

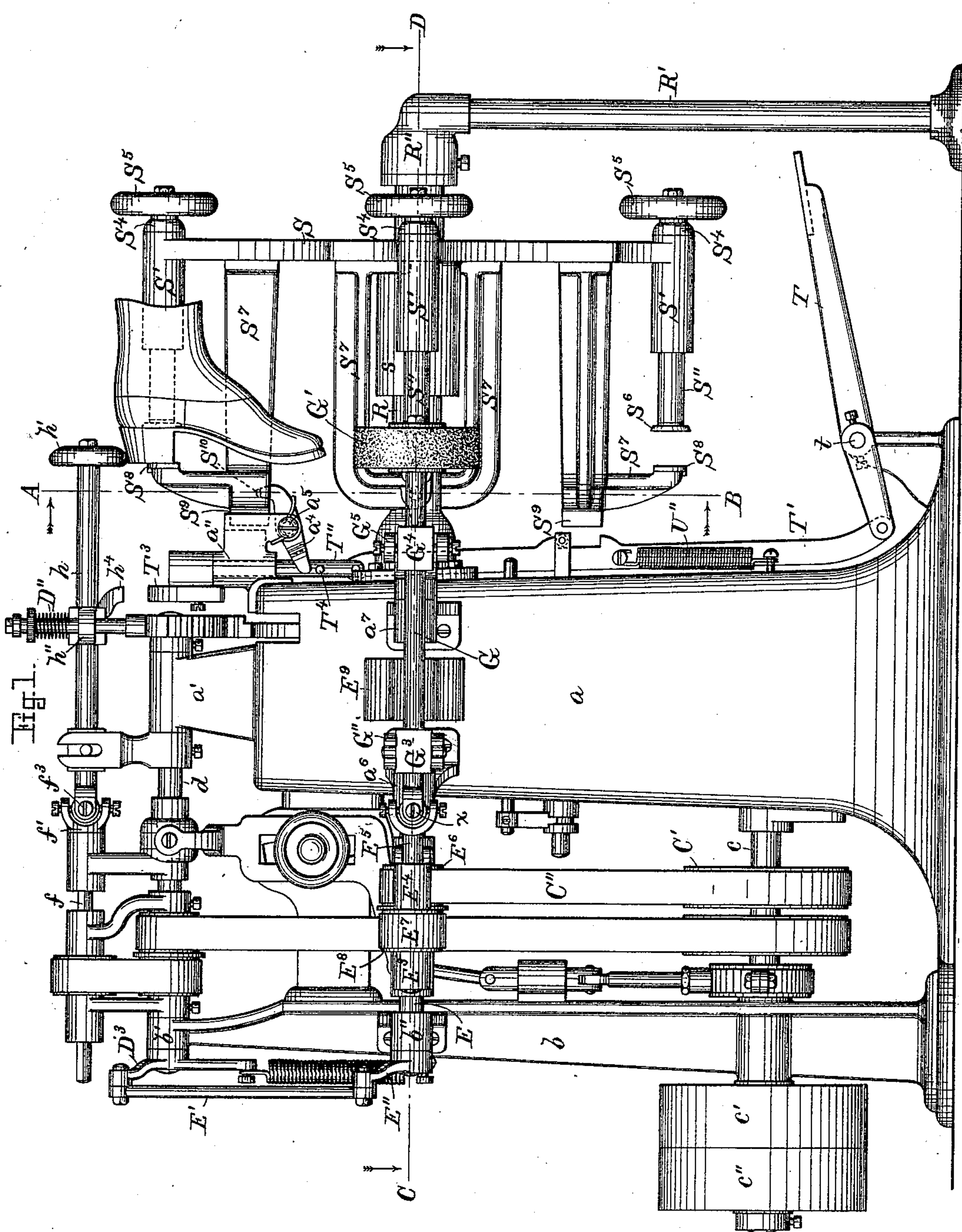
(No Model.)

3 Sheets—Sheet 1.

A. B. FOWLER, G. E. WARREN, & W. C. EVANS.  
HEEL BURNISHING MACHINE.

No. 438,997.

Patented Oct. 21, 1890.



Witnesses

Henry Chadbourne.  
Charles L. Fogg.

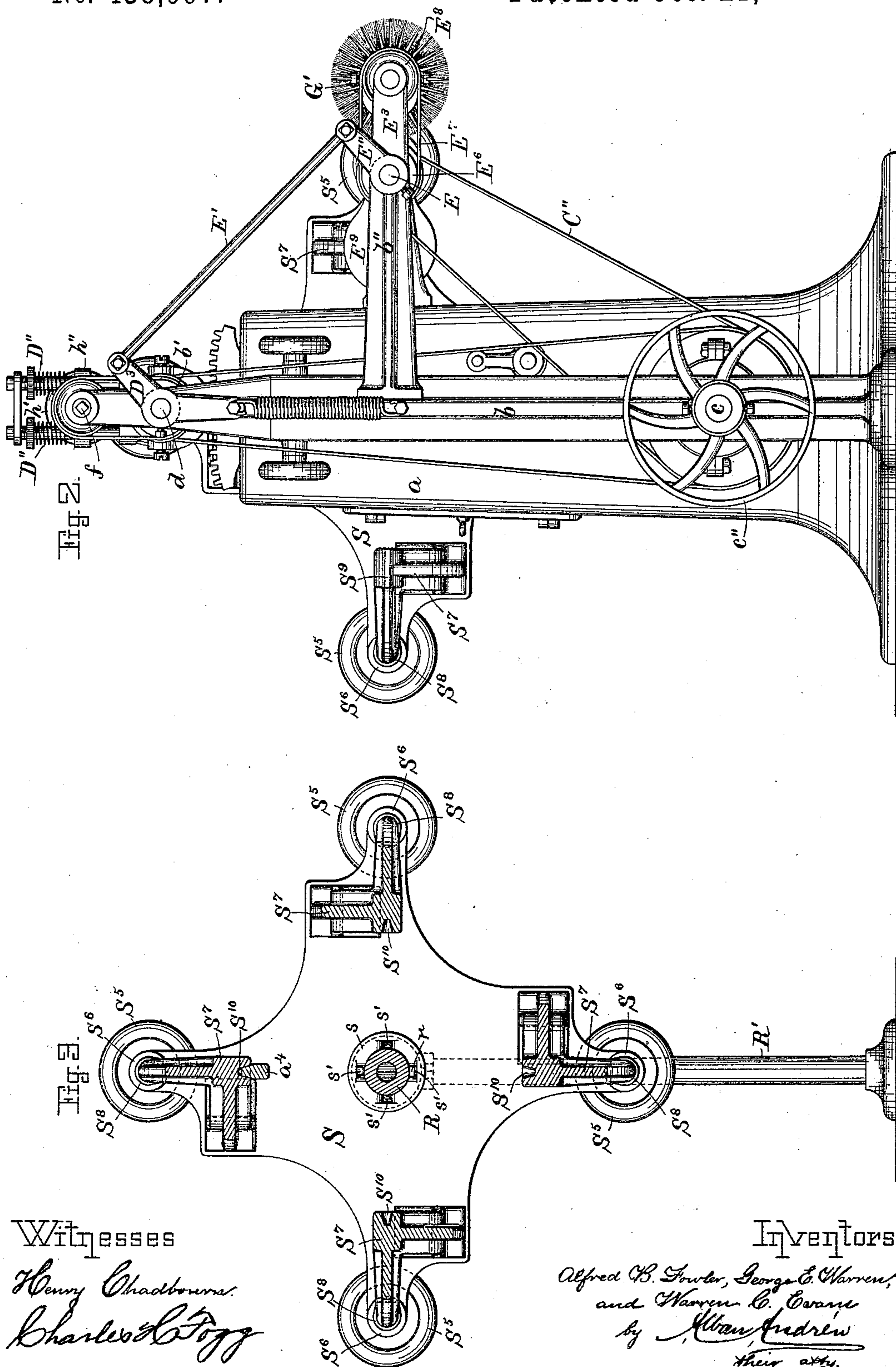
Inventors

Alfred B. Fowler, George E. Warren  
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their atty.

3 Sheets—Sheet 2.

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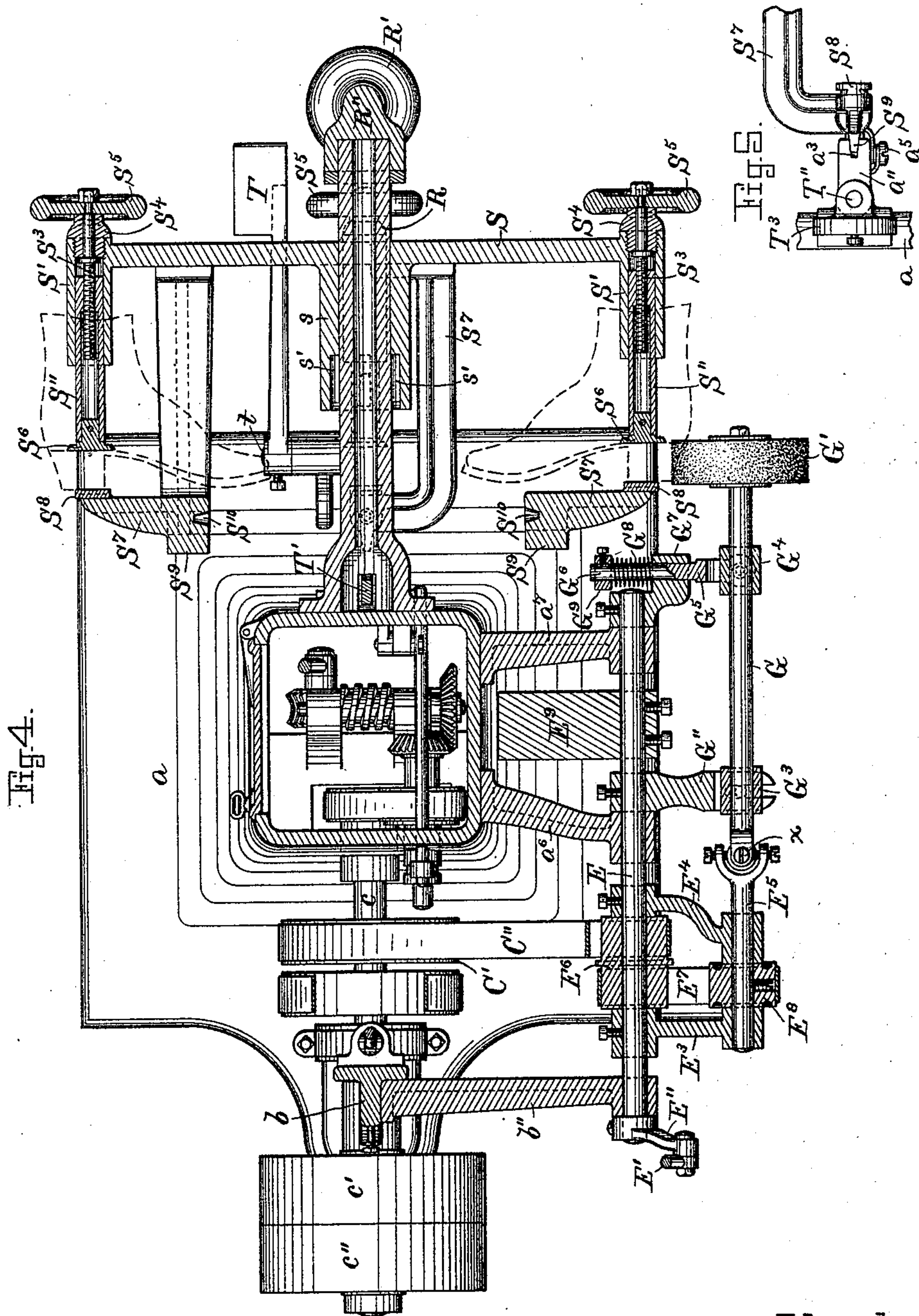
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and Warren C. Evans  
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their atty.



# UNITED STATES PATENT OFFICE.

ALFRED B. FOWLER, GEORGE E. WARREN, AND WARREN C. EVANS, OF  
EXETER, NEW HAMPSHIRE, ASSIGNORS TO THE ROCKINGHAM MACHINE  
COMPANY, OF SAME PLACE.

## HEEL-BURNISHING MACHINE.

SPECIFICATION forming part of Letters Patent No. 438,997, dated October 21, 1890.

Application filed November 25, 1887. Serial No. 256,056. (No model.)

*To all whom it may concern:*

Be it known that we, ALFRED B. FOWLER, GEORGE E. WARREN, and WARREN C. EVANS, all citizens of the United States, and all residents of Exeter, in the county of Rockingham and State of New Hampshire, have jointly invented new and useful Improvements in Heel-Burnishing Machines, of which the following, taken in connection with the accompanying drawings, is a specification.

This invention relates to improvements in heel-burnishing machines, and it is carried out as follows, reference being had to the accompanying drawings, wherein—

Figure 1 represents a side elevation of the improved machine. Fig. 2 represents a rear view of the same. Fig. 3 represents a vertical section on the line A B in Fig. 1, showing the revolving jack; and Fig. 4 represents a horizontal section on the line C D, shown in Fig. 1. Fig. 5 is a detail plan view of the jack-centering device.

Similar letters refer to similar parts wherever they occur on the different parts of the drawings.

This invention relates particularly to an improved rotary jack and means for locking the same in position while burnishing and brushing the heel; also, in an improved device and mechanism for automatically brushing the heel after it has been burnished.

The other parts of the machine are substantially like those shown and described in the patent granted February 14, 1888, No. 377,826, to A. B. Fowler for improvements in heel-burnishing machines.

$a$  is the standard of the machine, with its bearing  $a'$  for the rock-shaft  $d$ , and  $b$  is the rear post having upper bearing  $b'$  for said rock-shaft  $d$ , as shown and described in the above-mentioned patent.

$c$  is the rotary driving-shaft with its fast and loose pulleys  $c'$  and  $c''$ , as usual.

The mechanism for imparting a rocking motion to the shaft  $d$  from the rotary shaft  $c$  is the same as shown and described in the former patent above mentioned.

$h'$  is the burnishing-tool secured to the forward end of the burnisher-shaft  $h$ , which lat-

ter is universally jointed at  $f^3$  to the rotary longitudinally movable and oscillating shaft  $f f'$ , and such combined motions are imparted to said shaft  $f f'$  from the rotary driving-shaft  $c$  by intermediate connecting mechanism, as shown and described in the aforesaid patent.

$h''$  is the radially-yielding forward bearing for the burnisher-shaft  $h$ , such bearing having the forwardly-projecting lip  $h^4$ , in a manner and for the purpose as set forth in the aforesaid patent.

$D'' D''$  are the springs for pressing the burnisher-tool against the heel while in the act of being burnished.

$T$  is the treadle pivoted at  $t$  and having connected to its inner end the link  $T'$ , the upper end of which is connected to the plunger  $T''$ , that is guided in the bracket  $a''$ , secured to the standard  $a$ , said plunger  $T''$  having secured to its upper end the lifter-cam  $T^3$ , that is brought against the projection  $h^4$  when the treadle  $T$  is depressed in the same manner as shown and described in the aforesaid patent. The treadle  $T$  is normally held in the position shown in Fig. 1 by the influence of the spring  $U''$  when the machine is in operation, and the machine is stopped when the treadle is depressed in a manner and by mechanism as fully described in the above-mentioned patent.

We desire to state that the parts of the machine as above described form no part of our present application, and are only briefly mentioned for the purpose of more fully showing the nature, construction, and operation of our present improvements.

The improved rotary jack is constructed as follows: To the front of the standard  $a$  is firmly secured the cylindrical shaft or spindle  $R$ , the outer end of which is supported and held in place by means of the post or rod  $R'$ , secured in its lower end to the floor and having, preferably, a cap or head  $R''$  in its upper end, to which the outer end of the spindle  $R$  is suitably secured.

$S$  is the revolving-jack frame, and  $s$  is its hollow hub, that is journaled on the horizontal spindle  $R$ , as shown in Figs. 1, 3, and 4, and



adapted to slide forward and back on the latter, so as to bring the shoe-heels held by the jack in position when being burnished and brushed and to withdraw said heels and the jack after the work is done, so as to enable the jack to be turned around its axis one-fourth of a revolution, as will hereinafter be more fully described. The frame S has in its outer ends the four horizontal bearing-sleeves S' S' S' S', in each of which is adjustable the clamping-sleeve S'' and the plate S<sup>6</sup>, secured to the end of such sleeve S''. The sleeve S'' is adjustable within the sleeve S' by means of the screw S<sup>3</sup> and hand-wheel S<sup>5</sup> in the same manner as shown and described in the patent aforesaid. The screw-shaft S<sup>3</sup> works in a screw-threaded portion in the sleeve S'', the latter being free to move forward and back in the sleeve S' without turning around its axis.

S<sup>4</sup> is a bearing for the screw-shaft S<sup>3</sup>, said bearing being secured to the outer end of the sleeve S' between the hand-wheel S<sup>5</sup> and a collar on the screw-shaft S<sup>3</sup>, as shown and described in the aforesaid patent, by which the screw-shaft S<sup>3</sup> may be rotated without moving longitudinally.

S<sup>7</sup> S<sup>7</sup> are the heel-top-lift rests secured to or cast in one piece with the frame S and having heel-plates S<sup>8</sup> secured to them, as shown in Figs. 1, 3, and 4.

In the inner end of the hollow hub s there are longitudinal grooves s' s' s' s', equal in number to the jack-screws S<sup>3</sup>, and to the shaft R is secured a projection r, (shown in Fig. 3,) that is made to enter one of the grooves S' when the jack-frame S is pushed forward in working position, thus holding or locking the jack-frame in its proper position and preventing it from turning around its axis while the work of burnishing and brushing the heel is being done.

For the purpose of aiding in centering the jack-frame S when it is pushed forward in working position we make on the inner end of each of the top-lift rests S<sup>7</sup> a V-shaped projection S<sup>9</sup>, adapted to enter a correspondingly-shaped tapering recess a<sup>3</sup> in the front of the stationary bracket a'', as shown in Fig. 5. After the rotary jack S has been turned around its axis a fourth of a revolution and moved longitudinally into operative position it is automatically locked in such position by the spring-pressed pawl a<sup>4</sup>, pivoted at a<sup>5</sup> on the bracket a'', and having its forward end adapted to enter a locking notch or recess S<sup>10</sup> on the under side of that one of the heel-top-lift rests S<sup>7</sup> that is for the time being opposite to the bracket a'', as shown in Figs. 1 and 3. After the heel is burnished or brushed, or both, the locking-pawl a<sup>4</sup> is disengaged from the top-lift rest by the depression of the treadle T by the action of a projection T<sup>4</sup> on the side of the rod or plunger T'', as shown in Fig. 1, that comes in contact with the rear end of the pawl a<sup>4</sup> and trips it sufficiently to cause it to be disengaged from the notch in

the top-lift rest S<sup>7</sup>, after which the operator pulls the jack-frame S toward him far enough to cause the locking projection r on the post R to be disengaged from the guide-groove S' in the hub S, after which the said jack-frame S may be freely turned a quarter of a revolution around its axis and again pushed into a corresponding operative position, there to be again locked while another shoe-heel is being burnished and brushed, and so on.

The automatic mechanism for brushing the shoe-heels after they have been burnished—that is, to brush one burnished heel while another one is being burnished, and so on in rotation—is constructed as follows: In stationary bearings b'', a<sup>6</sup>, and a<sup>7</sup> is located the rock-shaft E, which is automatically rocked in its bearing by means of the links E', connected in its ends to levers E'' and D<sup>3</sup>, secured, respectively, to the shafts E and d, as shown in Figs. 1 and 2. To the rock-shaft E are secured the levers E<sup>3</sup> and E<sup>4</sup>, the outer ends of which serve as bearing for the shaft E<sup>5</sup>, which is given a quick rotary motion by means of a pulley C', secured to the driving-shaft c, and a belt C'', leading from it to the pulley E<sup>6</sup>, that is loosely journaled on the rock-shaft E, and a belt E<sup>7</sup>, leading from the latter pulley to the pulley E<sup>8</sup>, secured to the shaft E<sup>5</sup>, as shown in Figs. 1 and 4. The shaft E<sup>5</sup> is universally jointed at X to the brush-shaft G, which latter has secured to its free end the cylindrical brush G'. (Shown in Figs. 1, 2, and 4.) To the rock-shaft E is secured the forked arm or lever G'', in which is guided the bearing G<sup>3</sup> for the brush-shaft G, as shown in Fig. 4, said bearing being free to adjust itself out and in on the forked arm or lever G'', according to the curvature of the heel of the boot or shoe on which the rotary brush G' is acting.

For the purpose of permitting the rotary brush G' to be held against the boot or shoe heel with a proper pressure and to yield to inequalities in the curvature of such heel we journal the brush-shaft G near the brush G' in a sleeve or bearing G<sup>4</sup>, that is pivoted in the outer end of the forked piece or hanger G<sup>5</sup>, the shank or spindle G<sup>6</sup> of which passes through an arm or lever G<sup>7</sup>, secured to the rock-shaft E, and has surrounding it a coiled spring G<sup>8</sup>, between the lever G<sup>7</sup> and a collar G<sup>9</sup>, secured to the spindle G<sup>6</sup>, as shown in Fig. 4.

E<sup>9</sup> in Figs. 1, 2, and 4 is a balance or counterweight secured to the rock-shaft E for the purpose of balancing the shafts E<sup>5</sup> G and their respective bearings, pulley, and brush, so as to keep the said shaft E properly balanced during its rocking motion.

By means of the rock-shaft d, its lever D<sup>3</sup>, the link E', and lever E'' on the shaft E a rocking motion is imparted to the latter, causing the brush G' to swing from breast to breast of the shoe-heel that is held in the jack, and during such swinging movement of the brush it is given a quick rotary motion around its axis by means of the connecting mechanism from the driving-shaft c to the



shaft E<sup>5</sup>, as above described. During such motion of the brush G' it is held against the heel with the proper and desired pressure by means of the spring G<sup>8</sup> on the spindle G<sup>6</sup>, as hereinbefore fully described. Thus it will be seen that while one shoe-heel is being automatically burnished another one previously burnished is being automatically brushed, and thus the heels are automatically burnished and brushed in one and the same machine without any other manipulation than securing the boot or shoe to the jack, turning the latter a part of a revolution around its axis, and removing the shoes from the jack after being burnished and brushed, thus saving a great deal of time and labor in the art of finishing the heels.

Having thus fully set forth the nature, construction, and operation of our invention, we wish to secure by Letters Patent and claim—

1. In a burnishing-machine, the improved jack, as described, consisting of the horizontal shaft R and the hub s, journaled on the latter and adapted to slide forward and back on said shaft to turn around it and to be locked in position, as described, in combination with a series of top-lift supports S<sup>7</sup> and longitudinally-adjustable clamping-plates S<sup>6</sup>, actuated by clamping devices on the jack-frame S, as and for the purpose set forth.

2. In a burnishing-machine, the automatic heel-brushing device, as described, consisting of the rock-shaft E and the rotary brush G' on the shaft G, mounted in bearings on said rock-shaft and universally jointed to the rotary shaft E<sup>5</sup>, located in bearings E<sup>3</sup> E<sup>4</sup> on said rock-shaft E and adapted to yield against the action of the spring G<sup>8</sup> as the said brush-shaft is rotated and oscillated, as and for the purpose set forth.

3. In a burnishing-machine, the combination of the following elements, namely: a plurality of rotary and longitudinally-movable jacks having devices for clamping the shoes in position, a burnishing-tool, a rotary oscillating and yielding brush, and means for locking the jacks in position.

4. In a burnishing-machine, the supporting-

shaft R and the rotary and longitudinally-movable jack-frame S s, mounted thereon, in combination with the treadle T, the rod T', and spring-pressed pawl a<sup>4</sup> for securing the jack in working position, substantially as described.

5. In a burnishing-machine, the rock-shaft E, having secured to it the bearings E<sup>3</sup> E<sup>4</sup>, and having rotary shaft E<sup>5</sup> journaled in said bearings, the balance-weight E<sup>9</sup>, secured to the rock-shaft E, and the brush-shaft G, universally jointed to the shaft E<sup>5</sup> and having brush G' secured to its free end, and having such end journaled in the radially-yielding bearing G<sup>4</sup>, substantially as and for the purpose set forth.

6. The combination of a series of rotary and longitudinally-movable jacks having devices for clamping shoes in position, a fixed shaft on which the same are movable, a locking mechanism to prevent longitudinal and rotary movement of the jacks, a number of rotating tools to act on the shoes held by the jacks, and lifting mechanism to move the rotating tools away from said boots or shoes to permit the jacks to be moved out of the path of movement of said tools, substantially as shown and described.

7. The combination of a rotary and longitudinally-movable jack-frame having a number of clamping devices for securing shoes in position, a fixed shaft on which the jack-frame is mounted, a number of oscillating rotary and yielding tools, and locking mechanism for holding the jack-frame in position during the operation of the tools, substantially as shown and described.

In testimony whereof we have signed our names to this specification, in the presence of two subscribing witnesses, on this 5th day of October, A. D. 1887.

ALFRED B. FOWLER.  
GEORGE E. WARREN.  
WARREN C. EVANS.

Witnesses:

D. G. JACKSON,  
R. S. COGSWELL.