

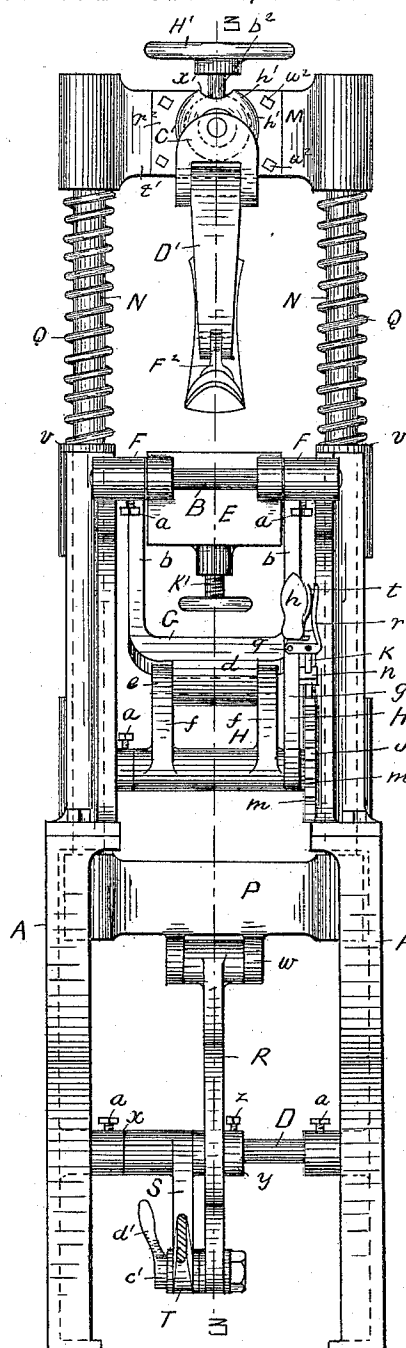
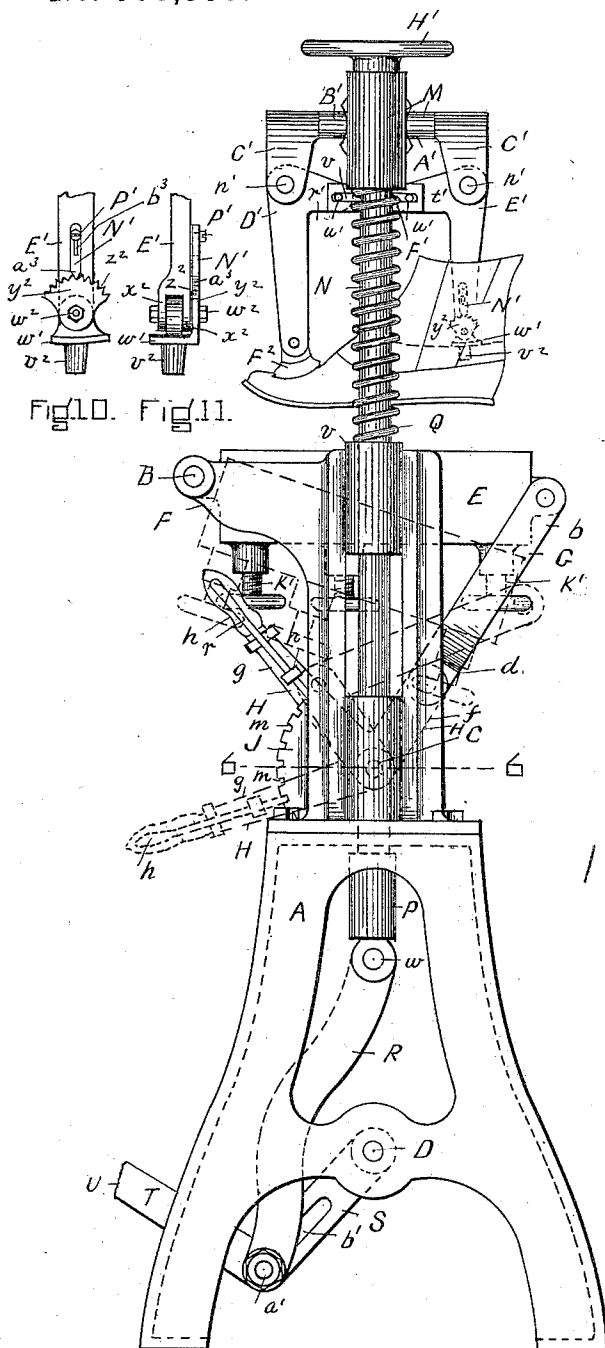
(No Model.)

2 Sheets—Sheet 1.

A. T. TREGURTHA.
SOLE LAYING MACHINE.

No. 398,358.

Patented Feb. 19, 1889.



WITNESSES.

Fig. 1.

Fig. 2.

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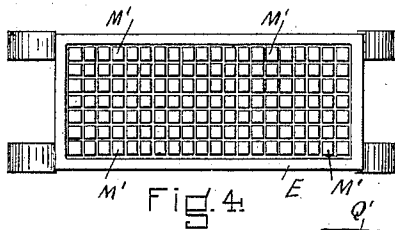


Fig. 4.

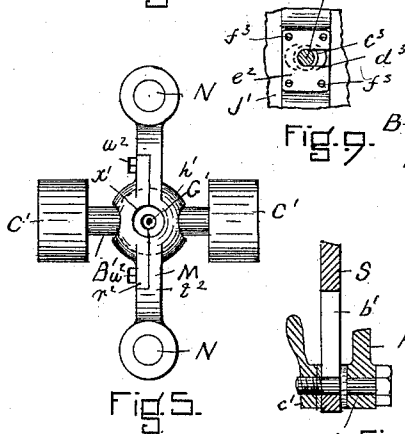


Fig. 5.

Fig. 9.

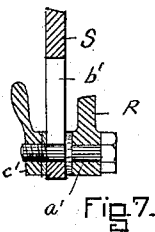


Fig. 7.

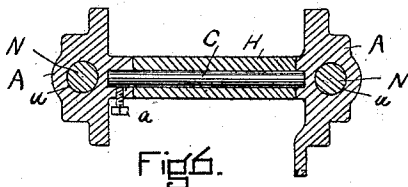


Fig. 6.

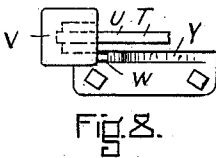


Fig. 8.

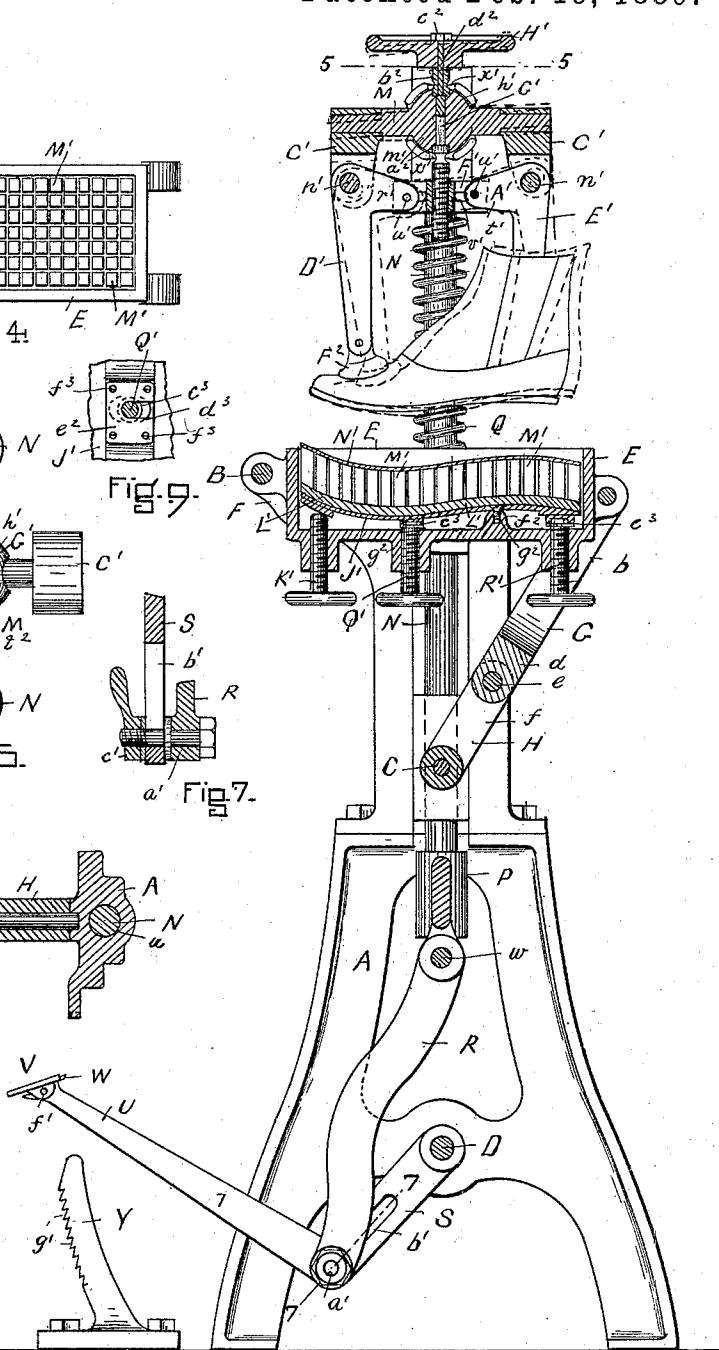


Fig. 3.

WITNESSES.

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UNITED STATES PATENT OFFICE.

ALFRED T. TREGURTHA, OF EVERETT, ASSIGNOR TO HENRY A. CLARK, OF BOSTON, MASSACHUSETTS.

SOLE-LAYING MACHINE.

SPECIFICATION forming part of Letters Patent No. 398,358, dated February 19, 1889.

Application filed October 20, 1888. Serial No. 288,634. (No model.)

To all whom it may concern:

Be it known that I, ALFRED T. TREGURTHA, of Everett, in the county of Middlesex and State of Massachusetts, have invented certain new and useful Improvements in Sole-Laying Machines, of which the following is a full, clear, and exact description.

This invention relates to a machine for the purpose of temporarily securing the outer sole to a lasted upper and inner sole of a boot or shoe, for it afterward to be secured by stitches or other fastening in the usual way; and the invention consists of a sole-laying machine constructed and arranged for operation, all substantially as hereinafter fully described.

In the accompanying sheets of drawings is illustrated a sole-laying machine constructed in accordance with this invention—

Figure 1 being a side elevation; Fig. 2, a front elevation; Fig. 3, a vertical central section from front to rear; Fig. 4, a detail plan view, to be hereinafter referred to; Fig. 5, a detail plan view below line 5 5, Fig. 3. Fig. 6 is a cross-section on line 6 6, Fig. 1. Fig. 7 is a detail section on line 7 7, Fig. 3; and Fig. 8 is a detail plan view. Fig. 9 is a detail plan view; and Figs. 10 and 11 are detail front and side views, respectively, of one of the parts.

In the drawings, A represents two upright standards connected together by three horizontal cross-rods, B, C, and D, secured by set-screws *a*, and on which are supported and carried the various parts of the machine.

E is a bed made of box shape, (shown in Fig. 3 in section,) and hinged at one end between arms F of the uprights A to the rod B, on which it can swing vertically.

G is a link pivoted by its forked arms *b* to the back end of the bed box-frame, and by its other end, *d*, pivoted at *e*, between the two forked arms *f* of a lever, H, turning on the cross-rod C of the uprights, the portion *g* of this lever extending to the front of the machine in an angular direction at one side and having a handle, *h*, for operation thereof, as shown in Figs. 1 and 2 more particularly.

J is a plate secured to the upright at the right of the lever H and having a series of notches, *m*, arranged concentrically to the

rod or pivot C, and adapted to engage with these notches is a pin or pawl, K, arranged to slide in guideways *n* on and pivoted at *q* to the lever, and having an arm, *r*, against which bears a flat spring, *t*, secured to the handle *h*, the tension of which spring acts to hold the pin or pawl K to its engagement with the notched plate and thus hold the lever fastened from movement.

Pressing the arm *r* toward the lever-handle moves the pawl K up and away from its engagement with the notched plate, and then moving down the lever through its link-connection G with the box-frame E will swing it down on its hinges into the position shown in dotted lines in Fig. 1, and when swung up into its normal position in full lines, Fig. 1, the arm *f* of the lever and link G act as a toggle-joint and hold the box-frame E firmly in such position, the lever also interlocking with the notched plate, preventing accidental movement of the bed-frame, and when the bed is in an intermediate position the engagement of the lever-pawl K with the notched plate secures the lever and thus the bed in such position.

M is a cross-head rigidly attached to two vertical rods, N, arranged to slide up and down in sockets *u*, one in each upright A, and connected at their lower ends to another cross bar or head, P.

On each rod N is a spiral spring, Q, bearing against the under side of the cross-head M and the upper end, *v*, of its respective upright.

Pivoted at *w* to the bottom of the cross-head P is a link, R, in turn pivoted by its other end to one arm, S, of a lever or treadle, T, which is arranged to swing on the rod D, its other arm, U, projecting to the front in convenient position for operation thereof by the foot. This lever is prevented from lateral movement on its rod or pivot by its abutment against the shoulder *x* of the upright and a collar, *y*, secured by set-screw *z* to its rod D.

The pivot or pin *a'* on which the link R swings passes through an elongated slot, *b'*, in one arm of the treadle T, and when adjusted to any position in such slot it is secured from movement therein by screwing up

the check-nut c' on the end of said pin, having a handle, d' . (Shown in Figs. 2 and 7.)

The treadle has foot-pieces V, pivoted at f' , for it to swing thereon vertically within certain limits, and projecting therefrom is a steel pawl, W, arranged to engage with notches g' in a bar, Y, secured to the floor, the pawl, when the lever is pressed down, engaging with a notch and holding the lever from upward movement, and to free the lever from such engagement it is pressed down sufficiently to release the pawl from its engagement with the bar Y. When swinging up the foot-piece, the treadle can freely rise. By pressing down this lever the cross-heads P S are pulled down against the springs Q, the rods N sliding freely in their sockets, and when the lever is released the springs act to raise them to their normal positions.

Attached to the upper cross-head, M, by a socket, h' , in the head, and a ball, m' , making a ball-and-socket joint, is a jack or holder, A', for the last, made of a cross-arm, B', having downwardly-projecting arms C' at each end, between which are pivoted, respectively, levers D' E' at n' , the arms r' t' of which extend toward each other and each engages by a separate pin, u' , with a horizontal slot, v' , in a block or nut, F'. The end of one of the arms of the levers E' has a pin, v^2 , which is of a size to fit the usual socket in the heel of the last, and is pivoted to it by a bolt, w^2 , between two arms, x^2 , of the arm, on which bolt or pivot it can swing back and forth in line with the length of the last, and it has a plate, y^2 , extending up in front of the arm, having on its upper edge ratchet-teeth z^2 , arranged concentrically to said pivot, and arranged to engage with these ratchet-teeth by its end a^3 is a pawl, N', secured to the side of the lever-arm by a screw, P', which passes through a longitudinal slot, b^3 , and screws into the lever-arm, as shown more particularly in Figs. 10 and 11. Turning out this screw, the pawl N' can be raised and the pin v^2 turned on its pivot to the right or left to have it project from its supporting-arm in the angle desired, and then push the pawl down to engage a tooth and secure it by the screw P', which will hold the pin firmly and rigidly in such position on the lever-arm. The end of the downwardly-projecting arm of the other lever, D', has a pivoted toe-piece, F², concave on its under face, against which face the upper side of the toe of the last or the lasted upper bears when placed on the jack, as shown more particularly in Fig. 1.

Passing freely through openings x' in the shell forming the socket h' is a stem or rod, G', which extends through and is arranged to turn freely in the ball m' and prevented from longitudinal movement by the flange or shoulder a^2 on one end and by its other end by a loose sleeve, b^2 , on a reduced portion, d^2 , of the rod G', held by the nut c^2 on the end of the rod above the handle or wheel H' on the rod. This rod has a screw-thread on its

lower end arranged to screw into the block or nut F', so that the turning of this screw-rod to the right or left will raise or lower accordingly the nut F', and consequently the arms r' t' of the levers D' E', swinging them on their pivots correspondingly and moving their lower arms to or from each other.

Within the box E is a plate, J', preferably of spring metal-shaped longitudinally to conform substantially to the longitudinal contour of the bottom of the last or the lasted upper, and it is fastened near its right-hand end to a transverse rib, f^2 , of the bottom of the box by screws g^2 , the plate otherwise being free within the box, so that its ends can freely move up and down. Screwing up through the bottom of the box, one at each end and one between the rib f^2 and the left-hand one, are three screws, K', Q', and R', the one at the left adapted to screw up against the under side of the left-hand end of the plate, and the other two screws each having on its end a circumferential groove, c^3 , which engages with a shoulder, d^3 , on the inner side of a block, e^3 , secured to the under side of the plate J' by screws f^3 . These screws are for adjusting the plate J' so that it will conform to the various shapes longitudinally of the bottoms of the lasts or inner soles operated upon by the machine, and in their use the two screws Q' R', as they are screwed up or down by their groove-connections c^3 with the plates, respectively raise or lower the same at their respective connecting-points, and the screw K', when screwed up, raises its end of the plate and makes a rest or bearing for its end, so that with these several screws the plate J' (being made of spring metal) can be brought to the desired outline or shape, corresponding to the varied outlines or shapes of the sole of the foot being operated upon. Within the box and resting on this plate J' is a sheet of india-rubber, L', and resting on this sheet of india-rubber are blocks M', made of india-rubber square in cross-section, all of the same length and size and filling the box, as shown in section in Fig. 3 and in plan view in Fig. 4, fitting, preferably, closely together within the box. On top of these india-rubber blocks is a sheet or layer of felt, N'.

The operation of the machine is as follows: The lever H is first swung down so as to bring the box E down into the position shown in dotted lines in Fig. 1, and the screw G' turned to the left to swing the lower arms of the levers from each other; loosen the pawl N' on the lever E', so its pin v^2 can freely swing on its pivot, and then place the socket at the heel of the last with the lasted upper thereon on the pin, and turn the screw-rod G' to the right, which will swing the lower arms of the levers toward each other, at the same time hold the toe of the lasted upper, so it will bear upon the hollow face of the toe-piece; then engage the pawl N' with the ratchet-tooth of the pin in line therewith, and continue the turning of the screw

until the last with the upper is firmly held in place. When so secured, the outer sole to be applied to the boot or shoe, having been first cemented on its proper side with any suitable cement, is placed up against the inner sole and held in such position by hand. The box-frame E is then swung up into the desired position by operating the lever H, and held there by locking the lever with the notched plate J, as shown in full lines in Fig. 1. The treadle T is now pressed down, which, through its connections with the cross-heads M N, draws down the jack, the outer sole then bearing upon the upper felt sheet above the india-rubber blocks, and with sufficient power exerted upon the treadle T the yielding india-rubber blocks will press the outer sole closely at all points to the bottom of the inner sole, according to the contour of the inner sole, the jack or holder of the boot or shoe, through its ball-and-socket joint, allowing the jack to move, swing, and adjust itself to the yielding bed of blocks, so that all points of the surfaces of the two soles will be properly secured together by the cement. When the cement is sufficiently set or dry, the treadle is allowed to rise, which raises the jack and its boot or shoe from its yielding bed, which then is swung down by operating its lever H, the screw G' turned to free the last from the levers D' E', which, with the boot or shoe, can be removed from the jack or holder and another put in place, and its outer sole secured as before, and so on. The swinging down of the bed-frame gives plenty of room between it and the jack for the easy and convenient removal of the last and boot from the jack; also, it can be arranged to swing in other ways than as herein particularly shown. It is prevented from lateral movement by its hinges b bearing against the collars of the rod B.

If desirous of pressing any portion of the outer sole harder than at other points to insure its close union at such points with the inner sole, the plate J' can be raised at such portion by turning up or in the several screws K' Q' R', by which more pressure will be exerted upon the outer sole at such place from the same downward movement of the jack, these screws, as they are turned in or out, correspondingly raising or lowering the portion of the plate to which they are attached, the circumferential grooves in the screws Q' and R' allowing of their being freely turned in either direction. This plate, however, can be dispensed with and the bottom of the box shaped to conform to the bottom of the boot or shoe for the yielding blocks to rest thereon; but it is preferable to have the plate or any suitable independent bed for the blocks to rest thereon, as they can then be the better adjusted to the various shapes of the bottoms of boots, or changed, as it is desired, to exert more pressure upon the sole at one end or the other; also in lieu of fastening the plate at the point shown to the bed-bottom it can be fastened at either end, as

desired, and in such case the location of the screws K' Q' R' would be correspondingly changed and arranged to suit; and, if desired, a more or less number of screws can be used, as desired.

Each elastic block M' in its operation yields independently of the other, and yet at the same time is more or less affected laterally by its adjoining ones, so that the proper yielding and yet firm pressure upon the outer sole is secured for the better and closer holding of the outer sole to the inner sole while the cement is setting. They can be of other shapes in cross-section—such as diamond or round or oblong—but it is preferable to have them square for various reasons.

The socket v for the ball w is made in two parts, v^2 , for the insertion of the ball, secured together by screws u^2 , as shown in Figs. 2 and 5.

In lieu of having the rod or spindle G' screw into the block F', it can be arranged to screw into the ball and turn freely in the block and be provided with shoulders to prevent longitudinal movement of the rod; also, in lieu of having both levers of the jack swing on their pivots, one can be rigid, and they can be adjusted and arranged for operation in other ways than as shown.

By means of the elongated slot b' in the arm S of the treadle T the pin a' can be moved and adjusted as to its distance from the fulcrum-pin w, so that the power of the treadle can be increased or diminished, as desired, and the distance the jack is raised above the yielding bed; also, the link can be adjustably connected to the treadle in other ways than as herein particularly shown and described.

The sheet of felt prevents cement getting on the blocks to interfere with their proper movements.

The screws Q' and R' can be connected to the plate J' in any suitable manner other than the particular one shown, so that they can turn freely and yet move up or down the plate, as desired.

Having thus described my invention, what I claim is—

1. In a sole-laying machine, a molding or pressure bed hinged at the toe end to a suitable support and having a toggle-lever pivoted to its opposite end, and suitable means for operating said toggle-lever for swinging said bed up and down and rigidly securing it in position, and a jack or last-holder secured to and adapted to move up and down in suitable guideways in a suitable frame or support to and from said bed in the operation of the machine.

2. In a sole-laying machine, a molding or pressure bed hinged at the toe end to a suitable support and having a toggle-lever pivoted to its opposite end, and suitable means for operating said toggle-lever for swinging said bed up and down and rigidly securing it in position, and a jack or last-holder secured

to a suitable frame or support by a ball-and-socket joint, and adapted to move up and down in suitable guideways in said frame or support to and from said bed in the operation
5 of the machine.

3. In a sole-laying machine, a molding or pressure bed hinged at the toe end to a suitable support and having a toggle-lever pivoted to its opposite end, and suitable means
10 for operating said toggle-lever for swinging said bed up and down and rigidly securing it in position, and a jack or last-holder secured to a support or frame consisting of cross-heads M and P, connected by rods N, adapted
15 to slide in guideways in a frame or support, A, to and from said bed, and provided with an operating-treadle and springs Q, for the purpose specified.

4. In a sole-laying machine, the combination, with a frame or box hinged to a suitable support and arranged to be secured in position, of a continuous flexible plate, J', supporting a yielding bed secured therein transversely under the shank portion, and one or
20 more screws, Q' R', screwing through said box and connected to the plate, and one or more screws, K', screwing through the box against the plate, for the purpose specified.

5. In a sole-laying machine, the combination, with a box or frame hinged at one end
30 to a suitable support and having a toggle-lever pivoted to its opposite end, and suitable means for operating said toggle-lever for swinging said bed up and down and rigidly

securing it in position, of a continuous plate, J', secured and arranged to be adjusted in said box, a sheet of india-rubber, and separate independent and removable blocks of india-rubber inclosed within said box, for the purpose specified.

6. In a sole-laying machine, a jack or last-holder having levers D' E', pivoted thereto, and each arranged by one of its arms to engage with a last and by its other arm to engage with a block or nut operated by a screw
40 in a suitable support to swing said levers on their pivots, for the purpose specified.

7. In a sole-laying machine, a jack or last-holder having pivoted levers D' E', each arranged by one arm to engage with the last
50 and by its other arm with a slot or slots, v', in a block or nut operated by a screw, G', in a suitable support, for the purpose specified.

8. In a sole-laying machine, a jack or last-holder having pivoted levers D' E', the arm
55 of one, E', of which is provided with a pivoted pin, v², to engage with the socket in the last, and having ratchet-teeth z², for engagement therewith of a pawl, N', on the lever-arm, for the purpose specified.

In testimony whereof I have hereunto set my hand in the presence of two subscribing witnesses.

ALFRED T. TREGURTHA.

Witnesses:

EDWIN W. BROWN,
CARRIE E. NICHOLS.