

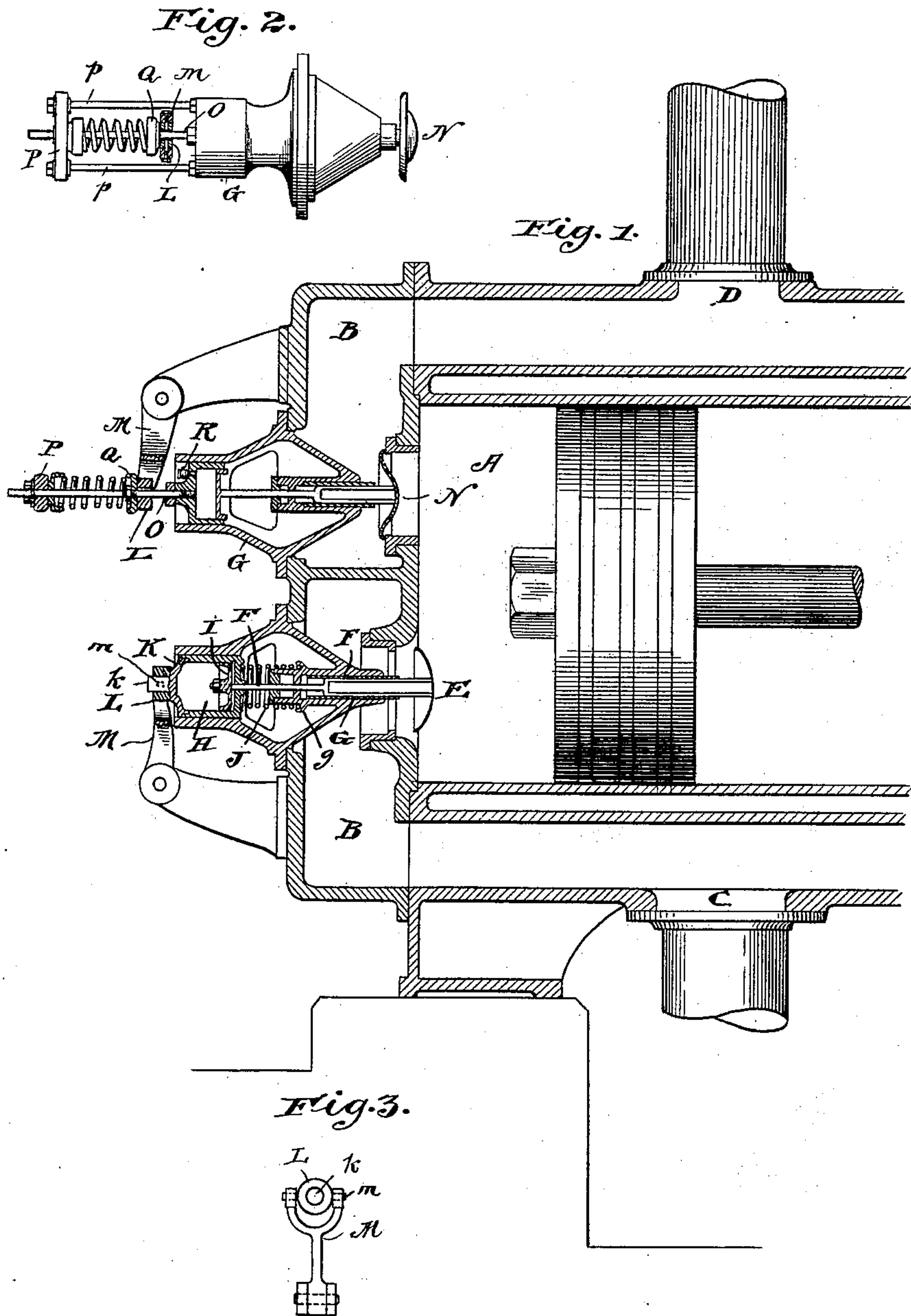
No. 607,195.

Patented July 12, 1898.

E. T. SEDERHOLM.
VALVE GEAR FOR AIR COMPRESSORS.

(Application filed Aug. 17, 1896.)

(No Model.)



Witnesses,
J. S. Mann
Frederick Goodwin

Inventor,
Edward T. Sederholm
By Offield, Broke & Hutchinson
Attys.

UNITED STATES PATENT OFFICE.

EDWARD T. SEDERHOLM, OF CHICAGO, ILLINOIS, ASSIGNOR TO THE FRASER
& CHALMERS, OF SAME PLACE.

VALVE-GEAR FOR AIR-COMPRESSORS.

SPECIFICATION forming part of Letters Patent No. 607,195, dated July 12, 1898.

Application filed August 17, 1896. Serial No. 602,961. (No model.)

To all whom it may concern:

Be it known that I, EDWARD T. SEDERHOLM, of Chicago, Illinois, have invented certain new and useful Improvements in Valve-Gears for Air-Compressors, of which the following is a specification.

This invention relates to certain improvements in valve-gears for air-compressors, and has for its object to provide for the easy opening and closing of the air-compressor valves.

My invention relates more particularly to that class of valve-gear in which the valves are closed either by positive mechanical means or by a yielding pressure or force exerted upon them; and my invention consists in the employment of a movable dash-pot to cushion the valves, whereby the danger of breaking the valve or its associated parts is avoided. It has been proposed heretofore to employ a valve-stem disconnected from the valve, and it has also been proposed to employ a stationary dash-pot affording a cushion to the valve to prevent its opening or closing too violently.

In carrying out my invention I disconnect the valve and its stem from the positively-acting valve-gear and employ a movable dash-pot, which serves as a valve-closing means.

My invention may be embodied in several forms of construction, two of which, slightly differing in detail, I have shown in the accompanying drawings, the principle, however, being the same in both.

In the drawings, Figure 1 is a sectional elevation through the end of the air-compressor cylinder and its valve-chambers and valves, showing also the inlet and outlet connections partly broken away. Fig. 2 is a plan showing the valve-gear, its guide, and the valve. Fig. 3 is a detail of a rocking arm forming a part of the valve-gear.

In the drawings let A represent the air-compressor cylinder, and B the valve-chamber thereof; C, the air-inlet, and D the air-outlet.

E represents the suction-valve, and F its stem. Said stem passes through a guide formed in a casting G, which provides also a guide for a dash-pot H. Upon the end of the stem F is mounted the piston I, reciprocating

within the dash-pot. A spring J is interposed between the end of the dash-pot and a stationary collar *g* on the casting G. The outer end of the dash-pot is provided with a head K, having a stud *k* thereon, said stud being provided with a collar L, fitting loosely thereon, and a valve-lever M is pinned upon said collar, as shown at *m*. (See Fig. 3.) This lever is adapted to be moved in any convenient way and at regular times.

The discharge-valve (marked N) and the parts for operating it correspond substantially with those already described, the difference being that as the discharge-valve opens outwardly its dash-pot is reversed as to position, while its spring surrounds a stem O, connected to the dash-pot, said stem having a rigid support P, connected by rods *p* to casting G, and the spring is interposed between said support and a collar Q, fastened to the dash-pot stem. The lever M in this case also is pivotally connected to a collar L, loosely mounted on the stem O. A suitable stuffing-box may be provided, as at R, and the dash-pot instead of being arranged outside of the valve-chamber, as shown, may be inside.

The operation of this valve-gear is as follows: The valve mechanism in the case of either valve operates the dash-pot in such manner that at the time when the valve is to open the dash-pot is moved out of the way into such a position that the valve travel is limited at the dash-pot to its proper amount. When the proper time arrives for closing the valves, the dash-pot is pushed against the piston mounted on the valve-stem, thus closing the valve at the desired moment. This closing motion of the dash-pot may be accomplished either by positive mechanical means or by means of suitable pressure being applied to the dash-pot, the motion of the latter being controlled by the collar L and lever M. The piston I fits snugly into the dash-pot H, and an air-cushion is formed between the bottom of the dash-pot and the piston when the valve opens. The degree of this cushion can be regulated by the small valve R, which is of such construction that the air may be drawn in as the dash-pot recedes, and

when the valve opens the air is discharged through said small valve, which is so set as to retain sufficient air to form the cushion.

5 By the employment of the movable dash-pot the danger of breaking the parts of the valve-gear, the springs used therein, and the valves themselves is obviated and a readily-adjustable, smooth-working, and durable valve-gear is provided.

10 Obviously the arrangement of the dash-pot members may be reversed—that is to say, the dash-pot itself may be connected to the valve-stem and the piston may be connected to the valve-gear. Obviously also the form of the
15 valve-gear may be varied at pleasure.

I claim—

1. A valve-gear comprising in combination a valve-stem carrying a piston, and a movable dash-pot operated by the valve-gear and
20 adapted to be moved away from the piston

whereby to allow the valve to open and to cushion the valve in the opening movement, and to be returned while in operative contact with the piston to close the valve, substantially as described.

25 2. In a valve mechanism the combination with a valve and its stem of a piston mounted upon and moving with said stem, a movable dash-pot, a stem connected thereto a lever for moving the dash-pot away from the piston 30 to permit the valve to open and to cushion the valve in the opening movement and a spring for returning the dash-pot to its closed position, said spring acting upon the dash-pot stem, substantially as described.

EDWARD T. SEDERHOLM.

Witnesses:

C. C. LINTHICUM,
FREDERICK C. GOODWIN.