

(No Model.)

4 Sheets—Sheet 1.

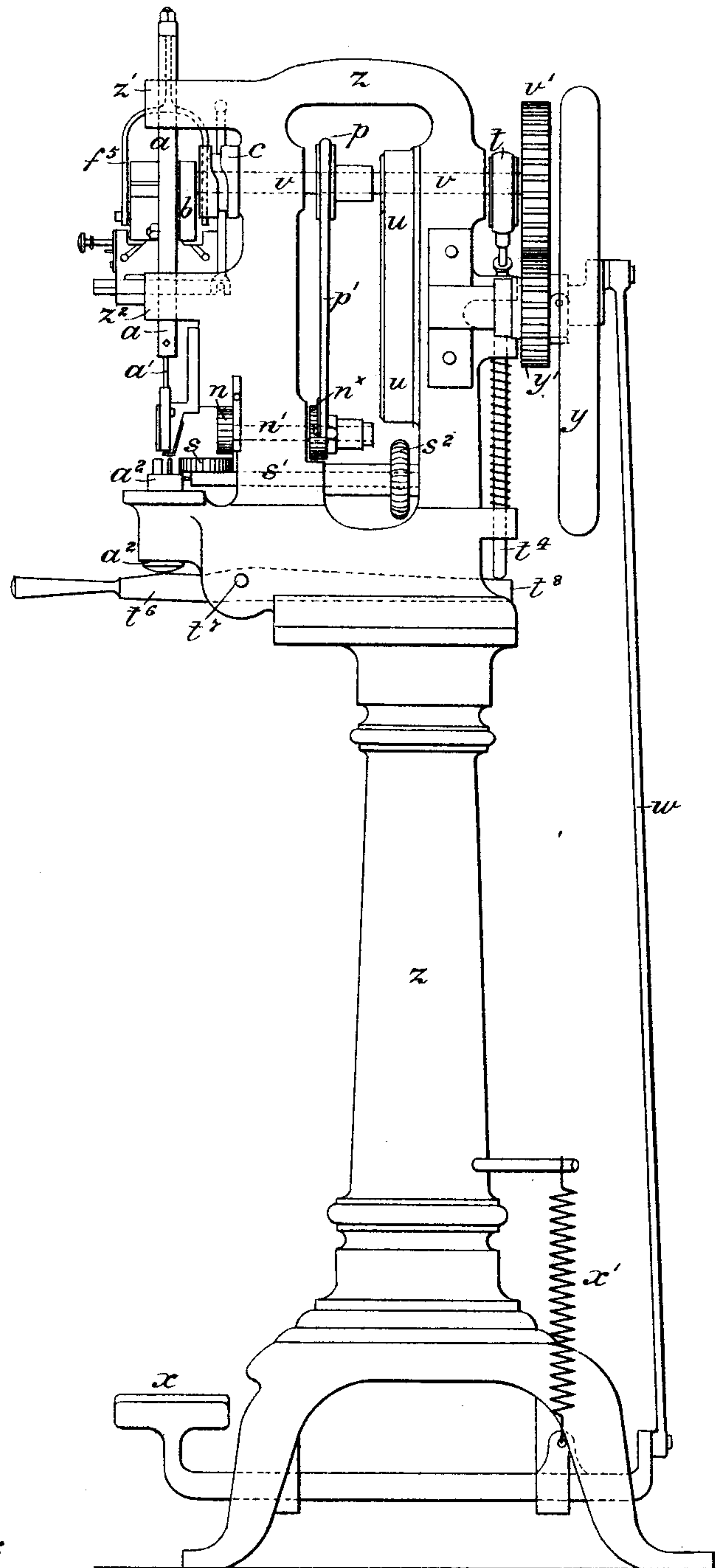
J. E. CUTLAN.

NAILING MACHINE FOR BOOTS OR SHOES.

No. 388,640.

Patented Aug. 28, 1888.

FIG. 1.



Witnesses:

Henry Burkhardt.

A. D. Talbot.

Inventor:

J. E. Cushman.

(No Model.)

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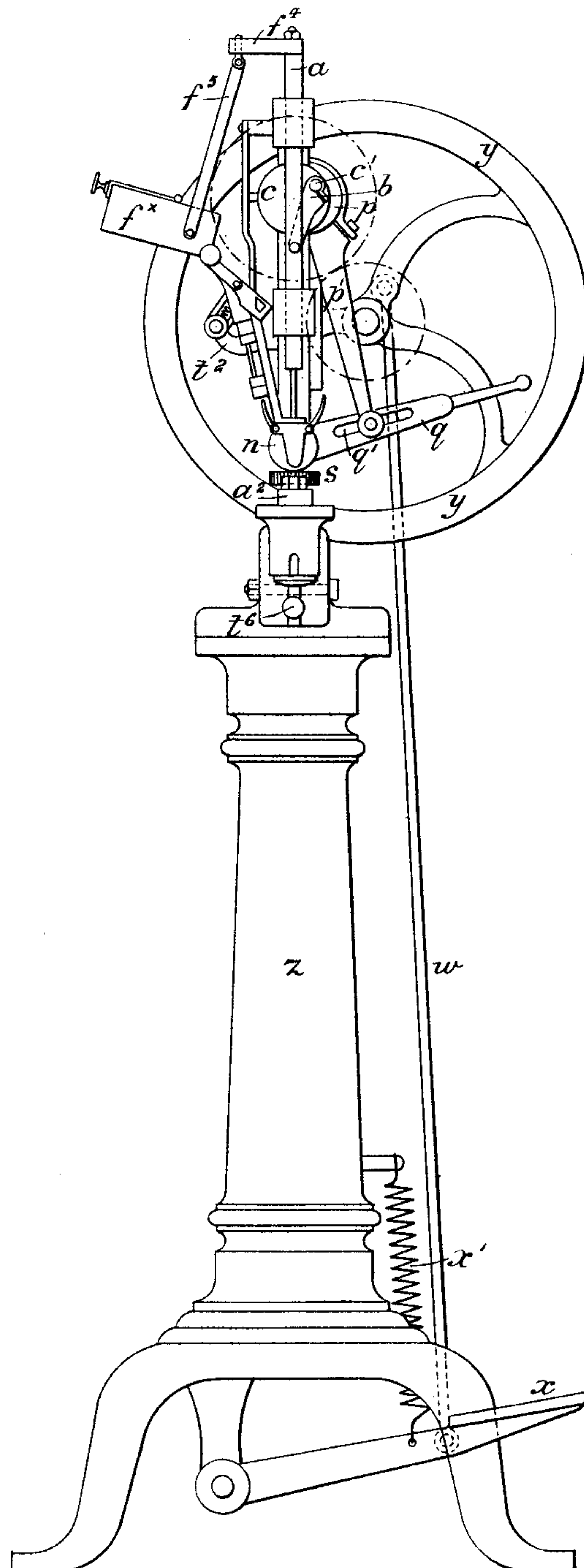
J. E. CUTLAN.

NAILING MACHINE FOR BOOTS OR SHOES.

No. 388,640.

Patented Aug. 28, 1888.

FIG. 2.



Witnesses :

Henry Birkenhead.

A. D. Talbot

Inventor.

J. E. Cushman

(No Model.)

4 Sheets—Sheet 3.

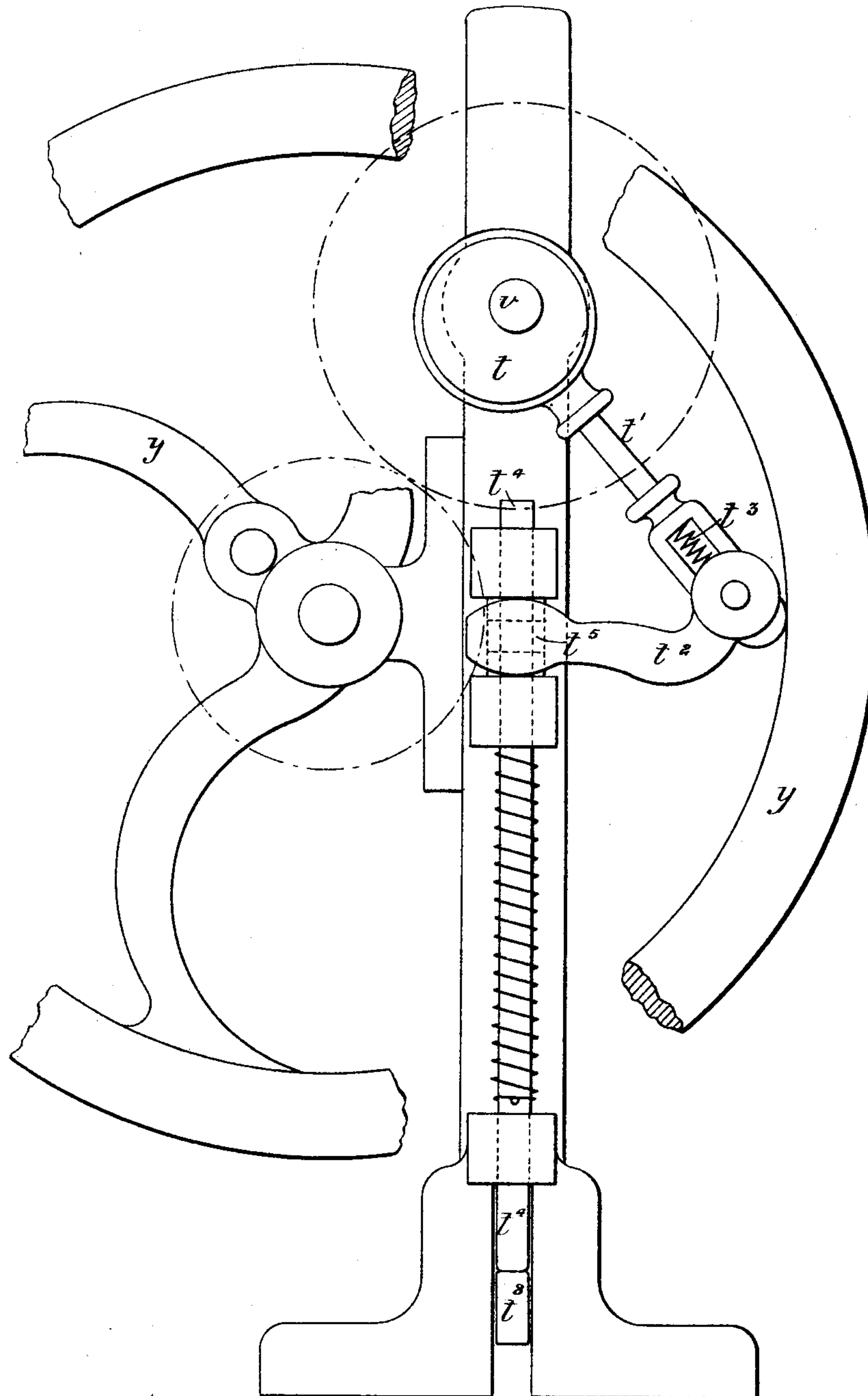
J. E. CUTLAN.

NAILING MACHINE FOR BOOTS OR SHOES.

No. 388,640.

Patented Aug. 28, 1888.

FIG. 3.



Witnesses:

Harry Birkbeck.

A. D. Talbot.

Inventor:

J. E. Curran

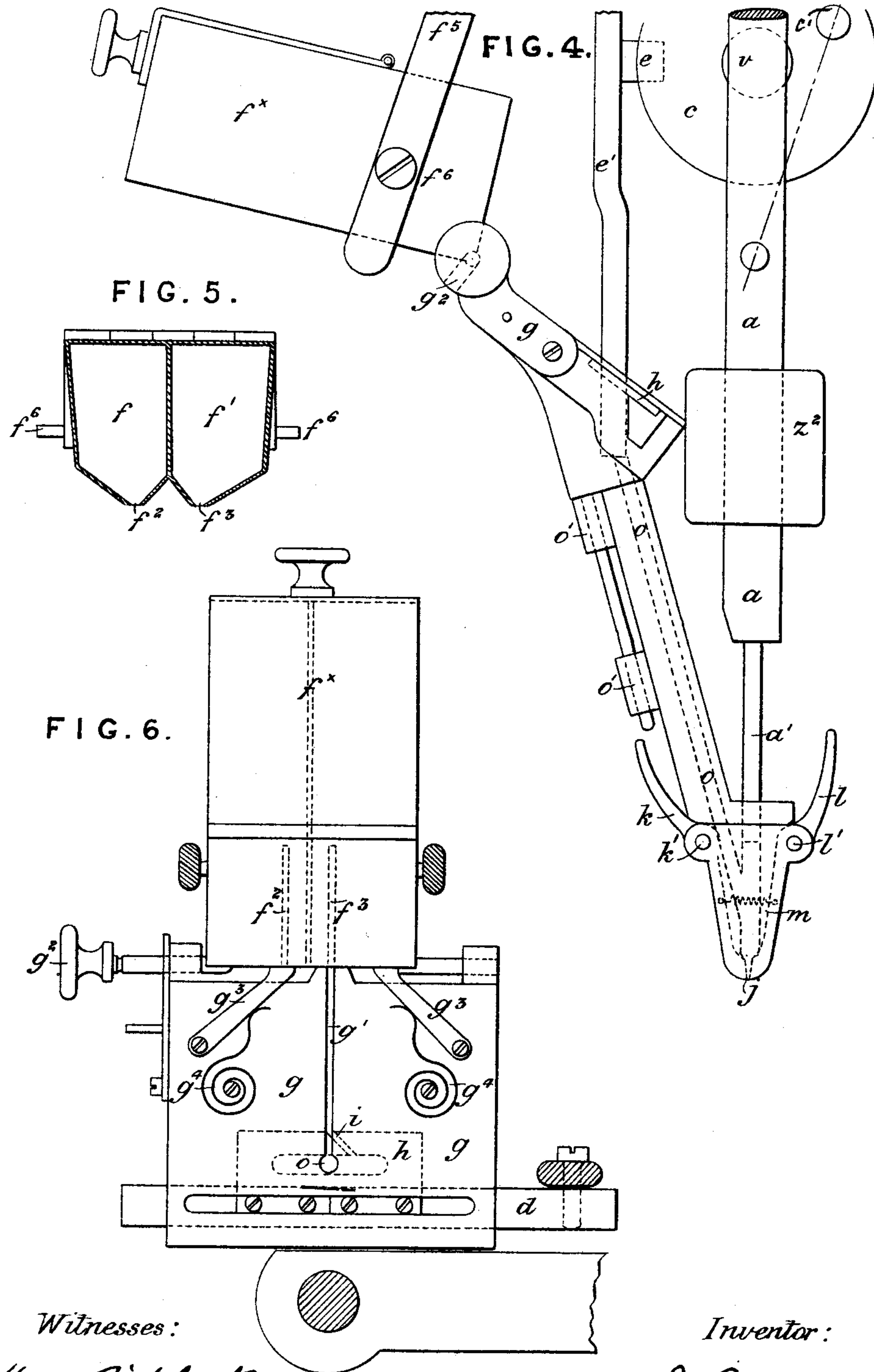
(No Model.)

4 Sheets—Sheet 4.

J. E. CUTLAN.
NAILING MACHINE FOR BOOTS OR SHOES.

No. 388,640.

Patented Aug. 28, 1888.



Witnesses:
Henry Dickhaut.
A. D. Talbot.

Inventor:
J. E. Cutlan

UNITED STATES PATENT OFFICE.

JOHN ELLIS CUTLAN, OF WELLINGBOROUGH, COUNTY OF NORTHAMPTON,
ENGLAND.

NAILING-MACHINE FOR BOOTS OR SHOES.

SPECIFICATION forming part of Letters Patent No. 388,640, dated August 28, 1888.

Application filed December 9, 1887. Serial No. 257,412. (No model.) Patented in England May 19, 1884, No. 7,893.

To all whom it may concern:

Be it known that I, JOHN ELLIS CUTLAN, a subject of the Queen of Great Britain, residing at 46 Market Square, Wellingborough, in the county of Northampton, England, architect and surveyor, have invented certain new and useful Improvements in Machines for Driving Rivets or Nails into the Soles of Boots or Shoes, (for which I have received Letters Patent in Great Britain, No. 7,893, dated May 19, 1884,) of which the following is a specification.

This invention relates to improvements in machines for driving rivets or nails into the soles of boots or shoes, whereby I am enabled to quickly and regularly drive nails or rivets into either the inner sole or outer sole in the manufacture of boots or shoes.

In order the better to explain my invention and the manner of carrying the same into practice, I will proceed to describe the same with reference to the accompanying drawings.

Figure 1 shows a side elevation of my improved machine. Fig. 2 shows a front view elevation. Fig. 3 shows enlarged detail view of the gripping device for locking the support or rest. Fig. 4 shows enlarged view, in elevation, of the nail feeding and driving apparatus. Fig. 5 is a transverse section of the nail-reservoir. Fig. 6 is a plan, partly in section, of the nail-reservoir and slide for regulating the supply of nails or rivets.

Similar letters of reference indicate corresponding parts throughout, and for brevity I shall hereinafter refer to both nails and rivets as "nails," and similarly to both boots and shoes as "boots."

On the standard z is mounted the fly-wheel y , as shown, driven by means of a treadle, x , and connecting-rod w , the treadle x always being brought into position ready to start the machine, as shown in Fig. 2, by means of the spring x' .

On the shaft of the fly-wheel y the toothed wheel y' is firmly secured, and this again gears with and drives the second toothed wheel, v' , on the main shaft v , from which shaft v the whole of the parts of the mechanism are driven or actuated as follows: The plunger a (sliding in bracket-arms z' z'' on the standard z and carrying the punch or driver a' , fixed therein)

has reciprocatory upward and downward motion imparted thereto by means of the connecting rod or link b , on the crank-pin c' , on the outside of the double cam c , fixed on the shaft v . This revolving cam c gives motion to the slide-bar d by means of the connecting arm c' , on which is mounted the projection e , which rides against and is actuated by the double-cam surface e . (See Fig. 4.)

To the upper part of the plunger a , and free to turn thereon, is mounted the arm f^1 , which again is connected by means of the forked rod f^2 to the nail-reservoir f^3 , to which it is secured on centers f^4 .

Fig. 5 shows the nail-reservoir f^3 , having two compartments, f and f' , (for two different lengths of nails,) each compartment having a slot, f^2 and f^3 , respectively, in the bottom thereof wide enough to allow only the nail-shanks to drop through, and in Fig. 6 the nail-feeding device is shown, this being a plate, g , having a slot, g' , (similar to the slots f^2 and f^3 ,) down which the nails are fed from one of the said slots f^2 and f^3 , either of which can be brought opposite the slot g' by the catch g^2 , while the nails are prevented from coming out of the slot out of use by the stop or catch g^3 , held in position by the springs g^1 .

The slide-bar d has fixed thereon the slotted plate or slide h , (advantageously formed in two parts, as shown in Fig. 6,) having the feed-slot i , which, by the action of the cam c , permits one nail at a time to pass from the groove or slot g' into the tube or conductor o , down which it falls into the hole j , immediately under the punch or driver a' . This hole is formed in the spring catches k and l , which are mounted on axes k' and l' , and are forced to open outward by the driver a' coming down, but normally kept closed together by the spring m , as shown in Fig. 4, the feed-tube o and the parts k and l being divided and made so as to open together on hinges o' o' for convenience in cleaning out or repairs.

On the shaft v , Fig. 1, is also mounted an eccentric, p , which, by means of the connecting-rod p' and arm q , Fig. 2, causes the partial revolution of the axis n' , having on the end thereof the toothed wheel n , which gears with and revolves the feed-regulating wheel s , mounted on the support s' , which support is

also adjustable by means of the regulating-screw s^2 .

On the shaft v is also mounted a second eccentric, t , (see Fig. 3,) with a connecting-rod, t' , attached to a crank-arm, t^2 , (with a spring, t^3 , inserted and combined therewith,) for gripping and firmly holding the upright pin t^4 , which travels through its other end, t^5 , this pin t^4 at its lower end resting against the lever-bar t^6 , which forms the support for the rest a^2 , upon which the work is laid.

The operation of the machine is as follows: Referring to Fig. 1, the work is placed on the rest a^2 by depressing the lever-bar or support t^6 , which is fulcrumed at t^5 , and at its other end, t^4 , presses up the rod t' and spring thereon, as by thus depressing the lever arm the rest a^2 drops down therewith and leaves space to lay the sole or other work on the rest. The lever-arm t^6 is then released and the reaction of the spring on the rod t' presses the arm t^6 up again and with it the rest a^2 . The machine is now put in motion, and at each revolution the plunger a is moved up and down. This also, by means of the forked arm f^5 , rocks the nail-reservoir f^x , (which is hinged to the plate g ,) so as to cause some of the nail-shanks to drop through the slot f^2 or f^3 , and thence pass into the slot g' in plate g . The slide h is then moved across by the slide-bar d , actuated by the cam c , and the slot i in the slide h , Fig. 6, as it is moved across, allows only one nail to pass down and upon the bottom of the slot i , coming over slot g' . This nail then drops down the tube or passage o and falls with its point downward into the hole j , directly under the driver a' . At this moment, before the driver comes down onto the nail, the eccentric t , Fig. 3, forces down the arm t^2 and firmly grips the upright rod t^4 at the point t^5 and holds the same rigidly. Thus the lower end thereof offers a firm resistance to the lever-arm t^6 , which therefore makes an immovable support for the rest a^2 . The driver a' now comes down onto the nail-head and forces said nail through the loose jaws k and l , which open outward accordingly, and the nail is driven into the material lying on the now immovable rest a^2 . As soon as the driver a' has reached its lowest point the eccentric t and its connections release the grip on the rod t^4 , and the feed-wheel s is then immediately caused to act by the eccentric p , which is in such a position as to be just then commencing to lift the eccentric connecting-rod p' , by which it raises the arm q , having a spring-pawl at the end thereof, which pawl, when the arm q is forced down, runs over the teeth n^x on the end of axis n' , (see Fig. 1,) and this pawl engages with the teeth n^x on the axis n' , and so partially revolves the said axis n' and toothed wheel n on the end thereof, and this latter again gives a partial revolution to the wheel s , against the milled or toothed edge of which the work is pressed, which is thus fed forward after each nail has been driven in, the distance apart at which it is desired to

drive the nails being regulated more or less by altering the position of the lower end of the rod p' in the slot q' of the arm q , (see Fig. 2,) and thus causes more or less travel of the arm q , and consequently imparting more or less feed-motion to the wheel n . By turning the screw s^2 , Fig. 1, round the support s' and feed-regulating wheel s are drawn away from or moved toward the rest a^2 and opening j , through which the nails are driven, and so regulates the distance from the edge of the material at which it is desired to drive in the nails.

If desired, an indicator or counter, u , may be mounted, as shown in Fig. 1, the main axis v passing through the top thereof, and so actuating the train of wheels of the counter, and thus showing the number of nails used, as at each revolution of the axis v a nail is fed down and driven into the work.

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

1. In a boot-nail driving machine, the combination, with the plate g , having the slot g' and an aperture, o , of the slide h , having the slot i at an angle to the slot g' , and also having the slot transversely to the slot g' , substantially as set forth.

2. In a boot-nail-driving machine, the combination, with the slide h , having the slot i therein for supplying one nail at a time under the nail-driver, of the cam c , the plunger a , the nail-driver a' , the rocking nail-reservoir f^x , and the forked arm f^5 , the said plunger a rocking the nail-reservoir by means of said forked arm f^5 , substantially as set forth.

3. In a boot-nail-driving machine, the combination, with a cam, c , nail-reservoir f^x , nail-feed-regulating slide h , and slotted plate g , of a tube, o , plunger a , carrying the nail-driver a' at its lower end and having the forked arm f^5 connected to its upper end for rocking the nail-reservoir, and the loose jaws k and l , kept closed by spring m , substantially as set forth.

4. A boot-nail-driving machine worked with the main actuating-axis v , having the two eccentrics t and p and the double cam c thereon, a nail-driver actuated from the eccentric t , and the regulating-wheel operated with the eccentric p , and a nail-feeding device operated by the double cam c , substantially as set forth.

5. A boot-nail driving machine constructed with a gripping device consisting of an arm, t^2 , actuated by eccentric t through the rod t' , having spring t^3 inserted in the slotted end, an upright rod, t^4 , gripped at t^5 , and the lever-arm t^6 , which supports the rest a^2 at the moment the driver a' is driving in the nail, substantially as set forth.

JOHN ELLIS CUTLAN.

Witnesses:

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HERBERT E. DALE,

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