

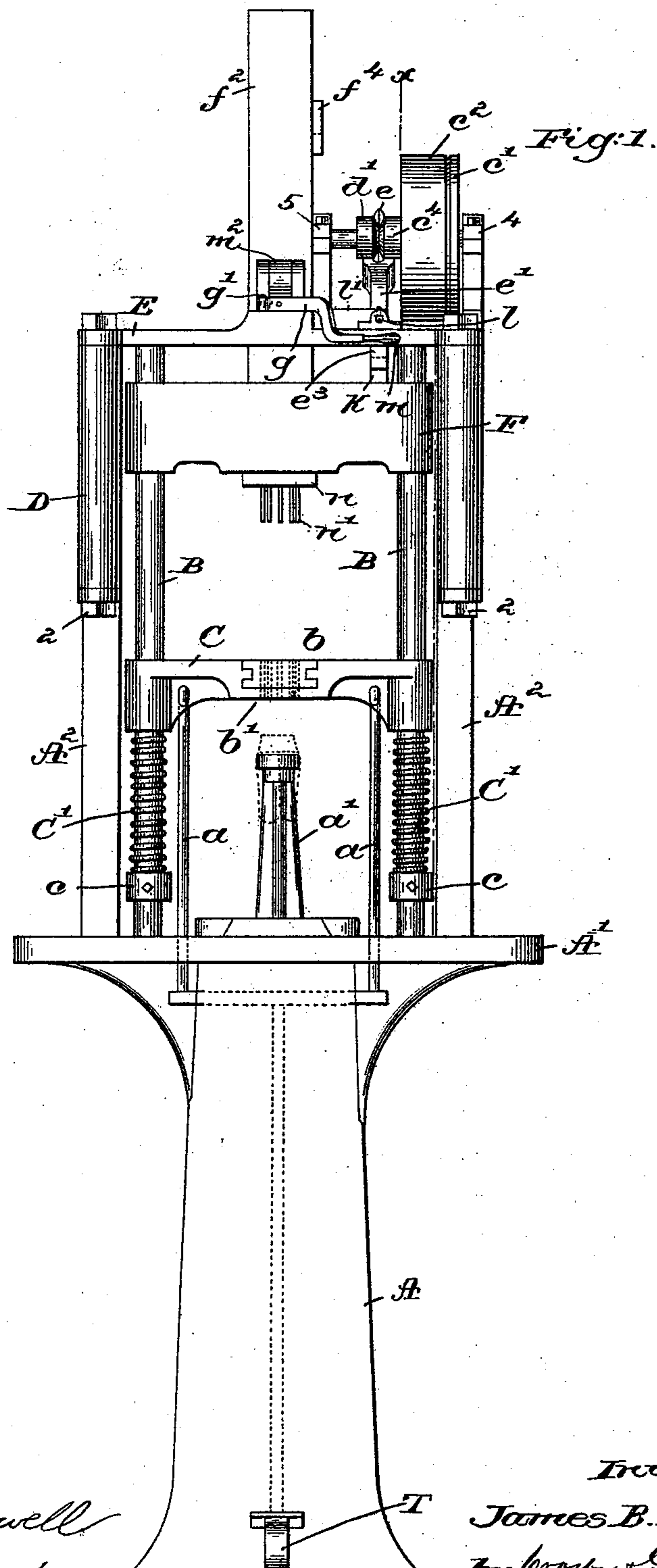
(No Model.)

2 Sheets—Sheet 1.

J. B. TILTON.
HEEL NAILING MACHINE.

No. 498,092.

Patented May 23, 1893.



witnesses.

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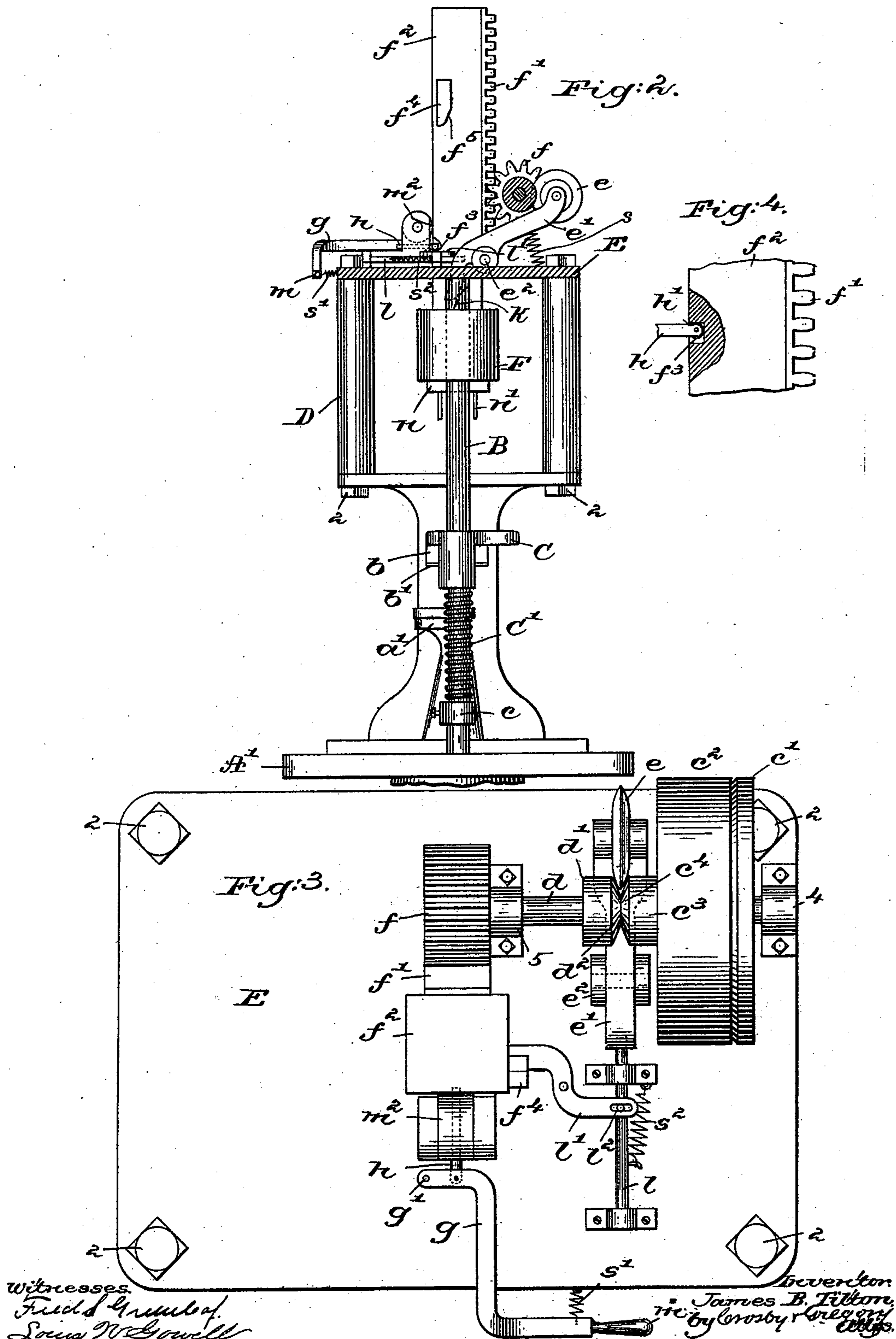
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UNITED STATES PATENT OFFICE.

JAMES B. TILTON, OF HAVERHILL, MASSACHUSETTS.

HEEL-NAILING MACHINE.

SPECIFICATION forming part of Letters Patent No. 498,092, dated May 23, 1893.

Application filed October 29, 1892. Serial No. 450,339. (No model.)

To all whom it may concern:

Be it known that I, JAMES B. TILTON, of Haverhill, county of Essex, State of Massachusetts, have invented an Improvement in Heel-Nailing Machines, of which the following description, in connection with the accompanying drawings, is a specification, like letters and figures on the drawings representing like parts.

10 This invention has for its object the production of a heel nailing machine for boots or shoes, which, in its operation will compress the heel and secure it to the shoe by the action of a drop to which is secured a driver plate having nail drivers. The upward movement of the drop is automatically controlled, but its time of release, so as to drop and drive nails is under the control of the operator. The lifting of the drop is effected preferably from a continuously moving part of the machine, preferably a friction clutch pulley which at times rotates a shaft which co-operates with the drop by the interposition of suitable gearing, the upward movement of the drop being terminated at the desired point, and at which point the drop is locked until released to descend by gravity.

Figure 1, in elevation, shows a front view of a heel nailing machine embodying my invention. Fig. 2, is a side elevation of the same partly in section, taken on the line $x-x$, Fig. 1. Fig. 3, is a top view thereof on an enlarged scale, and Fig. 4, is a detail to be described.

35 I have herein shown my invention as applied to a framework of usual construction, the same consisting of a base or column A surmounted by a bed-plate A' which, in turn supports the uprights A^2 and guides B, upon which a cross-head C is adapted to move, said cross-head being supported by suitable springs C' between the said cross-head and collars c secured to the guides B in any suitable manner. The cross-head has connected thereto a suitable yoke a secured to a treadle T, and the bed-plate has the usual support a' , for the boot or shoe, said support being adapted to slide in suitable guides on the said bed-plate, and the cross-head C has a nail box b and spanker-plate b' , all as common in heel nailing machines.

To the uprights A^2 , I have secured, by suit-

able bolts 2 and housings D, a top plate E upon which is mounted the actuating mechanism constituting my invention. A shaft d 55 mounted in suitable bearings 4, 5, on said top-plate, has at one end thereof a suitable clutch device, herein shown as a cone surface c' , fast upon said shaft, and a belt pulley c^2 loose on said shaft and adapted to be continuously rotated at suitable speed. The hub c^3 of said pulley has its outer end beveled, as at c^4 , and a collar d' , having a similarly beveled end d^2 , is secured to the shaft adjacent to the beveled end of the hub c^3 . A bevel 65 edged wheel e is carried by one end of a lever e' and is held normally in contact with and between the beveled faces of the hub and collar, described, by a suitable spring s , the action of the edge of said wheel between the beveled faces c^4 and d^2 normally moving the hub so that the pulley c^2 engages with the cone c' to rotate the shaft d . A gear f secured to the shaft d engages a rack f' of an arm or upright f^2 extended through 75 a suitable opening in the top-plate, and attached to or forming part of a drop F,—a rather heavy weight,—adapted to slide on the guides B, and having secured to its underside a driver plate n provided with drivers n' of usual construction. The arm f^2 has a suitable notch f^3 , see Figs. 2 and 4, to co-operate with a suitable locking device, herein shown as a pin h , provided with a roller or other stud h' , the opposite end of said pin 85 being pivoted to a bent lever g pivoted at g' to the top plate and normally holding the pin h pressed toward the arm f^2 by a suitable spring s' .

The lever e' carrying the wheel e is pivotally attached to the top plate at e^2 and the downturned end e^3 of said lever is extended below the top plate through a suitable opening therein and is adapted to be engaged by a cam surface or projection k secured to the top of the drop F, as shown in full lines Fig. 1, and dotted lines Fig. 2, the said cam surface or projection k being of such shape that when the drop is fully raised it will contact with the end e^3 of lever e' and will move the same upon its pivot to retract the wheel e from engagement with the collar d' and hub d^3 , thereby releasing the pulley c^2 from engagement with the cone or other clutch de- 95 100

vice c' and stopping the rotation of the shaft d . At the same time the opening f^3 has arrived opposite to the end of the locking pin h and the same is pressed into the opening by or through the action of the springs s' , thus holding the arm f^2 and its drop F positively locked in its raised position.

When the lever e' is moved upon its pivot by the cam surface k , as described, a locking device for said lever, shown as a pin l , is moved forward by a spring s^2 to enter a suitable opening, shown in dotted lines Figs. 2 and 3, in the said lever e' to positively hold the wheel e out of engagement with the clutch device, and the said locking pin l is positively retracted from engagement with the said lever e' by or through a bent lever l' slotted at one end to engage a stud l^2 on the pin l , the other end of the lever l' being in the path of movement of a lug or projection f^4 having a beveled face f^5 and secured to the arm or upright f^2 , the said lug coming in contact with the end of the lever l' as the arm f^2 descends.

The operation of the machine is as follows:—
 25 Supposing, as shown in Fig. 1, that the drop has been raised and is positively held in its uppermost position by the locking pin h , as described, the operator will place a shoe and its heel upon the rest a' and through the treadle and its connection will depress the cross head C until its under side rests upon the heel, the spanker-plate d' being swung to one side; nails will then be inserted in the nail box b from a suitable skimmer, or in any usual manner, and with the cross head still held down upon the heel, the operator will grasp the handle m of the lever g and draw the same toward him, thereby drawing the locking pin h out of the recesses f^3 in the arm or upright f^2 , permitting the drop F to fall and force the drivers n' into the openings in the nail box and driving the nails therein into the heel to attach it to the shoe. The impact of the heavy drop upon the cross-head also serves to compress the heel as the nails are driven therethrough and into the sole. As the drop reaches its lowest position the beveled face f^5 of the projection f^4 comes in contact with the inner end of the lever l' , turning it quickly upon its pivot and through the stud l^2 retracting the locking pin l from engagement with the lever e' , the latter being immediately acted upon by its spring s to force the bevel edged wheel e into position between the collar d' and hub c^3 , thereby moving the loose pulleys c^2 into engagement with the clutch device and rotating the shaft d , which, through the gear f and rack f' raises the arm f^2 and the drop until the locking pin h again enters the recess f^3 , at which time the cam surface k again acts upon the lever e' and throws the wheel e out, thereby releasing the clutch mechanism and stopping the rotation of the shaft d .

In practice the drivers will be of such length that the heads of the nails will be left pro-

truding a short distance from the bottom of the heel, and a top lift is then applied in usual manner, the usual spanker-plate b' being turned into position, and upon the next descent of the drop the said top lift will be spanked upon the projecting ends of the nails in well known manner.

I have herein shown a friction wheel n^2 as adapted to bear against the side of the arm f^2 opposite the rack f' to serve as a guide therefor and reduce friction, and in order to render the withdrawal of the locking pin h from the recess f^3 as easy as possible, I have secured thereto the roll or other stud h' , as described, the friction between the locking device and the arm being greatly lessened by its use.

While I have herein shown a driving pulley as loose upon the shaft d and adapted to be moved into engagement with the part c' fast on said shaft, it is obvious that these parts may be reversed and the shaft d may be made in two parts, one carrying the driving pulley being continuously rotated, and the other carrying the gear f being connected thereto at times by a suitable clutch mechanism.

I do not desire to limit my invention to the exact construction and arrangement of parts as herein shown and described, nor to the exact form of clutch, as it is obvious that other forms of clutch mechanism may be used without departing from my invention, the gist of which resides in raising the drop carrying the nail driver by or through a rotatable part of the machine and locking it in its uppermost position automatically, and disconnecting the nail drop and rotatable part of the machine, the descent of said drop when manually released, throwing into operation a suitable clutch mechanism between the said rotatable part of the machine and the driver mechanism to again lift the drop automatically.

The lever e' , its roll e , and spring s , constitute what I denominate the clutch actuating device, or the device to control the closing or opening of the clutch members c' , c^2 .

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

1. A heel nailing machine containing the following instrumentalities, viz;—a support for the shoe to which the heel is to be nailed; a nail box; a support therefor; a drop provided with a series of drivers, and having a toothed extension; a rotating pulley; a shaft adapted to be rotated thereby at times; a gear on said shaft in mesh with the toothed extension of the drop; a clutch mechanism intermediate said shaft and pulley; an actuating device for the clutch mechanism, including a spring-controlled lever having a down-turned end; a locking pin to hold said actuating device normally in inoperative position; and projections controlled by the movement of the drop to withdraw the locking pin when the drop descends, and to move the lever into

position to release the clutch when the drop has reached its highest point, substantially as described.

2. In a heeling machine, a support for the shoe to which the heel is to be attached; a cross-bar having a shoe support and a nail box; a drop having an extension provided with gear teeth, a shaft *d* having thereon a gear and one member of a clutch, and a continuously rotating pulley constituting the other member of the said clutch, a clutch actuating device, a locking device to normally hold the said clutch actuating device in its

inoperative position, and a suitable projection controlled by the movement of the drop to effect the release of the actuating device that it may in turn effect the closing of the clutch to lift the drop automatically from its lowest position, substantially as described.

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

JAMES B. TILTON.

Witnesses:

GEO. W. GREGORY,
M. J. SHERIDAN.