(No Model.)

W. A. PALMER.

MACHINE FOR SHEARING, PUNCHING, AND RIVETING.

No. 257,059. Patented Apr. 25, 1882.

Fig. 1.

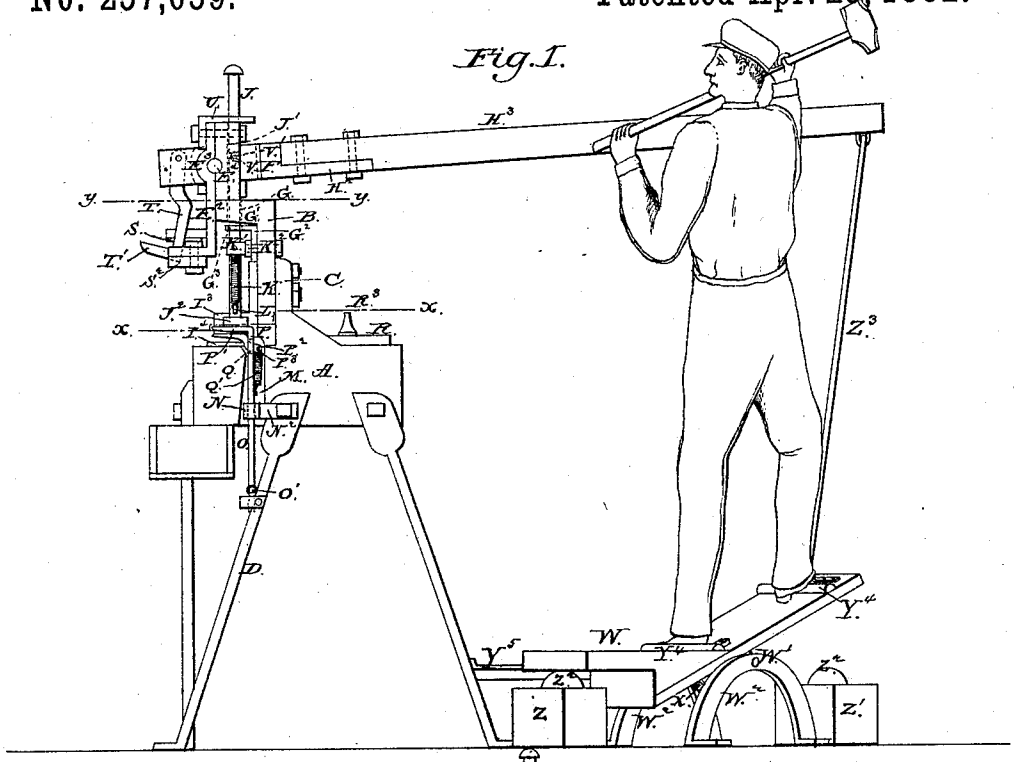


Fig. 3.

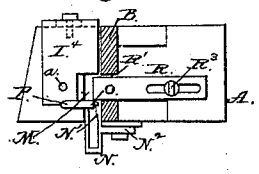


Fig. 2.

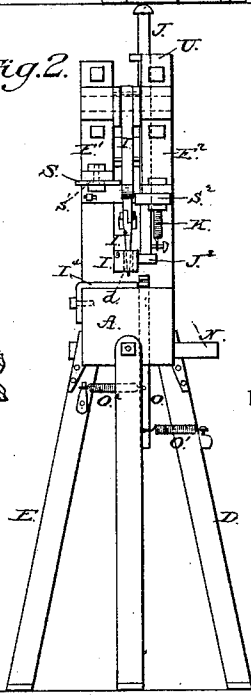


Fig. 4.

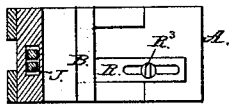


Fig. 5.

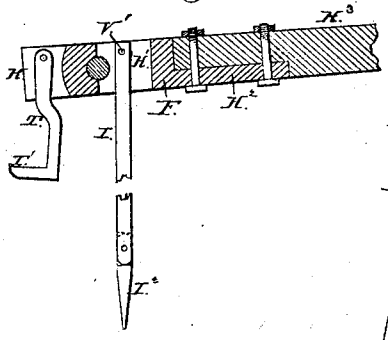
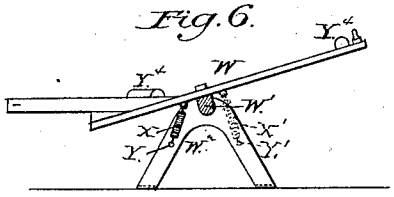


Fig. 6.



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WILLIAM A. PALMER, OF ROME, GEORGIA.

MACHINE FOR SHEARING, PUNCHING, AND RIVETING.

SPECIFICATION forming part of Letters Patent No. 257,059, dated April 25, 1882.

Application filed September 29, 1881. (No model.)

To all whom it may concern:

Be it known that I, WM. A. PALMER, a citizen of the United States, resident at Rome, in the county of Floyd and State of Georgia, have invented a new and valuable Improvement in Punching and Riveting Machines; and I do hereby declare that the following is a full, clear, and exact description of the construction and operation of the same, reference being had to the annexed drawings, making a part of this specification, and to the letters and figures of reference marked thereon.

Figure 1 of the drawings is a representation of a side elevation of my invention. Fig. 2 is a front view. Fig. 3 is a horizontal section taken on line *y y* of Fig. 1. Fig. 4 is a horizontal section taken on line *x x* of Fig. 1. Fig. 5 is a longitudinal section of the lever-casting, and Fig. 6 is a part sectional view of the treadle.

This invention has relation to punching and riveting machines; and it consists in the novel construction and arrangement, in connection with the supporting-frame and bed-plate, of the pivoted punch-guide and operating-lever, the riveting-hammer and retracting-spring, the oscillating lever carrying the goose-bill clamp at its upper end and the retracting-springs working in opposite directions near its lower end, the shouldered guide for stopping the lever, the punch-plate and adjustable guide for adapting the machine to different widths of strap-iron, the knife for cutting the riveted straps into lengths, and the oscillating treadle for operating the punch and knife, as will be hereinafter fully described, and particularly pointed out in the claims.

The object of the invention is to produce a machine for rapidly and conveniently punching and riveting sections of strap-iron together to form bale-ties, barrel-hoops, and the like, and I will now proceed to describe its construction and operation with reference to the accompanying drawings, in which like letters of reference refer to corresponding parts of the machine.

The anvil A, having lugs C, forms a bed-plate to which the casting B is bolted. It is supported on legs D and E, at a convenient height from the floor to enable the operator at the front of the machine to manipulate the straps and rivets. Castings E′ and E², one being slightly longer than the other, are bolted to the front face of the casting B, as shown, and form boxes E³, in which the fulcrum E⁴ of the lever-casting F is journaled. The casting B is provided with a vertical rectangular opening, G, in the offset portion G′ of the same. Below the offset portion a slotted guide-plate, G², is bolted, the slot G³ of the same registering with the opening G in the casting B. The lever-casting F is bifurcated vertically at its forward end, at H, and is provided with a vertical rectangular opening, H′, slightly in the rear of this bifurcation, and has a perforated arm, H², for attaching the rabbeted end of a wooden lever, H³, as shown.

A vertical bar, I, is pivoted in the vertical slot H′, passes down through the opening G in the casting B, and also through the slot G³ in the guide-plate G², is rabbeted at its lower end, and has a punch, I², pivoted thereto. A punch-guide, I³, is bolted to the face of the casting B, its base being slightly elevated above the face of the bed-plate A.

Beneath the punch-guide I³, and secured to the anvil or bed-plate A, is a punch-plate, I⁴, of steel, the hole *a* for the punch I² having a cutting-edge. A vertical bar, J, of steel, passes along a recess, J′, in the right face, from the front of the machine down through the opening G in the casting B, through the slot G³ in the guide-plate G², and is provided with a hammer-head, J², at its lower end, which is held by a spiral retracting-spring, K, one end of which is secured to an arm or pin, K′, projecting from a bolt-head, K², at the front of the casting B, and the other end to a pin, L, projecting from the right side of the vertical bar J.

A recess, M, is made vertically in the right-hand face of the anvil or bed-plate A, and a lateral guide, N, having a shoulder, N′, near its inner end and an arm, N², for securing it to the frame or support of the bed-plate, is projected into the recess M, and also extends laterally therefrom, as shown. Down through this lateral guide N an arm or bar, O, is passed and is sustained in place in the recess M by spiral retracting-springs O′ O², the first being near the bottom and connected to the right front leg, D, and the second being a little higher up and connected to the left front

leg, E. The upper end of the bar O is provided with a goose-bill clamp, P, the upper jaw, P′, of which is stationary and the lower jaw shouldered, the stud or tenon P^2 being perforated at P^3, passed through slot Q, and secured by a spiral spring, Q′, to the rear face of the arm or bar O.

An adjustable guide or gage, R, is passed from the front through an opening, R′, in the casting B, and is secured to the face of the anvil by a thumb-screw, R^3, as shown, and is intended for gaging straps of different widths, in order that they may be rapidly placed beneath the punch with the middle of the strap beneath the punch.

The lower end of the castings E and E′ project horizontally toward the front of the machine and have threaded holes for the reception of the bolts by which the portion S of the knife, which is slotted at S′ to render it adjustable, is secured to the under face of the casting E, and a laterally-adjustable stop, S^3, is secured to the under face of the casting E^2, as shown, against the vertical face of which the cutter T′ bears in its descent.

An arm, T, is pivoted at its upper end in the bifurcated end of the lever-casting F, is curved, as shown, to permit it to swing back between the castings E^2 and E′, and is provided at its lower end with an angular steel cutter, T′, which, in conjunction with the adjustable plate or portion S of the knife or shears, serves to cut the straps when it is necessary to shorten the riveted straps.

A guide-plate, U, for the vertical bar J is secured to the tops of the castings B and E^2 by one of the bolts employed to connect said last-mentioned castings. When the punch is inserted into the opening *d* through the punch-guide Babbitt metal is filled in to close the space around the punch and render its action certain and precise in its descent upon the material to be punched. A groove, V, is made in the rear face of the casting B, near its upper end, to permit the proper introduction of the pin V′, on which the vertical bar I is supported.

An obtuse-angled rocking treadle, W, has its shaft W′ journaled in bearings in supports W^2, adapted to be secured to the floor by means of screws in the ordinary manner. Spiral retracting-springs X and X′ are suspended from the rocking treadle W, on opposite sides of the shaft W′ and near opposite edges of the rocking treadle, as shown, and studs Y and Y′ project inwardly from the supports W^2, for engagement with the lower eyes of the pendent springs X and X′ respectively, when it is desired to employ said springs to lessen the jar to the operator on the rocking treadle W. Blocks Z and Z′, provided with cushions or balls Z^2, are placed under the ends of the rocking treadle W to act as stops for the treadle, the springs tending to render the action of the rocking treadle more easy and uniform. A rod, Z^3, connects the operating-lever with the treadle, as shown. In cases where the machine is to be employed to rivet the strap-iron into hoop form the face of the anvil should be made convex to fit the concavity of the hoop at the riveting-point or lap at the ends of the strap. In its normal position the power end of the wooden lever H^3 is elevated, and the end of the rocking treadle W, to which this lever H^3 is connected by the rod Z^3, is also elevated. At this time the pivoted punch I^2 is elevated to permit the introduction of the sections or ends of the straps to be punched to the goose-bill clamp P. The operator on the rocking treadle W then throws his weight upon the elevated incline of the same, causing the power end of the lever H^3 to descend, by this movement causing the punch to descend and punch the holes in the lapped joint of the strap-iron. With the left hand—the straps being sufficiently tightly held by the goose-bill clamp P—the operator at the front of the machine, as soon as the punch has been raised from the holes, which is accomplished by rocking the treadle back to its normal position by shifting the weight of the operator standing thereon, pushes the straps toward the right-hand side of the machine, which carries the bar O and clamp P toward the right part of the shoulder N′ in the lateral guide N, and with his right hand picks a rivet from a conveniently-located box and drops it, point down, into the holes previously punched. By then releasing the pressure toward the right hand the springs O′ O^2 will draw the bar O against the shoulder N′ and bring the rivet directly between the hammer J^2 and anvil A, at which time the operator on the treadle strikes a blow with a hammer upon the head of the bar J, drives it down, and upsets the rivet. The springs O′ O^2, as the blow is struck, permit the arm O and goose-bill clamp P to be carried down with the straps, so that these parts are not injured by the blow. As soon as the blow has been given the retracting-spring K returns the hammer to its normal position. By then attempting the withdrawal of the straps from the goose-bill clamp P the latter will clamp them sufficiently hard to cause the bar O to be drawn forward, and thereby escape the shoulder N′, when it will be drawn back to its normal position by the springs O′ O^2, ready for a repetition of the operation.

In the case of riveting straps at their ends to form hoops the operation will be the same; but the anvil should be convex around the hardy-hole to fit the concavity of the hoop.

In riveting the sections together for baleties, hoops, and the like they are frequently too long and have to be cut to the proper length. The knife hereinbefore described is intended for this purpose and operates as follows: The arm T is sufficiently long to permit the cutter T′ to come below the portion S of the knife when the lever is in its normal position. A space is then left between the cutter T′ and the blade S, into which the strap is inserted at the point desired to be cut. The treadle is

then operated to cause the lever to descend, which operation raises the cutter and severs the strap.

Where straps of different widths are to be punched the adjustable gage R is set so that when the straps strike against it the punch will pass through them midway between their edges.

The treadle W is provided with cleats Y^4 for giving a foothold to the operator standing thereon. A brace, Y^5, connects one of the treadle-supports to the frame of the punch, as shown.

Having thus fully described my invention, what I claim as new, and desire to secure by Letters Patent, is—

1. In a punching and riveting machine, the bar O, provided with the goose-bill clamp P at its upper end, in combination with the springs O′ O^2, the lateral guide N, having shoulder N′, and the bed-plate A, substantially as and for the purposes specified.

2. In a punching and riveting machine, the combination, with the bifurcated operating-lever, of the pivoted arm T, carrying at its lower end the cutter T′, the adjustable blade S, and the laterally-adjustable stop S^2, the blade S being secured to the lower face of the casting E′ and the stop to the lower face of the casting E^2, the cutter operating between them, substantially as and for the purposes set forth.

3. The combination, with the operating-lever of a punching and riveting machine, of the rocking treadle W, connected thereto by a rod, as shown, substantially as and for the purposes specified.

4. The combination, with the rocking treadle W, of the retracting-springs connected thereto and to the supports, and the blocks provided with stop-cushions on their upper faces, placed under the ends of the treadle, substantially as and for the purpose set forth.

5. In a punching and riveting machine, the bed-plate, punch-plate, and the pivoted punch secured to the lower end of the vertical bar I and operated by the lever H^3, in combination with the slotted casting B, the vertical bar J, carrying the hammer-head J^2 at its lower end, and the goose-bill clamp P, springs O′ O^2, and lateral guide N, having shoulder N′, substantially as specified.

In testimony that I claim the above I have hereunto subscribed my name in the presence of two witnesses.

WILLIAM A. PALMER.

Witnesses:

THEO. MUNGEN,

JAMES J. SHEEHY.