

R. E. BECHTOLD.
 FLAP VALVE FOR TWO CYLINDER COMPRESSORS.
 APPLICATION FILED JUNE 2, 1916.

1,276,478.

Patented Aug. 20, 1918.

Fig. 1.

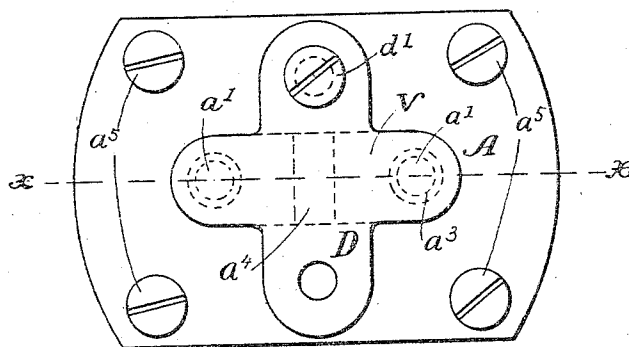


Fig. 2.

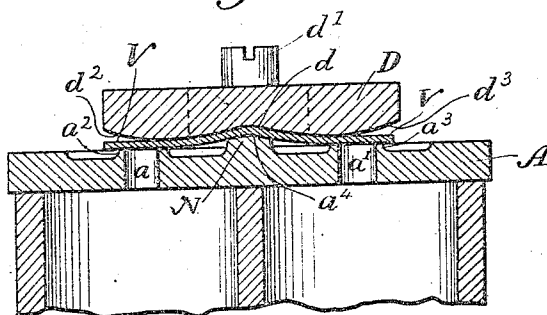
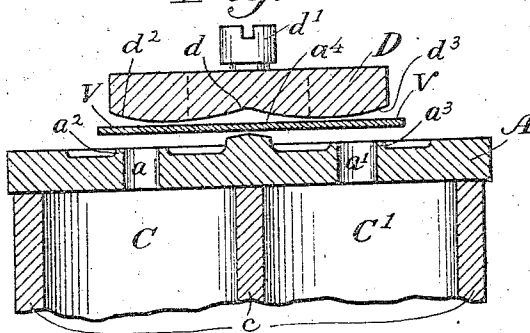


Fig. 3.



WITNESSES:

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UNITED STATES PATENT OFFICE.

REUBEN E. BECHTOLD, OF FORT WAYNE, INDIANA, ASSIGNOR TO THE GUARDIAN
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FLAP-VALVE FOR TWO-CYLINDER COMPRESSORS.

1,276,478.

Specification of Letters Patent.

Patented Aug. 20, 1918.

Application filed June 2, 1916. Serial No. 101,309.

To all whom it may concern:

Be it known that I, REUBEN E. BECHTOLD, a citizen of the United States, residing at Fort Wayne, in the county of Allen and State of Indiana, have invented new and useful Improvements in Flap-Valves for Two-Cylinder Compressors, of which the following is a specification.

My invention relates to improvements in compressors and particularly to flap valves for compressors and pumps.

The purpose of my invention is to provide a valve suitable for use on a high-speed two-cylinder compressor adapted for use on cooling apparatus and the like. It is cheap, efficient and durable.

My invention is illustrated in the accompanying drawings, in which:—

Figure 1 is a top plan view of the cylinder head of a two-cylinder compressor valve stop with one of its cap screws removed and the underlying valve shown in dotted lines, in so far as it does not coincide with the outline of the stop. The valve ports and seats are indicated by dotted lines.

Fig. 2 is an axial section on the line $x-x$ of Fig. 1 through the ports and valve seat, valve and valve stop.

Fig. 3 is the same as Fig. 2, but the valve stop is shown raised instead of bolted down with the valve in position for service.

In the drawings C, C¹ are the cylinders bored in the casting A. The cylinder heads are formed from a casting A with ports a , a^1 for the cylinders, C, C¹, respectively. The cylinder head casting is secured to the cylinder casting by bolts a^5 .

The circular valve seats, a^2 a^3 are so located as to be covered by opposite ends of the flap valve V which is a resilient plate held securely in position at or near the middle by a valve stop, D. When so held each end of the plate is a valve held against its seat with an initial tension. The cylinder head casting between the valve seats is slightly higher than said seats, and is made in the form of a ridge, a^4 , somewhat raised along the center. The valve stop is grooved at the center, d , to clamp the valve V down tightly upon the said ridge a^4 , seating the end of the flap valve upon the valve seats a^2 and a^3 . The valve stop D is held securely in position by the cap screws, d^1 , threaded into the cylinder head casting A.

The resilient plate V which forms the

flap valves is not given a permanent set by being clamped upon the ridge by the valve stop, but is thereby bent so as to give it an initial tension and cause it to seat upon the valve seats a^2 , a^3 , and close the ports a , a^1 , until temporarily lifted by pressure from within the cylinders, C, C¹, respectively. The valve stop is so curved on the surfaces d^2 , d^3 , above the ports a , a^1 , respectively, as to prevent motion of the valve beyond its limits of elasticity and this curve is designed to distribute the bending and subject the valves to the least strain. As the plate which forms the valves is not pierced or given permanent set, but consists of a single flat piece, it retains its shape at the free ends so as to hold the valves with a uniform initial pressure over the entire valve seats.

All valves will be uniform and standard, and thus facilitate assembling; and such valves when in use will not require attention, which is an important point in cooling apparatus of this class. Obviously this double valve can be very cheaply made, and very readily assembled.

I claim as my invention and desire to secure by Letters Patent of the United States:

1. A valve for compressors, comprising a valve seat, a sheet of material constituting a flap valve for said seat, a support for said sheet elevated above the seat and means for bending the sheet over its support and into engagement with the valve seat to bear upon the valve seat with initial tension.

2. In a compressor, the combination of two cylinders with a common head provided with a port and valve seat for each cylinder and with a ridge substantially midway between the valve seats, a normally flat elongated resilient strip seated upon the ridge and extending over both valve seats, a valve stop with a groove on its under side which is the complement of the ridge and in coöperation with said ridge serves to bend, without setting, the ends of the strip downwardly to bear with a tension on the valve seats, the under side of said stop plate toward both ends curving in such a manner as to keep the motion of the valves within their limit of elasticity and to equalize and minimize the strain on the valves when in use, and means for holding the stop in clamped position.

3. In combination with a two cylinder

compressor, a port and valve seat for each cylinder, a ridge substantially midway between the valve seats and projecting above the plane thereof, an elongated resilient strip seated upon the ridge and extending over both valve seats and a valve stop adapted to clamp the strip to the ridge in such a manner as to bend the ends of the strip downward and cause them to seat upon the valve seats with an initial tension and close the ports until temporarily displaced by pressure from within the cylinders.

4. In a compressor, the combination of two pump cylinders each provided with a port and valve seat with a straight elongated resilient strip forming flap valves for both valve seats, and means for holding said normally straight strip at its transverse center above the plane of the valve seats and causing its ends to bend downwardly from said center into such position as to normally bear upon said valve seats with an initial tension and close said ports.

5. In a compressor, the combination of two cylinders with a common head provided with a port and valve seat for each cylinder, a transverse ridge on the head midway between the valve seats, the upper surface of which ridge is above the plane of the valve seats and inclined downwardly on opposite sides of a central angular edge in the direction of said valve seats, a normally straight

elongated resilient strip seated upon the ridge and adapted to be bent downwardly and under tension at its ends over said valve seats to close the ports, and a valve stop having a groove in its under side complementary to the angular surface of said ridge to hold and tension said strip, the ends of the valve stop curving upwardly on the under side in such manner and to such a degree as to maintain within the limit of elasticity the upward movement of the free ends of the strip.

6. The combination of a compressor having two cylinders each having a separate port and valve seat on the same side of each cylinder, a fixed ridged abutment disposed between the valve ports and extending above the plane of the valve seats, an elongated resilient strip forming flap valves for each valve seat and disposed with its intermediate portion engaging the ridged abutment, and means for flexing the strip over said abutment and holding it in position to normally seat upon said valve seats to close said ports.

In testimony whereof I have hereunto set my hand in presence of two subscribing witnesses.

REUBEN H. RECHTOLD.

Witnesses:

ALBERT W. MELLOWS,
FREDERICK A. SMITH.