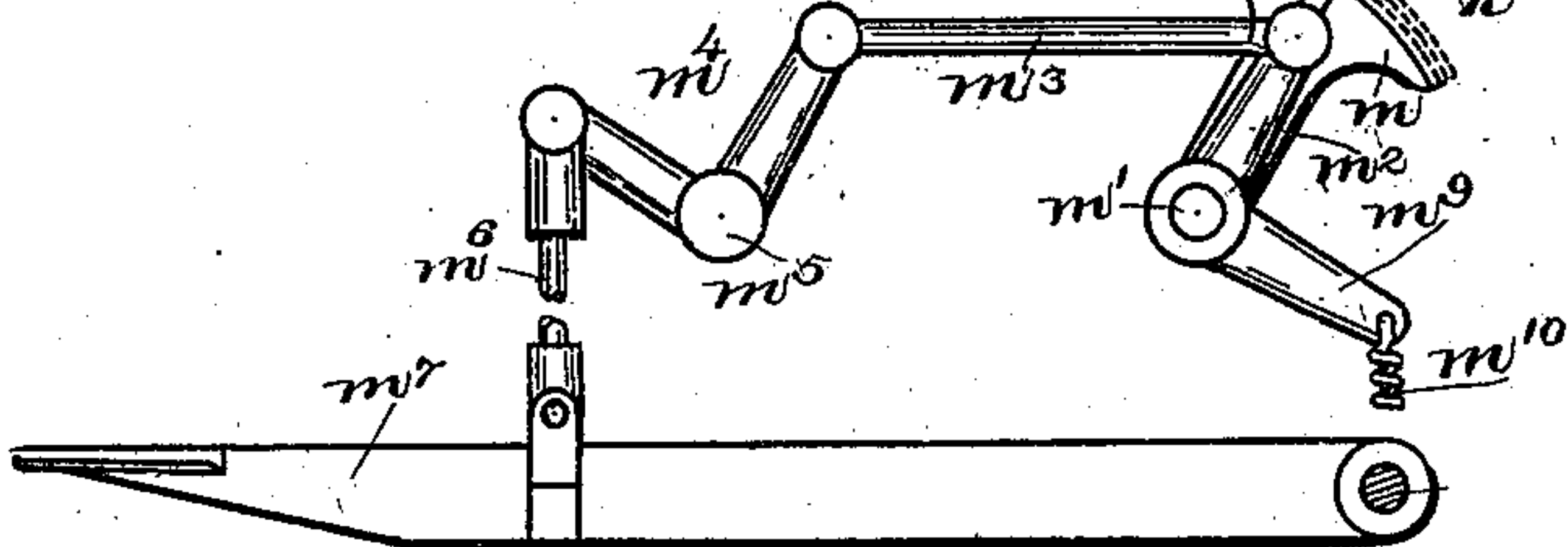
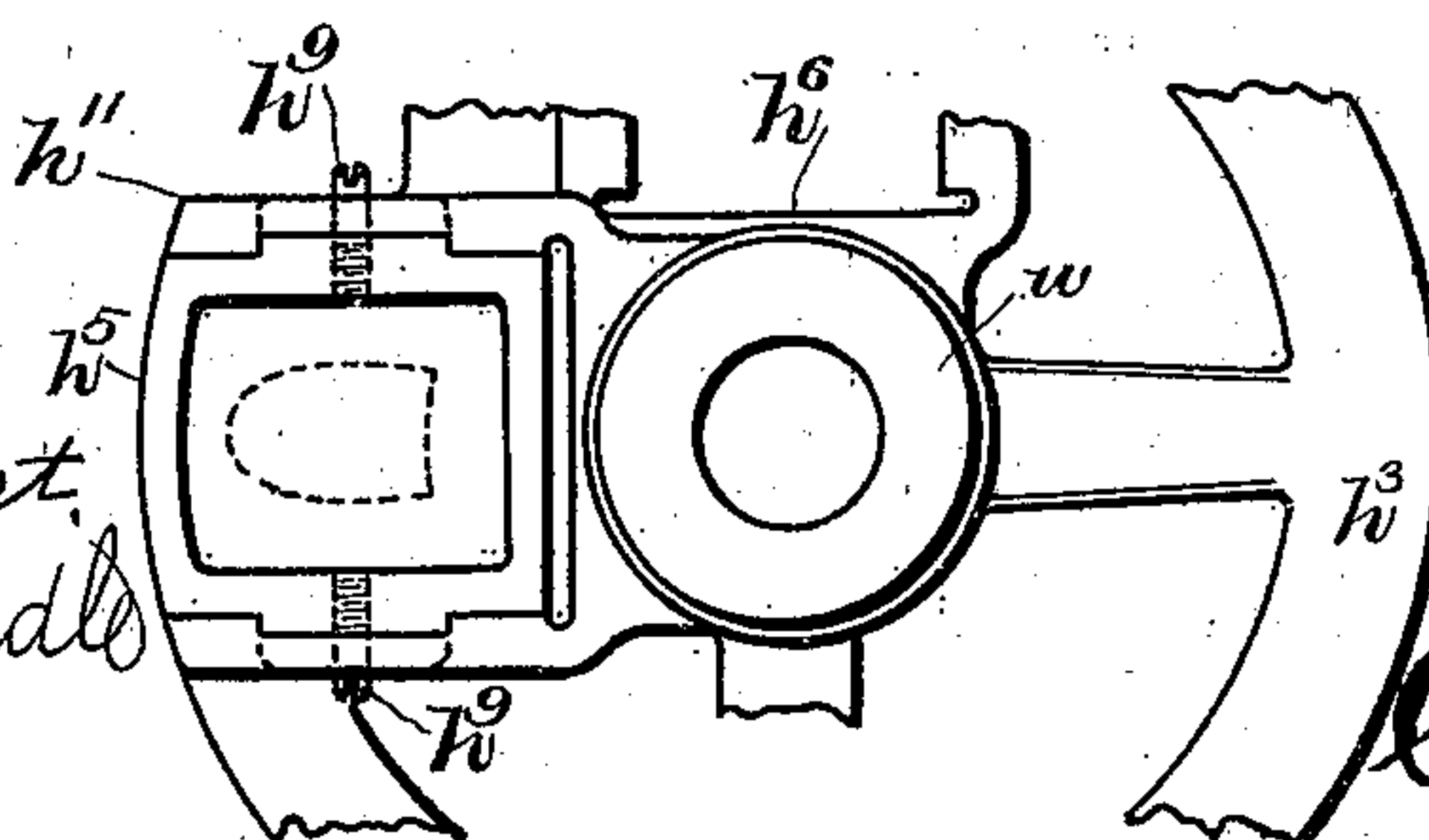


FIG. 7.

FIG. 8.

WITNESSES

*Fred V. Hart,*  
*George W. Beadle*



INVENTOR  
*E. E. Winkley*  
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# UNITED STATES PATENT OFFICE

ERASTUS E. WINKLEY, OF LYNN, MASSACHUSETTS.

HEEL-NAILING MACHINE.

983,852.

Specification of Letters Patent.

Patented Feb. 7, 1911.

Application filed October 8, 1896. Serial No. 608,215.

*To all whom it may concern:*

Be it known that I, ERASTUS E. WINKLEY, citizen of the United States, residing at Lynn, in the county of Essex and State of Massachusetts, have invented certain new and useful Improvements in Heel-Nailing 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 attaching heels to shoes, and it has for its object to provide a machine of this character in which the amount of pressure put upon the heel during the process of attaching the same may be controlled by the operator, and to improve the jack mechanism of such machines to provide for the ready adjustment thereof in order to relatively adjust the jack and nail block to accommodate "rights" and "lefts", and generally to improve the construction and operation of the machine.

To this end the present invention consists of the devices and combination of devices which will be hereinafter described and claimed.

The invention is illustrated in the accompanying drawings in which similar letters and figures of reference refer to similar parts, and in which—

Figure 1 represents the machine in front elevation, Fig. 2 shows the same in side elevation looking at the right of Fig. 1, Fig. 3 is a detail of the jacking mechanism, parts being in section. Fig. 4 is a side view of the jack, and a portion of the templet carrier. Fig. 5 shows a sectional view of the mechanism for actuating the toe support. Fig. 6 shows a modified construction of the jack, and Figs. 7 and 8 are detail views illustrating the manner of mounting the top lift holder and spanker in its carrier.

The main frame A is of a suitable size and shape to sustain the working parts of the machine, and as shown in the drawings, comprises the side frames  $a$ , and  $a^1$ , which are connected together by the cross head  $A^2$ , and guide plate  $A^3$ , which are bolted to the front face of the side frames  $a$  and  $a^1$ , as clearly shown in Figs. 1 and 2, and by a suitable cross girt  $a^2$ , which is bolted thereto at the base of the machine.

Mounted to reciprocate in the frame A, is a frame B, which carries the jack or last support and the nail block and top lift holder as will be hereinafter described.

The frame B is preferably constructed as shown in the drawings wherein  $B^1$  represents a plate mounted for a vertical reciprocation in the guide ways  $a^3$  of the guide plate  $A^3$ , it being held in the guide ways by suitable retaining plates  $a^5$ , which are secured to the plate  $A^3$  by the bolts  $a^6$ . At its upper end the plate  $B^1$  is provided with suitable ears or lugs  $b^3$  in which are mounted the rods  $b$ , they being provided with suitable stop shoulders  $b^4$  which rest upon the ears  $b^3$  and are securely fixed therein by clamping nuts  $b^5$ .

Near their upper ends rods  $b$  are provided with suitable stop shoulders  $b^6$ , upon which rests the cross head or carrier  $b^1$ , which is fixed thereto by suitable clamping nuts  $b^7$ , the upper ends  $b^2$  of said rods being arranged to be reciprocated in, and guided by suitable guides  $a^4$ , formed on or attached to the cross head  $A^2$ .

At its upper end the plate  $B^1$  is cut out forming a substantially U shaped recess in the sides of which are formed guides  $b^8$  for the movable jack carrier C, which is fitted for a vertical movement in said guide. At the base of the U shaped opening in plate  $B^1$ , is a horizontal guide way  $b^9$ , in which is formed a dovetail guide groove  $b^{10}$  the guide way  $b^9$  being projected from the front and rear faces of the plate  $B^1$ , and being supported by suitable braces  $b^{11}$ , as clearly shown in Fig. 2.

Within the dovetail guide groove  $b^{10}$ , is fitted the dovetail base of a movable jack elevating device D, which has an inclined upper edge  $d$ , which engages the under side of the jack carrier C, the arrangement being such, that a movement of the elevating device D toward the left in Fig. 2, will raise the jack carrier and the jack mounted thereon to clamp the heel of the shoe against the nail block and press the same preparatory to driving the attaching nails, as will be hereinafter described.

It will be noted that the jack has a vertical movement with the frame B, and also a vertical movement independent of frame B. The jack carrier C, has a dovetail guide groove  $c$ , in which is fitted the dovetail base



of the jack plate E, the jack plate E having a free sliding movement in said guide groove  $c$ , for the purpose of properly positioning the jack and the shoe thereon relatively to the nail drivers, nail block and top lift spanker, and to place the same after a heel has been attached in a convenient position for the removal of the shoe therefrom and the placing of another shoe thereon.

Upon the jack plate E, is a spindle  $e$ , (shown in dotted lines Fig. 1) upon which is fitted the hollow end of the heel standard  $f$ , of the jack F, in such manner, that the jack may be swung upon the arc of a circle with the heel standard as a center, in order to position the shoe thereon, relatively to the heel attaching devices according as the shoe is a "right" or "left".

For the purpose of holding the jack in its adjusted position the hollow end of the heel standard  $f$ , is split at  $x$  as shown Fig. 1, and in suitable ears  $x^1$  thereon is fitted a threaded screw  $x^2$  having a hand wheel  $x^3$ , by which to turn the same, and cause the ears  $x^1$  to clamp the split end of the heel standard  $f$  on the spindle  $e$ .

To the upper end of the heel standard  $f$ , is fixed a last pin or spindle  $f^1$ , it being preferably fixed to a head  $f^2$  which is constructed to have a rocking or tilting movement in rounded bearings  $f^3$ , toward and from the toe rest, as shown.

Projected from the base of the heel standard  $f$ , is a plate  $f^4$ , upon the forward end of which is a toe supporting standard  $f^5$ , the base of said standard being adapted to have a longitudinal adjustment toward and from the heel supporting standard  $f$ , in a groove  $f^6$  formed in the plate  $f^4$  (see dotted lines Fig. 4). A pivoted pawl or latch  $f^7$  upon the toe supporting standard  $f^5$ , engages a rack or series of notches  $f^8$ , upon the plate  $f^4$ , for holding the toe supporting standard in its adjusted position.

In order to properly position the shoe so that the heel seat thereof, shall be level with the under surface of the heel which is to be attached thereto the toe support  $f^9$  is arranged to be vertically adjustable to cooperate with the pivoted last pin or spindle  $f^1$  in securing such adjustment of the shoe. In order to provide for the vertical adjustment of the toe support  $f^9$ , it is mounted upon a rod  $f^{10}$ , which is fitted for a vertical movement within the toe supporting standard  $f^5$ , and to provide for a ready and quick adjustment of said toe support  $f^9$ , the rod  $f^{10}$  is provided with a rack  $f^{11}$  with which meshes a pinion  $f^{12}$ , keyed to the end of a shaft  $f^{13}$ , which is mounted in a bearing  $f^{14}$ , fixed to the standard  $f^5$ , and which at its outer end carries a suitable hand wheel  $f^{15}$ , to actuate said shaft and pinion, to raise or lower the toe support. The shaft  $f^{12}$  and pinion  $f^{11}$  are preferably arranged to be locked against

rotary movement, after the toe support has been adjusted to the position desired, in order to hold the same in its adjusted position, and the locking of said shaft and pinion may be conveniently secured by arranging said shaft to have a slight longitudinal movement in its bearing  $f^{14}$  and forming upon said pinion  $f^{11}$  a series of clutch teeth  $f^{16}$ , which are adapted to take into a series of similar clutch teeth  $f^{17}$ , carried by a plate  $f^{18}$ , fixed to the end of the bearing  $f^{14}$ .

A suitable spring  $f^{19}$  fitted to a recess in the outer end of bearing  $f^{14}$ , bears upon a collar  $f^{20}$ , on the shaft  $f^{12}$ , and tends to normally thrust said shaft outwardly and to clutch teeth  $f^{16}$  on the pinion  $f^{11}$ , to the fixed clutch teeth  $f^{17}$ , and to thus lock the pinion and shaft against rotary motion, holding the toe support  $f^9$  in its adjusted position.

A loose hand wheel  $f^{21}$ , is mounted upon the end of the bearing  $f^{14}$ , in juxtaposition to the hand wheel  $f^{15}$ , for a free rotary movement thereon, but fixed against any longitudinal movement, the arrangement being such that both wheels  $f^{15}$  and  $f^{21}$ , are grasped in the hand of the operator in making an adjustment, the wheel  $f^{21}$  forming a fulcrum or abutment whereby the wheel  $f^{15}$  can be readily moved toward the same by the operator, to move the shaft  $f^{12}$  and pinion  $f^{11}$ , to release the clutch members  $f^{16}$  and  $f^{17}$ . Thereafter, in rotating the wheel  $f^{15}$ , to adjust the toe support  $f^9$ , the wheel  $f^{21}$ , which is still grasped by the operator is free to turn and thus the locking device and the toe support adjusting device, can be operated by one hand. The toe support  $f^9$ , is preferably pivoted to the rod  $f^{10}$ , by a pin  $f^{22}$ , in order that it may have a limited swinging movement toward and from the heel support, and it has formed thereon, a toe or stop  $f^{23}$ , which limits the movement of the toe support in order to prevent the same from tipping over or falling down. The toe support at its upper end may be provided with a concave bearing or rest plate  $f^{24}$  adapted to receive the forward end of the last, as is usual in such devices.

Depending from the cross head  $A^2$  is a block or arm  $g$ , which at its lower end carries a gang or group of nail drivers  $g^1$ , the said drivers being preferably arranged upon a block  $g^2$ , fitted to a bearing  $g^3$ , in the end of said block or arm  $g$ , it having a sliding connection therewith, in order that the drivers may be removed and others substituted therefor when working upon different sizes and styles of heels. The block  $g^2$  is held in the bearing  $g^3$  by any suitable means such as the stud or bolt  $g^4$  fitted in the arm  $g$ , and engaging the block  $g^2$ .

In the machine of the drawings the drivers have no vertical movement while driving the heel attaching nails, the jacked shoe and nail block moving up to the drivers instead.



In the cross head or carrier  $b^1$  is formed a recess  $h$ , (see dotted lines Figs. 1 and 2) through which the drivers  $g^1$  and block or arm  $g$ , are adapted to operate during the upward movement of frame B, and the shoe carried thereby. In the rear, the cross head  $b^1$  has a projected bearing  $h^1$  in which is fitted a stud  $h^2$  upon the lower end of which is mounted to revolve in a horizontal plane the carrier  $h^3$  for the nail block  $h^4$ , and the top lift holder and spanker  $h^5$ . The nail block  $h^4$  is removably connected with the carrier  $h^3$ , by fitting it into the grooved recess or bearing  $h^6$  in said carrier and securing it in place by a suitable stud or bolt  $h^8$  as clearly shown in Fig. 1.

The nail block  $h^4$  has a series of nail receiving holes, arranged to conform to the drivers  $g^1$ , into which holes the attaching nails are dropped, as is usual in these machines.

The top lift spanker  $h^5$  is in the form of a hollow block, open at the top and having a closed bottom, the outer surface of which is a plane and smooth surface, which is adapted to spank the top lift upon the projecting ends of the heel attaching nails after the heel has been secured in place, and it is provided with any suitable top lift holder for the purpose of retaining the top lift in proper position thereon. The spanker  $h^5$  is mounted in the holder or carrier  $h^3$  in such a manner, that it may have a slight vertical movement therein when operating to attach the top lift, and such movement is secured by providing said spanker with the projecting studs  $h^9$  which are held in the slots  $h^{10}$  formed in the sustaining arms  $h^{11}$  of the carrier  $h^3$ .

The nail block  $h^4$  and top lift holder and spanker  $h^5$ , are preferably located upon the carrier  $h^3$ , at ninety degrees apart, in order that when one of them is in operative position, the other one may be in a convenient position for loading.

In order to hold the carrier with the nail block or top lift spanker in position with reference to the drivers  $g^1$ , a collar  $w$ , fixed thereon has bolt receiving apertures at proper points therein, in which a spring actuated pin or bolt contained in casing  $w^1$  is adapted to fit (see Figs. 1 and 7).

In the operation of heeling by this machine the shoe is jacked, and a heel is fitted to a suitable clamp or holder on the under surface of the nail block, and the nail block then loaded with nails, the jack is then moved up, to bring the heel seat of the sole, in contact with the heel, and the desired compression of such heel is caused by the pressure exerted thereon, between the jack or last and the nail block. The movable frame is then actuated to lift the jacked shoe and nail block and cause the nail drivers to enter the holes in the nail block,

to drive the nails therefrom into the clamped heel.

For the purpose of moving the jack and shoe upwardly to clamp the heel as above set forth, the inclined jack elevator D, is moved forward, causing the jack carrier C which rests thereon to be raised, and this upward movement of the jack is greater or less according as the heel is high or low.

For the purpose of allowing the operator to accurately determine and gage and control this pressure, to suit the particular heel upon which he may be operating, the jack lifting and pressing mechanism is under the control of the operator, and it is preferably of the following form and arrangement.

Upon the rear face of the guide plate  $A^2$ , is secured a bracket H, upon the upper end of which is formed a guide  $k$ , within which is a movable slide  $k^1$ , which has at its outer end an upright arm  $k^2$ , which has a movable connection with the jack elevator D, by means of a slotted guide  $D^1$ , upon the rear of said jack elevator D, the arm  $k^2$  having a pin  $k^3$ , which works in the guide  $D^1$ . The arrangement is such that the jack elevator D is free to move upwardly with the frame B, as hereinbefore referred to. The jack elevator D, is given its horizontal movement by moving in and out the slide  $k^1$ , and such movement is imparted to the slide  $k^1$ , by a sector lever  $m$ , which engages a rack  $k^4$  formed upon the bottom of the slide  $k^1$ .

The sector lever  $m$ , is mounted upon a short shaft  $m^1$ , fitted in bearings upon the bracket H, and upon the end of said shaft  $m^1$  is fixed a lever  $m^2$ , which is pivotally connected by a link  $m^3$  to one arm of a bell crank lever  $m^4$ , which is fulcrumed at  $m^5$  to the fixed frame of the machine, the other arm being pivotally connected to a rod  $m^6$  which has a pivoted connection with a foot treadle  $m^7$ , which is pivoted to the frame A at  $m^8$ . An arm  $m^9$ , upon the shaft  $m^1$ , is connected to one end of a spring  $m^{10}$ , the other end of which is connected to some fixed portion of the machine frame at  $m^{11}$ , the spring  $m^{10}$  acting to draw down the arm  $m^9$  and to move the sector lever  $m$ , to retract the slide  $k^1$ , and the jack elevator D, to permit the jack to assume its lowest position.

To raise the jack the treadle  $m^7$  is depressed, and through the link  $m^6$ , bell crank  $m^4$ , link  $m^3$  and arm  $m^2$ , the slide  $k^1$  and jack elevator D are moved outwardly, causing the inclined surface  $d$  of the jack elevator D, to lift the jack carrier C, which has a bearing thereon, and thus to cause the jack to be raised to clamp the heel preparatory to driving the attaching nails. In order to hold the jack in its raised position the treadle  $m^7$  is adapted to be engaged with a ratchet plate  $p$ , fixed to the side of frame A. When



the treadle is released from the ratchet plate  $p$ , the spring  $m^{10}$  acts to draw down the arm  $m^9$  and to retract the jack elevator D thus permitting the jack carrier and jack to fall, as heretofore described.

After the heel has been put under pressure and clamped between the shoe and nail block by the upward movement of the jack as described, the frame B is moved upward, carrying the jacked shoe and the nail block toward the cross head  $A^2$ , in order that the drivers  $g^1$  may drive the nails from said nail block into the heel, thus securing the heel to the shoe. This upward movement of the frame B, is imparted through a pitman M, which is hung to a short rod  $i$  (see dotted lines Fig. 1) fitted in bearings  $i^1$  in the bottom of plate  $B^1$  and which is connected to and actuated by a crank shaft  $n$ , mounted in bearings  $n^1$  of frame A.

T represents a power shaft which is mounted in bearings  $a^7$ , in the main frame A, and a bearing  $a^8$ , in the short vertical standard  $a^9$ , which has an arm or brace  $a^{10}$ , which is bolted to the side  $a^1$  of frame A, and a guard and brace  $a^{11}$  which is also bolted to the side  $a^1$  of frame A. Upon the shaft T are pinions  $t$ , which mesh with and drive the gears  $n^2$  upon the crank shaft  $n$ , thus imparting motion to said crank shaft. Upon the main shaft T, is a loose pulley  $T^1$  which is adapted to be driven by a belt from any suitable source of power.  $T^3$  represents a sliding sleeve which is splined to the main shaft T and which is free to have a limited movement along said shaft. Upon one end of the sliding sleeve  $T^3$  is a beveled face  $t^2$ , which coöperates with a beveled face  $t^3$  upon the loose pulley  $T^1$ , the beveled faces  $t^2$  and  $t^3$  forming complementary members of a driving clutch, by which the main or power shaft T is driven. Upon the other end of the sliding sleeve  $T^3$ , is a beveled face  $t^4$ , which coöperates with a beveled face  $t^5$ , formed upon a tubular projection  $a^{12}$  of the main frame A, the beveled faces  $t^4$  and  $t^5$  forming the complementary members of a brake clutch which stops the rotation of the shaft T. When the sliding sleeve  $T^3$  is moved toward the loose pulley  $T^1$  the brake clutch is opened and the driving clutch is closed thus imparting motion to the moving parts of the machine and when the sleeve  $T^3$  is moved in the opposite direction the driving clutch is opened and the brake clutch is closed, thus stopping the machine. The sleeve  $T^3$  is actuated by a bell crank lever  $T^4$  which is pivoted at  $t^6$  to the tubular projection  $a^{12}$ , one arm of which is forked and engages a groove in the hub of the sleeve  $T^3$ , (see dotted lines Fig. 1) and the other arm of which is connected by a rod  $t^7$  to a foot treadle  $t^8$  pivoted to the frame A. A spring  $t^9$  attached at one end to the bracket H and at its other end to the foot

treadle  $t^8$ , acts to normally raise such treadle and to open the driving clutch and close the brake clutch.

In Fig. 6 is shown a modified construction of the jack mechanism, in which provision is made for a preliminary vertical adjustment of the jack carrier and jack, prior to the upward movement of the same by the jack elevator, and wherein the inclined surface of the jack elevator is not so steep as in the construction before described, and therefore the friction between the jack carrier and jack elevator is greatly reduced, requiring less power to actuate the same. In this modified construction the jack carrier C, has upon the inner surface of its depending side flanges suitable guides  $q$  within which is guided for vertical movement an adjusting block  $q^1$  which is preferably provided with a roll  $q^2$  which has a bearing upon the inclined upper edge of the jack elevator D, which as shown is somewhat less inclined than in the construction hereinbefore set forth. The adjusting block  $q^1$  has an inclined upper edge  $q^3$  which contacts with and is acted upon by the inclined edge  $r$  of a horizontally movable adjusting wedge  $r^1$ . The adjusting wedge  $r^1$  is actuated by a threaded rod  $r^2$ , which is adapted to turn freely in a bearing  $r^3$  in the end of an arm  $r^4$  depending from the underside of the carrier C, a suitable handle  $r^5$  being provided to actuate said rod. The above arrangement is such that after the shoe has been placed on the jack, the wedge  $r^1$  may be moved by the rod  $r^2$  and by means of the block  $q^1$  resting upon the jack elevator D, raise the plate C and the jack thereon to give a preliminary vertical adjustment to bring the shoe thereon in juxtaposition to the heel to be attached, and thereafter the jack elevator D is moved by the treadle mechanism to clamp the heel seat in close contact with the heel.

The operation of my invention is as follows: The frame B being in its lowermost position, and the jack being moved outwardly upon the carrier C, the last and shoe are placed thereon and the jack adjusted to bring the shoe in proper position with its heel seat in alinement with the heel which has been placed in the holder upon the under side of the nail block, at the same time the top lift has been placed in the holder upon the underside of the top lift spanker. The nail block having been loaded with nails, the jack elevator D is moved by the treadle  $m^7$  and its connections, to elevate the jack and shoe to bring the heel seat of the sole in close contact with the heel on the nail block, and to compress said heel a sufficient amount as the character thereof shall dictate, the treadle  $m^7$  being locked by the rack  $p$  to hold the heel under compression. The treadle  $t^8$  is now depressed to actuate



the power shaft which through the gear connections transmits motion to the crank shaft  $n$ , and through the pitman  $M$  causing an upward reciprocation of the frame  $B$  and the shoe and heel, the heel being clamped as before stated and causing the nail drivers  $g^1$  to enter the nail block and drive the nails therefrom into and through the heel into the sole where they are clenched, thus attaching the heel, the drivers being of such a length as to drive the nails partially in only, leaving the heads projecting upon which the top lift is attached as is usual in these machines. The continued movement of the crank shaft depresses the frame  $B$  and the jack and shoe with the attached heel, whereupon the treadle is released stopping the machine with the frame  $B$  depressed. The jack elevator  $D$  is now moved backwardly upon the release of treadle  $m^7$ , and allows the jack to drop thus relieving the heel from pressure. The carrier  $h^3$  is now revolved to bring the top lift spanker and top lift in vertical alinement with the heel, when the jack elevator  $D$ , is again actuated to lift the jack and shoe to bring the projecting ends of the heel attaching nails in close juxtaposition with the top lift, when the treadle  $t^8$  is again actuated to start the power mechanism, to lift frame  $B$  and the shoe, which causes the nail drivers to enter the hollow top lift spanker, (the hollow therein being of sufficient depth to receive said drivers without danger of breaking them) and the top of said top lift spanker comes in contact with the block  $g^2$  which arrests the vertical movement of said spanker, and by means of the slot and stud connections thereof with its carrier, permits a further movement of said carrier and the jack and shoe of a sufficient distance to cause the projecting ends of the nails to enter the top lift and secure the same to the heel. The frame  $B$  then descends, the jack is allowed to drop, and the shoe and attached heel removed, whereupon the machine is ready to receive another shoe and to operate as before.

The improvement in jacks illustrated and described is not claimed in this application independent of the machine in which it is used as I have made the improvement in jacks the subject-matter of a separate application filed Jan. 17, 1901, Serial No. 43,592.

Nothing herein contained is to be interpreted as limiting the invention in the scope of its application to use in connection with the particular arrangement herein described, for, while the particulars of construction herein set forth are well suited to one form of the invention, it is not to be understood that these particulars are essential since they may be variously modified within the skill of the artisan without departing from the true scope of the actual invention.

#### Claims.

1. In a heel nailing machine, the combination with a shoe supporting jack, nail block and nail drivers of means for relatively moving the jack and nail block to clamp the heel upon the last and to release the heel after the nailing operation, and means for moving the jack and nail block together toward and from the drivers, substantially as described.

2. In a heel nailing machine, the combination with a shoe-supporting jack, of nail drivers, a top lift spanker movable into a position between the jack and nail drivers, said top lift spanker being provided with a recess to receive the nail drivers during the spanking operation, substantially as described.

3. In a heel nailing machine, the combination with the heel nailing devices, of a shoe supporting jack, means under the control of the operator to impart to said jack heel clamping movement, and power driven mechanism for imparting to said jack heel attaching movement, substantially as described.

4. In a heel nailing machine, the combination with the heel nailing devices of a vertically movable shoe supporting jack, means to actuate said jack to effect a preliminary vertical adjustment, means under the control of the operator for imparting to said jack heel clamping movement and power driven mechanism for imparting to said jack heel attaching movements, substantially as described.

5. In a heel nailing machine, the combination with a shoe supporting jack, nail drivers and nail block, of a jack elevator, a movable support for said elevator, actuating mechanism for said elevator, a fixed support for said mechanism, a sliding connection between said elevator and its actuating mechanism to permit a relative vertical movement of said supports without moving the jack elevator relatively to its support, and means for moving the elevator support to force the jack toward the nail drivers after a heel has been clamped against the nail block by the actuation of said elevator, substantially as described.

6. In a heel nailing machine, the combination with a templet or nail block and nail drivers, of a jack mounted to slide longitudinally and swing laterally, means for imparting to said jack and nail block a relative movement to clamp the heel, and independent mechanism for simultaneously moving the jack and nail block in the same direction toward the nail drivers after the heel is clamped, substantially as described.

7. In a heel nailing machine, the combination with a plurality of drivers fixed against vertical movement, of a nail block and a shoe supporting jack mounted for relative



lateral movement to provide for right and left shoes, means for imparting a relative movement to said nail block and jack to clamp the heel, and to release the heel after the nailing operation, and means for moving said nail block and jack toward the drivers, substantially as described.

8. In a heel nailing machine, the combination with a jack, of a jack elevating device comprising a movable wedge, a treadle and suitable actuating mechanism for advancing the wedge to elevate the jack, a spring for retracting the wedge to permit a depression of the jack, and a sliding connection between the wedge and its actuating mechanism, substantially as described.

9. In a heel nailing machine, the combination with a shoe-supporting jack, of nail drivers, a carrier, a top lift spanker arranged to have a slight vertical movement in said carrier, provided with a recess to receive the nail drivers during the spanking operation, said carrier being movable to bring the top lift spanker into a position between the jack and nail drivers, substantially as described.

10. In a heel nailing machine, the combination with a stationary frame and a gang or group of drivers mounted thereon, of a movable frame, a shoe supporting jack, a nail block and a top lift spanker mounted on the movable frame, substantially as described.

11. In a heel nailing machine, the combination with a shoe supporting jack of nail drivers, a nail block, or templet, and a top lift spanker, said nail block and top lift spanker being movable alternatively between the jack and the nail drivers, substantially as described.

12. In a heel nailing machine, the combination with nail drivers, of a movable support, a shoe-supporting jack and a nail block mounted thereon, means for relatively moving the jack and nail block on said support

to clamp the heel, and means for moving said support toward and from the nail drivers, substantially as described.

13. In a heel nailing machine, the combination with nail drivers, of a shoe-supporting jack, a support therefor, a treadle and suitable connections for moving the jack on said support toward the nail drivers to clamp the heel, and power-driven mechanism for moving said support toward the nail drivers to attach the heel, substantially as described.

14. In a heel nailing machine, the combination with nail drivers of a shoe supporting jack, a nail block, a nail driver block and a top lift spanker movable into a position between the nail drivers and the jack, and constructed to be actuated by, and alone transmit the entire thrust of, the nail driver block to attach the top lift while prohibiting an engagement therewith by the drivers, substantially as described.

15. In a heel nailing machine, the combination with a shoe supporting jack, nail block and nail drivers, of means for relatively moving the jack and nail block to clamp a heel upon the last, and independent means for simultaneously moving the jack and nail block toward the nail drivers after the heel is clamped, substantially as described.

16. In a heel nailing machine, the combination with nail drivers, of a shoe supporting jack, a nail driver block, a nail block and a top lift spanker arranged to displace the nail block and be directly engaged and actuated by the driver block, substantially as described.

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

ERASTUS E. WINKLEY.

Witnesses:

T. HART ANDERSON,  
WILLIAM A. SARGENT.