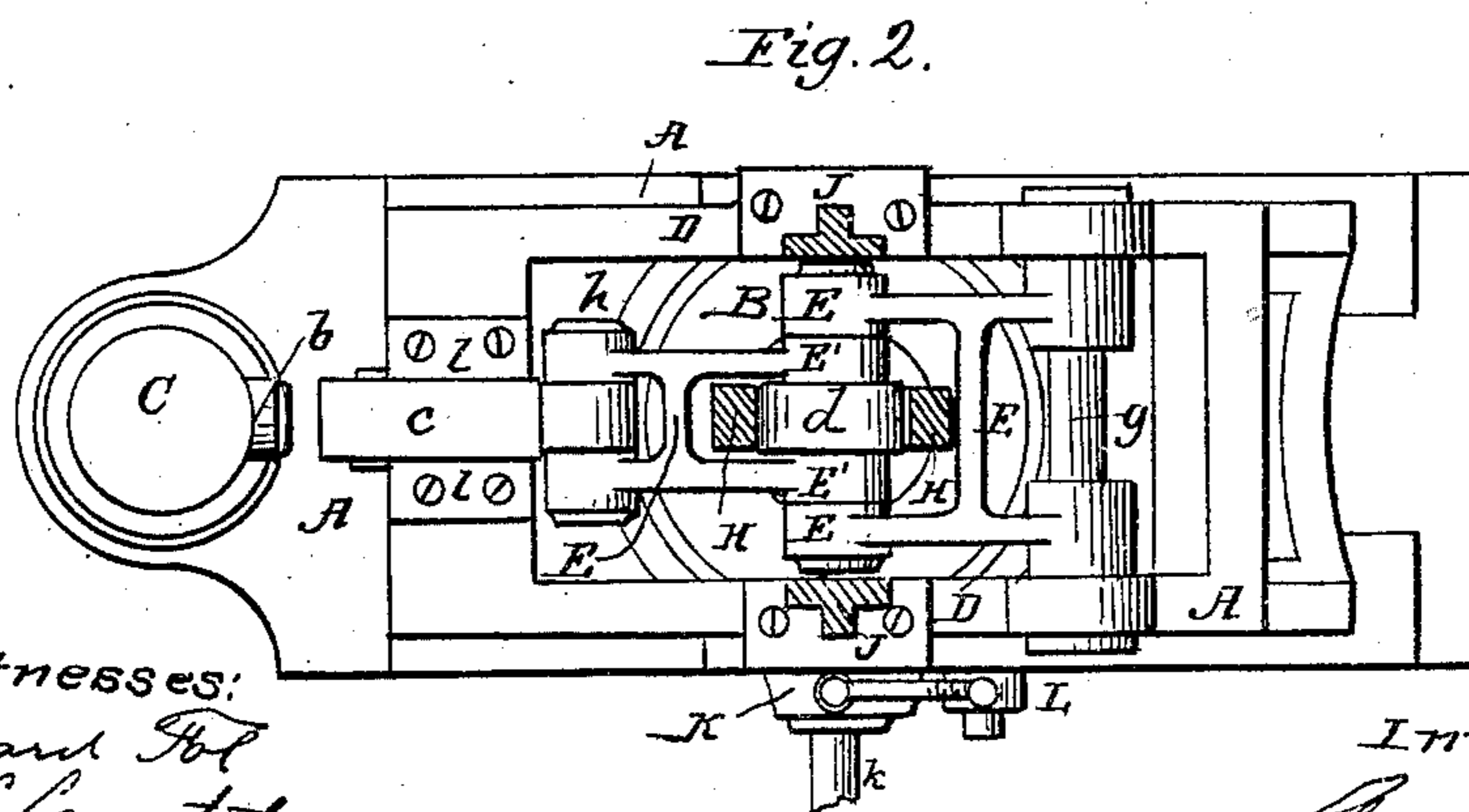
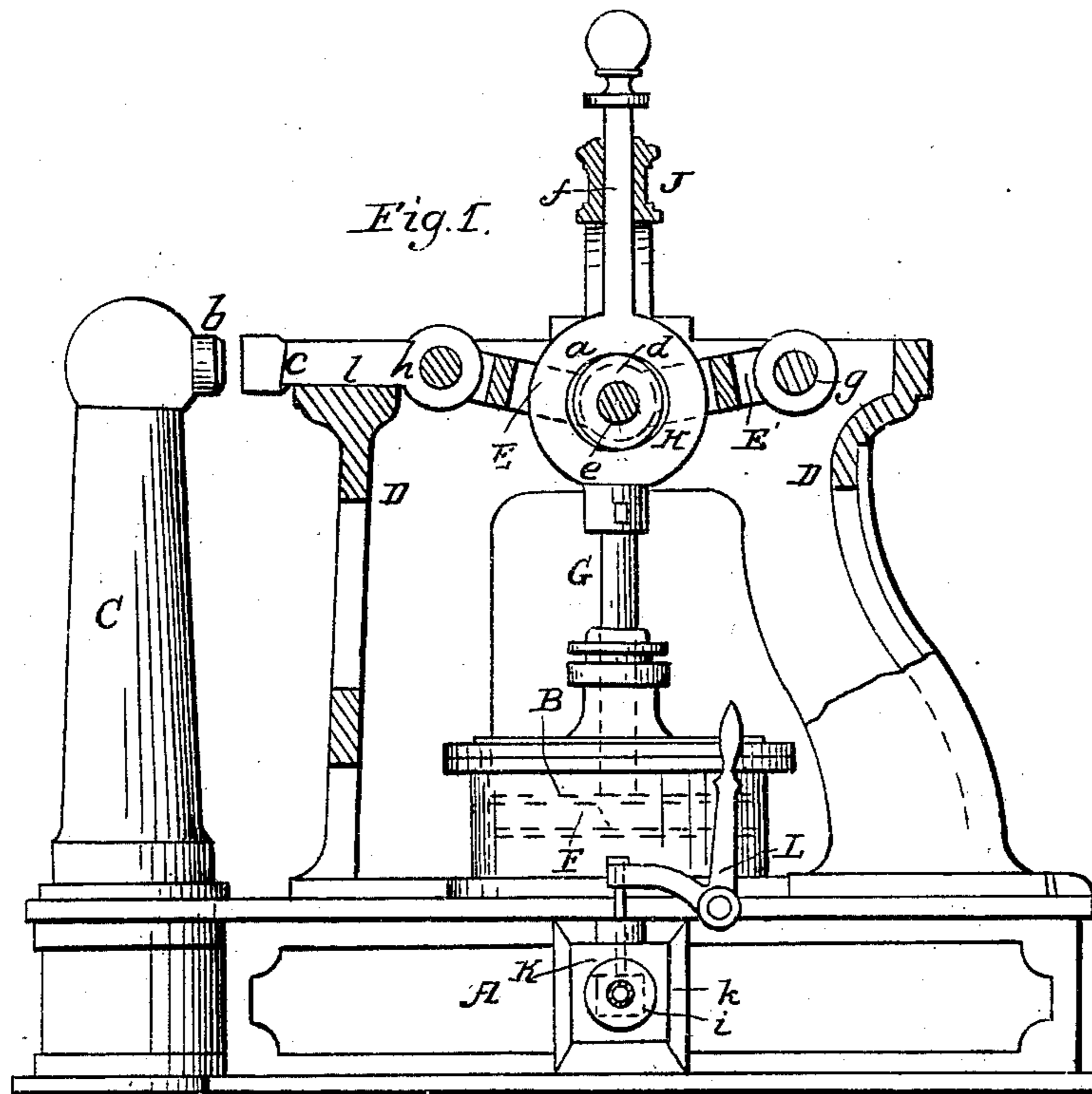


J. SPARROW.

Riveting, Punching, and Shearing Machine.

No. 25,588.

Patented Sept. 27, 1859.



Witnesses:
Edward Fol
J. L. Cartier

Inventor:
John Sparrow

UNITED STATES PATENT OFFICE.

JOHN SPARROW, OF PORTLAND, MAINE.

STEAM PUNCHING-MACHINE.

Specification of Letters Patent No. 25,588, dated September 27, 1859.

To all whom it may concern:

Be it known that I, JOHN SPARROW, of Portland, in the county of Cumberland and State of Maine, have invented a new and useful Improvement in Machinery for Riveting, Punching, and Shearing Metals; and I do hereby declare that the following is a full, clear, and exact description of the same, reference being had to the accompanying drawings, forming part of this specification, in which—

Figure 1, is a side elevation partly in section of a riveting machine constructed according to my invention. Fig. 2, is a plan view of the same partly in section.

Similar letters of reference indicate corresponding parts in both figures.

My invention consists in the employment in a machine for punching, riveting or cutting metals, of a single acting cylinder and piston operated by the pressure of steam, water or other fluid and a toggle, combined and applied to the punch or cutter substantially as hereinafter described to effect the necessary pressure thereon for the riveting punching or cutting operation.

To enable others skilled in the art to make and use my invention I will proceed to describe its construction and operation.

A, is a strong bed-plate on which is erected the upright cylinder B, the upright post or standard C, to which the fixed die *b*, is secured, and the upright framing D, which supports the toggle E, E', and contains or carries the guide *l*, *l*, for the horizontally working punch *c*. The piston F, shown in dotted outline in Fig. 1, has secured to its rod G, a cross head H, in which is an elliptical opening or slot *a*, in which works a roller *d*, which is fitted to turn loosely on the joint pin *e*, of the toggle E, E', and to the top of the said cross head H, is secured rigidly an upright guide rod *f*, arranged in line with the piston rod and working in an arched guide J, erected across the framing D. The two links E, E', of the toggle are forked at the joint, the latter to receive within it the roller *d*, and the former to receive E', within it, as shown in Fig. 1. The link E, is attached to the framing D, by a fixed pin *g*, and the link E, is attached to the punch by a pin *h*.

The cylinder has a port near the bottom, through which steam is admitted below the

piston, by a slide valve *i*, shown dotted in Fig. 1, said valve being arranged in a steam chest K, at one side of the bed plate and worked by means of a hand lever L. The valve seat contains besides the port communicating with the cylinder an exhaust port connected with a suitable pipe or other means of escape. The ports are arranged in the manner common to the steam and exhaust ports of slide valve steam engines. The steam chest K, is supplied with steam by a pipe *k*, from a suitable boiler.

The operation of the machine is as follows:—steam, water or other fluid at a suitable pressure being admitted to the cylinder below the piston by a proper movement of the valve *i*, the piston is forced upward and by its action on the joint of the toggle, causes the punch *c*, to be moved longitudinally toward the die *b*. When the valve is moved to shut off the steam from the cylinder and open the exhaust port the piston is caused to descend by its weight aided by the pressure of the atmosphere on its upper surface and so to draw back the punch.

This machine combines the two powerful agencies, of the toggle and the direct pressure of steam, water or other fluid upon the piston, while it is of simple construction and perfectly manageable.

By substituting a punch and fixed die of proper form for the punch *c*, and fixed die *d*, the same machine serves as a punching machine, and by substituting two cutters for the said die, and punch the same machine is converted into a shearing machine.

I do not claim separately either the use of a toggle movement or of the direct action of steam or hydraulic pressure for riveting punching or shearing; but

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

The employment for the purposes specified of a single acting cylinder and piston operated by the pressure of steam, water or other fluid and a toggle combined with and arranged and applied relatively to each other and the punch or cutter substantially as herein described.

JOHN SPARROW.

Witnesses:

EDWARD FOX,
S. L. CARLETON.