March 24, 1931. F. B. THOMAS 1,797,453

COMPRESSOR DISCHARGE VALVE

Filed May 10, 1928

Fig.1.

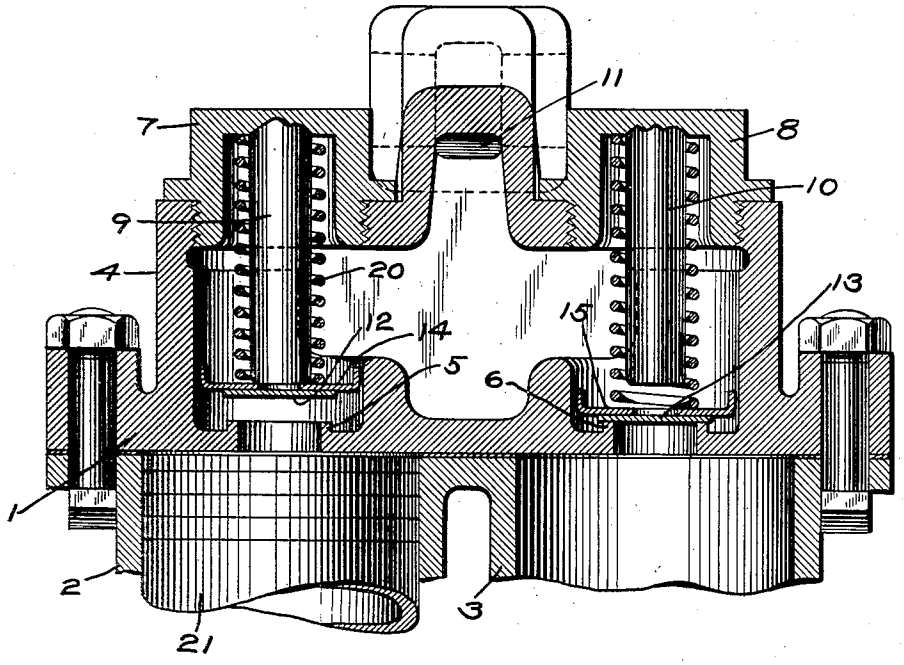


Fig.2.

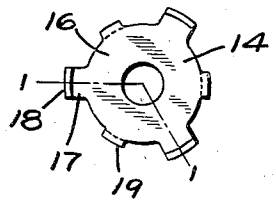
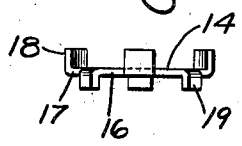


Fig.3.



INVENTOR
FRANK B. THOMAS
BY Wm. M. Brady
ATTORNEY

Patented Mar. 24, 1931

1,797,453

UNITED STATES PATENT OFFICE

FRANK B. THOMAS, OF WILKINSBURG, PENNSYLVANIA, ASSIGNOR TO THE WESTINGHOUSE AIR BRAKE COMPANY, OF WILMERDING, PENNSYLVANIA, A CORPORATION OF PENNSYLVANIA

COMPRESSOR DISCHARGE VALVE

Application filed May 10, 1928. Serial No. 276,596.

This invention relates to fluid compressors and more particularly to an improved valve arrangement therefor.

An object of the invention is to provide a fluid compressor embodying discharge valves of the disc type with light discharge valve springs to insure quiet and efficient operation.

Another object of the invention is the provision of a discharge valve guide plate, movable with the valve disc, formed from a single blank of metal provided with integral oppositely extending fingers forming respectively, means for receiving the valve disc and means for guiding the valve disc in its movement.

Other objects will appear as the description proceeds.

In the accompanying drawing; Fig. 1 is a central vertical section through the upper end of a fluid compressor illustrating the novel valve arrangement, the valve guide plates being taken on the line 1—1 of Fig. 2; Fig. 2 is a top plan view of one of the valve guide plates; and Fig. 3 is a side elevation of the same.

As shown in the drawing, the fluid compressor 1 may comprise cylinders 2 and 3 cast en bloc and having bolted or otherwise secured thereto the cylinder head 4. This head 4 has provided therein above the cylinders annular discharge valve seat ribs 5 and 6. The head 4 directly above the seats 5 and 6 may be provided with removable cap nuts 7 and 8 having formed thereon depending guide stems 9 and 10. These stems terminate above and at the axial center of the valve seat ribs 5 and 6 for a purpose which will be later described. Between the cap nuts 7 and 8, the head 4 is provided with a discharge port 11.

Adapted to seat upon the annular seat ribs 5 and 6 are flat discharge valve discs 12 and 13, which are preferably formed from heat treated chrome nickel steel. These valve discs are of a slightly greater diameter than the valve seat ribs 5 and 6 and are received in valve guide plates 14 and 15, which form one of the salient features of the invention.

Each of these valve guide plates includes a flat body 16 preferably formed from sheet steel and have radially extending guide fingers 17 formed on the periphery thereof at spaced points. These fingers are provided with upwardly extending right angularly disposed guide tongues 18, which form means for centering the guide plates relative to the seats 5 and 6. Depending fingers 19 are formed on the periphery of the plates intermediate the guide fingers 17 and form means for receiving the valve discs 12 and 13.

Relatively light coil springs spring 20 are placed about the stems 9 and 10 and these springs have their opposite ends engaging respectively the cap nuts 7 and 8 and the valve guide plates 14 and 15 and normally function to hold the valve discs 12 and 13 on their seats.

It can be seen that upon the up stroke of the pistons 21 the fluid will be compressed, which will lift the disc valves off their seats against the tension of the springs 20 and permit the discharge of the compressed fluid. The stems 9 and 10 form abutments for the valves and limit the upward movement thereof, while the plates 14 and 15 center the same relative to the seat ribs.

While one illustrative embodiment of the invention has been described in detail, it is not my intention to limit its scope to that embodiment or otherwise than by the terms of the appended claim.

Having now described my invention, what I claim as new and desire to secure by Letters Patent, is:—

In a fluid compressor, a cylinder, a head therefor having an annular discharge valve seat rib, a depending guide stem carried by the head terminating at the axial center of and above said seat rib, a disc discharge valve for the seat disposed between the seat and

the lower end of the stem, a guide plate for the disc valve movable in a recess and having depending fingers receiving the valve disc and radial fingers extending beyond the depending fingers terminating in upwardly extending guide tongues guided by the walls of said recess, and a valve spring on said stem engaging the guide plate normally holding the valve on its seat rib.

In testimony whereof I have hereunto set my hand.

FRANK B. THOMAS.