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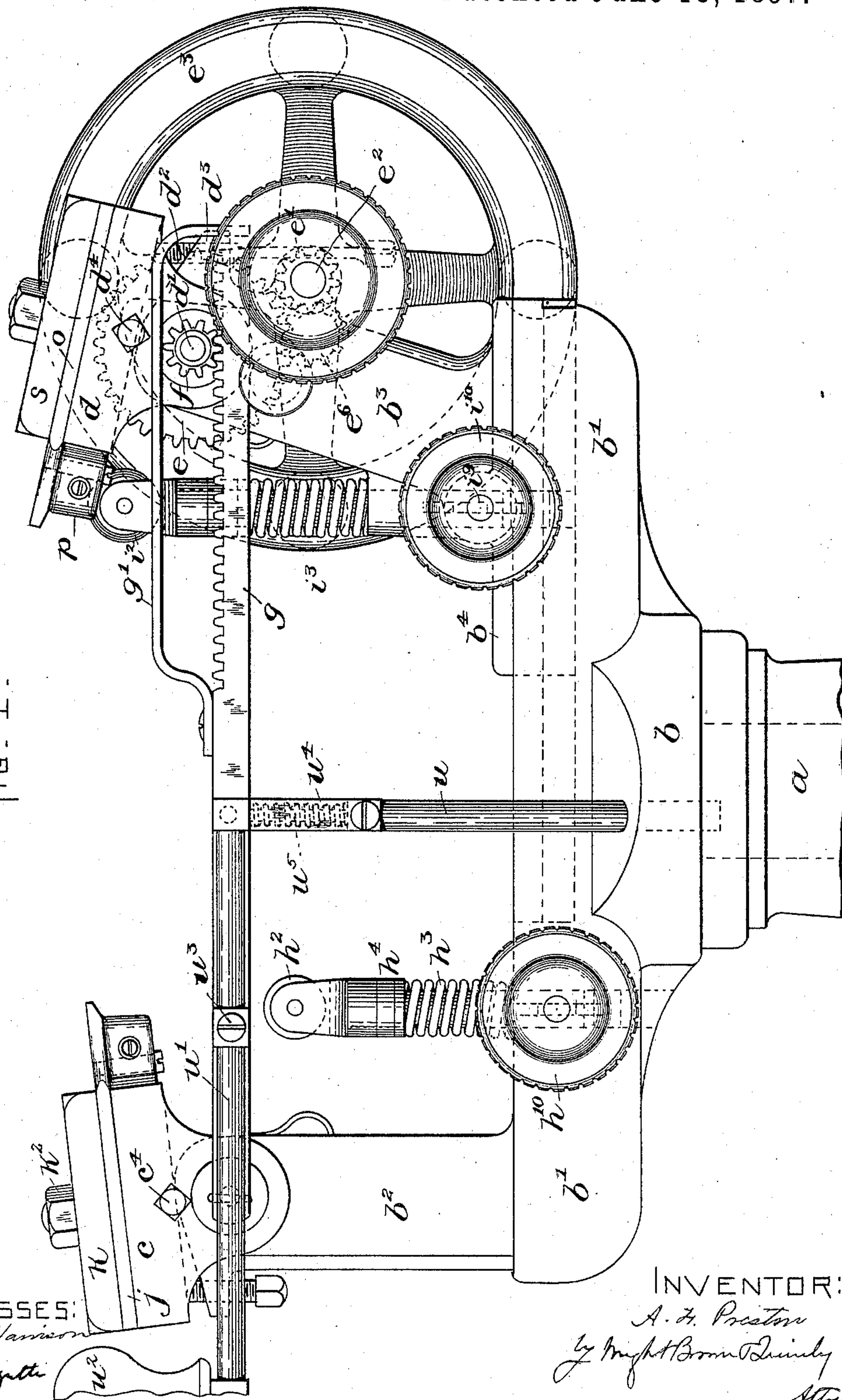
3 Sheets—Sheet 1.

A. F. PRESTON.
LASTING MACHINE.

No. 584,600.

Patented June 15, 1897.

FIG. 1.



WITNESSES:

A. D. Harrison

P. W. Pizzutti

INVENTOR:

A. F. Preston

By Knight Brown Quincy

Att'y.

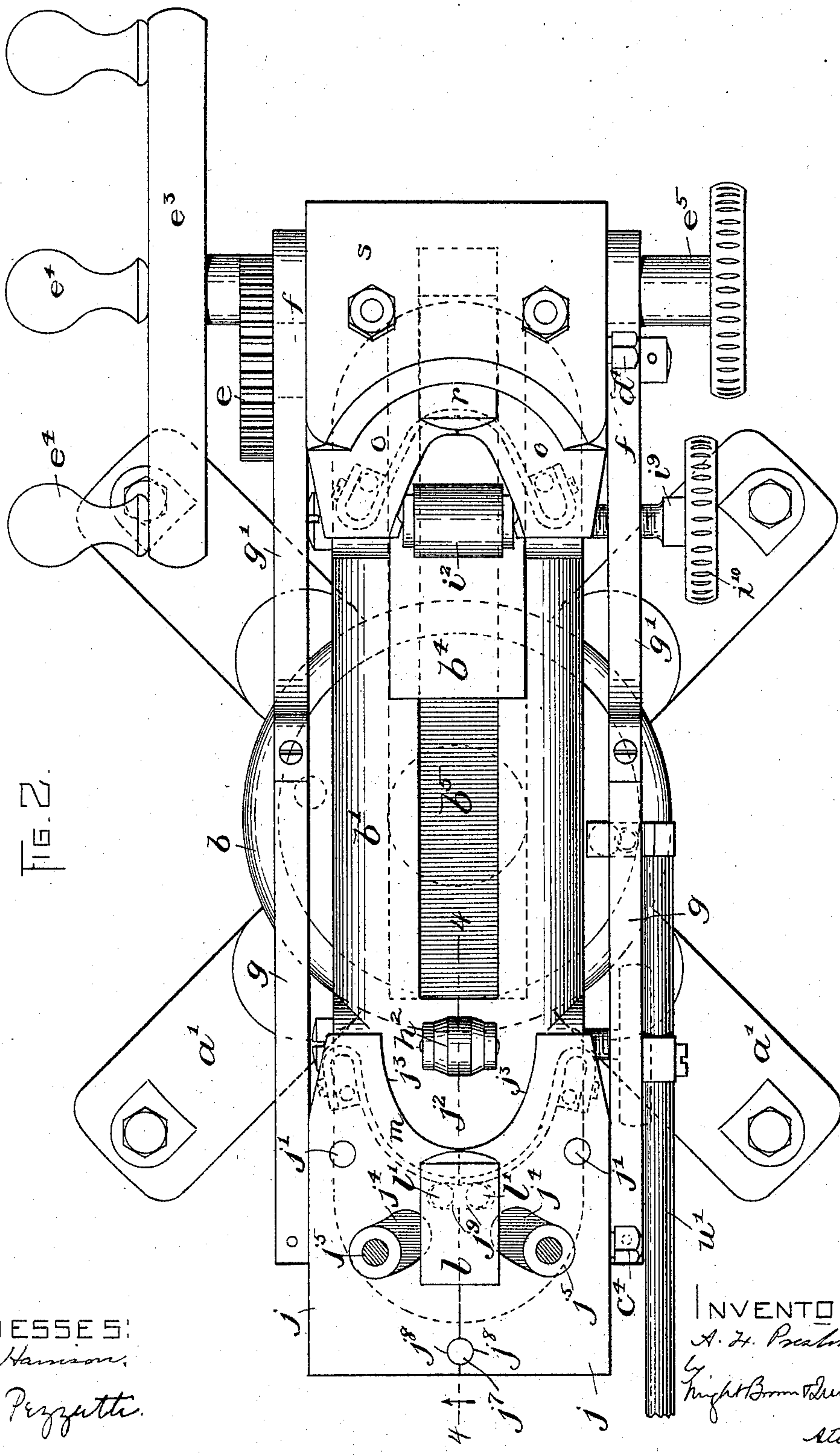
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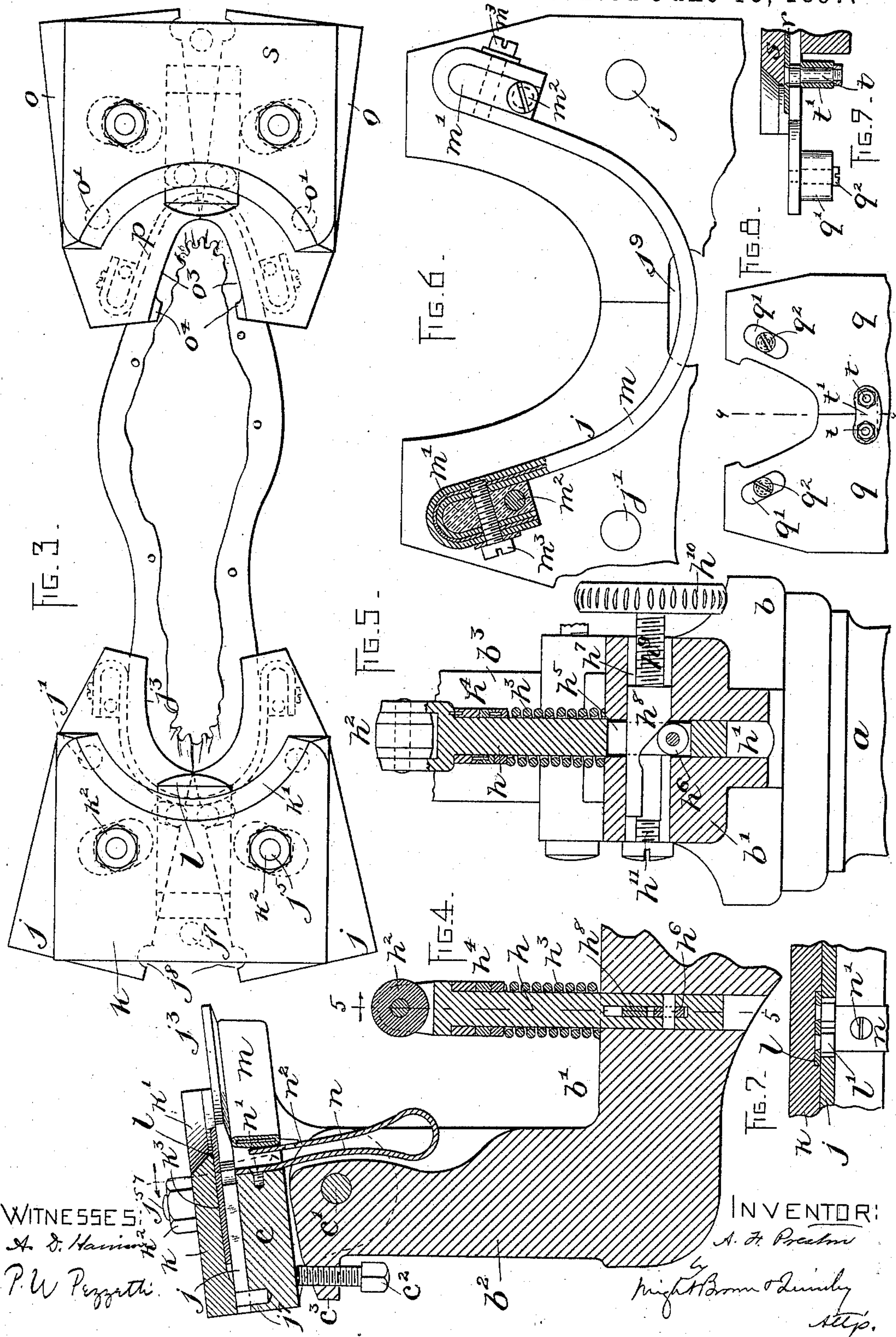
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UNITED STATES PATENT OFFICE.

ALBERT F. PRESTON, OF BOSTON, MASSACHUSETTS, ASSIGNOR TO THE
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LASTING-MACHINE.

SPECIFICATION forming part of Letters Patent No. 584,600, dated June 15, 1897.

Application filed November 20, 1896. Serial No. 612,901. (No model.)

To all whom it may concern:

Be it known that I, ALBERT F. PRESTON, of Boston, in the county of Suffolk and State of Massachusetts, have invented certain new and useful Improvements in Lasting-Machines, of which the following is a specification.

This invention has relation to machines for drawing the edges of the upper of a boot or shoe over the sole of the last and holding it taut while the operative secures it to the insole.

The object of the invention is to provide a machine for accomplishing this purpose in a simple expeditious manner and in which there shall be a minimum of parts which shall operate with the highest degree of efficiency.

To these ends the invention consists of a machine equipped with those features of construction and arrangement illustrated on the drawings, and which I shall now proceed to describe in detail, and then point out in the claims hereto appended.

Reference is to be had to the accompanying drawings, and to the letters marked thereon, forming a part of this specification, the same letters designating the same parts or features, as the case may be, wherever they occur.

Of the drawings, Figure 1 is a side elevation of a machine constructed in accordance with my invention, the base of the standard being broken away for lack of room to illustrate it. Fig. 2 is a plan view of the same. Fig. 3 illustrates a last with the upper at the toe and heel drawn over it and held in place by the movable wipers of my machine. Fig. 4 is a vertical section on the line 4 4 of Fig. 2. Fig. 5 is a transverse vertical section on the line 5 5 of Fig. 4, looking in the direction of the arrow. Fig. 6 is an obverse view of the movable wipers and the flexible band which coöperates with the wipers and acts as a stop both longitudinally and laterally for the last. Fig. 7 is a section on the line 7 7 of Fig. 4, looking in the direction of the arrow. Figs. 8 and 9 illustrate other forms of stops for a last.

The machine is equipped with a standard a , rising from a suitable base a' and supporting a revoluble circular bed b , having an elongated support b' , upon which are mounted up-

right carriers b^2 b^3 , the former of which is stationary and the latter of which has a base b^4 sliding in a slideway b^5 in the said support.

Upon the stationary carrier b^2 is mounted a head c , pivoted thereon by a pin c' and held at any desired adjustment by a set-screw c^2 , threaded through a lug c^3 on the carrier b^2 and bearing against the said head c . The forward carrier is likewise provided with an adjustable head d , pivoted by a shaft d' thereto, and likewise held at any desired adjustment by a screw d^2 , passing through a lug d^3 on the said carrier. Both of the said heads c and d are secured after adjustment by set-screws c^4 d^4 , respectively, passed through the said heads and bearing against the carriers.

The shaft d' , which acts as a pivot-pin for the head d , is provided at one end with a gear-wheel e , intermeshing with and driven by a pinion e^6 , which in turn has power imparted to it by a pinion e' on a shaft e^2 , journaled in bearings in the carrier b^3 and adapted to be rotated by a hand-wheel e^3 , having handles e^4 . The opposite end of the shaft e^2 is threaded to receive a milled binding-nut e^5 , which may be screwed tightly against the carrier d^3 , so as to lock the shaft against rotation.

The shaft d' is provided at each end with a pinion f , intermeshing with rack-bars g , each of the latter being pivoted at its rear end to the stationary carrier b^2 . Hence when the hand-wheel e^3 is revolved it causes rotation of the pinions f , which intermesh with the rack-bars g and cause the movement of the movable carrier b^3 toward the stationary carrier b^2 .

Preferably the teeth of the rack-bars g are covered or protected by shields or guards g' , consisting of strips secured at each end, so as to lie above the teeth and above the pinions f .

Projecting upward through an aperture h' in the elongated support b' is a standard or bar h , having its upper end bifurcated to receive the roller h^2 , said standard being mounted just in front of the carrier b^2 . A strong spiral spring h^3 surrounds the standard or bar and has one end bearing against a series of washers h^4 at the top end of the standard and its lower end bearing against the base of the support b' . The bar h is slotted, as at

h^5 , to receive a roller h^6 , and through a transverse aperture h^7 in the support b' is placed a wedge-shaped key h^8 , having its inclined portion resting upon said roller h^6 . A screw h^9 , threaded into the support b' and having a milled edge h^{10} , bears against the wedge-shaped key and slides it longitudinally to adjust the position of the standard and the roller h^2 , as occasion may require. A screw h^{11} is threaded into the support to act as a stop to prevent too great inward movement of the key h^8 . By turning the screw h^9 , so as to force the key h^8 inward, the standard is depressed against the tension of the spring h^3 , and when the screw is turned backward the spring h^3 forces the standard upward, as will be readily understood. A similar standard i , having a roller i^2 , is mounted in an aperture in the movable carrier b^3 . It, too, is adjusted by a screw i^9 , having a head i^{10} and cooperating with a roller mounted in an aperture in the said standard, similar in all respects to that shown in Figs. 4 and 5.

The purpose of the rolls h^2 and i^2 on the standards h and i will be hereinafter adverted to.

Upon the heads c and d are mounted the devices for smoothing and drawing the edges of the upper over the sole at the toe and heel, so that the operator may secure the upper to the insole.

Two complementary wipers $j j$ for the heel, shaped as shown in Fig. 2, each with its front inner corner recessed, are pivoted at $j' j'$ to the head c , and when in their normal position they form, as it were, a square with a curved recess j^2 in the shape of the peripheral curve of a heel, the curved edges j^3 being complements of each other. Each plate j is provided with a curved aperture j^4 to receive a stud j^5 , which holds the plate k up from them. A pin j^7 projects into a semicircular socket j^8 in the inner edge of each of the wipers to stop the inward movement of the wipers.

The wipers are held in place by a top plate k , having a front curved face k' , and secured in position by nuts k^2 , threaded on the screws j^5 . The plate k is provided on its under face with a groove or slideway k^3 to receive a slide l , having two downwardly-projecting pins $l' l'$, extending into slots $j^9 j^9$ in the edges of the wipers j , and which act to cause the wipers to have the same movement, so as to operate simultaneously. It will be noticed that the pivots $j' j'$ are substantially in alignment with the front inner edges of the wipers, so that when the latter are swung on said pivots the curved edges $j^3 j^3$ approach each other, the recess contracting in proportion to the movement of the wipers.

A bowed band m is bent around a block m' , which is pivoted to the front end of each wiper by the screw m^2 , said band being secured to the block by a screw m^3 , passed laterally therethrough. The pivot-screw m^2 for each block passes through the rear end thereof, so that the block may swing around it if

pressure be exerted longitudinally of the last against the center of the band. The said band may be formed of an inner strap of spring metal covered by leather, or else it may be formed of a single strip of sole leather or other suitable material.

The pivot-pins m^2 are secured to the wipers in front of the pivots j' in such a way that when pressure is exerted longitudinally of the machine against the center of the band m the wipers will be swung inwardly, as shown in Fig. 3.

In order to hold the band forward with the wipers in their normal inoperative positions, I employ a U-shaped spring n , secured to the head c by a pin n' , and having its free end n^2 bearing against the band in the rear thereof.

The wipers for the front movable carrier or the toe of the upper are designated by $o o$, being pivoted at $o' o'$ similarly to those at $j j$. Since the said wipers are in all respects precisely similar to those above described for wiping the upper over the last at the heel, I shall not describe them in detail, the only point of difference being that the wipers for the toe are formed with curved edges o^3 , shaped to conform to the toe of a last, and are also provided with inwardly-projecting lugs o^4 , the purpose of which will be hereinafter set forth.

A band p , similar to that at m , is pivoted to the wipers, being bent around blocks similar to those at m' . If desired, instead of employing a bowed band for the wipers at the toe I may swivel to the wipers $q q$, Figs. 8 and 9, elongated blocks q' by means of screws q^2 .

Projecting downward from the slide r , which moves in a groove in the top plate s , are two pins $t t$, passing through a curved block t' , the wipers having apertures extending inward from the edge to receive the pins $t t$, so that when the last is pressed against the block t' the wipers will have their ends thrown inward over the edges of the last.

I will now proceed to describe the operation of my machine. An upper having been previously stretched over a last by means of last-ing-pincers or in any other way the last is placed sole upward with the toe resting upon the roller i^2 and the upper curved surface of the last toward the heel on the roller h^2 and with the toe in alinement with the band p and the heel in alinement with the band m . Then upon revolving the hand-wheel e^3 the movable carrier is fed along toward the stationary carrier, so as to cause the last to be clamped firmly between the bands m and p , which, being flexible, conform to the heel and toe, respectively, and form stops for the same when it is impossible to slide the movable carrier any farther. The pressure of the toe and heel of the last against the bands p and m such as to cause the operating edges of the wipers to swing inward over the edges of the sole, so as to draw the edges of the upper inward and bind them firmly against the last.

At the same time that the last is being moved toward the stationary carrier by the movable carrier and is being clamped between two bands it is jacked or raised vertically against the inclined surfaces of the wipers, sliding up upon the rollers $h^2 i^2$ until the edges of the upper are firmly bound against the operative edges of the wipers. Thus it will be seen that the wipers $j j$ or $o o$ not only operate to draw the edges of the upper longitudinally of the last, but they also draw upon the said edges of the upper laterally or transversely of the last. After the carriage has been moved in to its farthest extent to draw the edges of the upper taut at the toe and heel and lock them the nut e^5 is turned to bind the shaft e^2 against rotation, and then the upper may be secured to the insole by means of any suitable tacking-tool.

By forming the toe-wipers $o o$ with the inwardly-projecting lugs o^4 the latter act as stops to prevent the upper from being displaced, since they engage the same before the wipers begin their operation and hold the last while the edges are being drawn over it.

When the upper has been secured to the insole, the nut e^5 is loosened and the hand-wheel reversed, so as to free the last from engagement with the wipers, the spring n' causing the wipers to return to their normal inoperative positions.

The bed b may be swung around upon the standard, there being a lock-bar u sliding in an aperture in the bed and adapted to drop in sockets in the top of the standard for locking the bed against movement. A lever u' , having a handle u^2 , is pivoted at u^3 to the outside of one of the rack-bars and is connected to the lock-bar by an L-shaped link u^4 , the lower arm of which passes under the rack-bar. A spring u^5 is inserted between the arm of the link and the rack-bar, so as to hold the lock-bar in its socket. By depressing the handle u^2 of the lever u' the lock-bar u is lifted out of its socket and the bed may be swung until the bar drops in the next socket, which is preferably diametrically opposite the first-mentioned one.

Having thus explained the nature of the invention and described a way of constructing and using the same, though without attempting to set forth all of the forms in which it may be made or all of the modes of its use, I declare that what I claim is—

1. A machine of the character specified, comprising in its construction, a bed, carriers on the bed, a pair of wipers mounted loosely on each carrier, and a bowed spring for each pair of wipers attached at each end to one of the said wipers.

2. A machine of the character specified, comprising in its construction, a bed, carriers on the bed, a pair of wipers mounted loosely on each carrier, means for causing the wipers of each pair to move in unison, and stops on said wipers against which the last impinges.

3. A machine of the character specified, comprising in its construction, a bed, a carrier having loosely-pivoted wipers for the toe, a carrier having loosely-pivoted wipers for the heel, means for causing the carriers to approach each other, whereby the engagement of the last with the wipers automatically causes them to wipe the edges of the upper, and a slide loosely engaging the heel-wipers for causing them to operate in unison.

4. A machine of the character specified, comprising in its construction, a bed, a carrier having loosely-mounted wipers for the toe, a carrier having loosely-mounted wipers for the heel, slides for each pair of wipers to cause them to move in unison, means for causing the last to simultaneously engage both pairs of wipers and automatically operate them, and means for moving the last vertically.

5. A machine of the character specified, comprising in its construction, a bed, a head, a pair of wipers pivoted loosely in the head, stops on said wipers to be engaged by the last, a roller mounted below the head, and means for moving said last horizontally, said parts being arranged whereby the movement of the last automatically causes the wipers to wipe the edges of the upper, and the last is jacked against the wipers, substantially for the purpose described.

6. A machine of the character specified, comprising in its construction, a bed, a stationary carrier having a pair of loosely-mounted wipers, a movable carrier having a pair of loosely-mounted wipers, both said pairs of wipers being automatically operated by the engagement therewith of the last, rack-bars secured to one of the carriers, a shaft having pinions engaging said rack-bars, said shaft being mounted in the other of the carriers, a hand-wheel, gearing connecting said hand-wheel with said shaft, and means for locking said hand-wheel against rotation.

7. A machine of the character specified, comprising in its construction, a bed, a stationary carrier having a pair of loosely-mounted wipers, a movable carrier having a pair of loosely-mounted wipers, both said pairs of wipers being automatically operated by the engagement therewith of the last, rack-bars secured to one of the carriers, a shaft having pinions engaging said rack-bars, said shaft being mounted in the other of the carriers, a shaft having a hand-wheel, gearing connecting said shaft with the pinion-shaft, and a nut on the hand-wheel shaft to lock it against rotation.

In testimony whereof I have signed my name to this specification, in the presence of two subscribing witnesses, this 16th day of November, A. D. 1896.

ALBERT F. PRESTON.

Witnesses:

A. D. HARRISON,
P. W. PEZZETTI.