(No Model.)

F. C. RINSCHE.

ENGINE.

No. 543,052. Patented July 23, 1895.

Fig. 1.

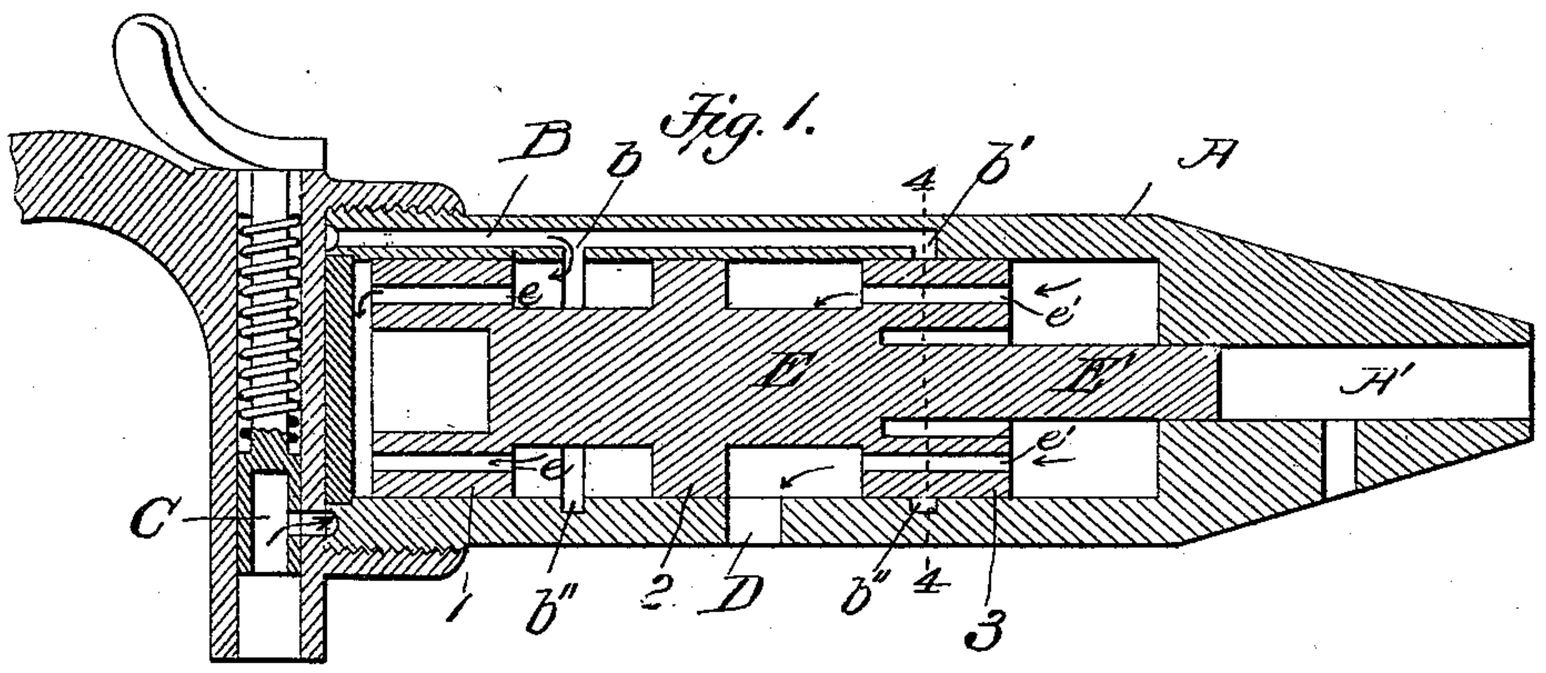


Fig. 2.

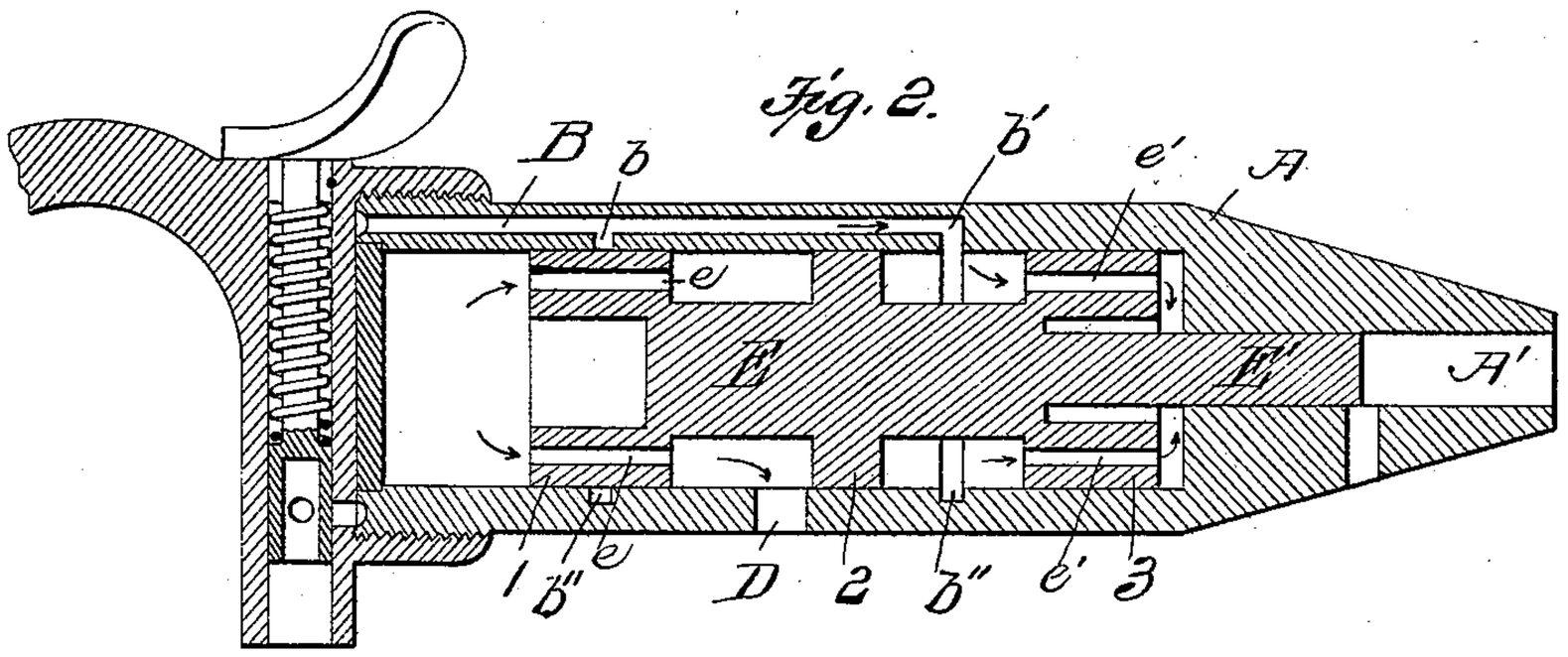


Fig. 3.

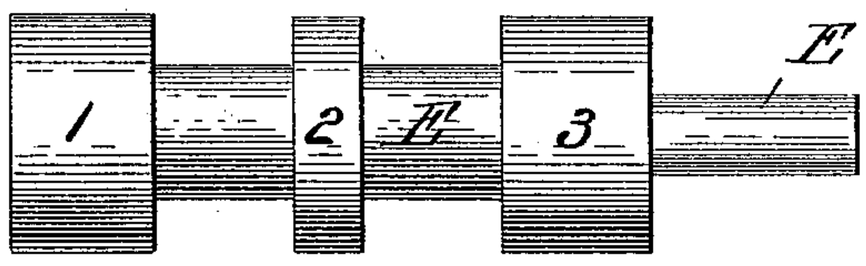
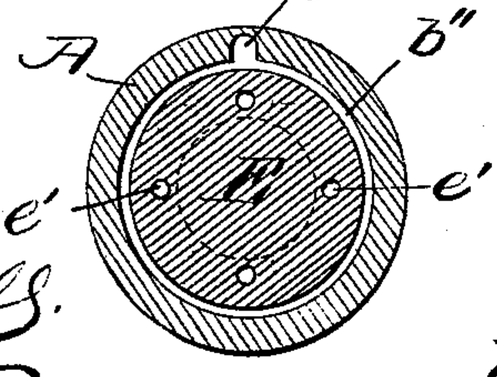


Fig. 4.



Witnesses:
F. R. Cotwalls.
Hugh K. Wagner.

Inventor
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By Paul Bakewell
his atty.

UNITED STATES PATENT OFFICE.

FRANK C. RINSCHE, OF ST. LOUIS, MISSOURI, ASSIGNOR TO PIERRE CHOUTEAU, OF SAME PLACE.

ENGINE.

SPECIFICATION forming part of Letters Patent No. 543,052, dated July 23, 1895.

Application filed February 25, 1895. Serial No. 539,627. (No model.)

To all whom it may concern:

Be it known that I, FRANK C. RINSCHE, a citizen of the United States, residing at the city of St. Louis, State of Missouri, have invented a certain new and useful Improvement in Engines, of which the following is a full, clear, and exact description, reference being had to the accompanying drawings, forming a part of this application, wherein—

Figure 1 is a longitudinal sectional view of my improved engine. Fig. 2 is a similar view showing the piston in a different position. Fig. 3 is a side elevational view of the piston. Fig. 4 is a cross-sectional view on line 4 4, Fig. 1.

This invention relates to a new and useful improvement in engines of that class which are designed to be run by motive fluid, preferably in the form of compressed air. The piston is provided with three heads, which control the inlet and exhaust of the motive fluid, and also a stem which delivers impacting blows upon a tool-shank arranged in the end of the cylinder.

In the drawings, A indicates the cylinder, in the end of which is formed the tool-shank opening A′, into which tool-shank opening extends the stem on the piston.

B indicates the inlet-port, which opens into the cylinder at points *b* and *b′*. The passage of the motive fluid through port B is controlled in any suitable manner, and preferably by a valve C arranged in the base of the handle secured to the cylinder A.

D indicates the exhaust-port leading from the side of the cylinder.

E indicates the piston operating in cylinder A, said piston being formed or provided with three heads 1, 2, and 3 and a stem E′ extending into the tool-shank opening. Arranged through the heads 1 and 3 are ports or openings *e* and *e′*, respectively. Heads 1 and 3 are preferably recessed on their outer faces.

The interior of the cylinder is formed with a recess or groove *b″*, into which the inlet-ports *b* and *b′* lead. The object of these recesses is to permit live fluid, when the pistons cut off its admission to the cylinder, to entirely encircle the piston-heads, so that the pressure thereon will be evenly distributed.

The operation is as follows: Assuming the piston to be at the upper end of the cylinder, as shown in Fig. 1, the motive fluid will pass through port *b* and through the opening *e* on top of the piston-head 1. When the piston is in this position, recess *b″*, into which port *b′* opens, (which port is cut off from the cylinder by head 3,) permits the motive fluid to circulate around head 3, thereby relieving it of any excess pressure at one point. The air at the lower end of the cylinder exhausts through opening *e′* and exhaust-port D, head 2 being above said exhaust-port to permit this. When the piston is forced down head 3 uncloses port *b′*, head 2 passes on the other side (or beneath) exhaust-port D, and head 1 closes inlet-port *b* to the cylinder. The motive fluid now passes through inlet-ports *b′* and through the opening *e′* to beneath head 3, as shown in Fig. 2. The air at the top of the cylinder exhausts through openings *e* and exhaust-port D. This cycle of operations is repeated during the operation of the engine.

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

In an engine, the combination with the cylinder formed with an exhaust opening in its side, and a reduced bore at its front end, of a handle secured to the rear end of the cylinder, an inlet passage in the base of the handle which inlet passage extends along the side of the engine-cylinder and opens thereinto at two points, a valve located in the handle base for controlling the passage of motive fluid to the engine, a three-headed piston which cooperates with the cylinder ports, the end heads of said cylinder being perforated, and a stem E′ on the piston which projects into the reduced bore in the front end of the cylinder, where it is adapted to deliver impacting blows upon the shank of a tool, likewise inserted in said bore; substantially as described.

In testimony whereof I hereunto affix my signature, in presence of two witnesses, this 18th day of February, 1895.

FRANK C. RINSCHE.

Witnesses:

F. R. CORNWALL,

HUGH K. WAGNER.