

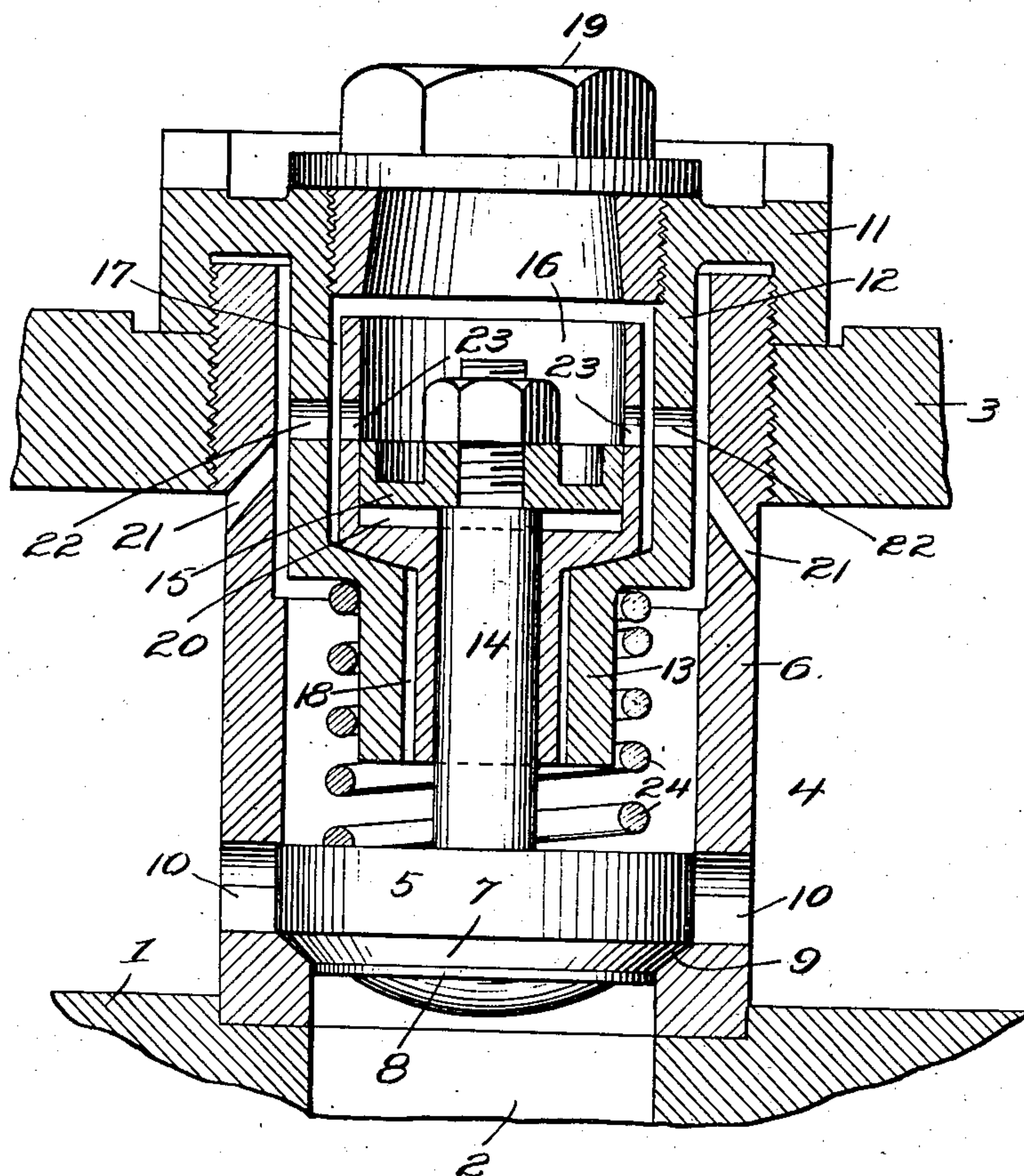
H. E. BARR & C. WAINWRIGHT.  
VALVE.

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955,043.

Patented Apr. 12, 1910.

Fig. 1



Witnesses

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# UNITED STATES PATENT OFFICE.

HARRY EDSIL BARR AND CHARLES WAINWRIGHT, OF ERIE, PENNSYLVANIA.

VALVE.

955,043.

Specification of Letters Patent.

Patented Apr. 12, 1910.

Application filed August 18, 1908. Serial No. 449,100.

To all whom it may concern:

Be it known that we, HARRY EDSIL BARR and CHARLES WAINWRIGHT, citizens of the United States, residing at Erie, in the county of Erie and State of Pennsylvania, have invented new and useful Improvements in Valves, of which the following is a specification.

This invention relates to valves, the object of the invention being to produce a discharge valve of the automatic lift type for air compressors and the like, which is so cushioned in operation that a considerable degree of lift may be imparted thereto thus securing the full area of the valve opening, while the operation of the valve is rendered positive on account of the cushioning effect obtained by a cushion chamber and piston or head and a preclosure face, which combined, act to overcome any tendency of the valve to dance or chatter on the valve seat during the closing operation, also preventing the air which has passed beyond the valve from flowing back into the compressing cylinder, the result being a valve particularly adapted to quite high speed work.

A further object of the invention is to provide a construction whereby the operation of the valve will not be effected or impaired by any dirt finding its way under the valve cap or by reason of the wobbling of the walls of the valve cap, the construction hereinafter described making allowance for such contingency so that the valve may readily accommodate itself to the valve seat and work with perfect freedom.

With the above and other objects in view, the nature of which will more fully appear as the description proceeds, the invention consists in the novel construction, combination and arrangement of parts as hereinafter described, illustrated and claimed.

The accompanying drawing represents a sectional view of a valve embodying the present invention.

In the accompanying drawings, 1 designates the wall of the cylinder in which the air compressing piston operates, said wall being provided with a port 2 leading to the valve of this invention, and 3 designates the outer wall of the compressed air chamber which leads to a suitable storage tank 4 designating such compressed air passage which surrounds the valve and its guide.

5 designates the valve which is mounted

with a snug sliding fit in a valve guide 6 of cylindrical form corresponding with the form of the valve, said valve being provided with a main conical working face 7 while on the side next to the compression cylinder, said valve is provided with a shallow or narrow cylindrical preclosure face 8 just sufficient to fill the port 2 and close the same immediately before the conical working face 7 comes in contact with the valve seat 9 which is also cone-shaped to agree with the working face of the valve. The air passing through the port 2 and getting by the valve 5 finds its exit through one or more openings 10 in the guide 6 into the chamber or discharge space 4.

The cylindrical face of the valve is of a width sufficient to close the ports 10 which lead into an air discharge space 4 between the cylinder wall 1 and the outer wall 3 of said space. The valve guide 6 is rabbeted into the inner cylinder wall 1 while the outer portion thereof is screwed into the outer wall 3. The cap 11 is screwed upon the outer end of the valve guide 6 and has a hollow cylindrical central portion 12 which extends well into the valve guide 6, the extreme inner portion thereof being reduced as shown at 13. The valve 5 is provided with a stem 14 upon the outer end of which is secured a cushion head or piston 15 which has a snug sliding fit in a self-adjusting cap 16 forming the cushion chamber. This cushion chamber is of less diameter than the portions 12 and 13 above described so as to leave an intervening annular space as shown at 17 and 18 thereby adapting the inner member 16 to adjust itself to the valve stem 14 regardless of the position of the cap 11 as to whether the latter is exactly centered or not. The outer end of the cushion chamber is closed by means of a plug 19 which screws into the cap 11 and seals the outer end of the cushion chamber. Air is admitted from the space 4 into the space 20 beneath the cushion head or piston 15 by means of ports 21, 22, and 23, formed respectively in the guide 6 the part 12 of the cap and the cushion chamber 16. 24 designates the valve closing spring which is interposed between the valve 5 and the cap 11.

By means of the construction just described, the inner cushion chamber is adapted to adjust itself to the valve 5 and center itself with relation to the stem of said valve



thus insuring the easy working of the cushion head or piston connected with said valve.

We claim:

1. A valve comprising a valve guide, a  
5 valve embodying a cylindrical body mounted to slide within the valve guide and also provided with a frusto-conical working face and a narrow cylindrical preclosure face, a  
10 cushion head or piston carried by said valve, a cap fitted to said guide and provided with a central hollow cylindrical portion which extends into the valve guide, a cup-shaped  
15 cushion chamber removably fitted in said cap, in which cushion chamber the head or piston works, and a plug removably fitted in the outer end of the cap and serving to hold the cushion chamber in place, substantially as described.
2. A valve comprising a valve guide, a  
20 valve embodying a cylindrical body mounted

ed to slide within the valve guide and also provided with a frusto-conical working face, a cushion head or piston carried by said valve, a cap fitted to said guide and provided with a central hollow cylindrical portion which extends into the valve guide, a cup-shaped cushion chamber removably fitted to said cap, in which cushion chamber the head or piston works, and a plug removably fitted in the outer end of the cap and serving to hold the cushion chamber in place, substantially as described.

In testimony whereof we affix our signatures in presence of two witnesses.

H. EDSIL BARR.

CHARLES WAINWRIGHT.

Witnesses:

FRED J. CARNEY,  
F. R. GILL, Jr.