E. MORSE.

Machinery for Applying Rivets or Clasps.

No. 201,192. **Patented March 12, 1878.**

Fig. 1.

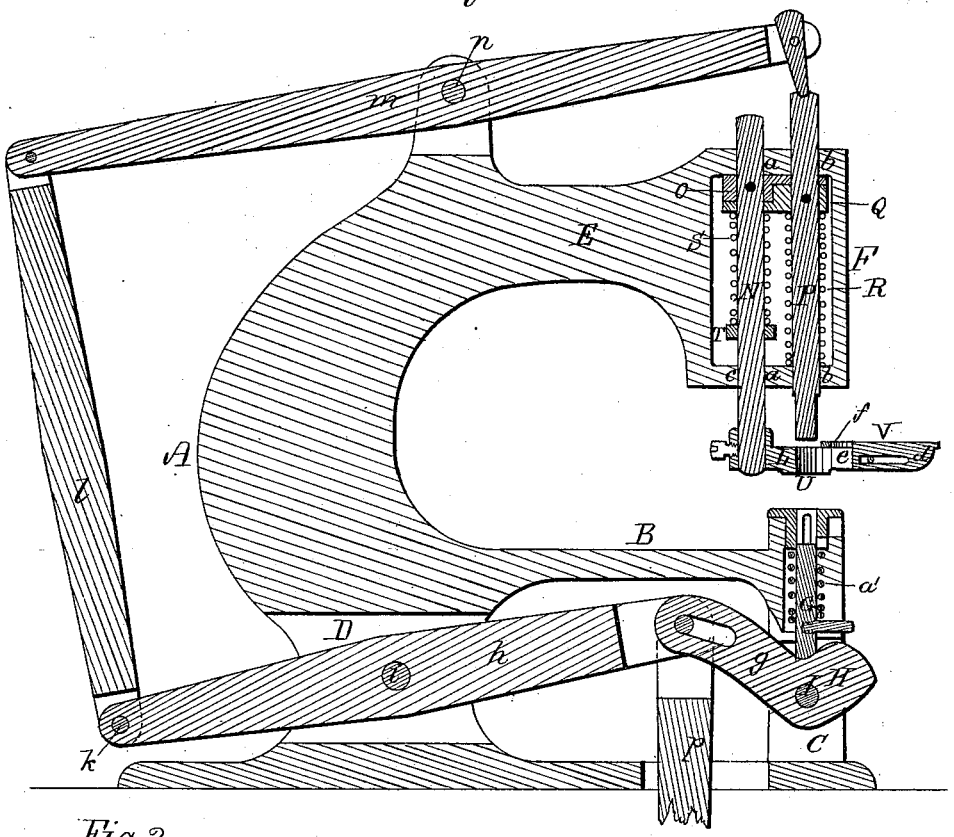

Fig. 2.

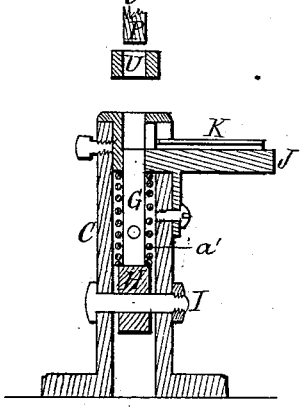

Fig. 3.

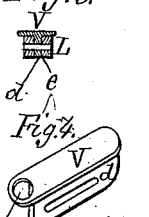

Fig. 4.

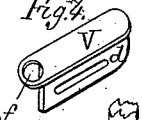

Fig. 5.

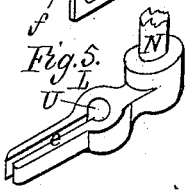

Fig. 6.

Witnesses.
F. Hyneuell.
L. A. Curtis

Inventor.
Edward Morse.
A. Curtis, Atty.

UNITED STATES PATENT OFFICE.

EDWARD MORSE, OF BOSTON, MASSACHUSETTS.

IMPROVEMENT IN MACHINERY FOR APPLYING RIVETS OR CLASPS.

Specification forming part of Letters Patent No. **201,192**, dated March 12, 1878; application filed August 25, 1877.

To all whom it may concern:

Be it known that I, EDWARD MORSE, of Boston, Suffolk county, Massachusetts, have invented a new and useful Machine for Applying Rivets or Clasps, of which the following is a specification:

This invention relates to the uniting of two or more pieces of leather or other material by means of toothed clasps or buttons inserted from opposite sides of such material; and consists in the combination, in an organized machine, of mechanical elements, substantially as hereinafter described, whereby at one operation the clasps are applied simultaneously to the two sides of the material.

The drawings accompanying this specification represent, in Figure 1, a vertical and longitudinal section of a machine embodying my invention. Fig. 2 is a vertical section of the upright driver-bar and its operating-cam; Fig. 3 a section, and Fig. 4 a perspective view, of the guide-plate for directing the upper clasp, while Fig. 5 is a perspective view of the foot which supports such guide-plate.

In these drawings the frame or standard of the machine is shown at A as composed of a horizontal bed, B, front and rear posts C and D, and an arched goose-neck, E, which terminates at front in an open head, F, the form of the whole closely resembling the frame of many sewing-machines now in use.

The post C is tubular, and within its upper part is disposed a rod, G, whose lower end rests upon the upper edge of a wiper-cam or eccentric, H, which is situated in the lower part of the said post, and is mounted upon a horizontal rock-shaft, I, which in turn is supported in the opposite sides of said post.

The rod G is forced against the eccentric H by a spring, *a'*, suitably arranged; and the relations of such rod and the eccentric with the post C are such that, when the eccentric is rocked or turned upon its axis by means hereinafter explained, the top of the rod is flush with the top of the post, and this movement is unvarying.

The rod G serves to support and drive a clasp or button into one side of the material, and to have at hand a number of clasps, by which the operation may be facilitated.

I add to one side of the post C a lateral horizontal shelf or trough, J, having a slotted or channeled top, K, to guide the prongs of the clasps, and present them to the material in a uniform direction, since it is important that the prongs of the clasps entering one side of the material shall not meet or coincide with those upon the opposite side, the upper surface of the shelf J being flush with the top of the rod G when the latter is in its lowest or normal position.

As before stated, the rod G constitutes a support for a clasp, and a means of driving such clasp into one side of the material; and to apply a clasp at the same operation to the opposite side of such material I employ a horizontal block or carrier and presser-foot, L, which is disposed over the post C, and secured at its rear end to the bottom of an upright bar, N, which in turn is mounted in bearings *a a* of the head F of the machine-frame, after the manner of presser-feet of sewing-machines.

An adjustable guide-plate, O, is applied to the upper part of the bar N, and embraces a second bar, P, which in turn is mounted in bearings *b b* of the head F, and is disposed in front of the bar N, a second guide-plate, Q, being secured to the last-named bar P and embracing the bar N.

A spiral spring, R, envelops the portion of the bar P between the plate Q and the bottom *c* of the head F, and serves by its stress to elevate such bar, while a second spiral spring, S, envelops the portion of the bar N between the plate O and a collar, T, secured to such bar immediately above the bottom *c* of the head F. The spring S serves to crowd the foot L down upon the material placed upon the top of the post C after such foot has been lowered, as hereinafter stated, and serves also to permit of adjustment or variable movements of the driver-bar P.

The foot L has a circular orifice, U, which coincides with the driver-bar P, and serves to receive and guide the upper clasp; and in order to readily present a clasp to the action of such bar P, I employ a horizontal slide-plate, V, placed upon the top of the foot L, and having a longitudinal fin, *d*, upon its under side, to enter a channel or slot, *e*, created in said foot and guide its movements, a circular open-

ing, *f*, being created in the inner end of the said plate V to receive the head of the clasp, while the channel *e* serves to receive the prongs of such clasp, and prevent turning of the latter as it is advanced to a position below the driver-bar P.

The slide-plate V, when pulled outward to its greatest extent, permits of insertion of a clasp, prongs downward, and with the head of the clasp resting in the opening *f*, and when pushed inward to the extent of its movement carries such clasp directly over the bore of the post C, and in alignment with the axes of the two driver-bars G and P.

It will be observed that the shelf J, which supports and presents the lower and inverted clasp or series of clasps, and the guide-plate V, which presents the upper clasp, are disposed at right angles to each other. The object of this is to present the prongs of one clasp to the spaces between the prongs of the opposite clasp, and thus prevent meeting of such prongs in the material.

To effect the respective movements of the driver-bars G and P—that is to say, to raise and lower the two simultaneously, or practically so—I prolong the cam or eccentric H rearwardly into a slotted arm, *g*, and swivel to this slotted arm one end of a horizontal rocking lever, *h*, which is fulcrumed at *i* to the rear post D of the machine-standard, and has its rear end pivoted, by a pin, *k*, to the lower end of an upright rod, *l*, the upper end of such rod in turn being pivoted to the rear end of a second horizontal rocking lever, *m*, which is fulcrumed at *n* to the top of the goose-neck E, while the front end of this last-named lever *m* is swiveled or connected in a suitable manner to the top of the driver-bar P.

A treadle, situated below the table or bench upon which the machine is placed, is connected by a rod, *p*, to the forward end of the lever *h*, and serves to effect the advance movements of the drivers G and P, the return movements of such drivers being effected by the springs R and *a'*, before explained.

The operation of this machine is as follows: A series of pronged buttons or clasps, such as are shown in Fig. 6 of the drawings, are placed, prongs upward, upon the shelf J, with the prongs embraced by the slotted top of such shelf, and the whole pushed inward until one rests upon the top of the driver-bar or plunger G. The slide-plate V is now pulled outward, and a clasp inserted so that its prongs extend downward into the channel *e* of the foot L and its head enters the opening U of such plate, when the plate is pushed inward until the head of the clasp coincides with the bore of the post C and the axes of the two drivers.

The material to be acted upon, whether the lapped ends of a leather belt, two or more pieces of leather or other material, or any other substance, is placed upon the top of the post C, and pressure applied to the treadle, which lowers the front ends of the levers *h* and *m*, and consequently raises the driver G and lowers the driver P and foot, it being observed, as before stated, that the adjustment of parts is such that the movements of the lower driver are uniform and arbitrary—that is to say, it rises always to such a position that its upper end is flush, or practically so, with the top of the post, and serves not only to raise the lower clasp and drive the prongs of the latter into the material, but constitutes an abutment or resistance, to enable the upper driver to force the prongs of the upper clasp into the material. Simultaneous with the raising of the lower driver G the upper driver P and the foot L descend until such foot rests upon the material, the ends of the prongs of the two opposite clasps being at this time in close proximity to such material. The pressure upon the treadle, and consequent simultaneous movement of the two levers, is continued until the upper end of the lower driver is flush, or about so, with the top of the post C and under side of the material, and the lower end of the upper driver reaches the top of the material, when the prongs of the two clasps will be found to have been buried in such material. The pressure upon the treadle is now relaxed, and the two drivers return to their normal or inactive positions, and the material is removed.

It should be noted that the movements of the parts are so timed that the driver G completes its movement a little before the upper driver P completes its movement. Thus the presser-foot L first clamps the material onto the post C; then the lower driver acts to force its clasp into the material, and, completing its upward movement, serves in some sort as an anvil, toward which the driver P, in completing its downward movement, descends, and in so doing clinches the prongs of the clasps within the material.

The additional movement which the upper driver can have independently of the lower driver is due to the shape of cam H, which, at its end, is so shaped as not to further raise the lower driver after it arrives at that end.

When the treadle is released the two drivers move apart, owing to the expansion of their released springs *a'* R, and the upper driver, in its ascent, carries with it the presser-foot bar N by means of its guide Q, which bears upwardly against the presser-bar guide O.

The prongs of the clasps employed in this machine should be preferably adapted to the thickness of the material with which they are used—that is, they should be of such length that when driven they shall strike against the head of the opposite clasp, and be turned over or clinched within the material.

As before stated, the movements of the lower driver are arbitrary—that is, it always rises to a given position with respect to the top of the post C; and as the material to be operated upon may vary considerably in

thickness, it is essential that the upper driver should be adjusted to adapt itself to this variation.

I claim—

1. In a machine for setting or applying rivets or clasps, the combination, substantially as set forth, of two oppositely-arranged reciprocating drivers, the one having an invariable and the other having a variable length of stroke, as and for the purposes set forth.

2. The combination, substantially as set forth, of two oppositely-arranged reciprocating drivers, the one having a variable and the other an invariable length of stroke, with mechanism, substantially as described, for operating the same simultaneously.

3. The combination of two oppositely-arranged drivers, the one having an invariable and the other a variable stroke, as described, with a presser-foot operating to hold the material with a yielding pressure against the table or support while the drivers operate on the same, substantially as set forth.

4. The yielding presser-foot, provided with a passage for the variable driver, and operated by said driver, as set forth.

5. The combination, with the reciprocating variable driver, of the yielding presser-foot, operated by said driver, and provided with a guide-plate, for properly presenting the upper clasp to the action of said driver, as set forth.

6. The guiding trough or shelf V, for presenting the lower clasp in such manner that its prongs shall interlock those of the upper clasp, substantially as and for the purposes stated.

7. The combination of the driver P and carrier-foot L, substantially as explained, whereby they travel together until the foot reaches the material, and the driver completes its movement alone, substantially as and for purposes stated.

8. The combination, substantially as set forth, of these elements: the two oppositely-arranged reciprocating drivers, the presser and carrier foot, provided with a guide-plate for delivering clasps to the upper driver, and the lower guide-plate for delivering to the lower driver clasps in such positions that their prongs shall be opposite the spaces between the prongs of the upper clasps, the combination being and acting as set forth.

EDWARD MORSE.

Witnesses:

L. A. CURTIS,

M. A. KENT.