

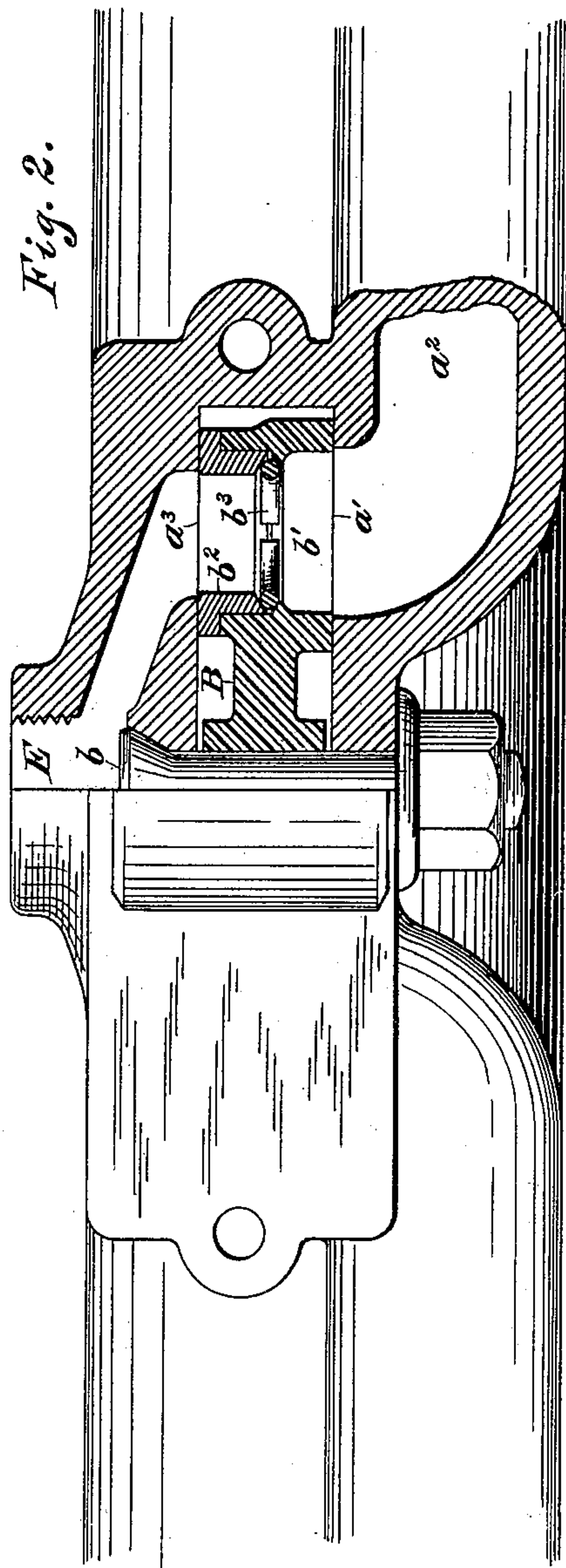
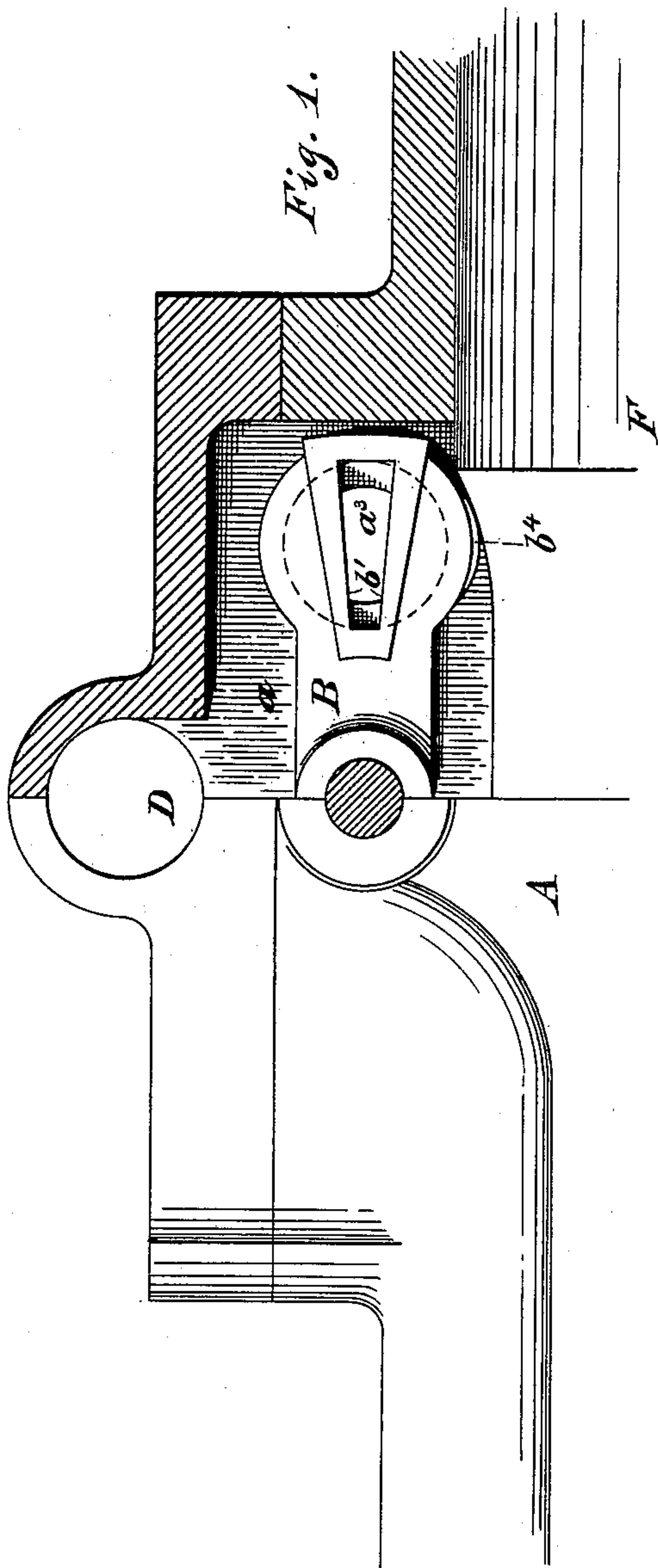
No. 613,806.

Patented Nov. 8, 1898.

J. P. SIMMONS.
DIRECT ACTING ENGINE.

(Application filed May 25, 1897.)

(No Model.)



Witnesses:

Geo. W. Heffinger.
Wm F. Watson.

Inventor.

John P. Simmons
By W. H. Smith
att'y.

UNITED STATES PATENT OFFICE.

JOHN P. SIMMONS, OF SAN FRANCISCO, CALIFORNIA, ASSIGNOR TO SQUIRE V. MOONEY, OF SAME PLACE.

DIRECT-ACTING ENGINE.

SPECIFICATION forming part of Letters Patent No. 613,806, dated November 8, 1898.

Application filed May 25, 1897. Serial No. 638,145. (No model.)

To all whom it may concern:

Be it known that I, JOHN P. SIMMONS, a citizen of the United States, residing in the city and county of San Francisco, State of California, have invented a new and useful Improvement in Direct-Acting Engines, of which the following is a specification.

This invention relates to the class of engines designed particularly to operate impact rock-drills; and its object is to provide a cheap, simple, and efficient valve mechanism for this class of devices.

It consists in the novel construction and combination of the several parts hereinafter fully described and specifically claimed.

The device is illustrated in the accompanying drawings, in which—

Figure 1 is an elevation of my invention, portions being in section. Fig. 2 is a plan, parts of which are also in section.

Referring to the drawings, A is a cylinder having a valve-chest a opening directly from its bore. This valve-chest is parallel-sided, closed on top, and extends radially outward from the cylinder.

As the parts on either side of the middle point in the length of the cylinder are duplicates of those on the other side a description of one side will suffice.

A valve-port a' opens into passage a^2 , leading to and communicating with the end of cylinder A. Opposite to port a' in the other side of the valve-chest a is an outlet-aperture a^3 . Fitted between the parallel sides of the valve-chest is a rock-arm B, pivoted upon a pin b . The end of the rock-arm B is provided with a radial slot or passage b' , suitably placed to coincide with the ports a' and a^3 in one position of rock-arm B. Upon the side of B adjacent to a^3 it is provided with a packing-ring b^2 . A spring-ring b^3 is also provided, adapted to press the packing-ring snugly against the parallel side of the valve-chest. The inner end of the ring b^2 is beveled inward, and the bottom of the pocket in which b^2 fits is likewise inwardly beveled, and between these two beveled surfaces the spring-ring b^3 is compressed radially inward, Fig. 2.

The rock-arm B is pivoted upon the pin C,

passing from side to side of the valve-chest and secured in place by a nut.

In the cylinder A is located a suitable piston F, having a portion of its length intermediate of its ends reduced in diameter and the portions between the larger and smaller diameters suitably sloped or curved to act as cam-surfaces to actuate the valve rock-arm B. A tappet or lug b^4 is provided upon the inner side of each end of B, adapted to project into the cylinder-bore and engage with the sloping portion of the piston F, each end alternately. D is an inlet-aperture for the admission of the actuating fluid. E is an outlet or exhaust.

The operation of the device is as follows: Movement of the piston F rocks the arm B by contact of the incline portion with one end tappet b^4 , thus bringing the passage through that end of rock-arm B coincident with port a' and exhaust a^3 and at the same time uncovering the port a' of the other end of the cylinder, thus reversing the direction of the actuating fluid, and consequently the direction of motion of the engine-piston F. This forms one cycle, which is repeated indefinitely.

What I claim as new is—

1. In a direct-acting engine, a cylinder, a piston therein having valve-operating inclines intermediate of its ends, a parallel-sided valve-chest extending radially outward from the cylinder and having ports in one of its parallel sides, and a rocking arm having a through port or passage adapted to control the said ports and be directly actuated by the piston.

2. In a direct-acting engine, a cylinder, a piston therein having valve-operating inclines intermediate of its ends, a pivoted valve having a through port or passage and adapted to rock in a plane radial to the cylinder, and a valve-seat parallel to the plane of motion of the valve upon which the valve slides.

3. In a direct-acting engine, a cylinder having a parallel-sided valve-chest extending radially outward with port-openings in the parallel sides, and a valve sliding between the

parallel sides having a through - passage adapted to connect and to form a communication between the port-openings in the opposite sides of the valve-chest.

- 5 4. A sliding valve provided with an outwardly-movable packing-ring fitted into its reverse side, said ring being beveled on its

inner end, and a spring-ring acting upon the beveled portion by radial expansion whereby the packing-ring is forced outward.

JOHN P. SIMMONS.

Witnesses:

W. A. McKOWEN,
J. MILLER.