(No Model.)

R. A. CARL.

RIVETING MACHINE.

No. 455,167. Patented June 30, 1891.

Fig. 1

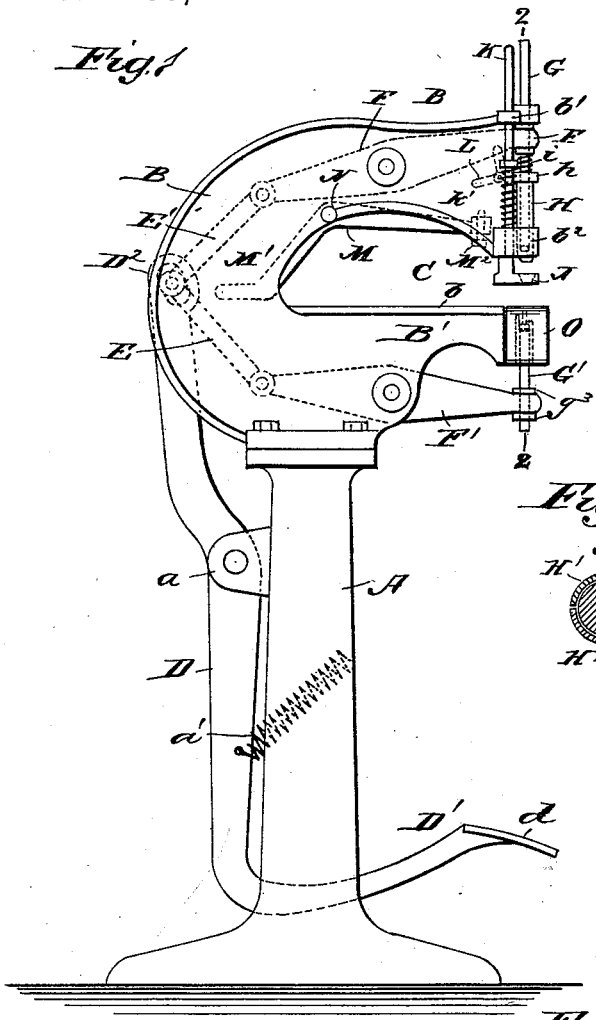


Fig. 2

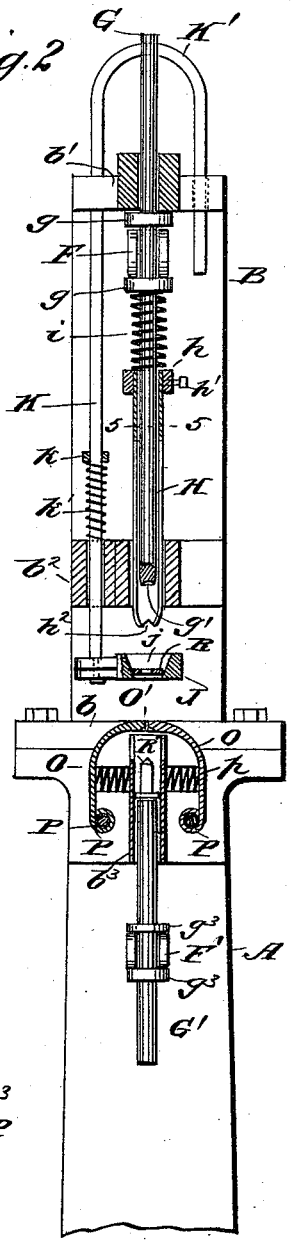


Fig. 5

Fig. 3

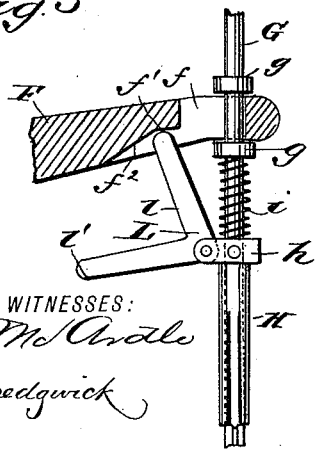


Fig. 4

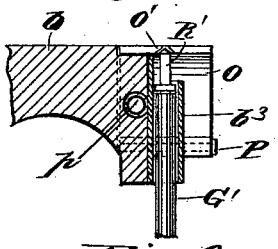
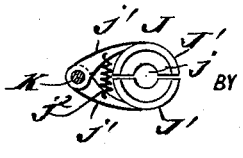


Fig. 6



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UNITED STATES PATENT OFFICE.

REINHOLD A. CARL, OF HEARNE, TEXAS.

RIVETING-MACHINE.

SPECIFICATION forming part of Letters Patent No. 455,167, dated June 30, 1891.

Application filed August 30, 1890. Serial No. 363,504. (No model.)

To all whom it may concern:

Be it known that I, REINHOLD A. CARL, of Hearne, in the county of Robertson and State of Texas, have invented a new and Improved Riveting-Machine, of which the following is a full, clear, and exact description.

My invention relates to improvements in that class of riveting-machines which are used for driving rivets in leather and other flexible material, and my invention is especially adapted to driving a pointed rivet instead of the ordinary blunt rivet.

The object of my invention is to produce a machine of simple construction that is cheap, strong, and durable and by means of which rivets may be rapidly set in the material to be riveted, the rivet being driven and headed at the same operation and without first punching holes in the material to be riveted.

To this end my invention consists in certain features of construction and combinations of parts, which will be hereinafter described and claimed.

Reference is to be had to the accompanying drawings, forming a part of this specification, in which similar letters of reference indicate corresponding parts in all the figures.

Figure 1 is a side elevation of a riveting-machine embodying my invention. Fig. 2 is a broken enlarged vertical section of the same on the line 2 2 of Fig. 1. Fig. 3 is a broken detailed sectional view showing the connection between one of the main levers and the arm connected with the burr-set. Fig. 4 is a broken detailed sectional view of the lower plunger and rivet-holding sleeve. Fig. 5 is a horizontal section through the burr-set and upper plunger on the line 5 5 of Fig. 2, and Fig. 6 is a detailed plan view of the burr-holder.

The frame of the machine consists of the column A and the hollow frame B, which is mounted thereon. The frame B is provided with two forwardly-extending and vertically-aligning arms B′, which thus form a horizontal opening C in the frame B. The lower arm B′ has its upper surface formed into a table b, and the upper arm is provided at its outer extremity with aligning cross-heads b' and b^2, which carry the upper plunger and burr-holder, as described below, and the lower arm is provided at its outer extremity with a vertical sleeve b^3, which serves as a guide for the lower plunger, and also serves as a rivet-holder.

Pivoted between the ears a on the rear portion of the column A is a vertical lever D, the lower end D′ of which is bent to extend forwardly through the foot of the column A and terminates in a suitable treadle d, and the upper end D^2 of which is enlarged, as shown, and terminates in the rear portion of the hollow frame B. The lever is held with its lower portion adjacent to the column A, so as to separate the plungers connected therewith by means of the spiral spring a', which is fixed to the lower portion of the lever and to the adjacent column. The upper end D^2 is pivotally connected by the diverging links E E′ with the main levers F and F′, which are centrally pivoted in the upper and lower portions, respectively, of the hollow frame B. The forward ends of the levers F and F′ are bifurcated, as shown in Fig. 2, and connect with the upper and lower plungers G and G′, respectively, the upper plunger having suitable collars g above and below the end of the lever, so as to hold the lever and plunger in a fixed position in relation to each other, and the lower plunger having similar collars g^3, which connect it in the same manner with the lower lever. The upper lever F has a vertical slot f extending through it adjacent to the plunger G, and the lower portion of the slot extends longitudinally inward, so as to form a shoulder f' and an inclined portion f^2 on the under side of the lever, said parts being adapted to actuate the burr-set arm, as hereinafter described.

The lower end of the upper plunger G is concaved slightly, as shown at g', so that it will easily head a rivet, and the plunger is provided on one side with a longitudinal slot g^2 to guide the burr-set. The burr-set H is mounted loosely on the upper plunger G, the said burr-set being composed of three similar segments H′, which extend below the lower end of the plunger and which are curved slightly inward, so that an opening h^2 is formed in the lower end of the burr-set, the opening being adapted to receive the point of the rivet. The burr-set is provided at its upper end with a collar h, through which extends a set-screw h', the said set-screw pro-

jecting into the slot g^2 of the plunger G, and thus serving as a guide to prevent the burr-set from twisting on the plunger. The burr-set is normally pressed downward, so that its lower end will project beyond the lower end of the plunger by the spiral spring i, which is interposed between the collar h and the lower collar g on the plunger.

A burr-holder J is suspended below the plunger G and burr-set H, so as to align therewith, the burr-holder being composed of the separable jaws J′, which have an opening j between them to receive a rivet and which are provided with rearwardly-extending arms j', the rear portions of the arms being pivoted on the guide-rod K and the arms and jaws being held normally together by the spring j^2, which connects the two arms. The guide-rod K is mounted loosely in the cross-heads b', and b^2 is doubled upon itself at its upper portion, as shown at K′ in Fig. 2, and its upper end then extends downwardly through the cross-head b'. It is provided with a collar k, which is placed a short distance above the cross-head b^2, and a spring k' is interposed between the collar and the cross-head, so as to normally hold the guide-rod and the burr-holder connected therewith in an elevated position. An elbow-lever L is pivoted on the rear portion of the collar h, the upper arm l of the lever extending upwardly into the slotted lever F and the lower arm l' of the lever extending rearwardly, as shown. A bent lever M is pivoted at its elbow on the stud N beneath the upper lever F, the said lever M having a rearwardly-extending portion M′, adapted to be operated on by the enlarged upper end of the lever D, and the said lever M extends forwardly to a point directly beneath the lower arm of the lever L, the front end of the lever M carrying a set-screw M^2, which is vertically adjustable therein and which is adapted to strike the lower arm of the lever L. A jaw O is pivoted on each side of the sleeve b^3, which incloses the lower plunger G′, the said jaws being pivoted on the parallel rods P and being curved toward each other at their upper ends, so as to meet centrally above the sleeve b^3, and their meeting edges thus align with the upper and lower plungers. The under surfaces of the jaws are beveled slightly at their meeting point, as shown at O′, so that a rivet driven from below easily forces its way between the jaws. The jaws are held normally together by a spring p, which extends from jaw to jaw. The front portion of the sleeve b^3 is cut away slightly at its upper end, as best shown in Fig. 4, so that a rivet may be easily inserted therein.

When the machine is to be operated, a rivet-burr R is placed in the burr-holder J, and a rivet R′ is placed in the sleeve b^3, with the head of the rivet resting upon the upper end of plunger G′. The material to be riveted is then inserted between the jaws O and the burr-holder and the operator steps upon the treadle d, thus forcing the lower portion of the lever D rearward and forcing the upper end of said lever forward. This movement forces the rear ends of the links E E′ forward and forces the forward ends of the links apart, thus actuating the main levers F and F′ and causing the plungers G and G′ to move toward each other. As the upper plunger descends, the burr-set H strikes upon the burr R and presses the burr-holder downward upon the material to be riveted, and at the same time the rivet R′ is forced through the jaws O, through the material, and through the rivet-burr. The downward movement of the burr-set H is caused by the shoulder f' on the upper lever F striking the upper arm of the elbow-lever L; but when the burr-set has moved downward sufficiently to press the burr upon the material to be riveted and upon the rivet the upper end of the lever D will have advanced sufficiently to strike the rear end M′ of the bent lever M, thus raising the forward end of the said lever and causing the set-screw M^2 therein to strike the lower arm of the lever L, thus tilting the lever and causing the upper arm to extend vertically through the slot f in the lever F. This allows the upper plunger G to descend without further actuating the burr-set, and the plunger strikes upon the point of the rivet R′ and heads the rivet upon the rivet-burr. The operator then removes his foot from the treadle d, and the spring a' causes the main lever D and the other operative parts of the machine to resume their normal position. It will be observed that the downward pressure on the burr-set should be removed at about the time the upper plunger strikes the point of the rivet, and this may be easily accomplished by means of the set-screw M^2, the said screw being turned so that it will actuate the lever L at any desired time.

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

1. A riveting-machine comprising two vertically-aligning plungers, a lever mechanism for forcing the plungers together, a sleeve inclosing the lower plunger, a pair of spring-pressed jaws arranged to meet above the lower plunger, a separable burr-holder interposed between the two plungers, a spring-pressed burr-set mounted loosely on the upper plunger, a lever mechanism for forcing the burr-set downward, and a lever mechanism for releasing the burr-set, all substantially as described.

2. The combination, with the upper plunger and the slotted main lever for actuating the same, of the burr-set mounted loosely upon the plunger, an elbow-lever pivoted to the burr-set and having one arm entering the slotted lever and the other arm extending rearwardly, as shown, a bent lever pivoted below the main lever and provided with a rearwardly-extending end and a forwardly-extending end aligning with the lower arm of the burr-set lever, and a treadle-lever for

actuating the main lever and the burr-set lever, substantially as described.

3. The combination, with the upper plunger and the main lever for operating the same, said lever having a vertical and longitudinal slot, as shown, of the burr-set mounted loosely on the plunger, the elbow-lever pivoted on the upper portion of the burr-set and having one arm extending into the longitudinal slot of the main lever and one arm extending rearwardly, as shown, and a lever mechanism for tilting the elbow-lever so as to bring the upper arm into alignment with the vertical slot of the main lever, substantially as described.

4. In a riveting-machine, the combination, with the upper plunger, the main slotted lever for operating the same, the treadle-lever connecting with the main lever, the burr-set mounted loosely on the upper plunger, and the elbow-lever pivoted on the burr-set, of a bent lever having its rear end extending into the path of the treadle-lever and its forward end aligning with the elbow-lever of the burr-set, and a set-screw arranged to be vertically adjustable in the front end of the bent lever, substantially as described.

5. A riveting-machine comprising two vertically-aligning plungers, two main levers pivoted in the machine and lower portions of connected with the plungers, as shown, a horizontal swinging treadle-lever having its upper end connected by links with the rear ends of the main levers, a sleeve inclosing the upper end of the lower plunger, a pair of spring-pressed jaws arranged above the sleeve, a spring-pressed burr-holder interposed between the plungers, a burr-set mounted loosely upon the upper plunger, a lever mechanism for moving the burr-set downward, and means for automatically releasing the burr-set, substantially as described.

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