

No. 673,068.

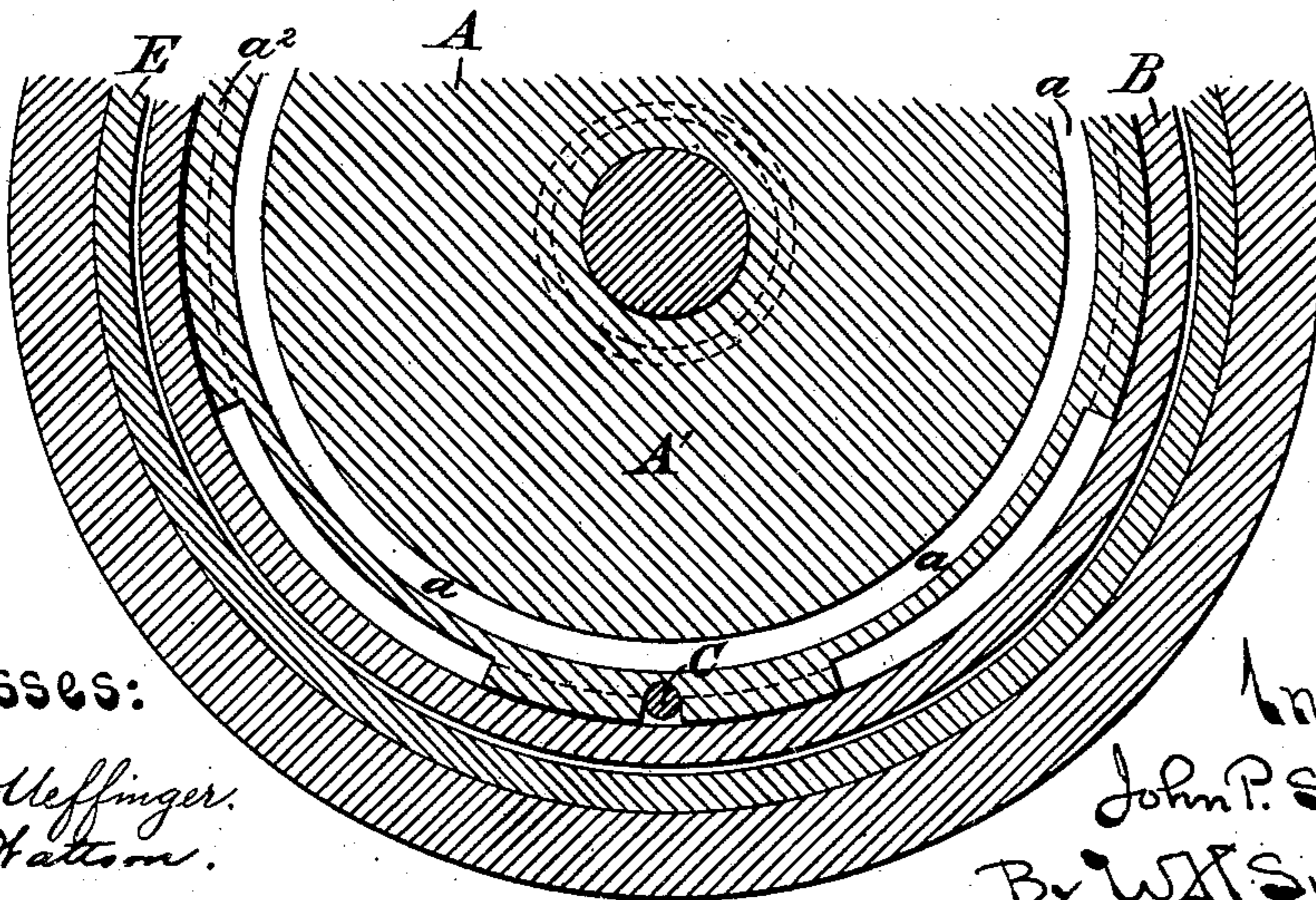
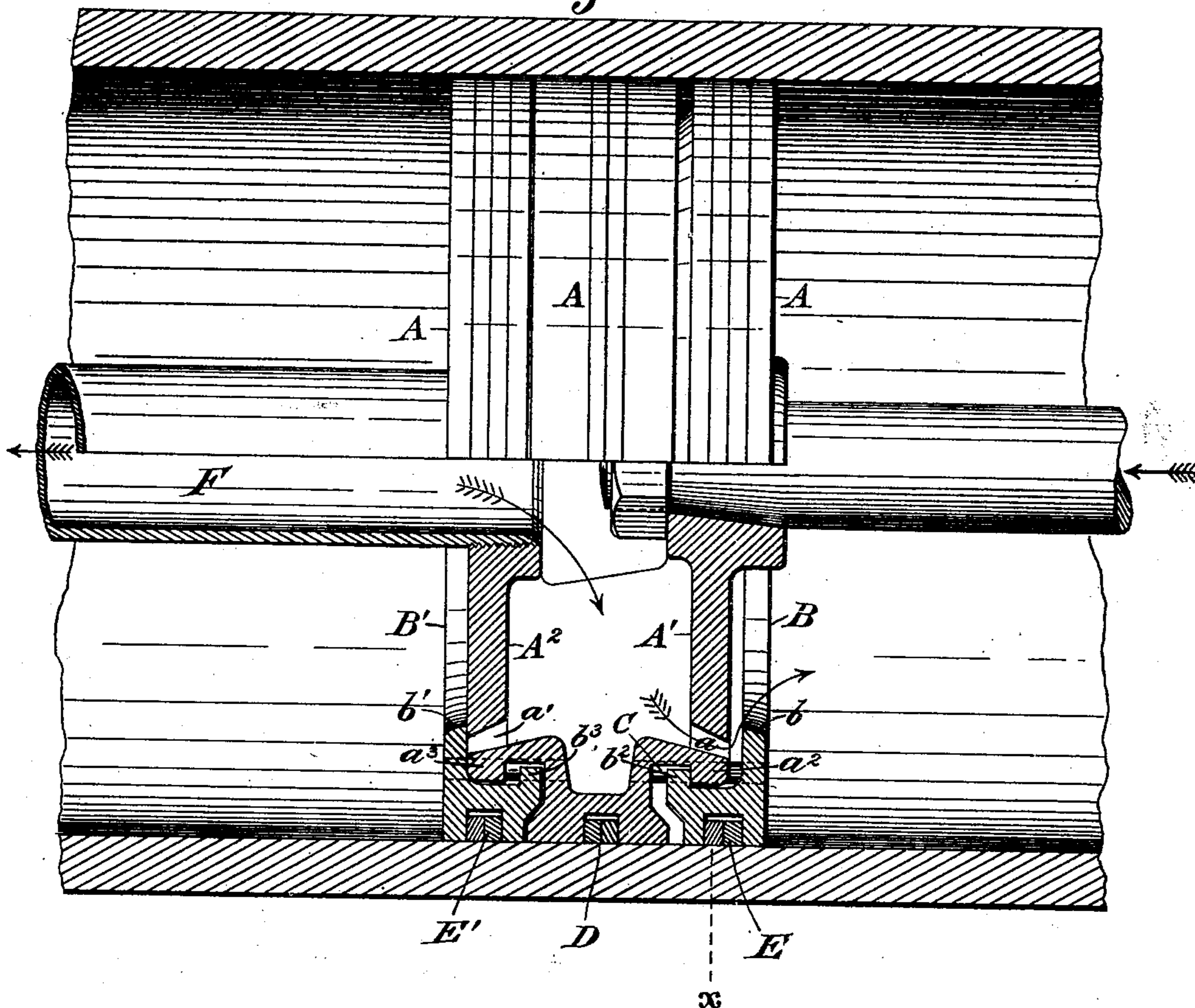
Patented Apr. 30, 1901.

J. P. SIMMONS.
VALVED PISTON.

(Application filed June 14, 1898.)

(No Model.)

Fig. 1.



Witnesses:

Geo. W. Heffinger.
Wm. F. Hutton.

Inventor.

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

Fig. 2.

UNITED STATES PATENT OFFICE.

JOHN P. SIMMONS, OF SAN FRANCISCO, CALIFORNIA.

VALVED PISTON.

SPECIFICATION forming part of Letters Patent No. 673,068, dated April 30, 1901.

Application filed June 14, 1898. Serial No. 683,452. (No model.)

To all whom it may concern:

Be it known that I, JOHN P. SIMMONS, a citizen of the United States, residing at San Francisco, in the county of San Francisco and State of California, have invented certain new and useful Improvements in Valved Pistons; and I do hereby declare the following to be a full, clear, and exact description of the same.

This invention relates to pistons for pumps or similar devices, and is particularly applicable to air-compressors, especially so to the class of compressors in which air is supplied to a hollow piston or other rod to the interior of the piston.

It consists, within a cylinder, of a piston-body provided with a laterally-reduced portion or portions in which are suitable ports or passages and a ring or rings loosely connected to the reduced portions, but snugly fitting within the cylinder, and each provided with a port or covering adapted to close the ports or passages.

It also consists of the novel arrangements and details of construction hereinafter described and claimed.

The object of the invention is to provide a simple and effective valved piston for pumps, air-compressors, and similar devices. This is accomplished, as shown, in the accompanying drawings herewith, in which—

Figure 1 is a longitudinal section of a portion of the cylinder, showing the improved piston therein, the lower half of the piston being shown in section to more clearly illustrate it. Fig. 2 shows a cross-section through line x of Fig. 1.

Referring to the drawings, A is the piston body and rod, made hollow and provided with laterally-extending reduced portions A' A^2 , having ring or annular ports a a' .

B is a ring fitting the cylinder snugly and connected to the piston by a loose connection, permitting slight movement of the ring B independent of the piston A.

The ring B is provided with a flange b , overlying the face of the piston A sufficient to engage with and close or control the port or passage a . Suitable means are provided for limiting the independent motion of the ring B, shown as the broken intermittent flanges a^2 on the piston and b^2 on the ring B. This construction permits of the ring B being

placed in position by the projecting portion of its flange b^2 being placed opposite the vacant portion of the flange a^2 of the piston and then pushed inward against the piston and turned with a partial rotation, so that the interrupted flanges a^2 b^2 interlock. Suitable means adapted to maintain this relative position of the valve-ring B and piston A, while permitting the independent motion necessary to close the port, is provided in pin C, which passes through the ring B, flanges a^2 b^2 , and body of piston. Suitable packing-rings may be provided in the piston, as shown at D, and packing may also be provided in the valve-ring B, as shown at E.

Where necessary or desirable, the piston may be made hollow and each face provided with a port and a ring-valve. This form is illustrated in Fig. 1. The parts corresponding to B a b a^2 b^2 E in the latter form are marked, respectively, B' a' b' a^3 b^3 E'. In this latter form the fluid may be admitted by a hollow piston or other rod, as shown at F, Fig. 1, or the sides A' A^2 may be moved apart to form a cage-piston and the air-inlet placed intermediate.

Other changes of form and construction will readily suggest themselves to mechanics without departing from the spirit of this invention. I do not therefore confine myself to the particular constructions herein shown and described.

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

1. In an air-compressor, the combination with a cylinder, of a piston therein comprising a bearing-surface in contact with the interior of the cylinder, a reduced portion at the side of the bearing-surface, a port in the reduced portion running longitudinally of the cylinder and means movably connected to said reduced portion adapted by frictional contact with the cylinder when the piston is worked back and forth, to open and close the port in the piston, substantially as described.

2. In an air-compressor, the combination with a cylinder, of a piston therein provided with a suitable port and comprising a bearing-surface, an extended reduced portion, outwardly-extending flanges thereon properly spaced apart, a valve for the port in the piston adapted to open and close the same by

frictional contact with the interior of the cylinder, inwardly-extending flanges on the valve adapted to project through the spaces between the flanges on the reduced portion 5 of the piston and turned therebehind, and locking means for preventing independent movement of the respective flanges, substantially as described.

3. In an air-compressor, the combination 10 with a cylinder, of a piston therein provided with a suitable port and comprising a bearing-surface, flanges projecting to the side of said bearing-surface, a valve adapted to open and close the port in the piston, flanges on 15 the valve adapted to engage the flanges on the piston, and locking means engaging certain flanges of both the valve and piston for preventing independent movement thereof, substantially as described.

20 4. In an air-compressor, the combination with a cylinder, of a piston therein provided with a suitable port, a valve for said port, op-

positely-disposed flanges on the piston and valve, and means passing through said flanges for locking the same together and preventing 25 independent movement thereof, substantially as described.

5. In an air-compressor, the combination with a cylinder, of a piston therein comprising a centrally-arranged bearing-surface, reduced portions extending in opposite direc- 30 tions from the sides thereof, ports in the end surfaces of said reduced portions running longitudinally of the cylinder and valves movably connected to said reduced portions adapt- 35 ed by frictional contact with the interior of the cylinder to open and close the respective ports in the cylinder when the same is worked back and forth, as and for the purpose described.

JOHN P. SIMMONS.

Witnesses:

WM. F. WATTSON,
C. A. HAIGHT.