(No Model.) 3 Sheets—Sheet 1.

R. J. SHIPLEY.

PUNCHING AND RIVETING MACHINE.

No. 489,547. Patented Jan. 10, 1893.

Fig. 1.

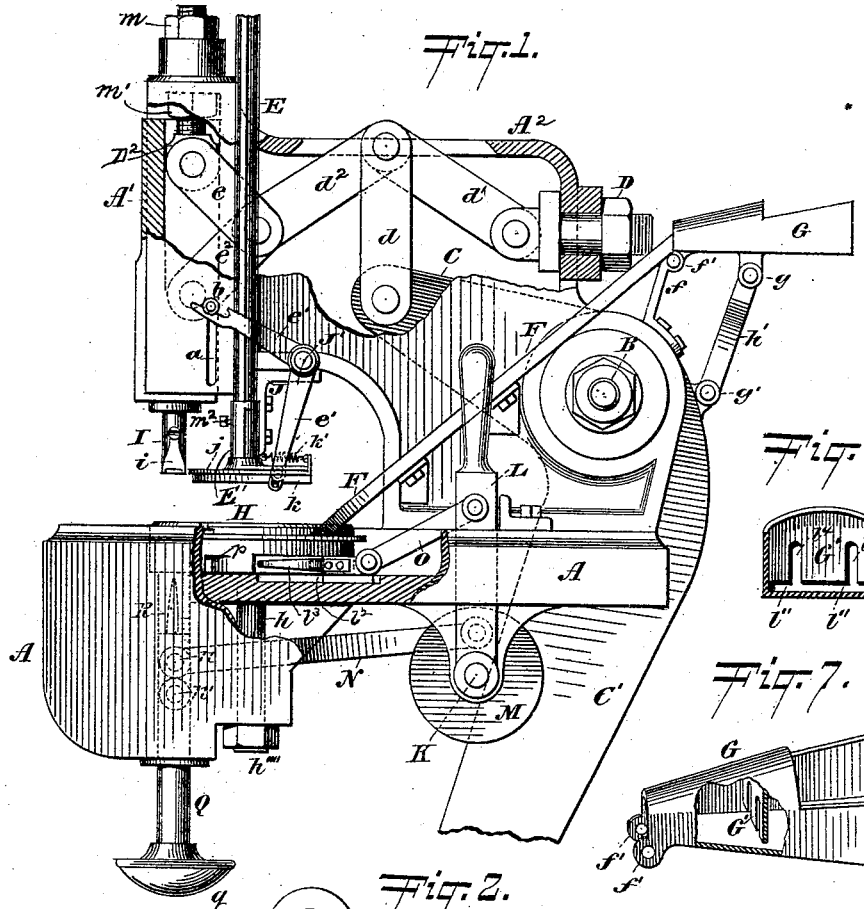
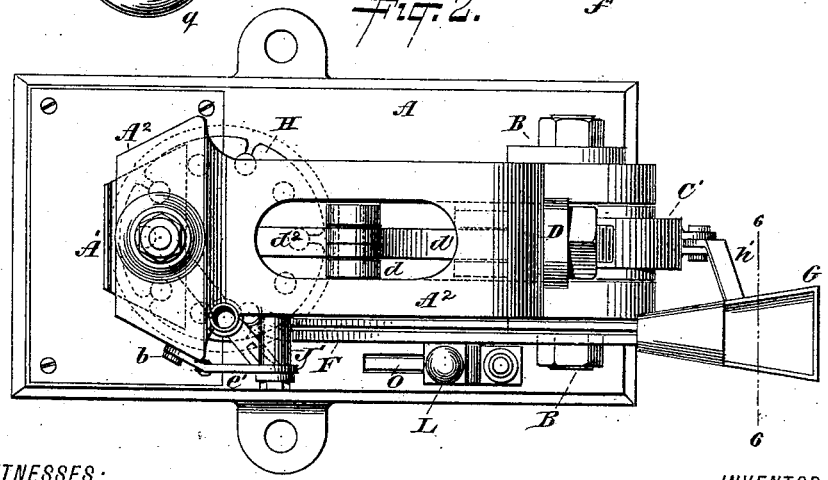


Fig. 6.

Fig. 7.

Fig. 2.



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(No Model.) 3 Sheets—Sheet 2.

R. J. SHIPLEY.

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Fig. 3.

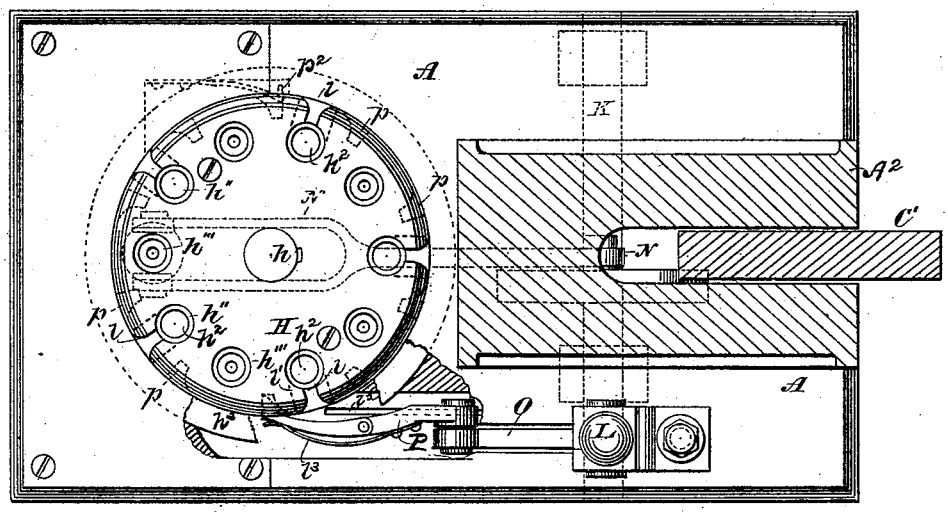


Fig. 4.

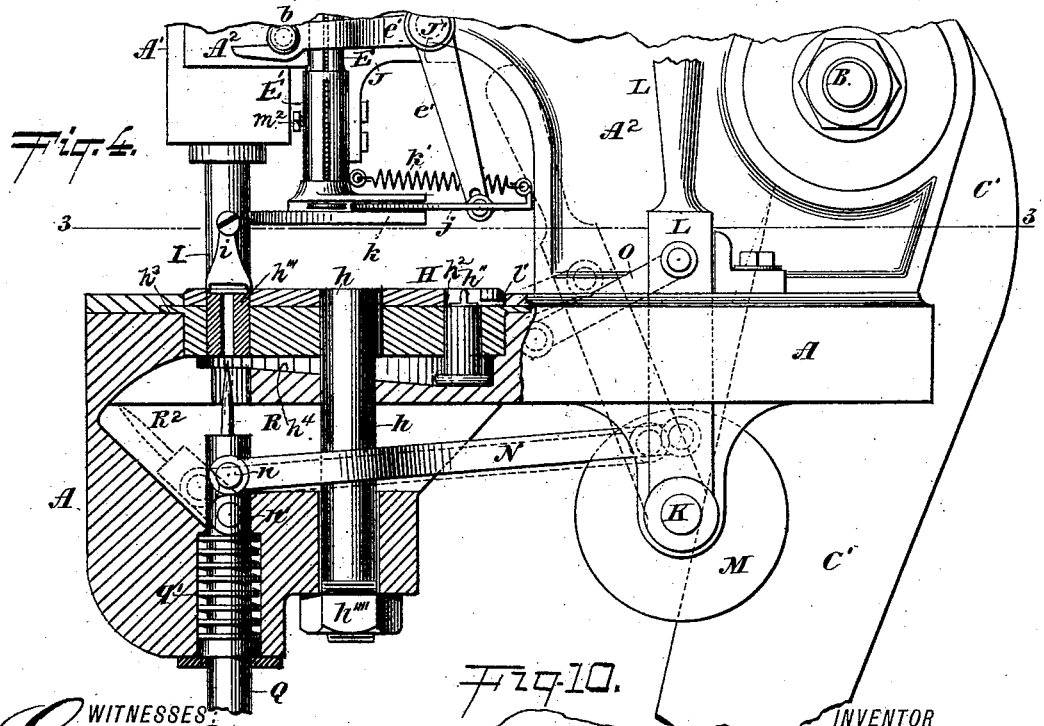
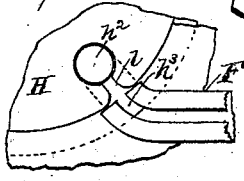


Fig. 10.



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(No Model.) 3 Sheets—Sheet 3.

R. J. SHIPLEY.

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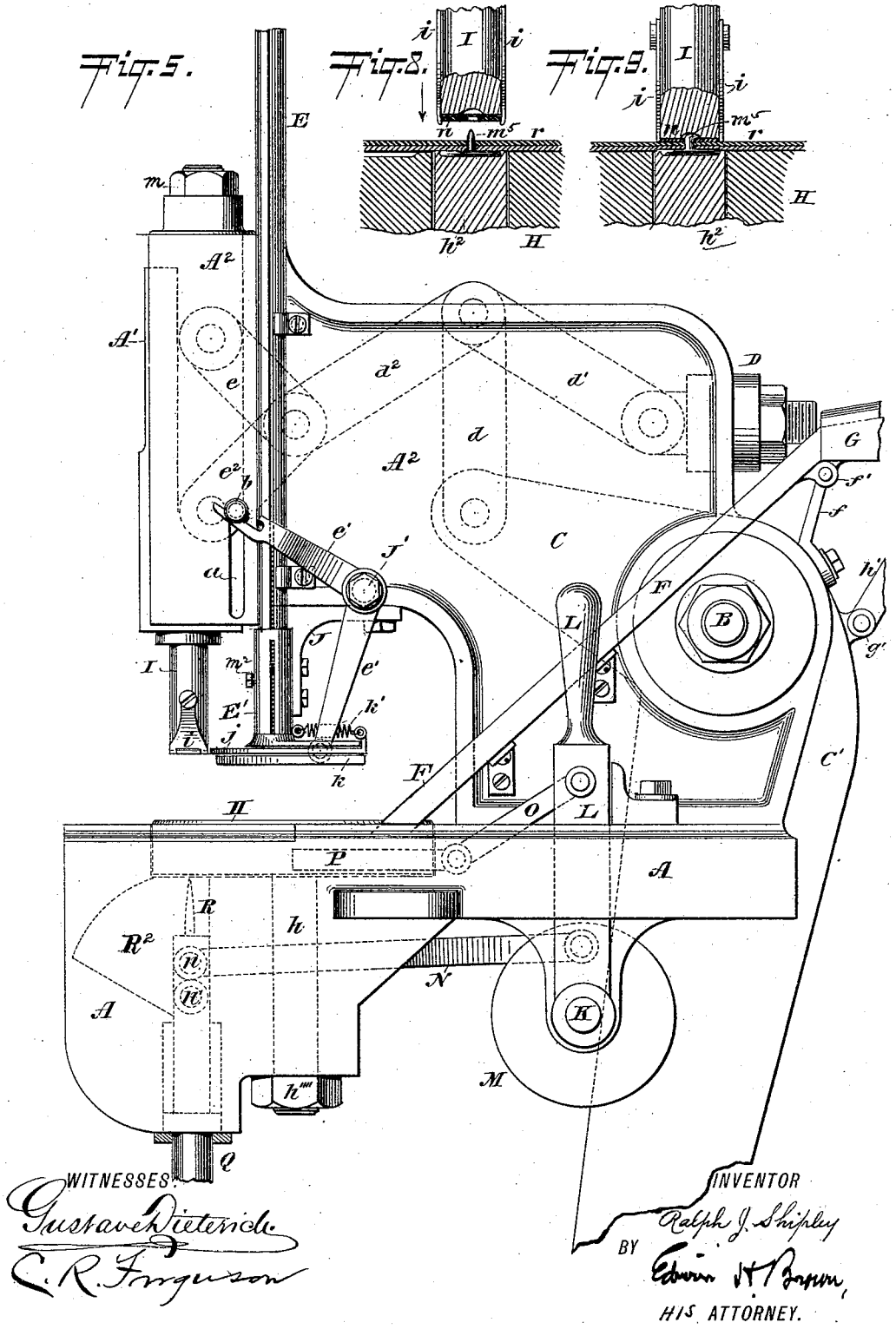

UNITED STATES PATENT OFFICE.

RALPH J. SHIPLEY, OF WATERBURY, CONNECTICUT, ASSIGNOR TO THE HOLMES, BOOTH & HAYDENS, OF SAME PLACE.

PUNCHING AND RIVETING MACHINE.

SPECIFICATION forming part of Letters Patent No. 489,547, dated January 10, 1893.

Application filed November 24, 1891. Serial No. 413,003. (No model.)

To all whom it may concern:

Be it known that I, RALPH J. SHIPLEY, of Waterbury, county of New Haven, and State of Connecticut, have invented a certain new and useful Improvement in Punching and Riveting Machines, of which the following is a specification.

This invention relates to machines for placing rivets in clothing, such as at the ends of pocket openings in overalls, and it consists in the construction and novel arrangement of parts as hereinafter set forth.

I will describe a machine embodying my invention and then point out the novel features in claims.

In the accompanying drawings, Figure 1 is a sectional side view of a machine embodying the improvement. Fig. 2 is a top view thereof. Fig. 3 is a plan view partly in section on the line 3, 3, of Fig. 4. Fig. 4 is a side view of a part of the machine partly in vertical section. Fig. 5 is an enlarged side view. Fig. 6 is a section of a feed box on the line 6, 6 of Fig. 2. Fig. 7 is a perspective view of the feed box with a portion broken away. Figs. 8 and 9 are enlarged details showing the riveting plunger in different positions. Fig. 10 is an enlarged detail of a portion of the machine.

Referring by letter to the drawings, A designates the bed of the machine, A^2 is an upwardly and forwardly extending arm or frame thereon, within which certain mechanism operates as will hereinafter appear.

I will first describe a punching mechanism by means of which holes are punched through the cloth preparatory to inserting the rivet, and also the means for presenting the rivet. This punching mechanism consists of a needle or punch R mounted on the upper end of a rod Q movable vertically through a guide opening in the forward portion of the bed A. The rod Q has an enlarged head q at its lower end against which an operator may place his knee to force the needle or punch upward through a hole in a rotary rivet carrier H, and through the cloth held upon the carrier over the hole. After releasing the needle or punch, it is returned to its downward or normal position by means of a spring q' surrounding the rod Q within the bed A as shown. The rod Q is made in two sections pivoted together at n'. The bed A has a chamber R^2 in it into which the upper portion of the rod Q, carrying the needle or punch, may be tipped. As a means for tipping the upper portion of the rod Q into said chamber a rod N has one end pivoted to it, the other end of said rod N being pivoted to a crank M mounted on a rock shaft K which is operated by a lever L.

The rivet carrier H consists of a disk seated in a recess in the bed A and mounted upon a shaft or rod h extending downward through an opening in the bed A. In this example of my improvement, the disk is fixed to the shaft or rod, and the latter has its lower end threaded and fitted with a nut h'''', below the bed, to prevent any vertical movement of the carrier.

The carrier H is provided with an annular row of holes h'' into which anvils h''', h^2 are seated. The anvils h''', h^2 alternate and each anvil h''' is provided with a vertical hole. These holes are for the passage of the needle or punch R.

The anvils h^2 are what I term rivet anvils and each one is movable vertically through its hole h'', and when in position to receive a rivet, as in Fig. 4, its upper end is on a plane with an annular flange, h^3 on the carrier H. As the carrier H is rotated, the anvil h^2, which has its lower end resting on the bottom of the recess in which the carrier is seated, is raised by the incline or cam surface h^4, so that when the rivet is in position to enter the puncture in the cloth, the upper end of the anvil h^2 will be substantially on a plane with the upper surface of the carrier. The holes h'' for the anvils h^2 have outward or lateral openings l above the flange h^3 for the passage of the rivet shanks from a chute and at the lower end these lateral openings l have wider openings or slots l' for the passage of the rivet head.

An intermittent rotary motion is imparted to the carrier H from the lever L, through the agency of the link O and a dog P. The link O is pivoted at one end to the lever L, and at the other end to the dog P. At its forward end the dog P has a tooth adapted to engage in one of the notches p in the periphery of the carrier H. The dog P is made in two sections pivoted together so that the toothed end

or section has a lateral movement relatively to the other section which has a rib in its lower surface engaging in a slot l^2 in the machine bed. A spring l^3 fastened to the dog has its free end bearing upon the swinging section so that the swinging section will engage with the carrier but at the same time be free to move outward when the dog is moved longitudinally. A spring detent p^2 prevents a backward movement of the carrier.

F, is an inclined chute down which rivets are fed to and are deposited on the rivet anvils h^2 of the carrier H. This chute is supported on brackets extending from the arm A^2, and at its upper end communicates with a feed box G, which is pivotally connected at its forward end, as at f', to an arm f extending from a fixed portion of the machine. A tilting motion is imparted to the box G from the rock lever C′ through a link h' which has a pivotal connection g with a lug depending from the bottom of the box and a pivotal connection g' with a lug on the rock lever C′.

It is desirable that the rivets be fed into and slide down the chute F with the shank pointing upward and as a means for properly delivering the rivets I provide the box G with a transverse partition G′, near its forward end. This partition has vertical slots l^4 formed in it for the passage of the rivet shanks and has an opening l' between its lower edge and the bottom of the box for the passage of the rivet heads. The rivets will be in line in the chute, and as an opening l of the carrier comes opposite the lower end or mouth of the chute, as shown in Fig. 10, the forward rivet will be forced onto an anvil h^2 and when the carrier is rotated one step the deposited rivet will be carried along and the others will be forced back into the chute by the rounded surface of the wall of the opening l.

I will now describe a means for placing a washer on the rivet and upsetting the rivet end.

I designates the riveting hammer secured to and movable vertically with a plunger A′ which moves in a guide-way at the forward end of the arm A^2. Motion is imparted to the plunger A′ and hammer I from the rock lever C′, which is operated from a foot lever not shown, through toggle links d, d', d^2, e, e^2. The link d is pivoted at one end to an arm C of the rock lever C′ and the upper end is pivoted to the adjacent ends of the links d', d^2. The opposite end of the link d' is pivoted to a bracket D secured to the arm A^2 and the forward end of the link d^2 is pivoted to the adjacent or meeting ends of the links e, e^2, the former of which, e, is pivoted to an adjustable bearing D^2, and the latter of which, e^2 has a pivotal connection with the plunger A′. The adjustable bearing D^2 has a screw threaded portion extending upward through a hole in the top of the arm A^2 and is provided at its outer end with a nut m, and a jam nut m' on the threaded portion bears against the lower surface of the top wall of the arm as shown. By adjusting the bearing D^2 up or down, the movement of the hammer I is diminished or increased so that the weight of the riveting blow may be regulated. Obviously a downward pull on the link d will cause the links d', d^2 to approach a horizontal line and through them cause the links e, e^2 to approach a vertical line, thus forcing the hammer I downward upon a rivet.

E designates a feeder tube for washers. This feeder tube is supported by a bracket J and extends vertically at one side of the arm A^2. The lower end E′ of the feeder tube is adjustable on the upper portion and is held as adjusted by a set screw m^2. This adjustment is necessary to bring a feeder bar in the proper plane with the hammer I as adjusted by a movement of the bearing D^2. The feeder has a feeder bar j operating across its lower open end in line with the end of the hammer I when said hammer is in its upward position.

Below the feeder bar j is a plate or platform k onto which a washer falls from the tube E. This plate k extends nearly to the hammer I and the space between it and the bottom of the tube E is only sufficiently wide for the passage of one washer at a time. Upon a downward movement of the hammer I, the feeder bar j is moved backward, in the position shown in Fig. 4, by means of a bell crank lever J′ fulcrumed to the arm A^2, one arm e' of which has a slotted pivotal connection with the plate j and the other arm e' engages against the under side of a stud b extending from the plunger A′ and movable in a vertical slot a in a wall of the arm A^2. Upon a return or upward movement of the hammer I, the feeder bar is caused to move forward and feed a washer to the end of the hammer between the resilient fingers i which are secured to the hammer and have a slight inward turn just below the end of the hammer, as plainly shown in Figs. 8 and 9. A coiled spring k' attached at one end to the feeder E and at the other end to the feeder bar j serves to move the feeder bar forward. By employing the spring a washer will not be crowded too tightly against the hammer during a portion of its upward movement. By this construction a washer is carried with the hammer and deposited on a rivet before upsetting the same.

The operation of the machine is as follows: The material to be riveted is held upon the carrier H and the punch R is forced upward by the knee of the operator to pierce the material, then the lever L is operated to rotate the carrier H one step to bring a rivet beneath the hammer and insert it through the perforation made by the punch, by this movement of the lever L the punch R is tipped in the position shown in dotted line Fig. 4. The hammer, carrying a washer, is now forced down by operating the rock lever C′ by means of foot power, thus upsetting the rivet m^5 as shown in Fig. 9. The lever L is now thrown

back to its vertical position and the operation repeated.

Having described my invention, what I claim is:

1. In a riveting machine, the combination of the rotary rivet carrier, a lever for rotating said carrier, a punch or needle movable vertically through a hole in said carrier a rod consisting of two portions pivoted together carrying said punch or needle and a connection between the said lever and the upper portion of said rod whereby the punch or needle may be tipped by a movement of the lever, substantially as specified.

2. In a riveting machine the combination with the bed of a rotary rivet carrier seated in a recess in said bed, and having peripheral notches, a lever pivoted to the machine, a dog operated by said lever to rotate the carrier, a vertically movable and tilting punch or needle and means connecting with said lever for tilting the punch or needle, substantially as specified.

3. In a riveting machine the combination with the bed of the rotary rivet carrier on said bed and having peripheral notches, an annular row of anvils in said carrier, a lever pivoted to the machine, a dog operated by the lever to engage in a notch of the carrier and rotate it, a vertically movable and tilting punch or needle and means connecting with said lever for tilting the punch or needle, substantially as specified.

4. In a riveting machine, the combination with the bed of the rotary rivet carrier seated in a recess in said bed and having lateral openings, means comprising a hand power for rotating said carrier, vertically movable anvils at the inner ends of the lateral openings, and an inclined chute, down which rivets are automatically fed into the lateral openings of the carrier, substantially as specified.

5. In a riveting machine the combination with the bed, of the rotary rivet carrier thereon, an annular series of anvils seated in the carrier each alternate anvil having a vertical hole and a punch or needle movable through said holes for punching a hole through material preparatory to placing a rivet therein, the other anvils of the series being vertically movable at the inner ends of lateral openings in the carrier, substantially as specified.

6. In a riveting machine the combination with the rotary rivet carrier of the vertically operating hammer, means, a rock lever and toggle links, for moving the hammer, and resilient fingers carried by the hammer for holding a washer, substantially as specified.

7. In a riveting machine the combination with a hammer, having resilient fingers to hold a washer of a vertically movable plunger carrying said hammer, a washer feeder adjacent to the hammer, a feeder bar for feeding a washer to the hammer, a connection between the feeder bar and plunger for operating the feeder, in one direction and a spring for operating it in the opposite direction, substantially as specified.

8. In a riveting machine the combination with the rotary rivet carrier, of the vertically operating hammer, carrying the resilient fingers the rock lever, the links, d, d', d^2, e, e^2, between said lever and hammer and a washer feeder, substantially as specified.

9. In a riveting machine the combination with a rotary rivet carrier having openings for rivet anvils, rivet anvils movable vertically in said openings, the said openings a cam for moving the anvils vertically having lateral openings, and a chute, substantially as specified.

10. In a riveting machine, the combination with a chute for rivets, of a rotary carrier having vertical openings provided with lateral openings at their upper portions adapted to be moved in line with the mouth of the chute, an anvil movable in each of said vertical openings and a cam surface for moving the anvils vertically, substantially as specified.

11. In a riveting machine, the combination with a vertically movable hammer and means for adjusting its movement, of a vertically adjustable washer feeder adjacent to the hammer, a set screw for securing it as adjusted a feeder bar for feeding a washer to the hammer, a connection between the hammer and feeder bar for moving the feeder bar in one direction and a spring for moving it in the opposite direction, substantially as specified.

In testimony whereof I have signed my name to this specification in the presence of two subscribing witnesses.

RALPH J. SHIPLEY.

Witnesses:
C. J. HACKETT,
GEO. H. BURHAM.