

C. STODDARD & J. W. D. FIFIELD.
Crimping-Machine for Boot and Shoe Uppers, &c.

No. 216,768.

Patented June 24, 1879.

Fig:1.

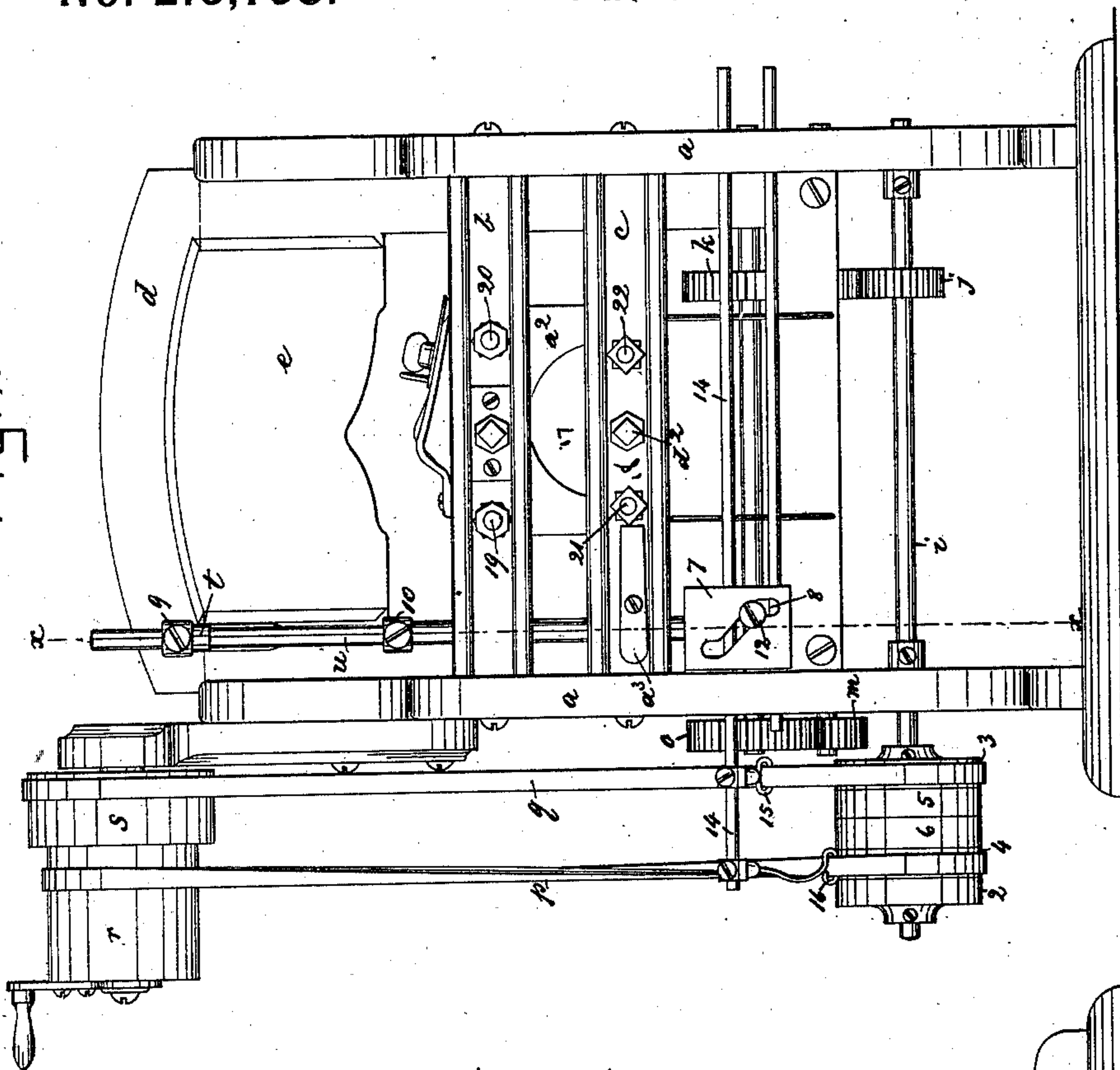


Fig:2.

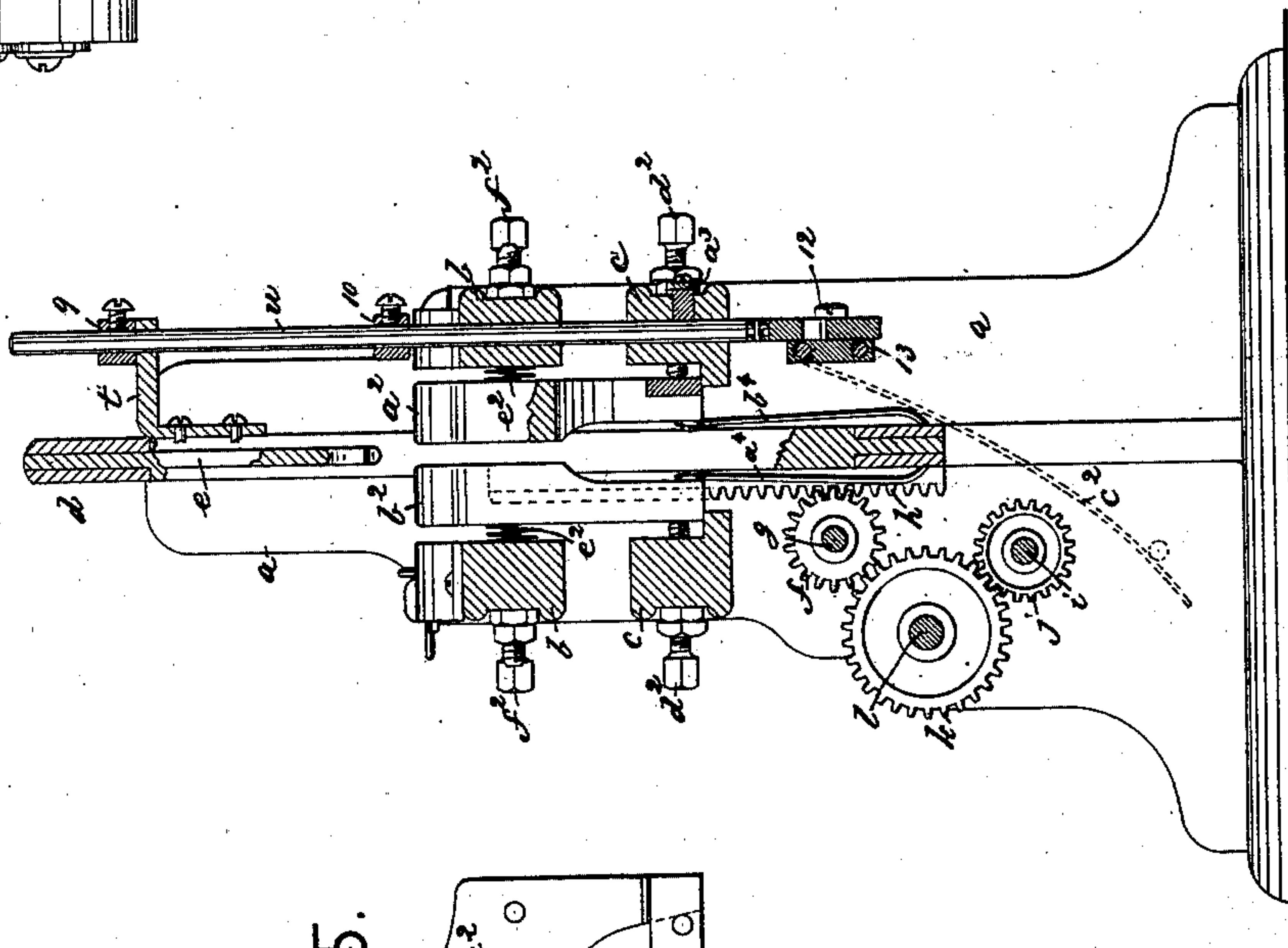
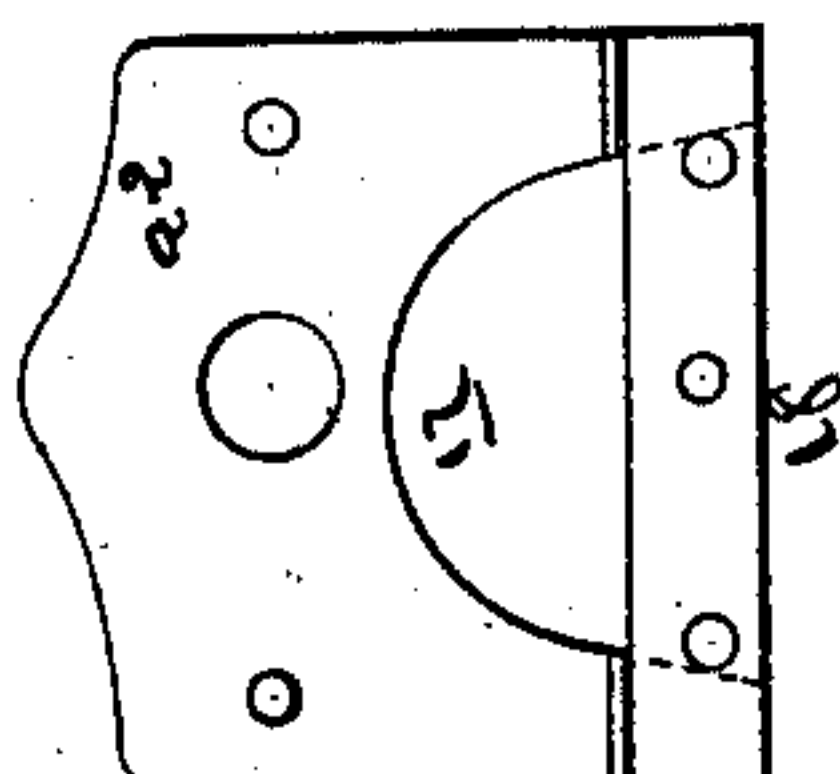


Fig:5.



Witnesses.

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Fig: 3.

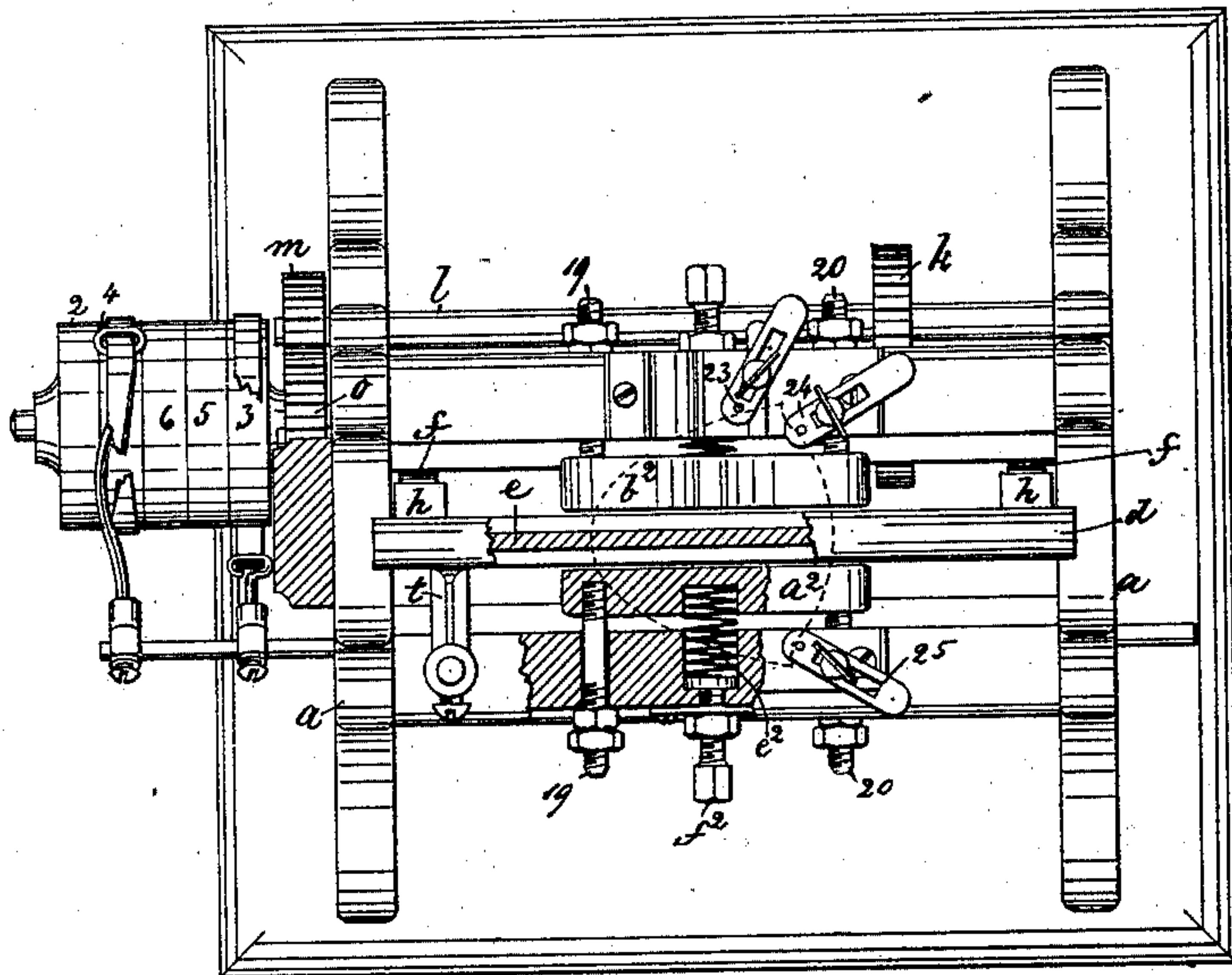
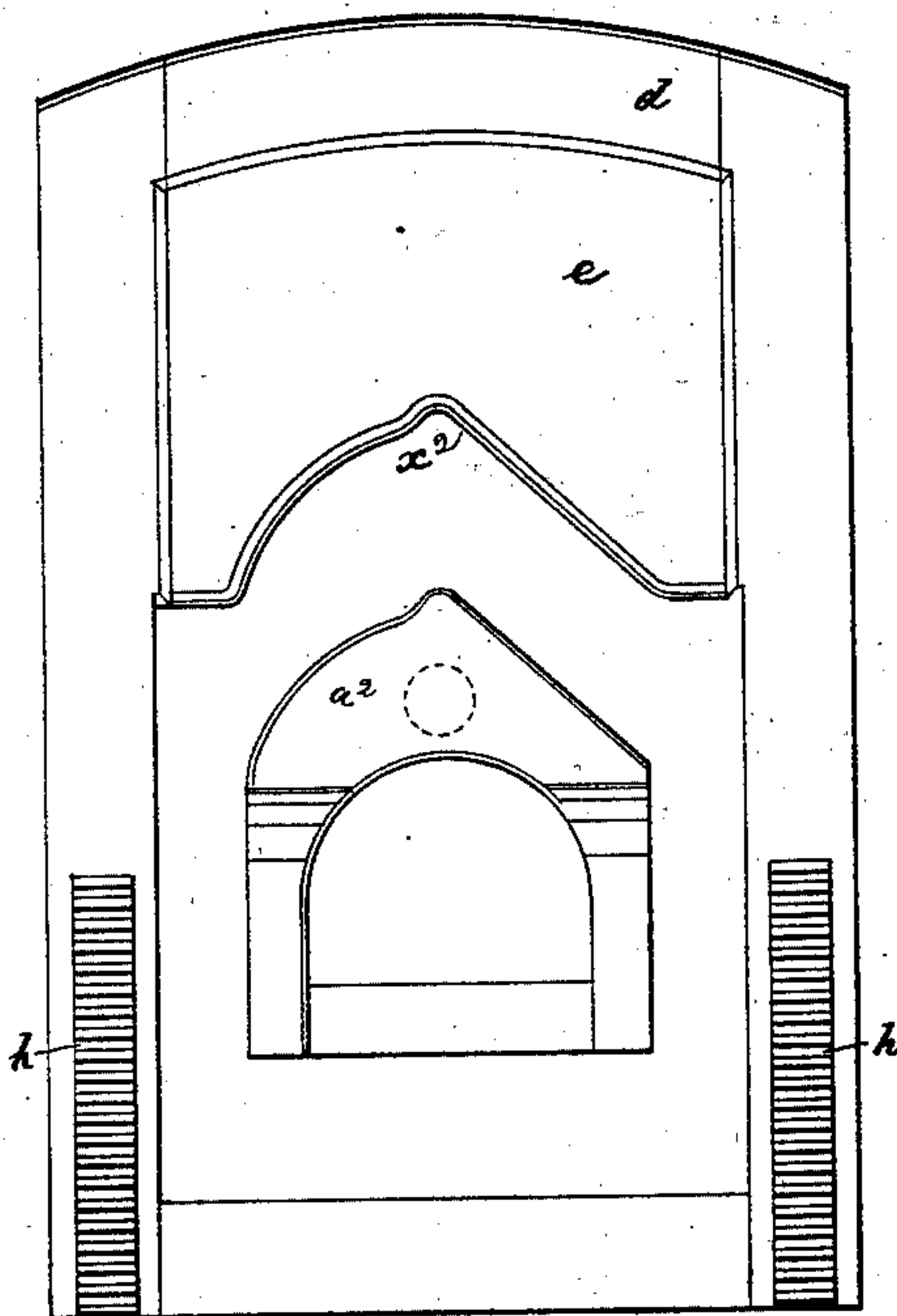


Fig:4.



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UNITED STATES PATENT OFFICE.

CURTIS STODDARD AND JOHN W. D. FIFIELD, OF NORTH BROOKFIELD, MASS.

IMPROVEMENT IN CRIMPING-MACHINES FOR BOOT AND SHOE UPPERS, &c.

Specification forming part of Letters Patent No. **216,768**, dated June 24, 1879; application filed May 1, 1879.

To all whom it may concern:

Be it known that we, CURTIS STODDARD and JOHN W. D. FIFIELD, both of North Brookfield, in the county of Worcester and State of Massachusetts, have invented an Improved Crimping-Machine for Boots and Shoes and other articles, of which the following is a specification.

This invention relates to mechanism for crimping leather for the manufacture of boots and shoes and other articles. In this our improved machine independent jaws having their fulcrum at their lower ends pressed toward each other at their upper ends by springs, and regulated as to the distance apart of their faces and the extent of their backward movement, are combined with a crimping tree, form, or plate carried by a reciprocating slide, and in combination with the said slide and belt-shipper mechanism are devices to automatically shift the belts and change the direction of rotation of the main shaft, to thereby reciprocate the slide and cause its form or plate to force a vamp down between its jaws, fit and crimp it upon the form, and discharge it therefrom below the jaws, as will be hereinafter fully described.

Figure 1 represents, in side elevation, a crimping-machine constructed in accordance with our invention; Fig. 2, a section thereof on the line *x x*; Fig. 3, a top view and partial section; Fig. 4, a side view of a slide, tree, or form, and jaw suitable for a boot; and Fig. 5 shows, in side view, one of the jaws of Fig. 1 removed.

The side frames *a a* of the machine, held together by the cross-ties *b c*, are provided with suitable guides or ways, to co-operate with the ends of and direct in right lines the movement of the slide *d*, which carries the tree, form, or plate *e*, shaped at its lower edge in accordance with the shape of the part of the shoe or boot to be produced or crimped by the machine. This slide *d* is reciprocated or lowered and raised automatically by means of pinions *f* on a shaft, *g*, which engage racks *h*, one at each side of the slide, at its lower end, next the side frames, (see Figs. 2 and 3,) the two racks *h* being located at opposite edges of the slides, in order to move it steadily and uniformly in its guideways with the least possible friction.

The shaft *g* derives its motion, as herein shown, from the shaft *i*, having a pinion, *j*,

which engages a toothed gear, *k*, on shaft *l*, having a pinion, *m*, which engages the large gear *o* on the said shaft *g*. The shaft *i* has two fast pulleys, 2 3, and two or more loose pulleys, 4 5 6. The fast and loose pulleys 2 4 receive the crossed belt *p*, which raises the slide, and the fast and loose pulleys 3 5 the straight belt *q*, which lowers the slide, each of the said belts being driven from the rotating drums or pulleys *r s*.

An ear, *t*, projecting from the slide *d*, embraces the shipper-actuator *u*, (shown as a rod provided with a head, 7, having a cam-shaped slot, 8, and having upon it two adjustable lugs, 9 10,) and at each ascent and descent of the slide strikes the lugs 9 10, lifts and lowers the actuator, and causes the cam-slot 8 to act upon the pin 12 of the block 13, secured to the shipper-rod 14, and move it, compelling the belt-guides 15 16 to automatically shift one of the belts from a fast to a loose pulley, and the other belt from a loose to a fast pulley. In this way the operation of the machine is made continuous, and the slide is automatically raised and lowered.

The slide has sufficient movement above the jaws *a² b²* to afford ample time for the introduction between the tree or form and the jaws of the piece of leather to be crimped, and as the acting edge of the plate *e* passes below the jaws the boot or shoe vamp, properly crimped and fitted thereto, is discharged from the form below the jaws, the vamp so crimped striking a suitable directing-apron, *c²*, which may be placed as in dotted lines, Fig. 2.

The jaws *a² b²* have their top portions shaped in conformity with the reverse of the tree or form *e* at its lower edge. Each jaw has an open space, 17, and a cross-bar, 18, at its lower end, which rests centrally upon the end of a fulcrum-screw, *d²*, which forms a pivot upon which the jaw rocks or turns.

We have also shown four guide-bolts, 19 20 21 22, connected with each jaw at bottom and top, the said guide-bolts being extended through holes in the cross-ties *b c*, larger in diameter than the bolts; and at the ends of the bolts are adjusting and check nuts, to permit the jaws pressed toward each other and the path of movement of the tree or form *e*, by a suitable spring, *e²*, to have a certain amount of movement toward and from each other, according to the thickness of the leather.

The bolts, fitting loosely the holes in *b* and *c*, permit the jaw to yield more at one than at its other end, to thereby provide for any variation in the thickness of the stock, which variations otherwise might be sufficient to break the machine.

The force of the springs e^2 and the pressure of the jaws against the leather on the form *e* are adjusted and made more or less, according to the class of leather, by means of the adjusting devices f^2 . (Shown as screws.) The screws act on followers or plates, which press upon the ends of the springs. Rubber or metal springs may be used.

The bolts 21 22 may be dispensed with, but we prefer to use them. If dispensed with, we shall employ the springs $a^4 b^4$ to act upon and hold the lower portions of the jaws, as in Fig. 2.

To secure accurate placing of the vamp above the jaws, in order that the tree or form *e* in its descent may strike the vamp centrally, we place at or near the top of the jaws certain adjustable vamp-gages 23 24 25, herein shown as slotted plates provided with upright pins, against which the instep-covering end of the vamp (shown in dotted lines, and at its side edge) rests. (See Fig. 3.)

The friction device a^3 holds the shipper-actuator *u* when not moved positively.

The operation of this machine is as follows: The vamp being in its proper position, resting on the jaws, the frame *d* and form *e* are caused to descend from their highest position, striking the vamp supported above the jaws, as described, creasing or folding it upon the form as the latter descends between the jaws, which press the said vamp closely against and conform and fit it snugly to the said form. As the form and vamp descend between the jaws, the latter, folded over the tree or form, is subjected to greater or less strain, according to the form of the springs e^2 . By giving the edge of the form the proper contour, and adjusting the pressure of the jaws upon the leather, the vamp may be formed into any shape required for boots and shoes of different patterns, performing the work with great smoothness.

The form *e* descends until it has passed between and below the jaws a^2 , when the crimped vamp drops off, and immediately afterward the ear *t* strikes the lower lug, 10, on the rod *u*, and actuates the shipper as required to reverse the movement of shaft *i* and raise the slide-frame *d*. The form *e* having been raised, the ear *t* strikes lug 9, and again moves the shipper, belts, and shafts in the opposite direction, but without stopping the machine to run the slide and form *e* down to crimp another vamp.

In shaping the form *e* a projection may be left, as at x^2 , Fig. 4, to cause a fullness in the leather over the instep, so that, by varying the shape of the projection x^2 , as well as the whole contour of the edge of the form or plate *e*, any desired shape or pattern may be pro-

duced. The shape shown in the drawings is for a certain pattern of shoe, the shape for a boot being shown in Fig. 4.

The scope of this machine is unlimited, being adapted to all kinds and patterns of boots or shoes.

We claim—

1. In a crimping-machine, the sliding frame and form, combined with jaws and racks at each edge of the sliding frame and pinions to depress the slide and form, substantially as described.

2. The slide and form or plate attached thereto and racks, combined with the main shaft, intermediate shafts and gearing between it and the racks and their operative pinions, and mechanism, substantially as described, to automatically reverse, but not to stop, the movement of the main shaft and slide-frame as the latter arrives at its lowest and highest positions.

3. In a crimping-machine, the reciprocating slide-frame and an ear thereon, combined with a shipper-actuator provided with lugs and a slotted head, to operate substantially as described.

4. The slide-frame and form, combined with the jaws supported on fulera at their lower ends, and with adjustable springs to regulate the degree of pressure between the jaws and form, substantially as described.

5. In a crimping-machine, jaws supported on fulera at their lower ends, as described, and springs to operate upon their upper ends to force them toward each other, and bolts or adjusting devices to regulate the forward position of the jaws, all substantially as described.

6. In a crimping-machine, two independent jaws supported on fulcrum-pins at their lower ends, and provided with mechanism to regulate their approach toward each other and springs to hold the upper portions of the jaws pressed toward each other, combined with a slide-frame and tree or form adapted to be moved downward between the jaws and crimp and discharge the vamp from the forms below the jaws, all substantially as described.

7. In a crimping-machine, the combination, with a tree or form and jaws, of the vamp adjusting and positioning devices, substantially as described.

8. In a crimping-machine, the shipper-actuator *u*, provided with slotted head 7, combined with the shipper and intermediate connecting devices, and a friction device or holder to hold the shipper-actuator at rest, substantially as described.

In testimony whereof we have signed our names to this specification in the presence of two subscribing witnesses.

CURTIS STODDARD.
JOHN W. D. FIFIELD.

Witnesses:

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W. H. MONTAGUE,