No. 624,435. Patented May 2, 1899.

J. FIELDING.

RIVETING ENGINE.

(Application filed Jan. 19, 1899.)

(No Model.)

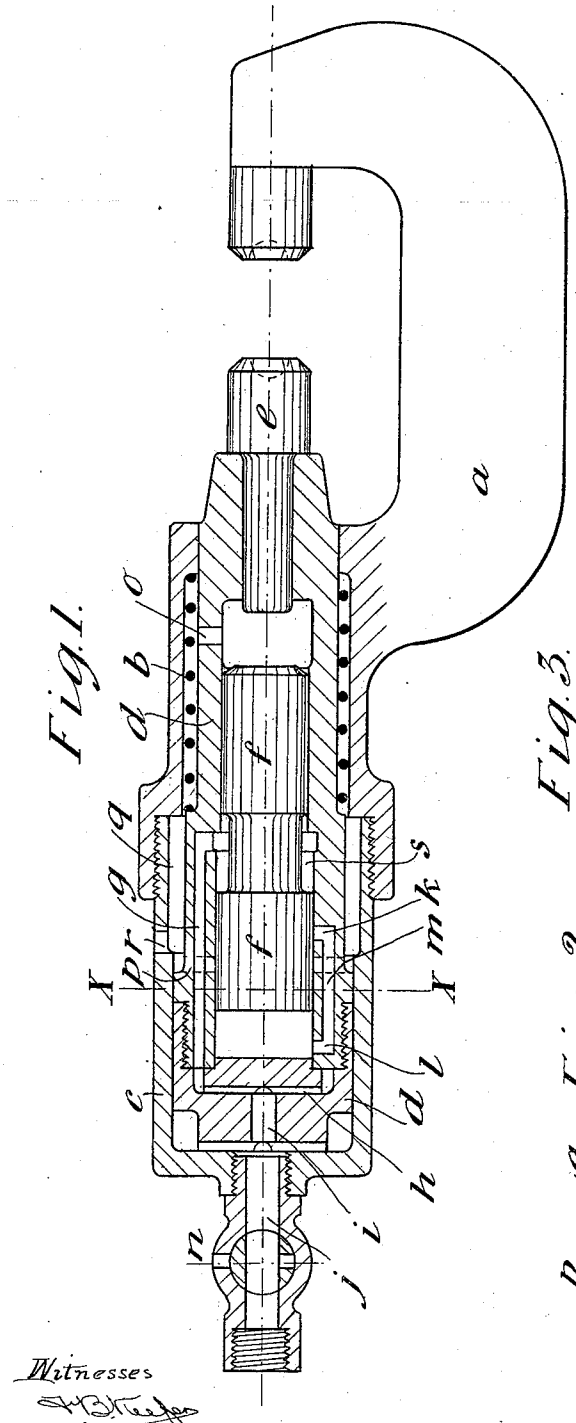


Fig. 1.

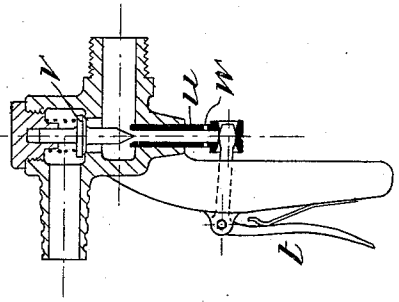


Fig. 3.

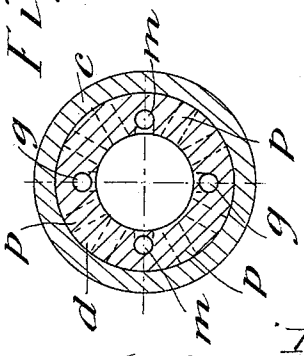


Fig. 2.

Witnesses

Inventor

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UNITED STATES PATENT OFFICE.

JOHN FIELDING, OF BELMONT, UPTON ST. LEONARD'S, ENGLAND.

RIVETING-ENGINE.

SPECIFICATION forming part of Letters Patent No. 624,435, dated May 2, 1899.

Application filed January 19, 1899. Serial No. 702,683. (No model.)

To all whom it may concern:

Be it known that I, JOHN FIELDING, a citizen of England, residing at Belmont, Upton St. Leonard's, in the county of Gloucester, England, have invented a certain new and useful Improved Riveting-Engine, (for which I have applied for a patent in Great Britain, dated December 6, 1898, No. 25,669,) of which the following is a specification.

My invention relates to a riveting-machine worked by steam, compressed air, or other elastic fluid and so constructed that the rivet is subjected to direct pressure, while it is also subject to percussion, as I shall describe, referring to the accompanying drawings.

Figure 1 is a longitudinal section, partly in elevation, of a riveting-machine according to my invention. Fig. 2 is a transverse section on the line $x\ x$ of Fig. 1. Fig. 3 is a section of a controlling-valve that may be used.

The body a of the machine, which carries the holding-back tool, has a cylindrical part occupied by a spring b and has attached to it a cylinder c, in which works a hollow piston d, carrying at its end the riveting-tool e. The piston d is bored to receive a percussion-plunger f, which has its front striking part a little smaller in diameter than its rear part and has between these parts a recess s, into which open ports g, formed in the wall of the piston d and communicating by channels h and i with the opening j for inlet and outlet of the working fluid. Other channels m, formed in the wall of the piston d, connect ports k and l, opening into the interior of the piston d. The admission and emission of the working fluid is determined by a three-way cock n. o is a port opening to the outer air from the space in front of the percussive plunger f, and ports p open from the interior of the piston d to an annular space q, which communicates with the outer air by a port r.

The machine works as follows: The plates to be riveted being placed with the rivet inserted in front of the tool e, the cock n is turned to the position shown in Fig. 1, admitting the working fluid, which, acting on the piston d, drives it forward, pressing the riveting-tool on the end of the rivet. At the same time the fluid passes by the channels i h g to the recess s and pressing on the annular shoulder of the larger part of the plunger f forces the plunger back until this shoulder passes the ports k, whereupon fluid passes by the channels m to the ports l and through them into the space behind the plunger f, forcing it forward, so that its front end strikes the riveting-tool. When the rear end of f in its forward stroke passes the ports p, the fluid behind it escapes as exhaust, and the plunger f is again driven back to be again pressed forward, so that it makes rapidly-repeated strokes upon the stem of the tool e, which is at the same time pressed upon the rivet by the fluid-pressure acting on the rear of the piston d. When the plug of the cock n is turned one-quarter around, the fluid is allowed to escape by the lateral opening, and the spring b pushes the piston d back into position for a succeeding operation.

Instead of the three-way cock n a valve such as that shown in Fig. 3 may be employed to determine the admission and emission of the working fluid. On pressing the spring-lever t the tubular stem u is pressed against the conical end of the stem of the valve v, which closes the mouth of u, and by further pressure the valve v is moved from its seat, admitting working fluid to the machine. On relieving the pressure on t the valve v closes and the stem u retreats, so that its mouth is left open, whereupon the working fluid passes through the bore of u and escapes by lateral apertures w.

Having thus described and ascertained the nature of this invention and the best means I know of carrying the same into practical effect, I claim—

A riveting-machine comprising a cylinder fitted with a hollow pressing-piston which carries the riveting-tool, and has within it a percussive plunger, the cylinder and pressing-piston being provided with ports and channels for passage of the operating fluid, and a retracting-spring for the hollow piston, substantially as described.

In testimony whereof I have hereunto set my hand in presence of two subscribing witnesses.

JOHN FIELDING.

Witnesses:
OLIVER IMRAY,
GERALD. L. SMITH.