

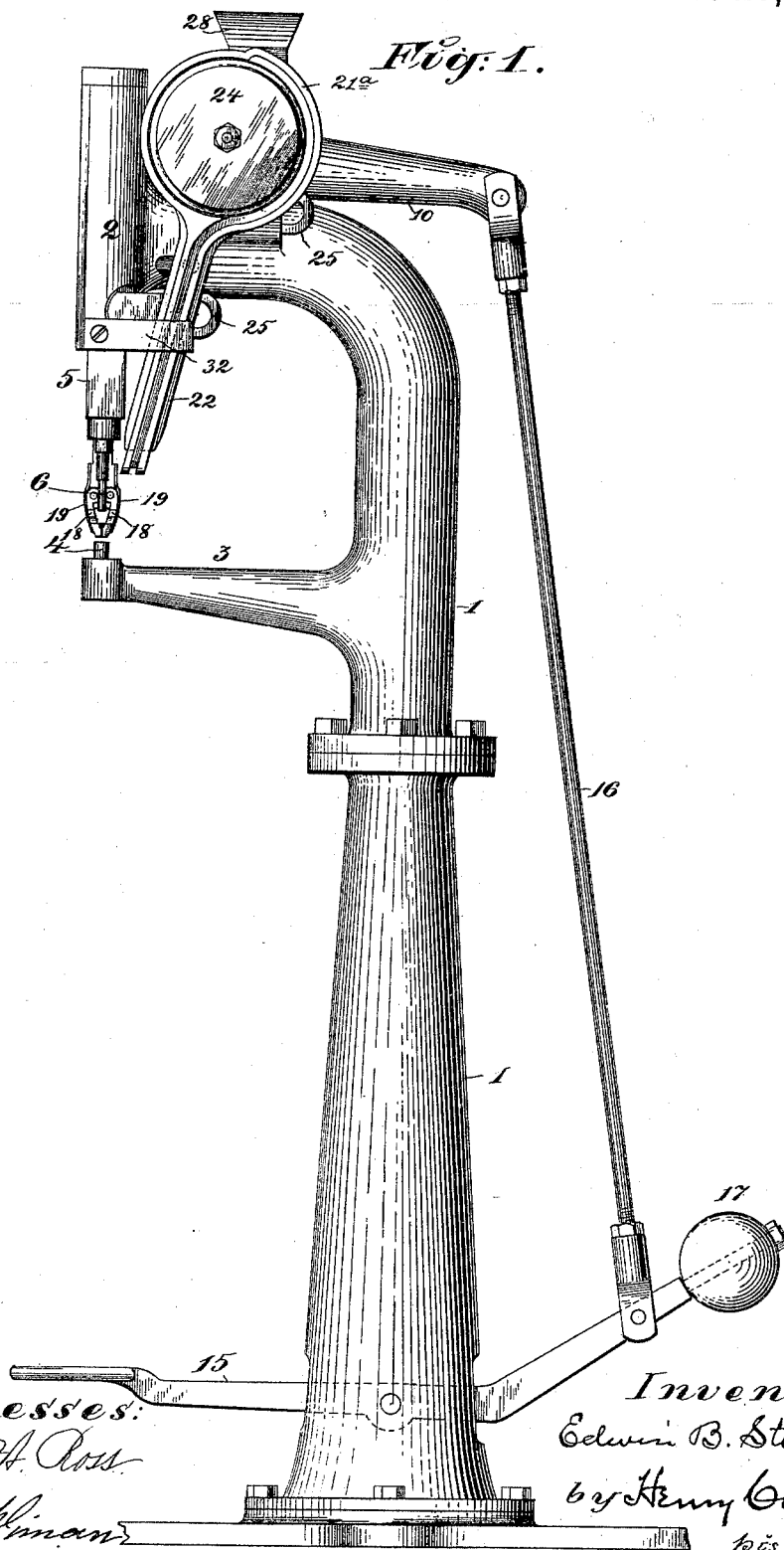
(No Model.)

3 Sheets—Sheet 1.

E. B. STIMPSON.
RIVET SETTING MACHINE.

No. 509,699.

Patented Nov. 28, 1893.



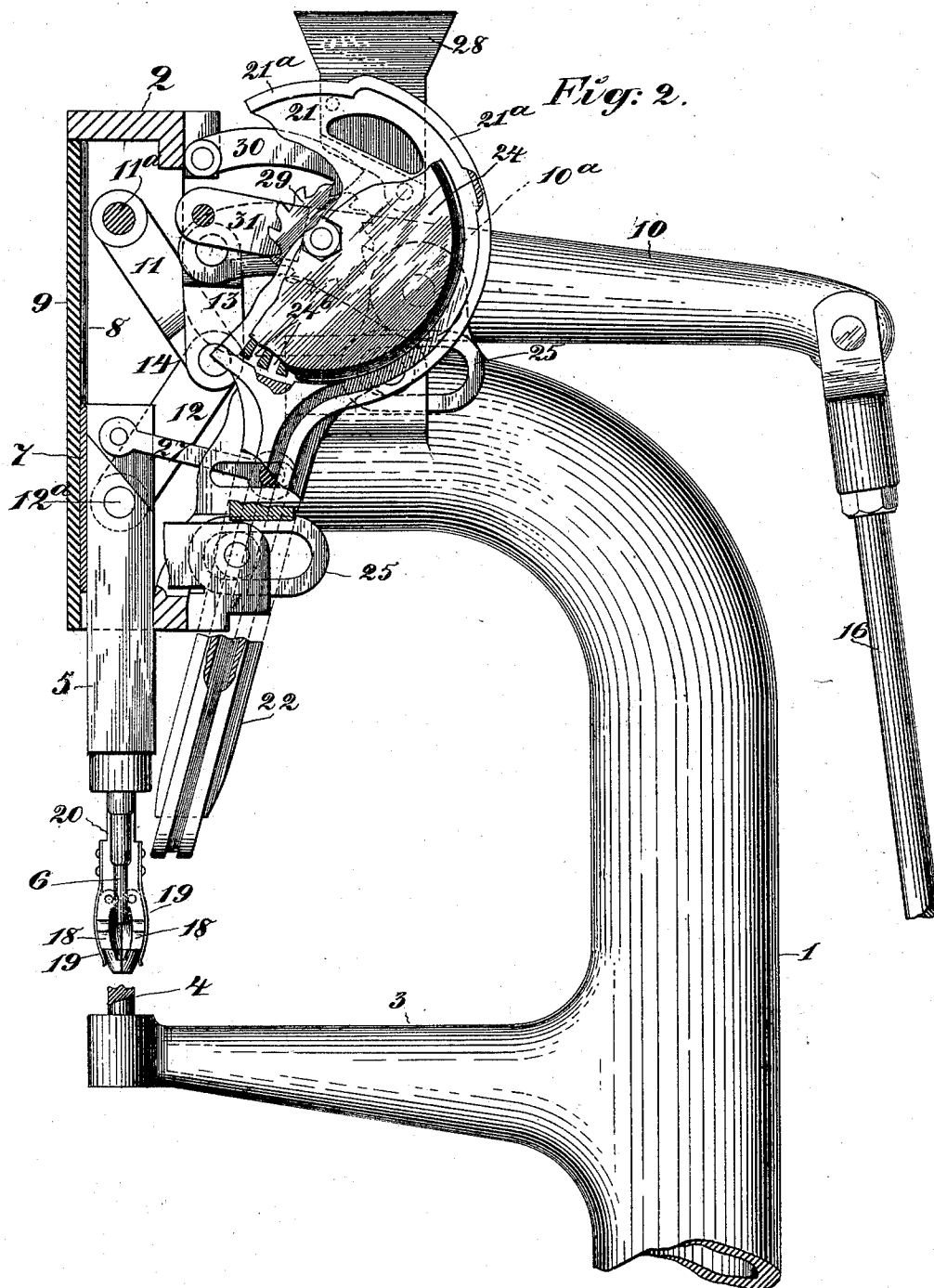
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3 Sheets—Sheet 2.

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Patented Nov. 28, 1893.



Witnesses:
Peter A. Ross.
J. H. Wiman

Inventor:
Edwin B. Stimpson
by Henry Coward
his Attorney

(No Model.)

3 Sheets—Sheet 3.

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Fig. 3.

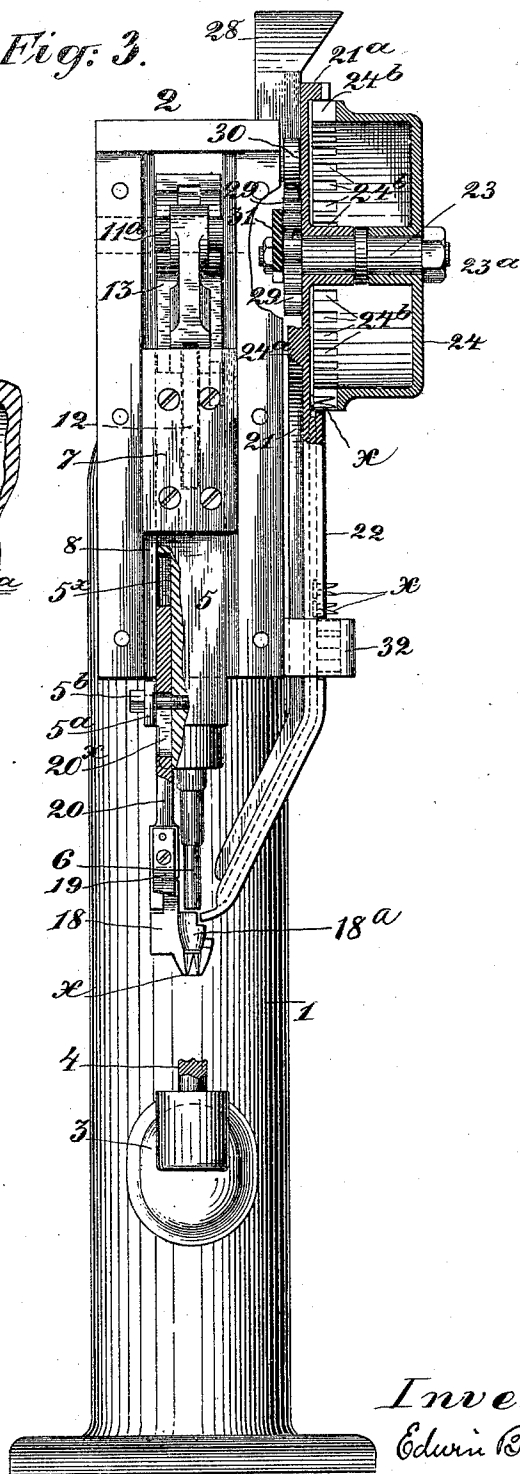


Fig. 4.

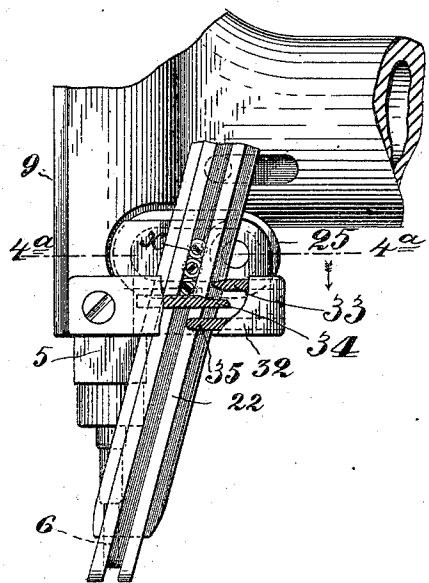
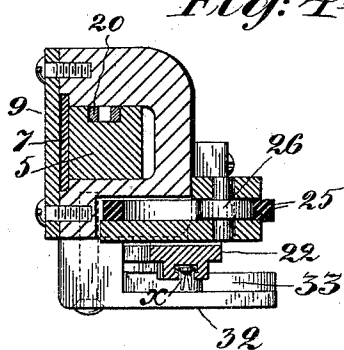


Fig. 4^a.



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UNITED STATES PATENT OFFICE.

EDWIN B. STIMPSON, OF BROOKLYN, NEW YORK.

RIVET-SETTING MACHINE.

SPECIFICATION forming part of Letters Patent No. 509,699, dated November 28, 1893.

Application filed February 13, 1893. Serial No. 462,099. (No model.)

To all whom it may concern:

Be it known that I, EDWIN B. STIMPSON, a citizen of the United States, residing at Brooklyn, in the county of Kings and State of New York, have invented certain new and useful Improvements in Rivet-Setting Machines, of which the following is a specification.

My invention relates to the class of machines mainly employed for setting and clinching hollow and split rivets, &c., and it has for its object the improvement of the constructive features of such a machine with a view to enhancing its efficiency and durability and lessening the cost of construction.

My invention is embodied in the machine illustrated in the accompanying drawings, wherein—

Figure 1 is a side elevation of the same, as a whole, on a relatively small scale. Fig. 2 is a side elevation of the upper part or head of the machine on a larger scale. In this view some of the parts are broken away and some are in section, for the better illustration of the construction. Fig. 3 is a front elevation of the upper part of the machine on the same scale as Fig. 2. In this view some of the parts are removed and some are represented in section, in order to better illustrate the construction. Fig. 4 is a fragmentary view on a larger scale than Figs. 2 and 3, illustrating the construction of the device for segregating the rivets in the road or way; and Fig. 4^a is a transverse section on line 4^a, 4^a, in Fig. 4.

1 represents a supporting standard or frame of any kind; this frame arches over toward the front at its top and carries the head, 2, of the machine. An arm, 3, branches from the standard 1 and supports the anvil, 4. In the head, 2, plays the plunger slide, 5, in which is fixed the plunger 6, this latter being over and aligned with the anvil 4. The slide 5 is guided in the head 2, through the medium of a plate, 7, secured to its face, the edges of said plate playing in grooves, 8, in the head. A face-plate, 9, secured to the head, forms the outer keeper to retain the plate 7 in its place in the guiding grooves. In Fig. 3 the face-plate 9 is not shown. A reciprocating movement is imparted to the plunger 6 by means of a lever, 10, which is fulcrumed on the standard at 10^a, and is coupled to the slide 5 through the medium of links 11, 12 and 13. The links

11 and 12 form a toggle, the former being coupled to the head at 11^a, and the latter to the slide 5 at 12^a. The link 13 is coupled to the shorter arm of the lever 10, and at its other end to the knuckle, 14, of the toggle. The lever 10, as herein shown, is operated through the medium of a treadle, 15, and connecting rod 16, a weight, 17, on the treadle, being employed to retract the parts. An upward movement of the long arm of the lever 10 drives down the plunger 6, through the medium of the connecting link 13, and the toggle links 11 and 12. In its descent the plunger finds in its path a rivet-pocket. This pocket comprises two like sections, 18, 18, which are pressed together by flat or leaf springs, 19. The sections or halves of the split pocket are pivotally secured by screws to a stem, 20, carried by the slide 5, the pivoted or hinged extremities of the pocket-sections, being let into gains or recesses formed in the opposite edges of the stem. The springs 19 are secured at their upper ends to the stem 20 and fit snugly up to and against the respective sections of the pocket. In Fig. 3 one of the sections 18, is removed, together with a part of its spring, in order to illustrate the form of the section, and that of the hollow or cavity, 18^a, in the same, to receive the rivet, *r*. This cavity is formed in the solid metal of the section of the pocket, by milling or other method, and is of such tapered form that the shank of the rivet may pass down through the opening in the bottom of the pocket, leaving the rivet suspended by its head. The plunger is of such size that when it descends into the pocket it expands the same by wedging its sections apart and thus frees the rivet. The stem, 20, of the pocket rests in a groove 5^x, in the slide 5, and is adapted to play up and down therein to a limited extent; it is retained in the groove by a plate 5^a, and is limited in its movements by a screw, 5^b, which engages a slot, 20^x, in the stem. This construction is clearly shown in Fig. 3. The pocket is suspended, in the position seen in Fig. 3, by its own weight, the operative end of the plunger 6 rising to a point above the pocket so as to permit of a rivet being delivered into the latter by the mechanism that will be hereinafter described. When the plunger descends the pocket descends with it until the pocket touches the material in which

the rivet is to be set, when its downward movement is arrested and the plunger passes down through it, driving the rivet into the material.

5 Fig. 2 shows the plunger at about mid-stroke. When it is at the end of its down stroke the toggle, composed of the links 11 and 12, will be aligned or on centers.

I will now describe the feeder for supplying and feeding the rivets, one by one, to the rivet-pocket, synchronously with the reciprocating movements of the plunger, premising that this feeder has a lateral movement imparted to it by the plunger-slide, partly for the purpose of moving the discharging end of the rivet-road up to and away from the pocket, partly for the purpose of agitating the rivet-box and partly for the purpose of segregating the rivets.

20 The back-plate 21, of the rivet-box is substantially integral with the rivet-road or way, 22, which latter is grooved in the ordinary manner, as indicated in Fig. 4^a, in such a way as to form keeper-guides for the flanged head of the rivet and allow its body to project outwardly, as clearly shown. The back-plate 21 is substantially circular in contour, and has a raised, circular flange, 21^a on its face, that portion or half of the flange seen at the right in Fig. 1 being drawn with a longer radius than the part seen at the left in the same figure. In the center of the back-plate is rotatively mounted (see Fig. 3) a shaft 23, on which is secured by a nut, 23^a, the rivet-box, 24. This box is circular, and its open end is presented to the back-plate 21, but it stands away from the said plate far enough to leave a space 24^a, wide enough to receive the flanged heads of the rivets. The margin of the box 24, will be of a thickness equal to the length of the shank of the rivet, at least, and it will have formed in it a series of slits, 24^b. These slits will be formed to a depth equal to or greater than the length of the shanks of the rivets used with the machine. The margin of rotating box 24 fits quite snugly within the circular flange at the left side of the back-plate 21. There is also a groove at the base of the flange 21^a, to receive the heads of the rivets.

50 On the rivet-feeder are two slotted tracks or guides, 25, in which are situated two rollers, 26, (one seen in Fig. 4^a.) mounted rotatively in brackets on the main frame. These serve as rolling supports for the feeder, on which it may be moved laterally, to and fro, by means of a link or bar, 27, coupled at one end to the plunger-slide and at its other end to the feeder, as shown. When the plunger descends, the feeder is pushed outwardly or away from the plunger, and when the latter ascends and withdraws from the rivet-pocket, the feeder is drawn inwardly or up toward the plunger in such a manner as to bring the lower, delivery end of the rivet-road into position to deliver a rivet into the rivet-pocket.

The rivet-box is supplied and replenished

through a hopper 28, and the box is intermittently rotated, and thus agitated, through the medium of a ratchet-wheel, 29, on the rear end of the shaft 23, and a hook-pawl, 30, which is pivoted to the head of the machine and extends back and engages the teeth on said wheel. The ratchet-wheel is stopped against back rotation by a friction pad, 31, which is secured to the back of the feeder and presses elastically on the rear face of the ratchet-wheel.

The agitation of the rivet-box causes the rivets to pass out of same and into the grooved way in the rivet-road; and if no means were provided to prevent it, they would slide down and out of the road continuously. In order to prevent this and to segregate the rivets so that they may be fed one at a time to the pocket, I employ a stationary escapement, best illustrated in Figs. 4 and 4^a. This escapement comprises a plate, 32, secured to the head of the machine and extending therefrom across the face of the rivet-road, whereby the latter, in its lateral reciprocating movement, plays along the rear face of said plate. On this face of the plate 32 are three horizontally arranged projecting ledges, 33, 34 and 35, arranged in different planes. When the rivet-road is in position for delivery, as in Fig. 4, the rivets in the road are checked against sliding down the road by the middle ledge, 34, and when the road moves outwardly to its other position, the thinned or sharpened edge of the upper ledge, 33, is inserted between the bottom rivet of the series and that next above, thus segregating the bottom rivet. This latter will be carried on (to the right in Fig. 4) between the upper and middle ledges until it passes the end of the latter, when it will fall by gravity onto the bottom ledge, 35. The next feeding movement of the rivet-road (toward the left in Fig. 4) will cause this segregated rivet to move along this lower ledge 35 and under the middle ledge, until the road reaches the delivery point, when the rivet will pass off from the end of the lower ledge and slide down the road to the pocket. On this last movement of the road to the feeding point, the series of rivets in the road above the escapement device will pass off from the upper or segregating ledge, 33, and descend to the middle ledge, resting thereon as seen in Fig. 4.

It will be seen that the feeder moves in a path substantially at right-angles to that of the plunger, and that it is in the outward movement of the feeder that the hook-pawl rotates the rivet-box.

My machine may be employed, with very slight modification, for setting and clinching all sorts of rivets, as eyelets, lacing studs, &c.; and indeed for all that general class of light riveting for which such machines are usually employed.

I may say here that this class of machines commonly employ a reciprocating plunger, an anvil, and a feeder comprising a rotating box

for the rivets or eyelets, a rivet-road or eyelet-road, and means for segregating the rivets or eyelets, and therefore I make no broad claim to these instrumentalities. Some of these machines also employ an expanding rivet-pocket; but so far as I am aware these have had the sections of the pocket made in the form of springs.

One object of my invention is to make the sections of the pocket independent of the springs and pivot or hinge them to the stem so that in case the section is injured it may be removed and replaced at a slight expense. Where the section of the pocket is integral with the spring, or is connected to the stem through the medium of a spring, it is difficult to keep the pocket in working order and it is costly to replace.

Having thus described my invention, I claim—

1. In a riveting machine, the combination with the stem 20, of the rivet-pocket, comprising two sections, 18, 18, each having its upper extremity pivotally mounted in a recess in the stem and its lower, laterally projecting portion recessed to form half of the pocket to receive the rivet, and the two like springs, 19, 19, secured at their upper ends to the stem and having their lower, free extremities curved to fit and bear upon the outer faces of the sections of the pocket, substantially as set forth.

2. In a riveting machine, the combination with the plunger, 6, and its slide 5, provided with a groove 5^x, of the stem 20, mounted in the groove 5^x parallel with the plunger, and capable of sliding longitudinally in same, means for limiting the movement of the stem in said groove, and the split pocket, secured to the pendent end of the stem 20, in the path of the plunger, substantially as set forth.

3. In a riveting machine, the combination with back-plate 21, of the feeder, provided with a raised marginal flange, and a hopper 28, and the shaft 23, mounted rotatively on said plate, of the rivet-box 24, secured on said shaft with its open mouth or end facing said back-plate but out of contact therewith to allow space for the rivet heads, said box being closed at its outer face and having marginal slits 24^b, for the passage of the rivets, substantially as set forth.

4. In a riveting machine, the combination with the main frame, the back-plate 21, and the road of the feeder, mounted in guides on the frame, and the plunger slide and link for moving the said plate and road to and fro, laterally, of the shaft 23, rotatively mounted in said back-plate, the rivet-box, carried by said shaft, the ratchet-wheel, fixed on the shaft 23, and the hook pawl 30 pivoted on the frame and engaging the teeth of the ratchet-wheel, substantially as and for the purposes set forth.

5. In a riveting machine, the combination with a laterally reciprocating rivet-road, of a

fixed escapement mechanism for segregating the projecting rivets as they descend in the road, said escapement comprising a plate adjacent to the face of road and provided with projecting parts to take between the rivets, as set forth.

6. In a riveting machine, the combination with the main frame and head of the machine, the plunger slide mounted in guides in said head, the plunger, and the rivet-pocket carried by the plunger slide, of the rollers 26, mounted on the frame at different heights, the back-plate 21, the slotted tracks 25, on the back-plate, mounted on the rollers 26, the road 22, fixed to said back-plate, the shaft 23, rotatively mounted in the back-plate, the rivet-box, fixed on said shaft, the ratchet-wheel 29, fixed on said shaft, the hook pawl 30, pivoted to the frame and engaging the teeth of the ratchet-wheel, and means intermediate the plunger slide and said back-plate, whereby the longitudinal movement of the plunger slide imparts a lateral movement to the feeder, substantially as set forth.

7. In a riveting machine, the combination with the frame 1 and head 2, and the plunger-slide 5 mounted in keeper-guides in the head, of fixed keeper-guides on the frame at right-angles to the path of the plunger-slide, the feeding mechanism, mounted in said keeper-guides, whereby it is adapted to move bodily sidewise in a right line, the inclined link 27, pivotally attached at one end to the slide 5, and at the other end to the feeding mechanism, and a fixed escapement, secured to the head of the machine adjacent to the rivet-road and having means for segregating the rivets as the road is moved to and fro, as set forth.

8. In a riveting machine, the combination with the frame and head of the machine, of the plunger, the plunger-slide mounted in keeper guides therein, the links 11 and 12, coupled together to form a toggle which is arranged in the head and coupled at one end to the plunger-slide and at the other end to the head, the operating lever, fulcrumed on the frame, the link 13, connecting the shorter arm of said operating lever to the knuckle of the toggle, the expanding rivet-pocket, carried by the plunger-slide, and the stationary anvil arranged below the plunger, as set forth.

9. In a riveting machine, the combination with a laterally moving rivet-road, of an escapement device for segregating the rivets in the road, said device consisting of a stationary plate, 32, situated adjacent to the face of the rivet-road, and furnished with three ledges, 33, 34 and 35, arranged, as set forth.

In witness whereof I have hereunto signed my name in the presence of two subscribing witnesses.

EDWIN B. STIMPSON.

Witnesses:

HENRY CONNETT,
PETER A. ROSS.