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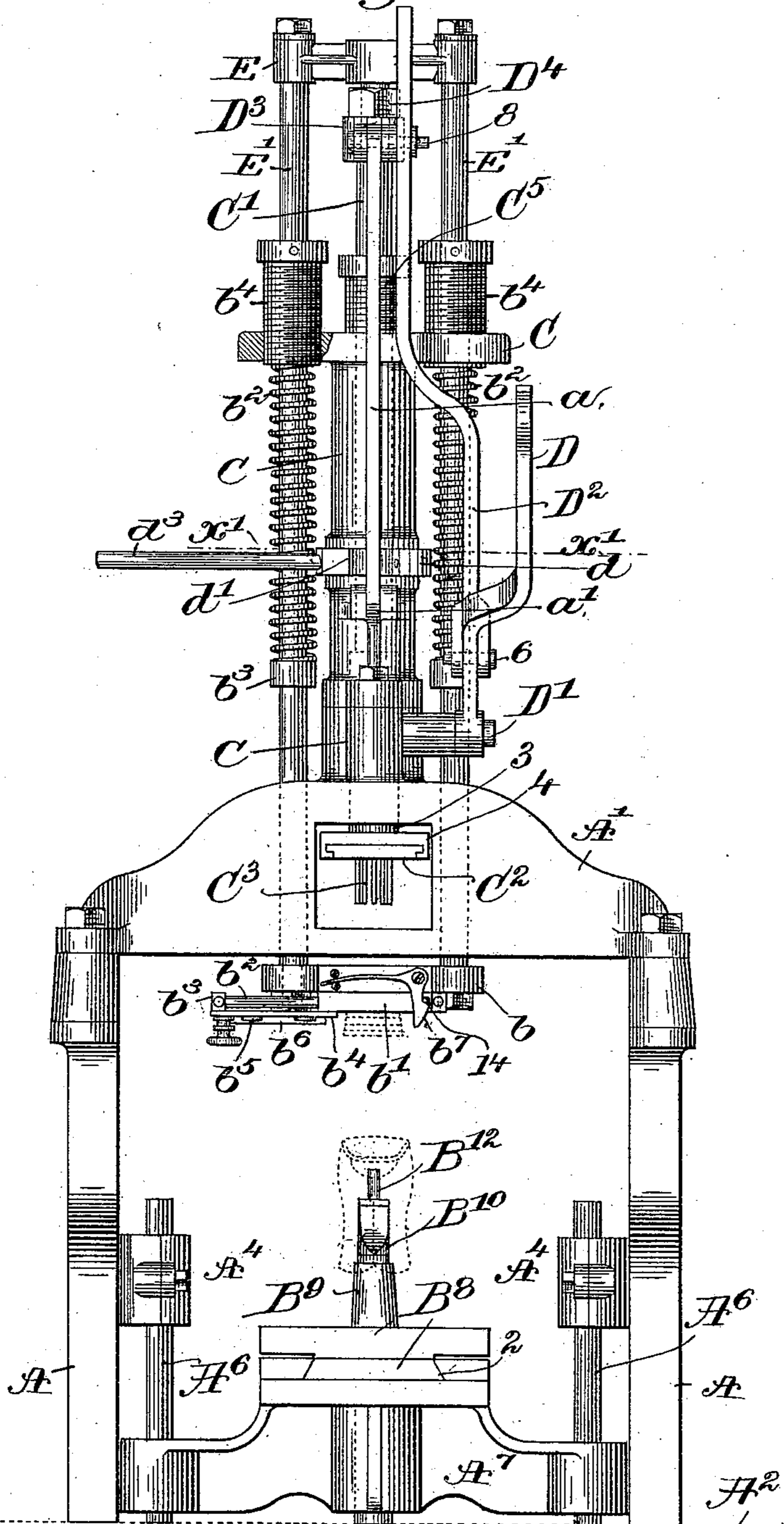
4 Sheets—Sheet 1.

C. W. GLIDDEN.
HEELING MACHINE.

No. 543,682.

Patented July 30, 1895.

Fig. 1.



Witnesses

Edward F. Allen.

Fred S. Grunkeaf.

Inventor.

Charles W. Glidden

by Crosby & Gregory Attys

(No Model.)

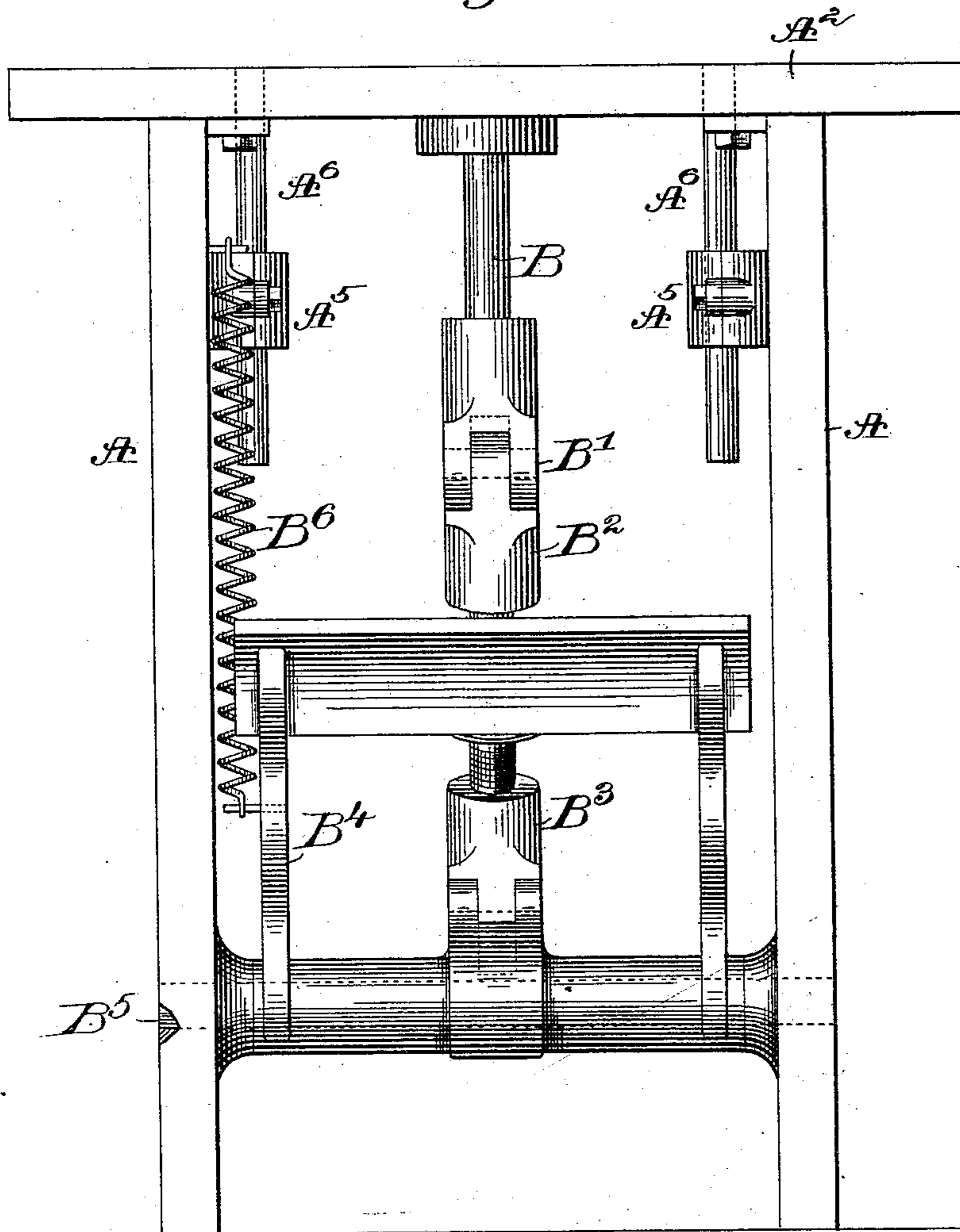
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Fig. 1a



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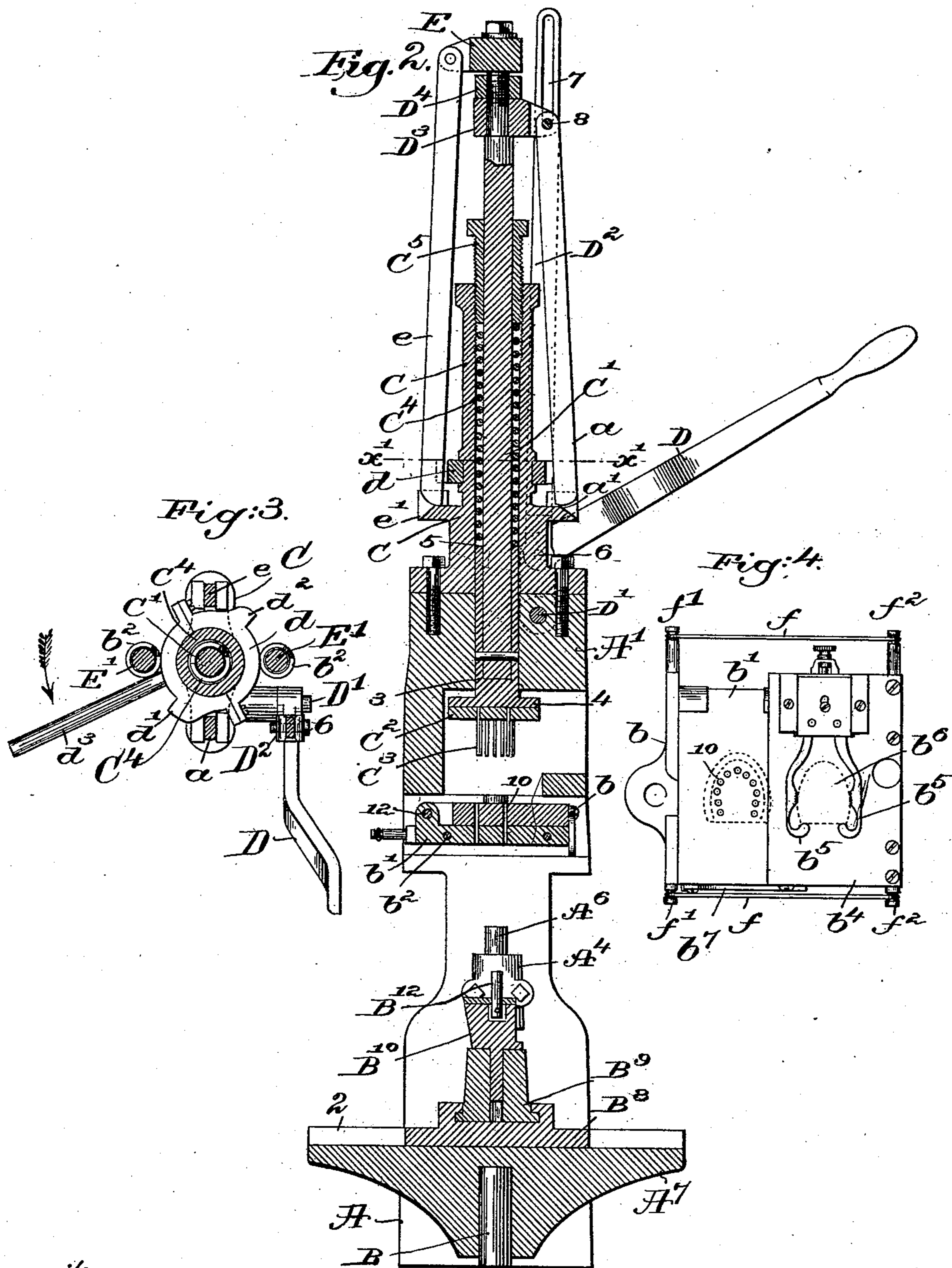
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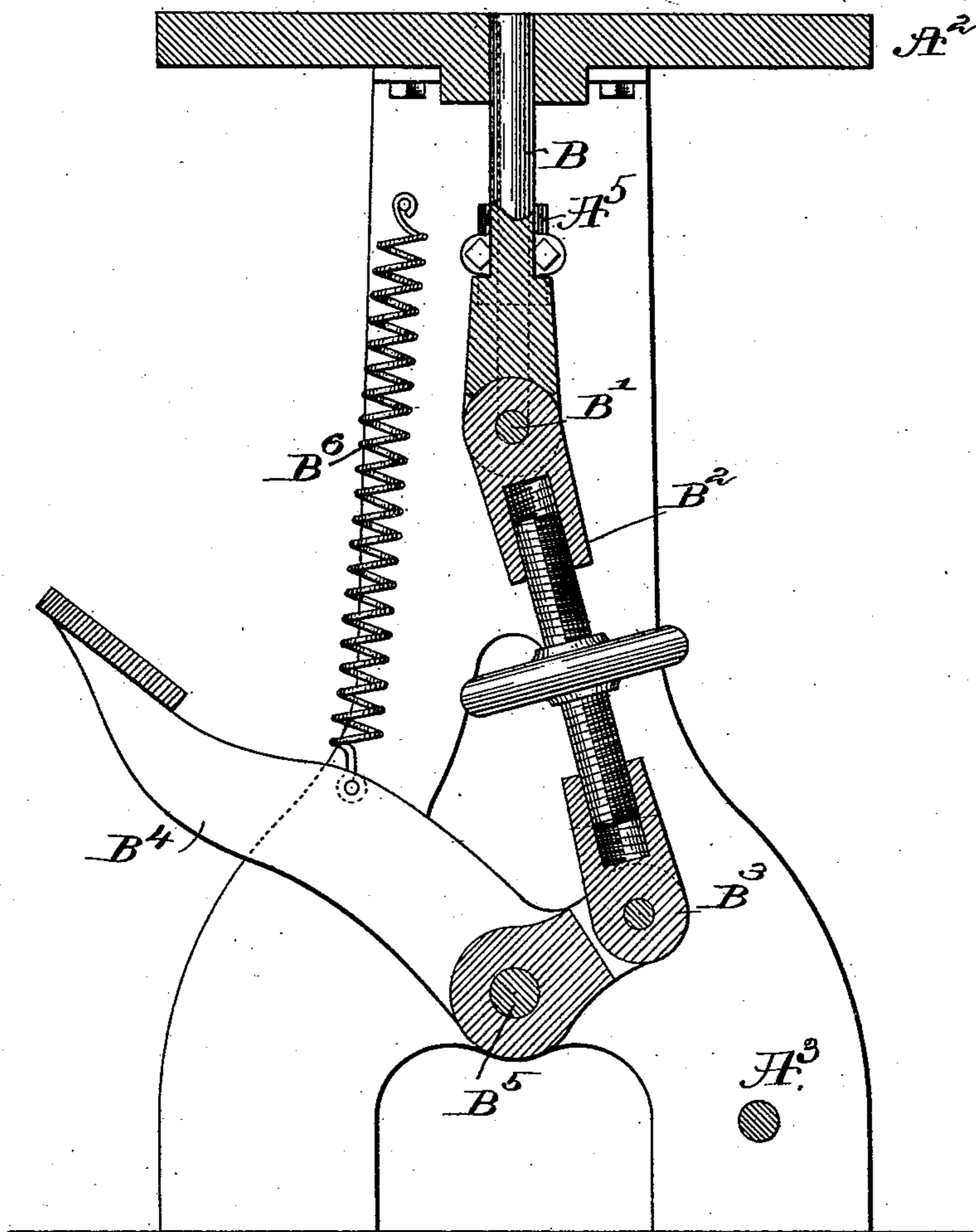
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Fig. 2a



Witnesses.

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UNITED STATES PATENT OFFICE.

CHARLES W. GLIDDEN, OF LYNN, ASSIGNOR TO JAMES W. BROOKS, TRUSTEE,
OF CAMBRIDGE, MASSACHUSETTS.

HEELING-MACHINE.

SPECIFICATION forming part of Letters Patent No. 543,682, dated July 30, 1895.

Application filed November 30, 1892. Serial No. 453,641. (No model.)

To all whom it may concern:

Be it known that I, CHARLES W. GLIDDEN, of Lynn, county of Essex, State of Massachusetts, have invented an Improvement in Heeling-Machines, of which the following description, in connection with the accompanying drawings, is a specification, like letters and numerals on the drawings representing like parts.

This invention is intended as an improvement on the class of machine represented in United States Patent No. 468,279, dated February 2, 1892. In the machine described in the said patent the drivers used to drive the nails during the heel-attaching operation are stationary and the nails are driven by a force applied to the shoe-support, and during this operation of attaching the heel, besides the power necessarily expended to effect the driving of the nails, the machine has also to compress powerful springs which are afterward released and permitted to act to effect the top-lift-attaching operation. It will also be seen in the machine referred to, where the heel-attaching operation is effected by or through the movement of the shoe-support, that any material differences in thickness of heel or hardness of stock will require greater power, and hence when such variations exist the power required to rotate the main shaft of the machine will constantly vary.

It has been found that nails may be driven into leather with less liability to run aside or cripple when the driving force is a quick sharp blow rather than slow pressure. I have therefore in my invention aimed to more evenly distribute the power required to operate the machine, so that each operation may be effected with the minimum application of power and as evenly distributed as possible through each cycle of operation, and I have also provided for attaching the heel, as well as the top lift, with a sharp quick blow, one following the other.

In my invention, wherein the heel-support is moved simply to put the heel and sole firmly in contact prior to the heel-attaching operation performed by a quick blow of only the necessary strength to drive the nails, the strain exerted on the last is so reduced that a wooden last may be safely used, which is of great importance to manufacturers.

Figure 1 is a front elevation of the upper part of a heeling-machine embodying my present improvements. Fig. 1^a is a front view of the lower part of the said machine, Figs. 1 and 1^a together showing a sufficient portion of the front of the machine to illustrate my invention. Fig. 2 is a vertical central section of Fig. 1, the last shown in Fig. 1 being, however, omitted. Fig. 2^a is a vertical central section of Fig. 1^a, Figs. 2 and 2^a making up a central section. Fig. 3 is a section on the line *x'*, Figs. 1 and 2. Fig. 4 is an under side view of the templet and top-lift carrier and some of their co-operating devices.

The framework is made up essentially of side pieces A A, a cross-beam A', a table A², and a cross-rod A³. The side pieces have, as shown, suitable boxes, as A⁴ A⁵, in which are clamped firmly the guide-rods A⁶, on which slides the cross-head A⁷. The cross-head A⁷ is connected, as herein shown, to a rod B, guided in a suitable bearing in the table A², the lower end of the said rod being suitably jointed at B' to an adjustable link B², in turn jointed at B³ to its actuating mechanism B⁴, in this instance shown as a foot-treadle, pivoted at B⁵. The treadle shown is represented as being acted upon by a suitable spring, as B⁶, it serving to normally depress the cross-head. The cross-head is provided with a suitable guideway, as 2, to receive a main slide B⁸, it in turn being grooved transversely for the reception of a cross-slide B⁹, suitably shaped to receive a last-post, as B¹⁰, having a suitable last-pin B¹².

The parts thus far referred to by letter are and may be of usual shape, and instead of the particular parts shown I may use any usual equivalents.

The cross-beam A' has erected on it a tubular or sleeve-like guide C for the driver-bar C', herein represented as a rod with a tubular extension 3, having a suitable head 4 for the reception of the driver-plate C² carrying the gang of drivers C³. The driver-bar is surrounded by a strong spiral spring C⁴, resting at its lower end upon a suitable shoulder 5 of the driver or a part thereof, the said spring being acted upon at its opposite end by an adjusting device C⁵, herein represented as a tubular nut, it also serving as a bearing or guide for the driver-bar. The driver-bar has

co-operating with it a suitable lifting device, shown in this instance of my invention as a lever D pivoted at D' and having joined to it at 6 a link D², slotted at its upper end, as shown at 7, to receive a pin 8 carried by a block D³, clamped upon the driver-bar by a nut D⁴.

When the outer end of the lever D is elevated, as shown in Fig. 2, the lower end of the slot 7 in the link D², by acting on the pin 8, lifts the driver and compresses the spring C⁴, and when the driver-bar is in its elevated position a suitable locking device, shown as a latch *a*, having its fulcrum on the pin 8, drops into engagement with a projection *a'* of the sleeve C. As the driver-bar is lifted, as stated, it also lifts a block E located above it, (see Figs. 1 and 2,) and said block lifts with it the rods E' E', guided in the cross-beam A' and having attached to their lower ends the templet *b*, it having suitable holes 10 for nails and for the passage of the drivers C³.

The rods E' are surrounded by suitable spiral springs b², which rest on shoulders b³, the said springs at their other ends being acted upon by spring-adjusters b⁴, shown as tubular nuts, screwed into ears at the top of the sleeve-like guide C, said nuts also acting as guides for the said rods, the adjustment of the nuts regulating the force of the blow employed in attaching the top lift.

The block E has co-operating with it a locking device, as *e*, which, when said block is elevated, engages a projection, as *e'*, of the sleeve C.

After the driver-bar and the block E and their attached parts have been elevated, as described, and locked in their elevated position, the lever D may descend, the slot 7 permitting such descent, so that the pin 8 has free travel in said slot after the locking device has been unlocked and while the driver-bar is descending.

The templet-plate has pivoted to it at 12 a heel-holder b', it having a series of holes coinciding with the holes 10 in the templet, said heel-holder (it really forming in one position a continuation of the templet) being represented as hinged or pivoted, in order that it may be dropped down, say, for ninety degrees, for the convenience of the operator in applying a loaded heel and a top lift, in order that they may be put onto a shoe.

The operator will insert into the holes 10 of the heel-holder the heads of the nails previously partially driven into the heel, the said nails exerting sufficient friction in said holes to hold the heel in place while the heel-holder is being turned up into the position shown in Figs. 1 and 2. The heel-holder plate b' is in this instance bored for the reception of guide-rods b², attached at one end to suitable ears b³ of a top-lift carrier, shown as a plate b⁴, having mounted upon it suitable jaws, as b⁵, controlled by suitable springs which normally act to cause the jaws to grasp the side edges of a top lift b⁶. (Shown by dotted lines, Fig. 4.)

These jaws are and may be of any usual or suitable construction. The operator may put a top lift between the jaws when the plate b' is turned down, as stated.

The templet *b* carries a suitable latch b⁷, which engages a pin or projection 14, the latch keeping the plate b' in its horizontal position during the attaching operation of both the heel and top lift.

The machine is provided with a suitable releasing device, represented as a ring *d* in two parts and clamped together outside the sleeve C, said ring having, as shown, two cam-surfaces d' d², which contact respectively and successively with the locking devices *a* and *e*, in order that the driver may first be tripped to attach the heel, and then the springs b² be permitted to act to attach the top lift, as will be described. This unlocking device has a suitable operating-handle, as d³, and in operation said handle to unlock the locking devices will be turned in the direction of the arrow, Fig. 3.

This invention is not limited to the exact form of locking devices or of releasing device co-operating therewith, and it will be obvious that I may, without invention, actuate the shoe-support by or from a shaft, as in the patent referred to, and this invention is not limited to the exact form of driver-lifting devices, as any other usual or suitable devices for such purpose may be used.

Referring to the drawings, wherein the driver-bar is represented as already elevated, I will now describe the operation of the machine. In this position it will also be supposed that the heel-holder b' is hanging vertically from its pivotal point 12. The operator will put the ends of the partially-driven nails of a loaded heel into the holes in the plate b' and at the same time will put the top lift b⁶ in position between the jaws of the top-lift carrier and will turn the plate b' up into the position shown in the drawings. Fig. 1 shows by dotted lines a heel in position, and Fig. 4 shows the top lift. The operator will now take a lasted shoe having its sole properly attached, said shoe being preferably on a wooden last, and will mount the last upon the heel-pin B¹², so that the last is held firmly. The operator will then cause the cross-head A⁷ containing a shoe-support to be lifted, and by the adjustment of the slides B⁸ and B⁹ will see that the heel end of the sole comes properly against the seat end of the heel, and by the time the joint contrivance which elevates the cross-head A⁷ is in its upper position the sole and heel will have been brought firmly together, so as to avoid any slipping during the attaching operation. The operator will next engage the handle d³, turn it far enough for its cam d' to meet and throw off the locking device *a*, thus letting the spring c⁴ act and throw the driver-bar down with a quick blow, causing the driver c³ to pass through the templet-plate, act upon the heads of the partially-driven nails, and drive the nails suffi-

ciently to attach the heel to the sole, leaving, however, preferably a portion of the heads of the nails protruding, in order that the top lift may be spanked thereon. The heel having been attached, the operator will lower the cross-head A^7 partially, and in so doing remove the tread end of the heel and its nails from the plate b' far enough to leave a space sufficient to let the top-lift carrier be put into the position immediately below the driver-holes in the templet, this movement being preferably effected by or through suitable springs f , best represented in Fig. 4, attached at one end to projections f' of the plate b' and to projections f^2 of the top-lift-carrier plate, the top-lift carrier during the operation of driving the nails from the heel into the sole resting at each time with one edge against the heel, the latter resisting the pressure of the top-lift carrier by the partially-driven nails, entering through the holes 10. The top-lift-carrier plate having been brought into correct position, the further movement of the unlocking device in the direction of the arrow, Fig. 3, will cause its cam-surface d^2 to act upon and release the locking device e , thus permitting the springs d^2 to operate to throw down quickly the templet and its attached parts together with the top-lift holder, the shoe support having been lowered sufficiently far to enable the springs to move the templet and its parts far enough to make a spanking blow sufficient to impale the top lift upon the heads of the partially-driven nails. This done, and the shoe-support having been brought into its lowest position and the driver-bar having been again elevated by or through suitable devices, as described, the operator will remove the last and shoe from the last-holding pin and will apply a new shoe and repeat the operation described.

Having described my invention, what I claim as new, and desire to secure by Letters Patent, is—

1. In a heel nailing machine, the following instrumentalities, viz;—a driver-bar having an attached series of drivers; a spring to actuate the driver-bar; a locking device to keep the driver-bar in position with its spring compressed; a templet; a carrier therefor; a suitable spring to actuate the templet; a locking device to retain the templet carrier with its spring in compressed condition, and a releasing device to successively release the locking devices and permit the spring of the driver-bar to first act to actuate it to drive nails, and then to permit a spring of the templet to operate to actuate the templet during the operation of attaching a top-lift, substantially as described.

2. In a heel nailing machine, the following instrumentalities, viz;—a driver-bar having an attached series of drivers; a spring to actuate the driver-bar; a locking device to keep the driver-bar in position with its spring compressed; a templet; a carrier therefor; a suitable spring to actuate the templet; a locking

device to retain the templet carrier with the spring in compressed condition; releasing devices to successively release the locking devices and permit the spring of the driver-bar to first act to actuate it to drive nails, and then to permit the spring of the templet carrier to operate to actuate the templet during the operation of attaching a top-lift, and actuating means for the shoe support whereby the latter may be moved to put the sole of the shoe and the heel to be attached to it, in firm contact prior to the heel attaching operation, substantially as described.

3. In a heeling machine, a driver-bar having an attached series of drivers, a spring to actuate the driver-bar; a lifting device to lift the driver-bar and compress its spring; a locking device to retain the driver-bar in position with its spring compressed; a templet; a templet-carrier operatively connected with the driver-bar and actuated in unison with it during the compression of the driver-bar spring; and a spring co-operating with the templet-carrier to depress the same when desired, substantially as described.

4. In a heeling machine, a driver-bar having an attached series of drivers; a spring to actuate the driver-bar; a lifting device to lift the driver-bar and compress its spring; a locking device to retain the driver-bar in position with its spring compressed; a templet; a templet-carrier operatively connected with the driver-bar, and actuated in unison with it during the compression of the driver-bar spring; an independent locking device for the templet carrier; a spring to depress the templet-carrier, and a releasing device for the said locking devices, the lifting devices being adapted to permit the driver-bar to descend when its locking device is released and yet leave the templet-carrier and templet in elevated position, substantially as described.

5. In a heeling machine, a templet plate, and a carrier therefor, combined with a hinged plate b' having holes coinciding with those in the templet plate, and a locking catch to hold the hinged plate and the templet in closed position, substantially as described.

6. A templet plate having a series of holes for the passage of drivers, a templet-carrier, a plate mounted on the templet plate and having a series of holes to receive the head ends of nails loaded into the heel blank, and a top-lift carrier adjustably mounted on the plate having the said holes to receive the nails, as described, said top-lift carrier being movable on said plate to bring the top-lift carrier into position to spank the top-lift onto the partially driven nails, substantially as described.

In testimony whereof I have signed my name to this specification in the presence of two subscribing witnesses.

CHARLES W. GLIDDEN.

Witnesses:

GEO. H. GLIDDEN,
H. P. FAIRFIELD.