C. WAINWRIGHT & F. J. CARNEY.

PLATE VALVE.

APPLICATION FILED DEC. 1, 1917.

1,273,698. Patented July 23, 1918.

Fig. 2.

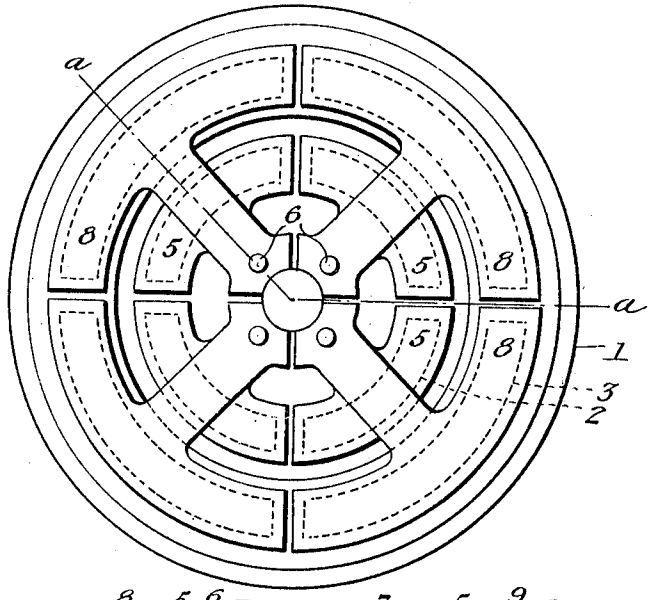


Fig. 1.

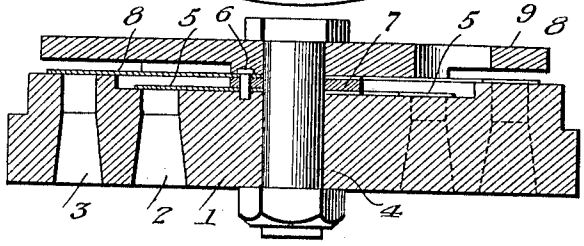
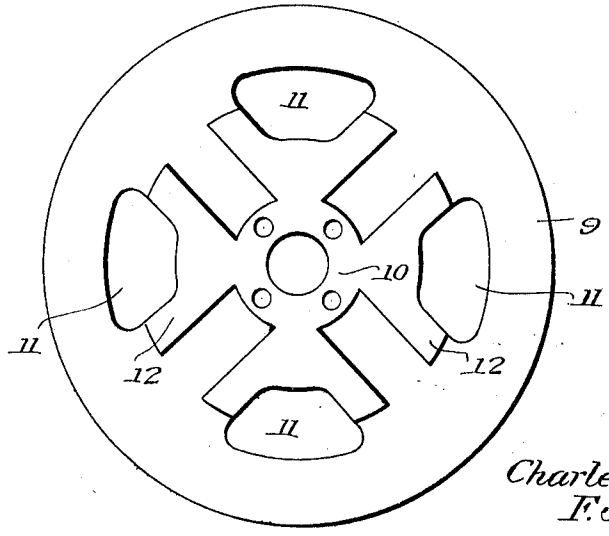


Fig. 3.



Inventors
Charles Wainwright
F. J. Carney

By Victor J. Evans

Attorney

THE NORRIS PETERS CO., PHOTO-LITHO., WASHINGTON, D. C.

UNITED STATES PATENT OFFICE.

CHARLES WAINWRIGHT AND FRED J. CARNEY, OF ERIE, PENNSYLVANIA.

PLATE-VALVE.

1,273,698. Specification of Letters Patent. Patented July 23, 1918.

Application filed December 1, 1917. Serial No. 204,896.

To all whom it may concern:

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

This invention relates to plate valves especially adapted to be used in air compressors and it consists in the novel features hereinafter described and claimed.

An object of the invention is to provide a valve of the character stated which is in the form of a built up structure including a head provided with several series of ports and sectional valves for closing the ports, there being provided upon the head a buffer plate located in the paths of movement of the sections of the valves and adapted to limit the movement of the same. The said valves are arranged in parallel planes but a single buffer plate is employed for all of the valves.

In the accompanying drawing:—

Figure 1 is a transverse sectional view of the plate valve.

Fig. 2 is a plane view of the valve, with the buffer plate removed.

Fig. 3 is a bottom plan of the buffer plate.

The plate valve comprises a head 1 which is provided with a series of inner ports 2 and a series of outer ports 3. The discharge ends of these ports are located in different planes as best shown in Fig. 1 of the drawing. A bolt 4 passes through the center of the head 1 and is employed for securing the parts together as hereinafter described. Resilient valve sectors 5 abut at their inner ends against the bolt 4 and the outer portions of the said valve sectors normally close the discharge ends of the ports 2. Pins 6 are mounted in the head 1 and pass transversely through the inner portions of the valve sectors 5. A washer 7 is positioned upon the inner portions of the sectors 5 and surrounds the bolt 4, and the pins 6, hereinbefore described pass transversely through the said washer. Valve sectors 8 bear at their inner ends against the sides of the bolt 4 and are positioned upon the upper surface of the washer 7. Pins 6 also pass transversely through the inner portions of the sectors 8. The outer portions of the sectors 8 are adapted to close the discharge ends of the ports 3. The washer 7 is of sufficient thickness to space the valve sectors 5 from the sectors 8 to an extent that it may normally lie in parallel planes when they are in closed positions over the ports 2 and 3 respectively. A buffer plate 9 is positioned upon the bolt 4 and the said plate is provided with a boss 10 which bears against the intermediate portions of the sectors 8 and which receives the end portions of the pins 6. The said boss 10 is of sufficient height to space the edge portions of the buffer plate 9 from the outer portions of the valve sectors 8 as best shown in Fig. 1 of the drawing. The buffer plate 9 is provided with openings 11 which are located above the adjacent edges of the valve sectors 5 and 8 and the edge portion of the buffer plate 9 is located in the path of movement of the valve sectors 8. The buffer plate 9 is further provided with inwardly disposed projections 12 which enter the openings 11 and which are located in the paths of movement of the outer portions of the valve sectors 5. When the head 1 is moving on its compression stroke the valve sectors 5 and 8 are closed over the ports 2 but when the said head 8 is moving in an opposite direction the sectors 5 and 8 uncover the ports 2 and 3 but inasmuch as parts of the buffer plate 9 are located in the paths of movement of both sets of valve sectors the sectors are prevented from becoming displaced to an extent to cause them to be warped or twisted out of their proper shapes.

An important advantage gained by this structure is that valves are made up of sectors and consequently in the event that any particular sector becomes worn or unserviceable it may be removed and a new sector substituted in its stead without requiring substitution of a complete valve.

Heretofore it has been the practice to make the valves in the form of circular disks which cannot be stamped out but which require milling. This is a very expensive operation and the replacement of a disk in case of a break involves considerable expense. In the present invention the valve sectors may be stamped and consequently they are cheap to manufacture and should one or more become unserviceable they may be removed without disturbing the other sectors or discarding them.

Having described the invention what is claimed is:—

1. A plate valve comprising a head pro-

vided with series of ports, the ports having discharge ends located in different planes, valves made up of sectors, the said valves being spaced from each other and lying in different planes and adapted to cover the ports in the head and a buffer plate connected with the head and having portions lying in the paths of movement of the sectors of the respective valves to correspondingly and similarly limit the movement of the sectors.

2. A plate valve comprising a head having series of ports, the discharge ends of which lie in the different planes, valves composed of sectors and connected with the head, and lying in different planes and adapted to close the discharge ends of the ports, a buffer plate connected with the head and provided with openings, the said buffer plate being provided with projections which enter the openings and the buffer plate having portions which lie in the paths of movement of the sectors of the respective valves.

3. A plate valve comprising a head provided with series of ports having their discharge ends located in different planes, a bolt passing centrally through the head, pins eccentrically mounted upon the head, valves composed of sectors, means spacing the valves from each other, said pins passing through the spacing means and the valves, the valves lying in parallel planes and normally closing the said ports, a buffer plate having a boss which receives the pins, the edge portion of the buffer plate being spaced from the valves, the buffer plate being provided with openings and the buffer plate having portions lying in the paths of movement of all the sectors of the valves to correspondingly and similarly limit the movement of the sectors.

4. A plate valve having spaced ports, independent superimposed sectors for closing said ports, and a single means for independently and uniformly limiting the port opening movement of the sectors.

5. A plate valve having spaced ports with relatively offset discharge ends; independent superimposed sections controlling said discharge ends, and a single member for uniformly and similarly limiting the port opening movement of the sectors.

6. A plate valve having closing plates seating in different superimposed planes, and a single buffer plate to limit the movement of all closing plates to uniform play.

7. A plate valve having independent series of ports, the discharge ends of one series being offset with respect to the discharge ends of the other series, independent sectors for closing the ports, and a single member to limit the opening movement of all sectors.

8. A plate valve having relatively offset ports, independent sectors for the respective ports, and a buffer plate adapted to limit the opening movement of the sectors of one series of ports, said buffer plate having means thereon arranged in the path of movement of and serving to limit the sectors of the other series of ports.

In testimony whereof we affix our signatures.

CHARLES WAINWRIGHT.
FRED J. CARNEY.

Copies of this patent may be obtained for five cents each, by addressing the "Commissioner of Patents, Washington, D. C.