

J. KEITH.
MACHINE FOR PUNCHING AND EYELETING SHOES, &c.

3 SHEETS—SHEET 1.

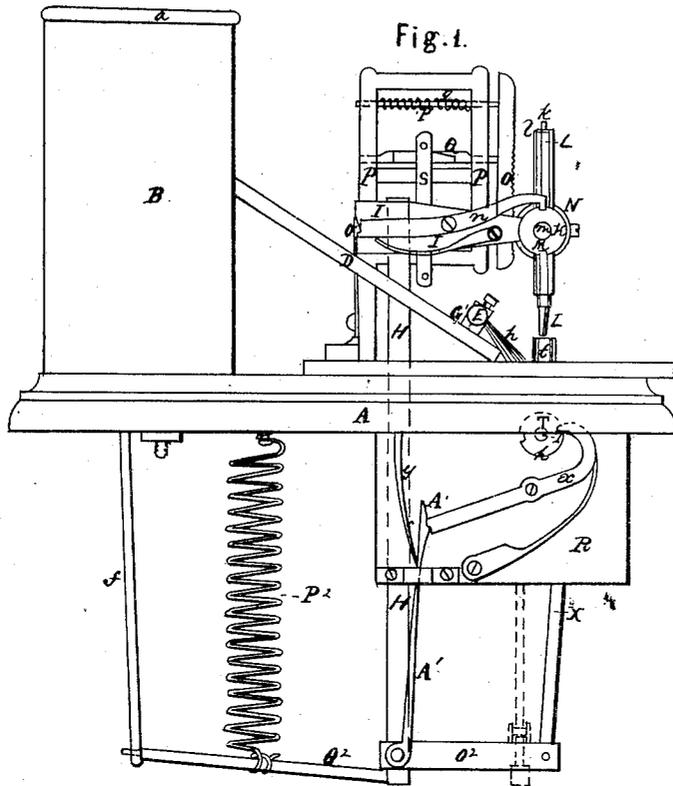
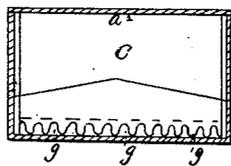


Fig. 7.



Witnesses

E. P. Hale Jr.
J. R. Bampton

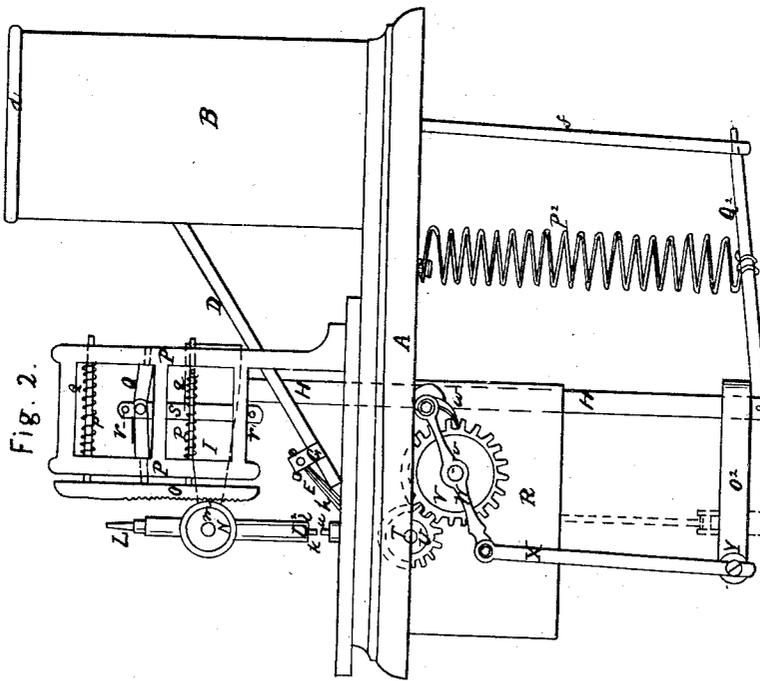
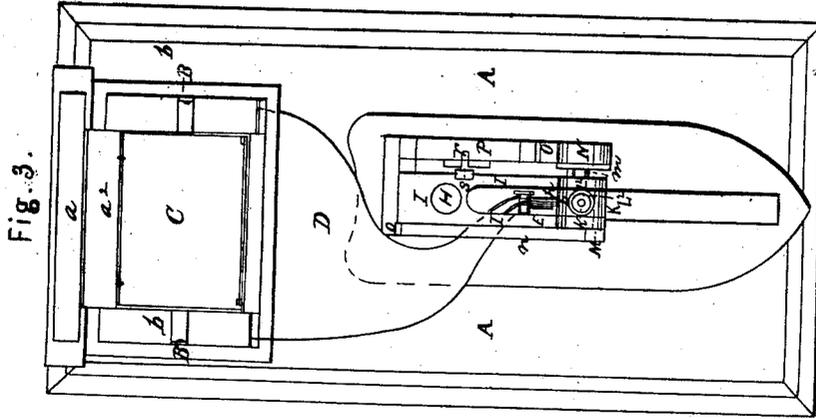
Inventor

Jeremiah Keith

J. KEITH.

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3 SHEETS—SHEET 2.



Witnesses.

W. P. Hale Jr
J. R. Bampton

Inventor

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3 SHEETS—SHEET 3.

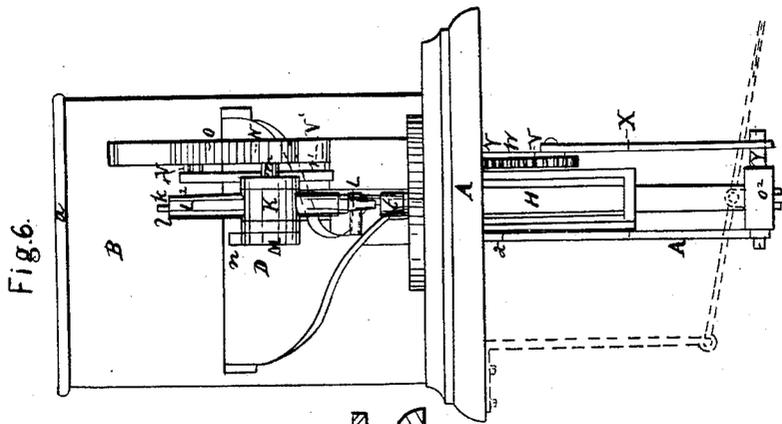


Fig. 6.

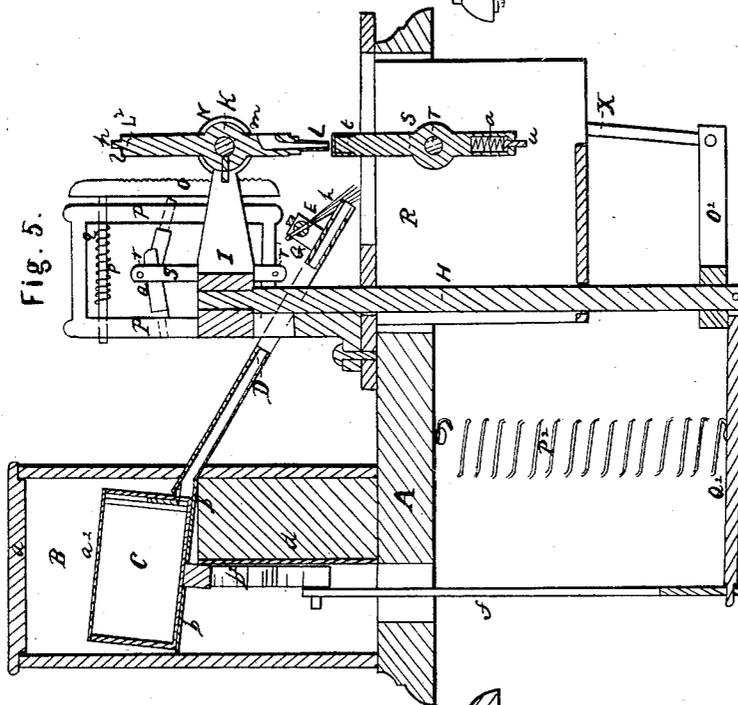


Fig. 5.

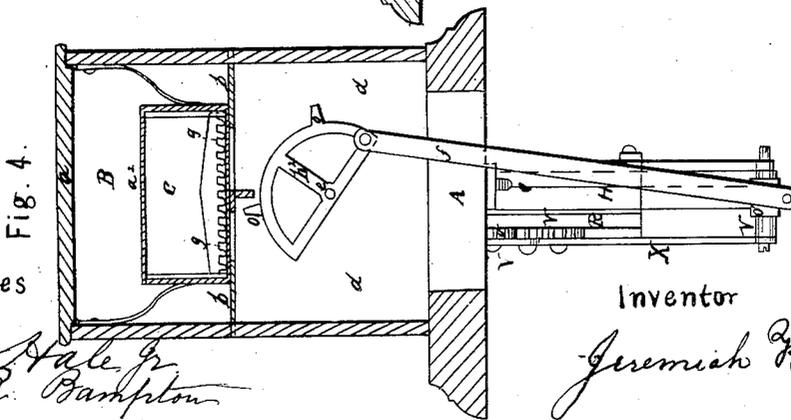


Fig. 4.

Witnesses

H. P. Hale, Jr.
J. R. Bampton

Inventor

Jeremiah Keith

UNITED STATES PATENT OFFICE.

JEREMIAH KEITH, OF NEW BEDFORD, MASSACHUSETTS.

IMPROVED MACHINE FOR PUNCHING AND EYELETING SHOES, &c.

Specification forming part of Letters Patent No. 37,170, dated December 16, 1862.

To all whom it may concern:

Be it known that I, JEREMIAH KEITH, a citizen of the United States of America, and a resident of New Bedford, in the county of Bristol and State of Massachusetts, have invented a new and useful or Improved Machine for Punching and Eyeletting Shoes or other Articles; and I do hereby declare the same to be fully described in the following specification and represented in the accompanying drawings, of which—

Figures 1 and 2 are side elevations of the machine, showing in red lines a treadle applied thereto. Fig. 3 is a top view of the said machine with the cover of the eyelet magazine case turned backward. Fig. 4 is a transverse and vertical section taken through the eyelet-magazine, and so as to show its operative mechanism. Fig. 5 is a vertical and longitudinal section taken through the punching and upsetting mechanism. Fig. 6 is a front view of the said machine.

The object of my invention is to produce a machine which shall not only punch or make the holes for the eyelets which are to be inserted in a shoe or other article, but introduce and properly fasten the eyelets in such shoe or article.

In the drawings, A denotes the frame or table for supporting the operative parts of the machine. On the rear part of the said table, and extending upward therefrom, is a rectangular box or case, B, which is provided with a cover, *a*, and has disposed within it a hopper or eyelet magazine, C, which may be of a rectangular or any other convenient shape, and be furnished with a lid or cover, *a*², the said magazine being supported on an inclined platform or partition, *b*. The said platform is so pivoted to the sides of the box as to allow it (the said platform) to have a vertical tilting movement, which, of course, is imparted to the magazine C. The said magazine has a stud or tooth projecting downward from its lower surface and extending through a rectangular slot made longitudinally through the platform *b*. The said stud or tooth engages with or is operated by a sectoral gear, *b*², or semicircular plate, having teeth *o o* arranged upon its outer surface. The said gear is supported by a pivot, *e*, which passes through it and into a vertical plate, *d*, as seen in Fig. 4. To one end of such gear a connect-

ing-rod, *f*, is attached and extends downward, and is connected to a treadle or any other motor which may be employed to give a vertical motion to the punching and upsetting mechanisms, to be hereinafter described. The vertical or upward and downward movements of the rod *f* impart to the hopper reciprocating intermittent movements, whereby the mass of eyelets are caused to arrange themselves with their broader parts or flanges downward. The said magazine is provided with a series of discharge-passages, *g g*, the same being arranged at its lower front side and opening into the upper end of the inclined chute D, as shown in Fig. 5.

Fig. 7 is an inner side view of the front part of the hopper, showing the discharging-passages. These passages have their greatest width at their lower parts, and are to be of a size just sufficient to allow the eyelets to pass easily through them, when such eyelets are brought into their proper positions, the object of so making the said passages being to cause a positive arrangement of the eyelets—viz., with their flanges downward—before entering the chute D. The conductor or chute D is attached to the platform *b*, and consists of an inclined tapering box, whose internal height should be slightly greater than that of the eyelets which are to pass through the same, but not great enough to permit the eyelets to turn during their descent through the chute. The lower part or discharging end of the said chute I form forked, in order that the lowermost eyelet may have its lower end so exposed as to be readily entered and carried forward by the seizer and carrier *u*, to be hereinafter described.

E is what I term the "retainer," the same being attached to a standard, G, and consists of a thin flexile spring, *h*, or its equivalent, so arranged as to extend down and retain the lower eyelet in a proper position to be seized by the carrier before mentioned. This spring should be of such a yielding nature as to easily give away and readily allow the seizer to take the lowermost eyelet and carry it forward out of the chute or conductor.

H is a vertical slide-bar, which extends down through the table A, and has its lower end connected with a cross-bar, O², which is to be attached to a treadle or any other motor suitable for imparting vertical movements to it. To the upper end of the said bar a bifur-

cated bar, I, is jointed, and extends at right angles therefrom, and has a block, K, which carries a punch, L, on one of its ends, while its opposite end is provided with what I term an "upsetter," L^2 , which is a cylindrical piece of metal, having a pin, k , projecting from its end. The said pin, when brought downward, enters the eye of the eyelet, while the flat surface or shoulder l compresses the eyelet upon its top surface. The said block K is mounted upon a shaft, m , which extends horizontally through the forks of the bar I, and carries on one of its ends a notched wheel, M, which operates in conjunction with a spring catch or pawl, n , arranged on the side of the bar I, as seen in Fig. 1. The said pawl is thrown out of its notches by means of a catch-lever or tripper, o , acting upon the rear part of said pawl, the whole being formed and arranged as shown in said figure. The other end of the shaft m carries a friction-wheel, N, which operates with a spring presser-bar, O, to give the proper rotary motion to the upsetter and punch L. This presser-bar consists of a rigid lever, having a piece of india-rubber or other material suitable to produce friction applied to its outer face. Said bar is attached to two horizontal slide-bars, p p , which extend horizontally through slots formed through a rectangular frame, P, which is constructed and arranged as shown in the drawings, Figs. 1 and 2. Each of the said bars p is encompassed by a helical spring, q , one end of which is connected to the inner face of the frame P, while the other end is affixed to the said bar, the object of such spring being to force the presser-bar O out of action with the friction-wheel N. Furthermore, in order to maintain the presser-bar and the friction-wheel N in contact at the proper periods for imparting to the block K, which carries the punch and upsetter, its semi-revolutions and intervals of rest, a jointed lever or toggle-joint, Q, is disposed within the frame P, and has its two ends passed through slots made horizontally through the said frame, as shown in Fig. 2. The front end of the said lever projects, when forced outward, through the frame P, and forces the said presser-bar O in'o engagement with the wheel N. The devices for operating the said lever Q are two studs, r r' , arranged upon a vertical bar, s , attached to the bar I, before mentioned, so that when the latter is drawn downward the upper stud, r , is brought in contact with the toggle, so as to bring the parts of the latter into a straight line, and thereby force the presser-bar against the wheel N and cause the latter to make a semi-revolution. When this is effected, the spring P^2 causes the slide-bar H to be elevated and the lower stud, r' , to strike against the under side of the toggle and raise the same, and thereby throw it out of action upon the presser-bar, which, by means of the springs q q , is drawn away from the wheel N, and remains out of contact with the latter until the toggle is again forced downward.

P^2 is a coiled spring, which has one of its

ends attached to the cross-bar Q^2 , while its other end is connected to the table A, as seen in Figs. 1 and 2, its object being to elevate the slide-rod H and the connecting-rod f , after each depression thereof.

R represents the frame for supporting the rotator S, which carries on one of its ends a punching block or bed, t , and on its other end an eyelet separator and carrier, u , and the mechanism by which it is operated. The said punching-block is of a cylindrical or other convenient form, having a flat top surface, and serves to support the shoe while having its eyelet-holes punched. The said eyelet-separator may be of a similar form, but should have a pin or stud, u , extending from its end, such pin resting on a spring, a' , which allows the pin to be forced into the main part during the depression of the upsetter while fastening the eyelet in the shoe.

T is the shaft of the rotator, which extends through the sides of the frame R, and has its journals resting in suitable bearings formed therein. One end of the said shaft carries a spur-wheel, U, which engages with a pinion, V, arranged on one side of the frame R, as shown in Fig. 2. The said pinion is supported and so as to be capable of being revolved upon a pivot, v , which passes through one side of the frame R.

W is a lever, which is arranged on the said pin v and turns on the same as a fulcrum. On one end of the said lever a spring-pawl, w , is disposed, the same operating with the pinion V, as shown in the drawings, the other end of said lever being jointed to a connecting-rod, X, whose other end is jointed to an arm, Y, extending from the slide-rod H. On the opposite end of the shaft T a notched wheel, Z, is arranged, and operates with a spring-pawl, x . The said pawl is thrown out of engagement with the wheel by means of a tripping-lever, A' , which is jointed to the bar O^2 . The said lever is constructed with a shoulder near its upper end, which operates with another shoulder made in the rear end of the longer arm of the pawl x to throw the pawl out of engagement with the wheel Z, and allow the latter to be rotated one hundred and eighty degrees. The lever A' is maintained in proper position with respect to the pawl by means of the spring y , the whole being formed and disposed as shown in Fig. 1.

Having described the construction of my machine, I will now describe its operation: If we suppose the slide-bar H and the connecting-rod f (which is attached to the mechanism for actuating the magazine C) to be connected to a foot-treadle disposed below them, the upward and downward movements of the treadle, acting through the connecting-rod and the sectoral gear b^2 , will give to the eyelet-magazine longitudinal reciprocating intermittent movements, which, acting in conjunction with the force of gravity, serves to bring the eyelets into proper positions for passing into the conductor D, the passing of the eyelets into the

guide or conductor being caused by the vertical tilting movements imparted to the chute by the sudden elevating action of the eyelet seizer and carrier while removing an eyelet from the retainer. If now we suppose a sufficient number to have been introduced into the chute or conductor, and we also suppose the punch to stand with its cutting-edge downward directly over the punch-block, and if we also suppose a shoe or other article to be punched to be placed upon the block, if, under these circumstances, the punch is depressed upon the punch-block, an eyelet-hole will be made in the leather of the shoe. Next, the spring P^2 will elevate the slide bar H and bring it back to its first position, causing, in the meantime, both the punch and punch-block to be revolved one hundred and eighty degrees, and the upsetter and eyelet-carrier to be respectively brought into the position just occupied by the punch and punch-bed. During such rotation the eyelet carrier and separator passes into the eye of the lowermost eyelet in the conductor, forces such eyelet out from the spring-retainer, and carries it forward into the hole previously made by the punch. If, next, we again depress the treadle, the upsetter will be brought down toward and upon the eyelet-carrier and its eyelet. The stud u of the eyelet-carrier being forced into its chamber, such eyelet will be compressed between the flat surfaces of the upsetter and eyelet-carrier, and be fixed firmly in the shoe. The treadle is next slightly elevated, and the shoe is raised and moved the distance to make the succeeding hole. A further elevation and depression of the treadle cause the punch and punch block to be again rotated one hundred and eighty degrees, and into their first-mentioned positions. By continuing these operations the shoe

or article to be operated upon will have its eyelet-holes punched and the eyelets properly inserted and secured therein.

It will be evident that if the eyelet-holes were made in the shoe prior to being operated on by the machine the punch and punching-bed might be dispensed with. In this case all we should have to do would be to put another eyelet-carrier in the place of the punch-bed and withdraw the stud r , (which forces the toggle-lever against the presser-bar,) and the said presser-bar would have no action on the friction-wheel N , and consequently there will be no revolution of the upsetter, but it will be free to have vertical movements imparted to it, as before, and will operate with the eyelet separators and carriers, as before described.

I claim—

1. My improved punching and eyeleting machine, the same consisting of the vibratory hopper or eyelet-magazine C , the inclined director D , the eyelet-retainer E , the rotary punch L and upsetter L^2 , the rotary punching-bed t , and the eyelet separator and carrier u , the whole being constructed and made to operate substantially as set forth.

2. The combination of the rotary punch L and upsetter L^2 with the rotary punch-bed t and the eyelet-separator u , the same being arranged substantially as set forth.

3. The combination of the magazine C , the conductor D , the retainer E , the revoluble eyelet separator and carrier u , and the upsetter L^2 , the same being arranged and made to operate as set forth.

JEREMIAH KEITH.

Witnesses:

JOS. W. CORNELL,
EDWIN P. TAYLOR.