2 Sheets—Sheet 1.

H. H. BIGELOW.

MACHINE FOR HEELING BOOTS AND SHOES.

No. 108,677. Patented Oct. 25, 1870.

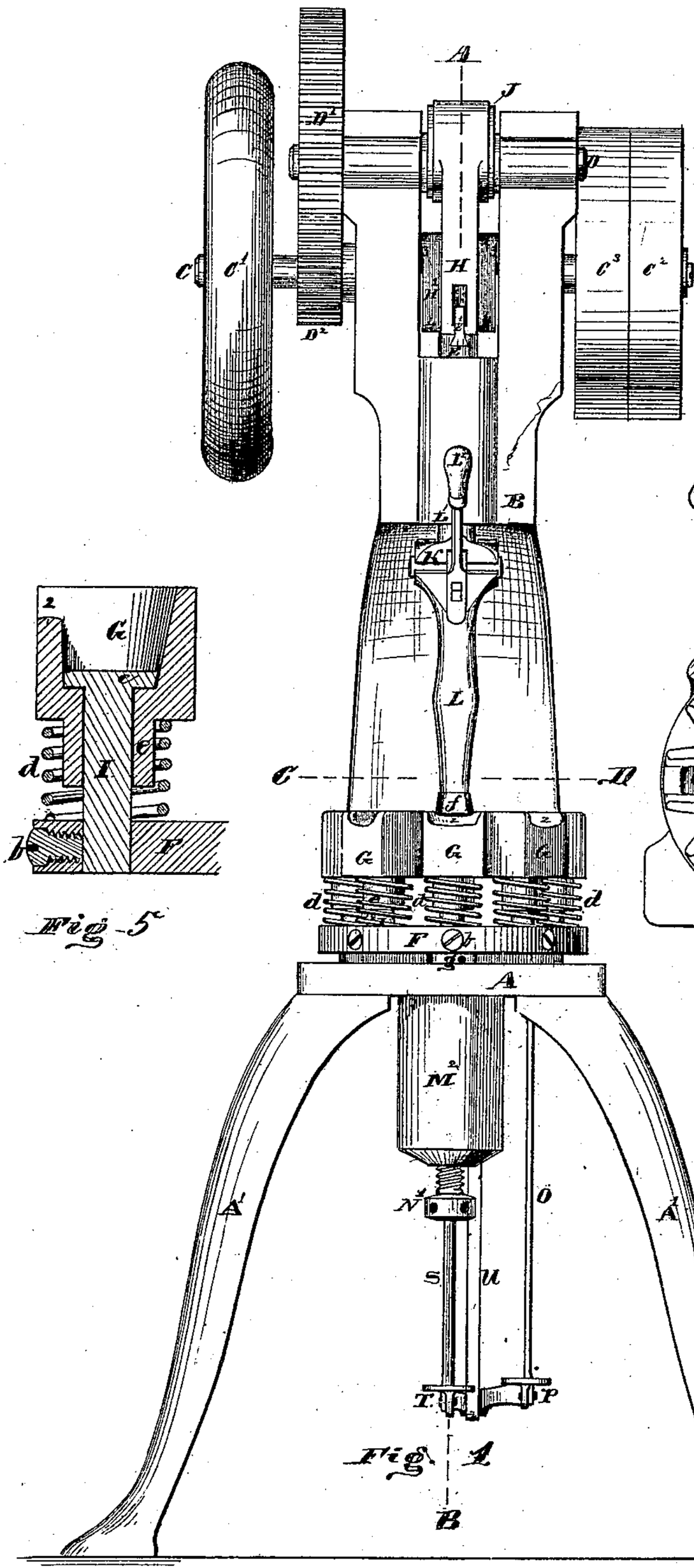

Fig. 1.

Fig. 5.

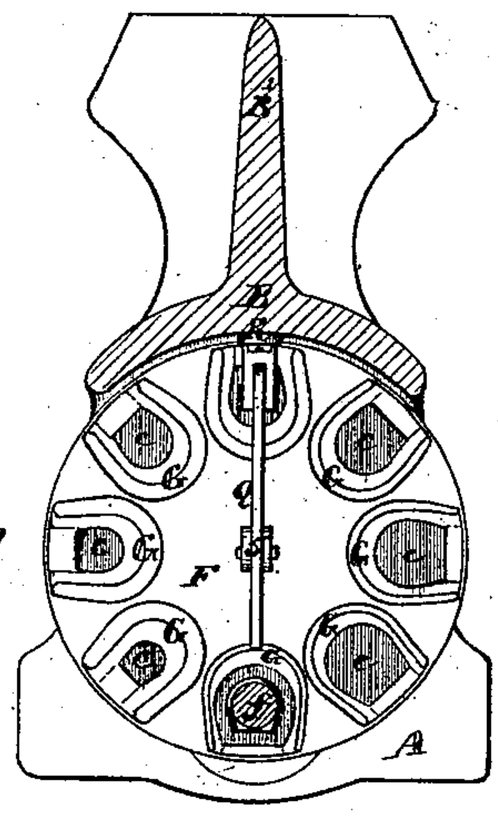

Fig. 4.

Witnesses { Thos. H. Dodge, A. O. Pierce }

Inventor Horace H. Bigelow

2 Sheets—Sheet 2.

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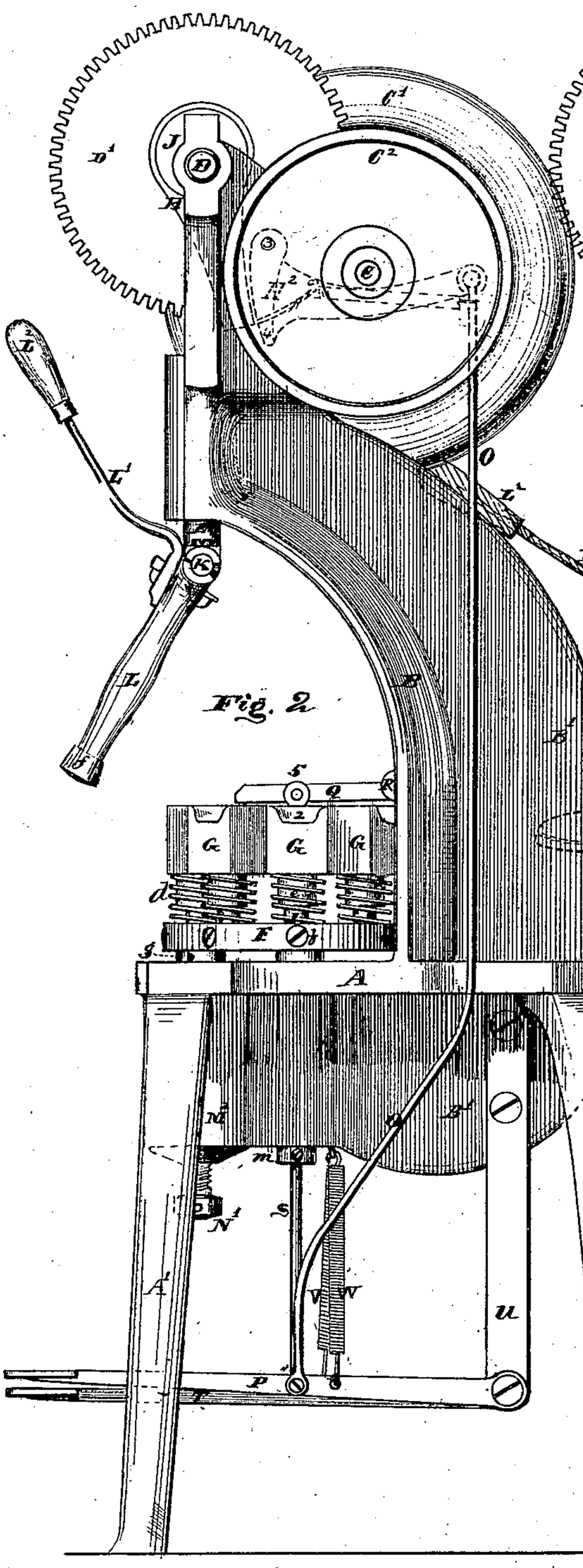

Fig. 2

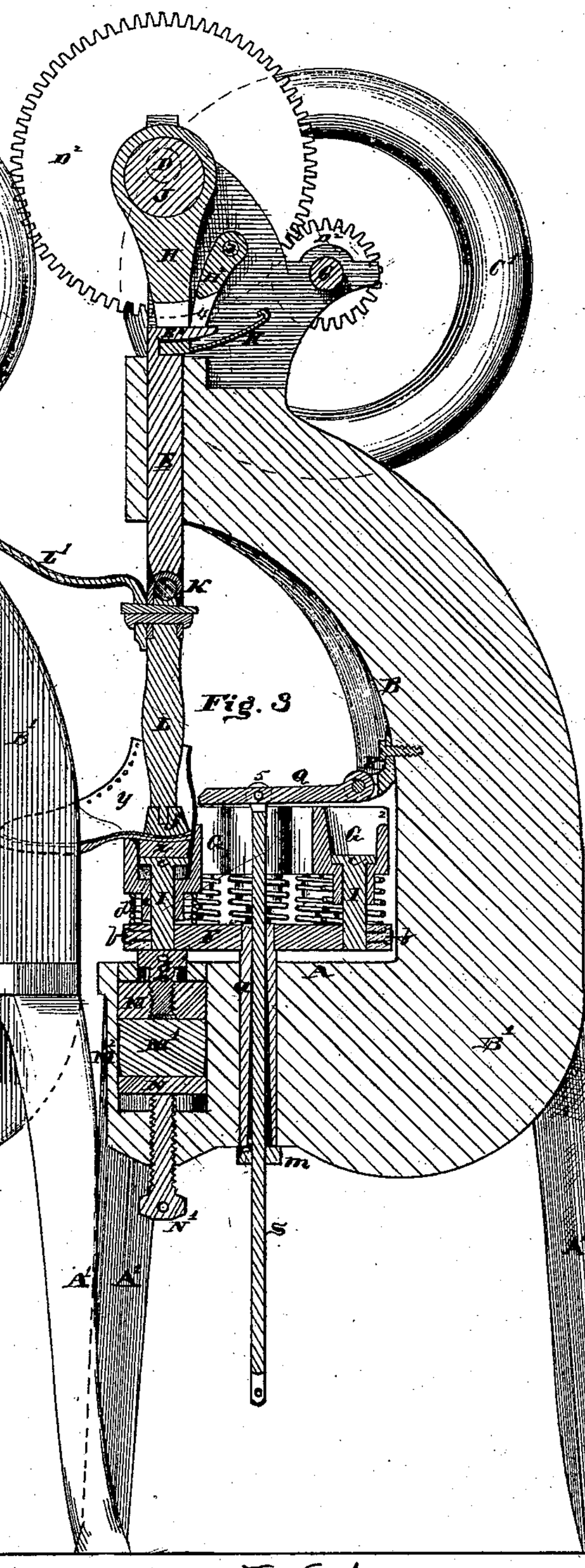

Fig. 3

Witnesses { Thos. H. Dodge, A. C. Dodge }

Inventor

Horace H. Bigelow

United States Patent Office.

HORACE H. BIGELOW, OF WORCESTER, MASSACHUSETTS.

Letters Patent No. 108,677, dated October 25, 1870.

IMPROVEMENT IN MACHINES FOR HEELING BOOTS AND SHOES.

The Schedule referred to in these Letters Patent and making part of the same

To all whom it may concern:

Be it known that I, HORACE H. BIGELOW, of the city and county of Worcester and State of Massachusetts, have invented certain new and useful Improvements in Machines for Heeling Boots and Shoes; and I do hereby declare the following to be a full, clear, and exact description of the same, reference being had to the accompanying drawing forming a part of this specification, in which—

Figure 1 represents a front view of my improved machine for heeling boots and shoes;

Figure 2 represents a side view of the same;

Figure 3 represents a central vertical section on line A B, fig. 1;

Figure 4 represents a horizontal section on line C D, fig. 1; and

Figure 5 represents a central vertical section of one of the drivers and dies, shown on an enlarged scale.

To enable those skilled in the art to which my invention belongs to make and use the same, I will proceed to describe it more in detail.

The nature of my invention consists—

First, in a spring holding-die, as hereafter explained.

Second, in the combination, with the spring holding-die, of a driving-stud, as hereafter explained.

Third, in the combination, with the holding-die and driving-stud, of a relieving-spring and adjusting-screw, as hereafter explained.

Fourth, in the combination, with a series of holding-dies and driving-studs, of a rotating plate or disk for supporting the same, as hereafter set forth.

Fifth, in the combination, with the holding-die, of a depressing-lever and treadle, as hereafter described.

Sixth, in the combination, with the holding-die, driver-stud, and operating plunger, of a swing jack-spindle, as hereafter described.

Seventh, in the combination, with the operating plunger and power-dog, of a bell-crank lever and foot-treadle, as hereinafter described.

Eighth, in a machine for heeling boots and shoes, the parts of which are constructed and combined together substantially as shown in the drawing and hereinafter described.

In the drawing—

The part marked A is the bed or table of the machine, supported upon the legs or standards A'.

B indicates the upright frame, upon which is supported the driving-shaft C, eccentric-shaft D, and plunger E. The frame B is made of the form shown in the drawing, and is provided with a strengthening flange, B', which extends down the back of the frame, and also across the under side of the bed A.

At the front of the bed or table A is arranged a circular plate or disk, F, pivoted at its center to the table A, in a horizontal position, by means of a hollow spindle, *a*.

Supported upon the disk or plate F is a series of spring holding-dies G and driving-studs I.

The dies G are for holding the boot or shoe-heels in proper position during the operation of attaching them to the boots or shoes; and the driving-studs I, which are provided at their upper ends with head-plates *c*, are for the purpose of forcing in the nails by means of which the heels are secured to the boots or shoes.

The dies G and the head-plates *c* of the drivers I are made to correspond in shape with the heels to be attached, each one of the series being made for a different-sized shoe or boot, or for a different pattern of heel.

The lower ends of the driver-studs I are fitted into holes drilled in the disk F, where they are secured in an upright position by means of suitable set-screws, *b*, at the edges of the disk F, while the dies G are arranged loosely upon the studs I, so that they can rise and fall thereon as required.

The dies G are held in an elevated position, when not otherwise acted upon, by means of coiled-wire springs *d*, arranged around the studs I, between the dies G and disk F, as shown in the drawing, the lower portion *e* of the die-block being turned down so as to fit into the coil of the spring, to prevent it from slipping out of place.

The dies G are made somewhat deeper than the thickness of the heels, so that their upper edges form a guide against which to rest the upper of the boot or shoe while attaching the heel.

The edge is scalloped out at the front of the die, as shown at 2, to allow space for the shank of the boot or shoe.

Above the disk F, and directly over the die at its front side, is arranged the vertical plunger E, supported by the upright frame B, and operated up and down by a dog, H, in connection with an eccentric, J, upon the eccentric-shaft D, at the upper part of said frame.

The plunger E has attached to its lower end, by means of a hinge-joint, K, a swing jack-spindle, L, for holding the boots or shoes while heeling them.

The lower end of the jack-spindle L is provided with a steel head, *f*, suitably rounded to fit the interior of the boots or shoes, while near the upper end of said spindle L is attached a hand-lever, L^1, furnished with a handle, L^2, by means of which the jack-spindle L may be swung forward, as shown in fig. 2, or back, as indicated in fig. 3 of the drawing.

Beneath the disk F, at the front of the table A, is arranged a device for relieving the machine from injurious strain and shock. It consists of a cushion-block, M, supported by a strong spring, M^1, incased in a hollow cylinder, M^2, beneath the table A.

In the upper side of the cushion-block M is ar-

ranged an adjusting-screw, *g*, the end of which projects above the top of the table A, and upon it rests the disk F and the lower end of the driver-stud I, beneath the jack-spindle L. By raising or lowering the screw *g* the drivers are adjusted to the different thicknesses of heels.

The spring M^1 rests upon a supporting plate, N, which latter can be adjusted up or down by means of a screw or bolt, N^1, in the end of the cylinder M^2, and by means of which the spring M^1 can be adjusted to withstand any desired amount of pressure.

The eccentric-shaft D receives its motion from the driving-shaft C, to which it is connected for operation by the gear D^1 and pinion D^2.

The driving-shaft C is provided with a balance-wheel, C^1, for equalizing the motion of the machine, and also with a tight-and-loose pulley, C^2 C^3, to receive the driving-belt.

The dog H moves up and down with the continuous motion of the eccentric J, but it is so arranged that it will swing back and not engage the plunger E, except when forced forward by the bell-crank lever H^2, (see dotted lines, fig. 2,) the rear end of which is connected by a rod, O, to a treadle, P, beneath the machine, which the operator presses down with his foot when he desires to set the plunger in motion.

The lever H^2 is fulcrumed to the upright frame B, as shown at 3, and, as its rear arm is depressed, its forward arm, 4, presses against the dog H, and swings it over the end of the plunger E, so that the next revolution of the eccentric forces down the plunger E and jack-spindle L.

The plunger is provided with a finger, E', at its upper end, which passes through an opening in the lower end of the dog H, whereby the plunger is raised with the upward motion of said dog, whether it is swung back or pressed forward.

The dog H is caused to swing backward by a suitable spring attached to the hook H^1 for that purpose.

A lever, Q, is arranged above the dies G, for pressing down the working die and releasing the heel therefrom.

One end of said lever Q is pivoted in an eye-piece, R, secured to the frame B, at the back of the disk, and the forward end of said lever projects far enough to the front to strike the edge of the forward or working die G, and it is actuated by means of a rod S, attached near its central part, 5, and which extends down through the hollow spindle *a*, and is joined to the treadle T, beneath the machine.

An adjustable collar, *m*, is arranged upon the rod S, which strikes the lower edge of the frame B, and prevents the lever Q from rising any higher than is necessary.

The treadles P and T are pivoted at their rear ends to an arm, U, which projects downward from the flange B, and they are provided with coiled-wire springs, V and W, which hold them in an elevated position, except when depressed by the foot of the operator, all of which is fully illustrated in the drawing.

The heels used in this machine are of the kind which are formed and the nails partially driven, and for which I have heretofore received Letters Patent.

The studs I may, if desired, be made with a shoulder at their lower ends, to rest upon the top of the disk F.

The operation of heeling a boot or shoe with my improved heeling-machine is as follows:

The driving-shaft being set in motion, which communicates power to the dog H, the operator swings out the jack-spindle L, and places a boot or shoe upon its head *f*, places a heel of the proper size in the forward die G, with the nails downward, against the plate *c* of the driver I. He then swings back the jack-spindle until the back of the upper of the boot or shoe rests against the rear edge of the die. This brings the parts in the proper position to receive the heel. He then places his foot upon the treadle P, which operates the dog H, in the manner before stated, and causes it to engage with the plunger E, thereby forcing down the jack-spindle with immense power, and pressing the boot or shoe upon the heel with sufficient force to drive the nails up through the heel and sole, and clinch them against the steel head *f* of the jack-spindle L. The die G the meanwhile is depressed, so that the full pressure is borne by the driver I.

The relative positions of the parts, when the plunger is depressed are fully indicated in fig. 3 of the drawing, where *x* indicates the heel and *y* the shoe.

As the downward pressure is removed from the head of the plunger, the spring attached to the hook H^1 causes the dog H to swing back.

The plunger E and jack L are raised by the finger E'.

The operator then places his foot on treadle T, and depresses lever Q, which presses down the die and releases the heel *x* therefrom. The jack-spindle is then swung outward, and the shoe removed, the operation being completed.

Thus it will be seen that, with my improved machine, boots and shoes may be heeled very rapidly, saving much time and labor, and greatly facilitating their manufacture, and reducing the cost thereof.

Having described my improved machine for heeling boots and shoes,

What I claim therein as new, and of my invention, and desire to secure by Letters Patent, is—

1. A spring holding-die, for retaining the heel in proper position while it is being secured to the boot or shoe, substantially as set forth.

2. The combination, with the holding-die G, of the driving-stud I, provided with a head-plate, *c*, substantially as and for the purposes set forth.

3. The combination, with the holding-die G and driving-stud I, of the spring *d*, substantially as and for the purposes set forth.

4. The combination, with the holding-die G and driving-stud I, of the relieving-spring device M M^1 M^2, and adjusting-screws N^1 and *g*, substantially as and for the purposes set forth.

5. The combination, with the driving-stud I and disk F, of the adjusting-screw *g*, substantially as and for the purposes set forth.

6. The combination, with a series of holding-dies, G, and driving-studs I, of the rotating plate or disk F, substantially as and for the purposes set forth.

7. The combination, with the spring-die G, of the depressing-lever Q, rod S, and treadle T, substantially as and for the purposes set forth.

8. The combination, with the holding-die G, driver-stud I, and operating plunger E, of the swinging back-spindle L, substantially as and for the purposes set forth.

9. The combination, with the jack-spindle L, of the hand-lever L^1 and handle L^2, substantially as and for the purposes set forth.

10. The combination, with the operating plunger E and power-dog H, of the bell-crank shipping-lever H^2, connecting-rod O, and treadle P, substantially as and for the purposes set forth.

11. A machine for heeling boots and shoes, the parts of which are constructed and combined together, substantially as shown in the drawing and herein described.

HORACE H. BIGELOW.

Witnesses:

THOS. H. DODGE,

A. E. PEIRCE.