

J. F. ALLEN.
Riveting Machine.

No. 229,795.

Patented July 13, 1880.

Fig. II.

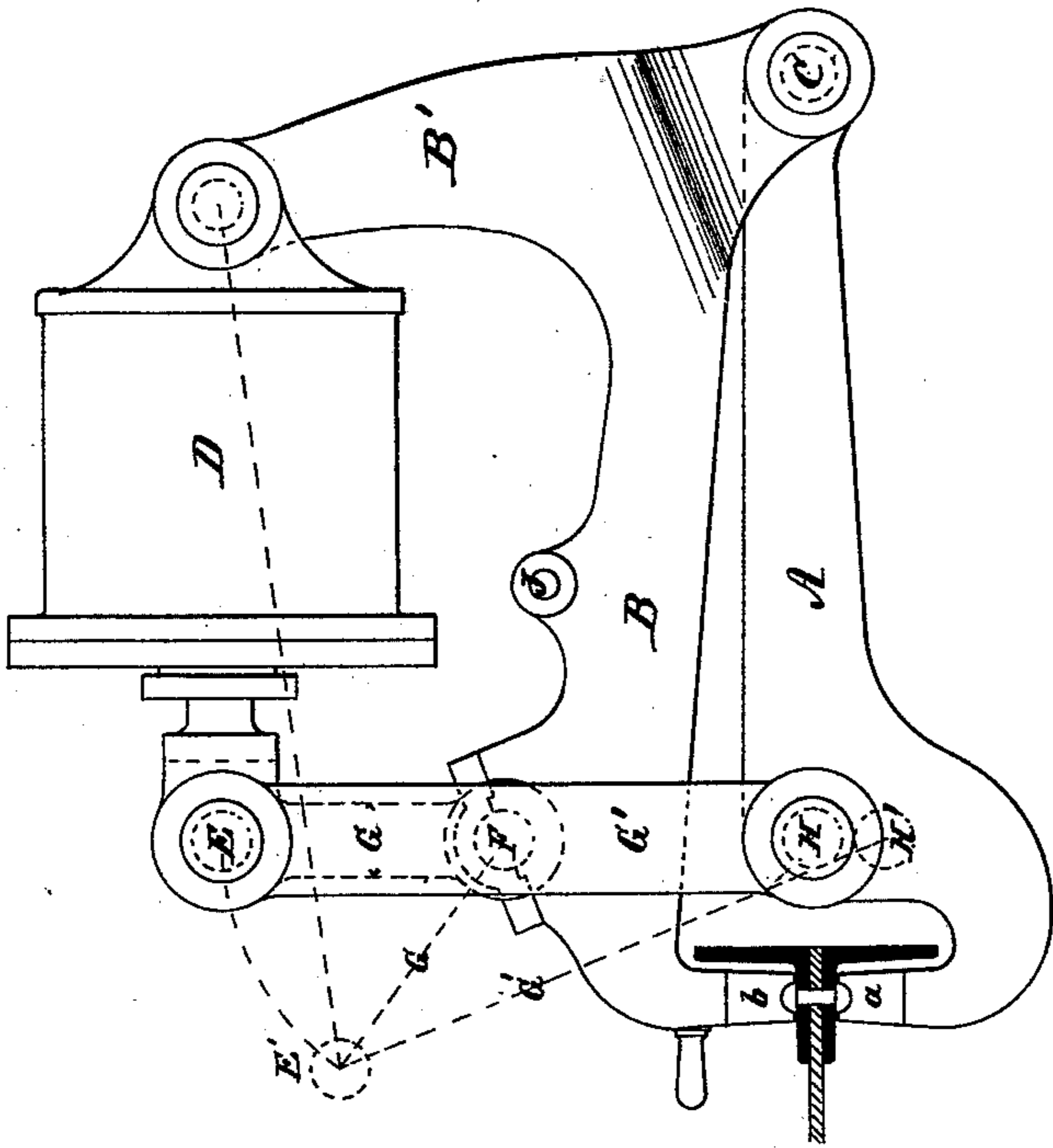
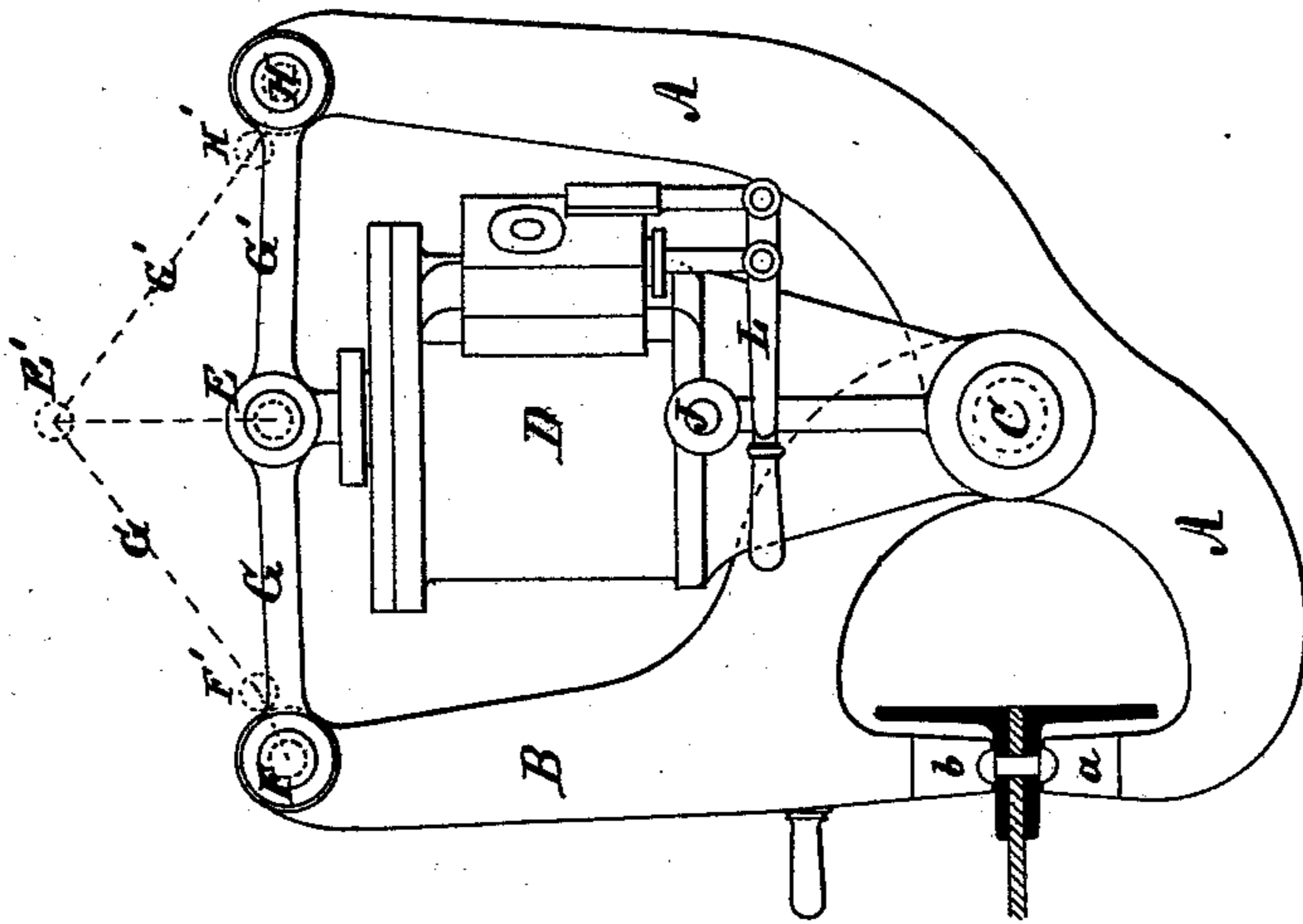


Fig. 1.



Witnesses.

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UNITED STATES PATENT OFFICE.

JOHN F. ALLEN, OF NEW YORK, N. Y.

RIVETING-MACHINE.

SPECIFICATION forming part of Letters Patent No. 229,795, dated July 13, 1880.

Application filed December 1, 1879.

To all whom it may concern:

Be it known that I, JOHN F. ALLEN, of New York, in the State of New York, have invented a new and Improved Riveting-Machine, applicable likewise for punching and shearing metal plates, of which the following is a specification.

My invention relates to portable machinery for riveting, punching, and shearing metal plates; and it consists in a combination of parts comprising two levers, forming an elbow or toggle joint, between the power employed for operating the machine and hinged or pivoted arms which carry the dies or other tools employed in the same.

In the accompanying drawings, Figure I represents a front view of a riveting-machine embodying my invention. Fig. II is a side view of a similar machine with a different arrangement of the several parts and embodying the same principle.

A and B are two arms or levers hinged together and turning on the center C. To one extremity of these arms or levers suitable dies *a* *b* are attached to form the desired head on the rivet whenever these ends are forced together.

In Fig. I a pressure-cylinder, D, is attached to the joint-pin C, provided with a suitable valve for admitting the pressure employed either above or below the piston working in the said cylinder, as may be required. This valve is operated by hand through the lever L. To the end of the piston-rod, at E, two levers, G and G', are attached, the other ends of which said levers are jointed at F and H to the projecting ends of the arms or levers A and B.

When the parts are in the position shown in the drawings and pressure is admitted below the aforesaid piston, the end E of the piston-rod will be moved to a point, E', and the outer ends of the rods or levers G and G' will move from F and H to F' and H', thereby moving the outer or projecting ends of the levers A and B together, and causing the other ends of said arms, to which the dies *a* and *b* are attached, to move a corresponding distance apart to move the dies over and above the projecting part of the newly-inserted rivet, ready for heading the same. When one of the said dies has been placed over the head of the rivet the

pressure is admitted into the cylinder D to force the cylinder-piston down again, whereby the ends of the rods G and G', and consequently the ends of the arms A B, to which these rods G G' are attached, will be forced outward again, whereby the lower ends of the said arms, containing the dies *a* and *b*, will be forced together to act upon the rivet to form the desired head by compressing or squeezing the metal into the properly-shaped die.

When the machine is to be used for punching or shearing, suitable tools for either of these purposes must be substituted in place of the said dies *a* and *b*.

By this application of an elbow or toggle joint between the power and the arms a very compact, light, and portable machine can be constructed, and a machine with a cylinder of eight inches in diameter and a pressure of from sixty to seventy-five pounds per square inch will be sufficient to form a head on a rivet one and one-fourth inch in diameter.

In the machine represented in Fig. II the same parts are combined and operate on the same principle; but this arrangement allows the distance from the center of the joint-pin C to the center of the dies *a* and *b*, or the length of this leverage, to be made any desired length without greatly increasing the size or weight of the machine.

In this Fig. II, A and B are the two arms, jointed together at C, and having on their other ends the dies or other tools, as shown at *a* and *b*. To a projecting part, B', of the arm B the cylinder D is hinged. The end of the piston-rod E is connected, through a rod, G, with the arm B at F, and through rods G' with the arm A at H.

The parts being in the position shown, the outward motion of the piston-rod (supposing the arm B; and consequently the center F, to remain stationary) will cause the rods G and G' to move into the position indicated by the dotted lines, whereby the arms A and B will be moved apart to admit the machine to be moved over the rivet to be operated upon.

When one of the dies has been placed over the head of the rivet, and the piston and piston-rod are forced inward, the arms A and B will be brought together again as the three centers E, F, and H are brought in a straight

line, or nearly so, the rods G and G' forming the elbow or toggle joint, and the dies will act upon the rivet to form the desired head by compressing or squeezing the metal into the properly-shaped die.

The machines are suspended and balanced on pins J, one of which projects at each side of the same.

Instead of using two levers turning on a center, a solid jaw may be made with a suitable projecting arm, to which the cylinder is attached. Into the lower part of this jaw a die similar to *a* may be attached, while the upper die may be made capable of sliding through a suitable hub or boss made in the upper part of this jaw. The rods G and G' being arranged similar, as represented in Fig. II, except that the rods G' will be attached to the upper part of the jaw, and the rod G to the upper end of the movable upper die, which

passes through the hub or boss in said jaw, the operation of this machine will be similar to that of the machine represented in Fig. II; but by this arrangement a perfect straight or parallel motion between the dies will be obtained.

What I claim as my invention, and desire to secure by Letters Patent, is—

In a riveting, punching, or shearing machine, the combination of the pressure-cylinder and piston, the piston-rod, the rods G and G', forming an elbow or toggle joint, and the hinged arms A and B, with suitable dies or other tools, arranged and operating substantially in the manner and for the purpose set forth.

JOHN F. ALLEN.

Witnesses:

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