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COMPRESSOR CONTROLLING DEVICE

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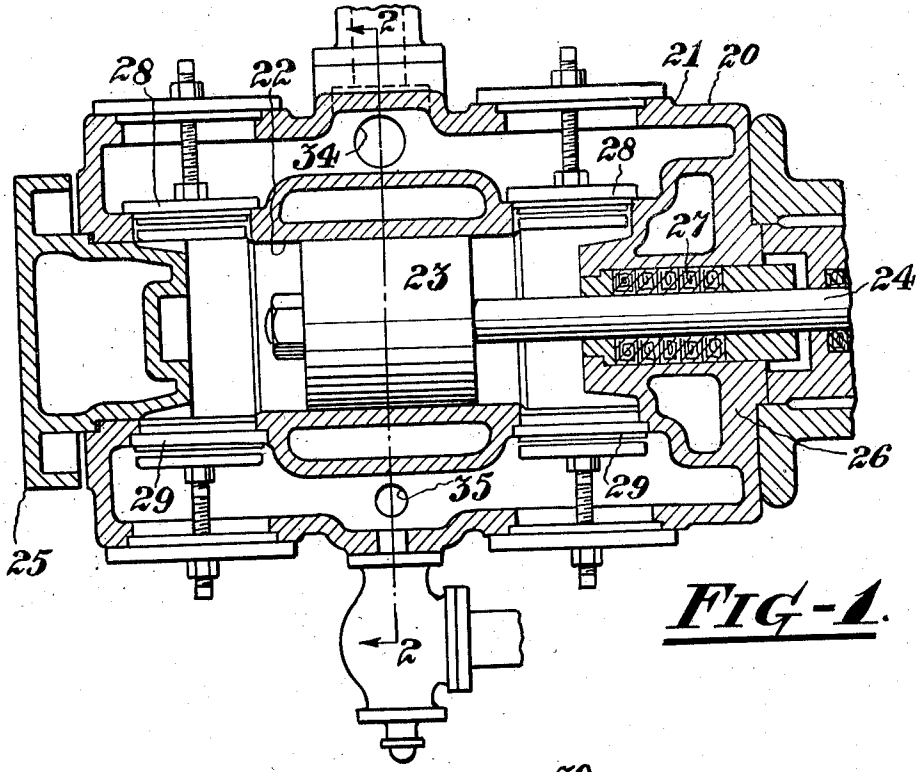


FIG-1.

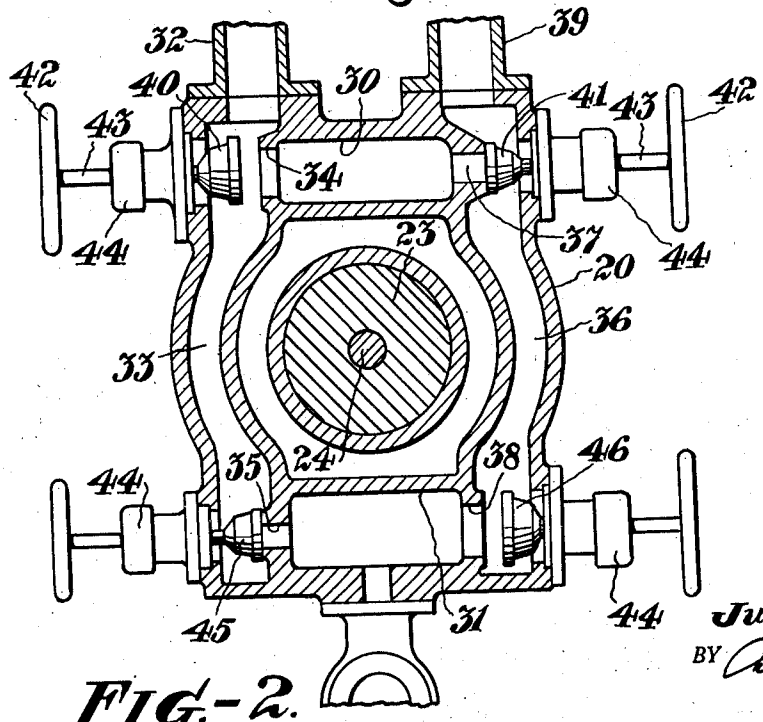


FIG.-2.

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COMPRESSOR CONTROLLING DEVICE

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1 Claim. (Cl. 230—42)

This invention relates to compressors, and more particularly to a controlling device for compressors of the reciprocatory type.

One object of the invention is to conveniently control the direction of flow of fluid through the compressor, either along the course which it follows during the normal compressing operation or in a reverse direction for the purpose of removing accumulated foreign matter from the compressing system.

Other objects will be in part obvious and in part pointed out hereinafter.

In the drawing accompanying this specification and in which similar reference numerals refer to similar parts,

Figure 1 is a longitudinal elevation, in section, of a compressor constructed in accordance with the practice of the invention, and

Figure 2 is a transverse view taken through Figure 1 on the line 2—2.

Referring more particularly to the drawing, 20 designates, in general, a compressor comprising a cylinder 21 having a piston chamber 22 wherein is arranged a reciprocatory piston 23. The piston is provided with the usual rod 24 for transmitting motion from a suitable power device (not shown). At the ends of the cylinder 21 are heads 25 and 26 to serve as closures for the ends of the piston chamber 22, and in the head 26 is arranged a suitable packing device 27 to prevent leakage of pressure fluid along the rod 24.

The compressor 20 is illustrated as being of the double acting type and the piston chamber 22 is accordingly provided at each end with inlet and discharge valve mechanisms 28 and 29, respectively, which act, automatically, for controlling the admission of fluid into and from the ends of the piston chamber.

As is customary, the cylinder 21 has an inlet chamber, designated herein 30, through which the fluid passes to the inlet valves 28 and a discharge chamber 31 in the cylinder receives the fluid compressed by the piston 23. The fluid intended to be compressed by the piston 23 is conveyed to the compressor by a pipe 32 which opens into a conduit 33 in the cylinder and the conduit 33, in turn, communicates with the inlet chamber and the discharge chamber through ports 34 and 35, respectively.

In the opposite side of the cylinder 21, and preferably in the same transverse plane as the conduit 33, is a discharge conduit 36 which communicates with the inlet chamber 30 and the discharge chamber 31 through ports 37 and 38, respectively, said conduit 36 opening into a conduit 39 which may lead to a storage receiver (not shown).

In order to enable the control of communication between the inlet chamber 30 and the discharge conduits 33 and 36 to be conveniently effected, valves 40 and 41 are arranged in the cylinder 21 in alignment with the ports 34 and 37, respectively, which they control. The valves 40 and 41 may, as indicated, be manually actuated and are, accordingly, provided with hand wheels 42 carried by stems 43 connected to the valves. The stems 43 which extend through casings 44, seated on the cylinder 21, may be suitably packed to prevent leakage of fluid to the atmosphere.

In like manner, valves 45 and 46, of the same type as the valves 40 and 41, are arranged in the cylinder 21 to control communication between the discharge chamber 31 and the conduits 33 and 36, respectively. The valves 45 and 46 are also manually operated and guided by cages 44 seated on the cylinder 21.

The operation of the device is as follows: Whenever it is intended to start the compressor the valves 41 and 46 are closed and the valves 40 and 45 are open. The fluid entering the piston chamber through the inlet valves 28, from the inlet chamber 30, passes into the discharge chamber 31, thence through the port 35 into the inlet conduit 33. The fluid may be thus by-passed until the speed of the piston 23 approaches or reaches normal. The valve 46 may then be opened and the valve 45 closed. Thereafter the fluid follows its normal course from the inlet chamber 30, through the piston chamber 22 wherein it is compressed, and is discharged through the valves 29 into the discharge chamber 31, whence it passes through the port 38 and the conduits 36 and 39 to the point of storage.

If, owing to the presence of foreign matter in the compressing system, such as may be entrained by the fluid or result from corrosion, it should be found desirable to cleanse the compressing system, the valves 40 and 46 are closed. The valves 41 and 45 are then opened. Fluid is then drawn or introduced into the compressor through the conduit 39 and the inlet chamber 30. Upon leaving the piston chamber the fluid passes through the discharge chamber 31, the port 35 and the conduits 33 and 32. After a period of operation considered sufficient to effect complete cleansing of the compressing system the valves may again be returned to the positions which they occupy during the starting of the compressor.

I claim:

In a compressor, a cylinder having a piston chamber and inlet and discharge chambers, inlet and discharge conduits each being communicable with the inlet and discharge chambers, a pair of valves associated with the inlet conduit, one valve controlling communication between the inlet conduit and the inlet chamber and the other valve controlling communication between the inlet conduit and the discharge chamber, and a second pair of valves associated with the discharge conduit, one valve of said second pair controlling communication between the discharge conduit and the inlet chamber and the other valve of said second pair controlling communication between the discharge conduit and the discharge chamber, one valve of each pair being opened to cause the fluid to follow its normal course from the inlet conduit through the piston chamber to the discharge conduit and being closed and the other valves of each pair being opened to cause a reverse flow of the fluid.

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