

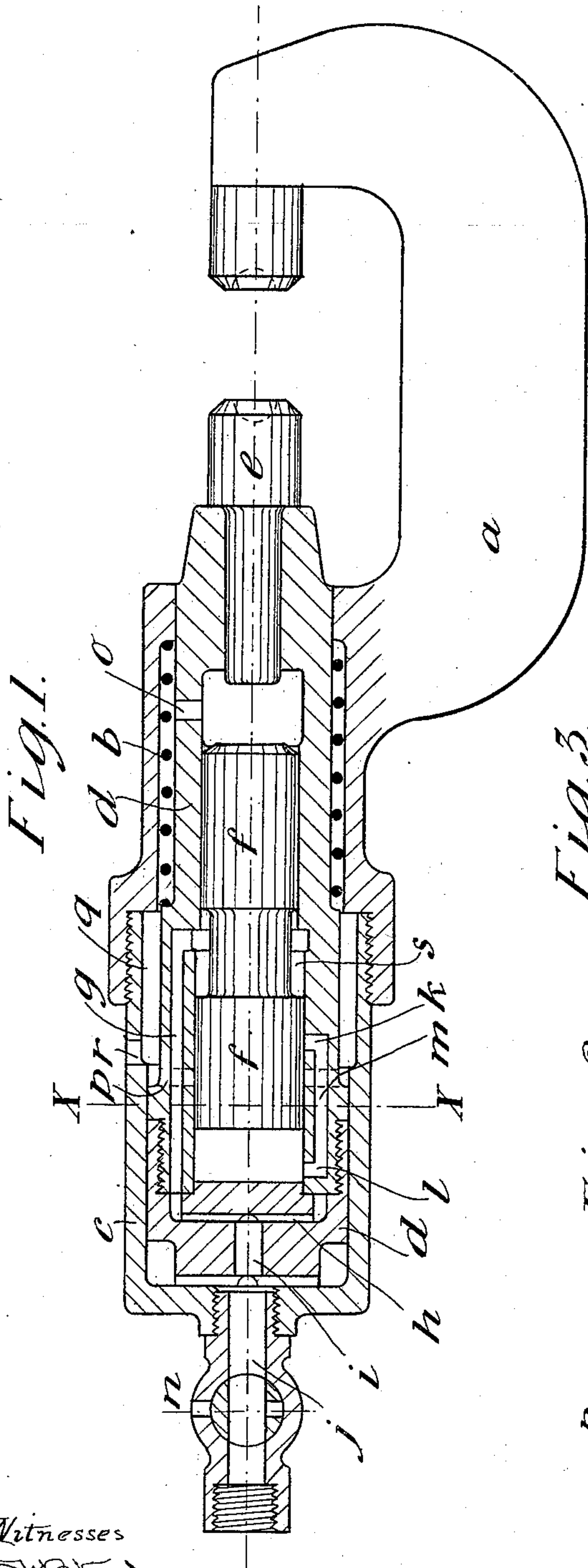
No. 624,435.

Patented May 2, 1899.

J. FIELDING.
RIVETING ENGINE.

(Application filed Jan. 19, 1899.)

(No Model.)



Witnesses
W. D. Stearns
Wm. H. Stearns

Fig. 3.

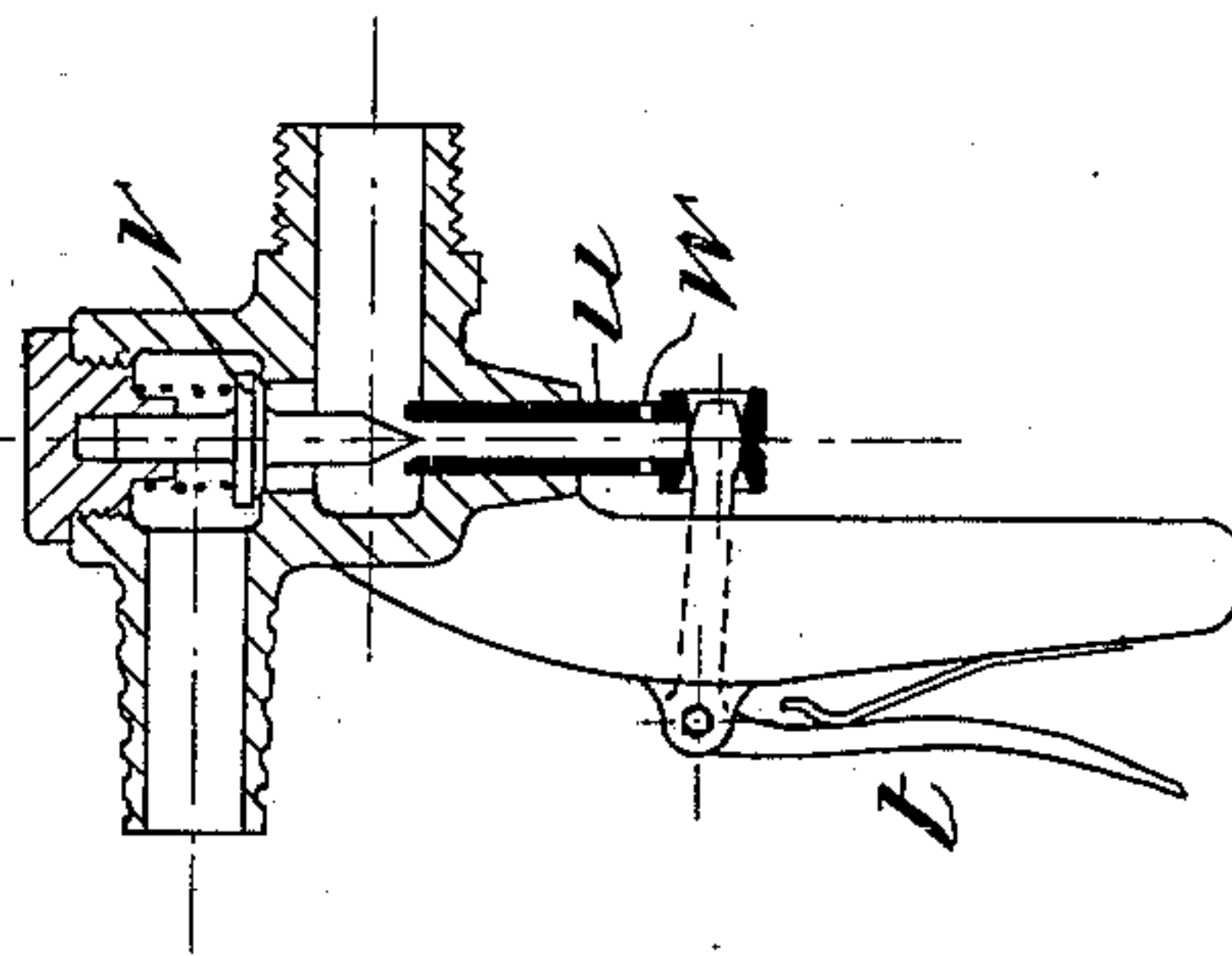
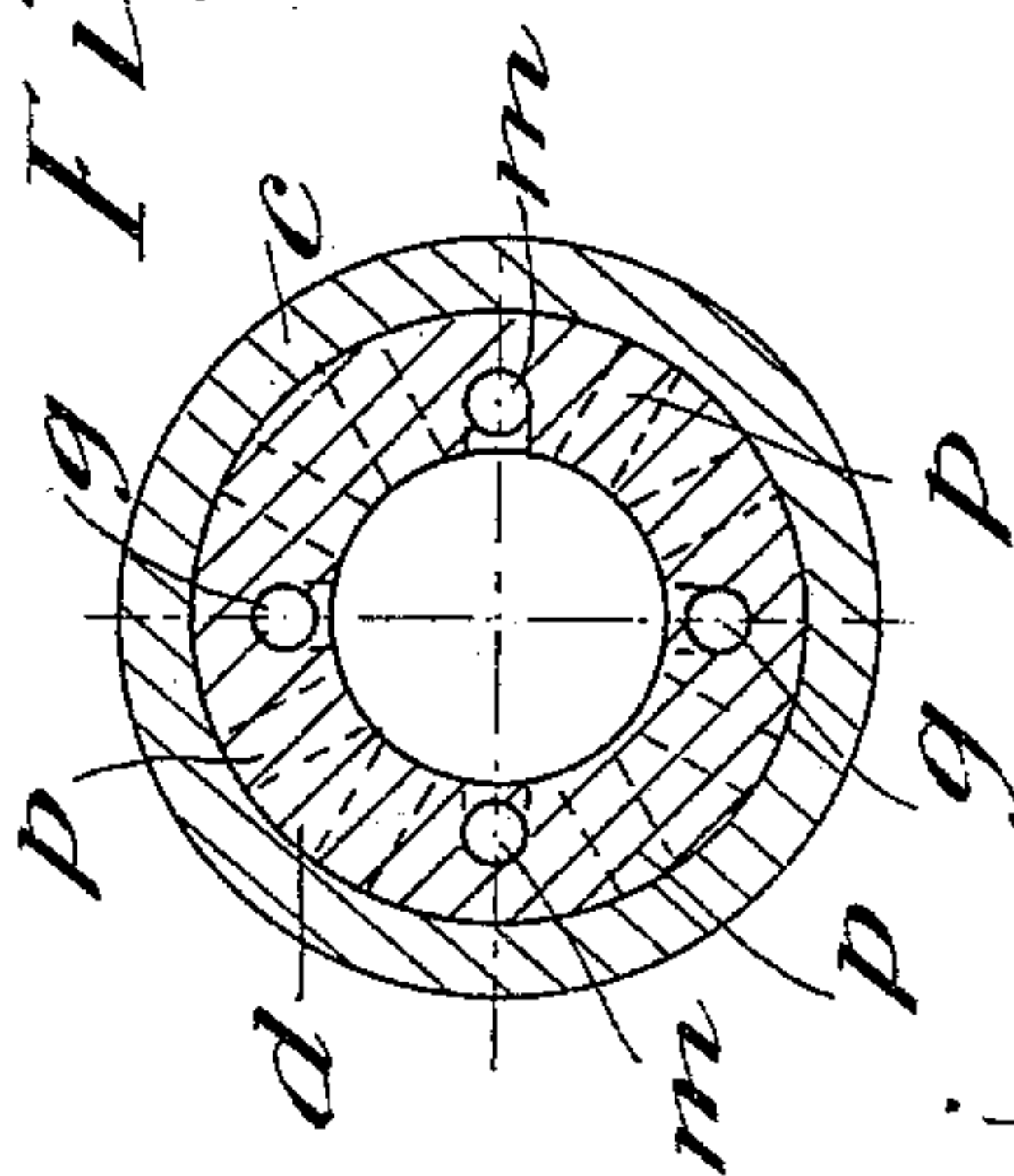


Fig. 2.



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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 *xx* 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.