Nov. 22, 1927. 1,650,494

C. A. DALLY ET AL

VALVE

Filed Dec. 7, 1926 2 Sheets-Sheet 1

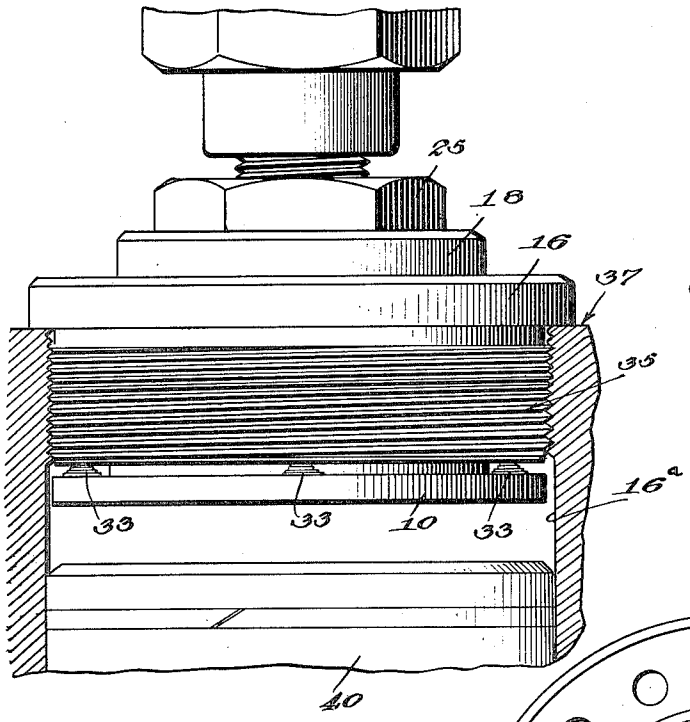


Fig. 1.

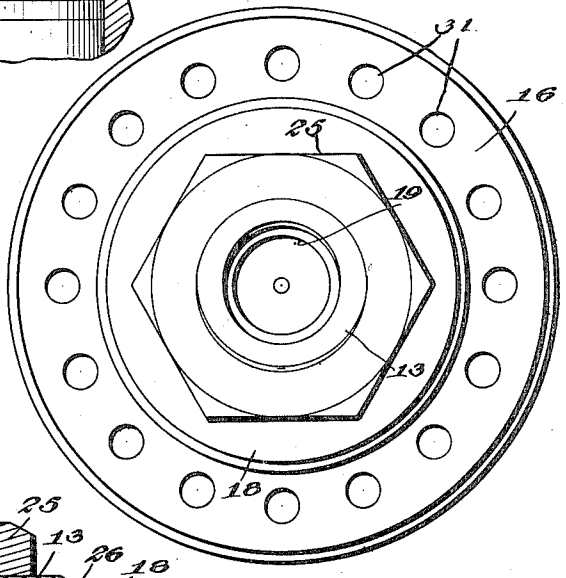
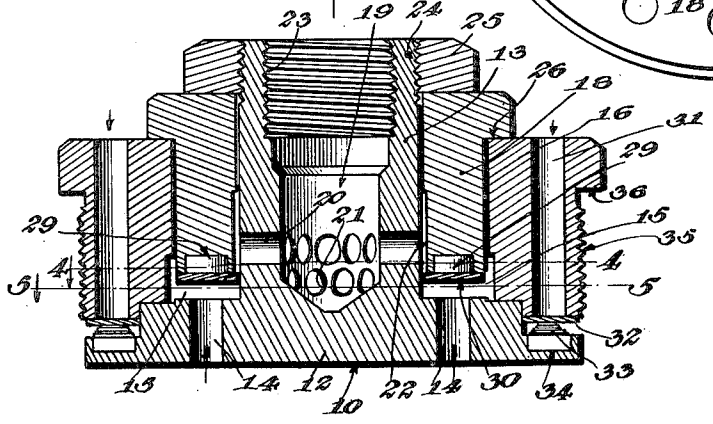


Fig. 2.

Fig. 3.



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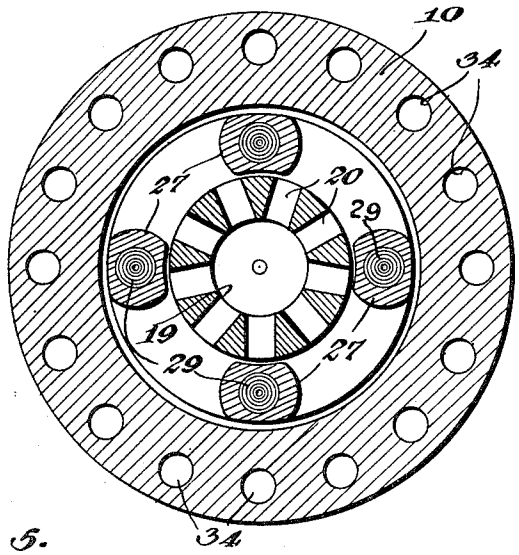


Fig. 4.

Fig. 5.

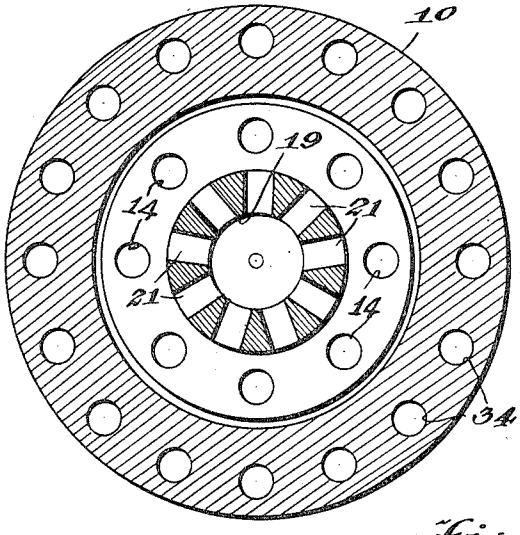


Fig. 6.

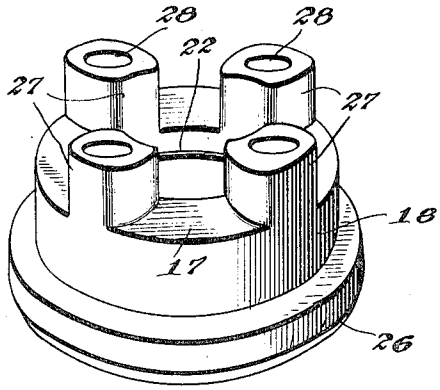
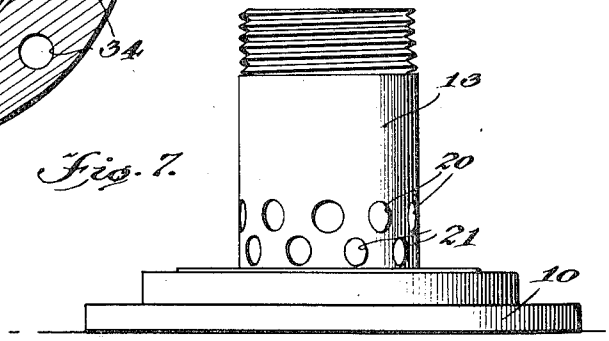


Fig. 7.



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UNITED STATES PATENT OFFICE.

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VALVE.

Application filed December 7, 1926. Serial No. 153,178.

This invention relates to valves and is more particularly directed to a type of valve adapted to be employed in single-acting air, gas or ammonia compressors.

An object of the invention is the provision of a combined inlet and discharge valve formed in a single unit which also may serve as a cylinder head so that the valve may be readily removed and inspected or repaired.

A further object of the invention is the provision of a combined inlet and exhaust valve forming a single unit which may be screwed into the end of a cylinder and forming the head of the cylinder.

This invention will be best understood from a consideration of the following detailed description, in view of the accompanying drawings forming a part of the specification; nevertheless, it is to be understood that the invention is not confined to the disclosure, being susceptible of such changes and modifications which shall define no material departure from the salient features of the invention as expressed in the appended claims.

Figure 1 is a view in elevation of the valve applied to a cylinder,

Figure 2 is a plan view of the valve,

Figure 3 is a vertical section of the combined intake and exhaust valve,

Figure 4 is a horizontal section taken along the line 4—4 of Figure 3,

Figure 5 is a horizontal section taken along the line 5—5 of Figure 3,

Figure 6 is a view in perspective of one of the operating parts of the valve, and

Figure 7 is a view in perspective of the intake section of the valve.

Referring more particularly to the drawings, 10 generally designates a section of the combined intake and exhaust valve having a cylindrical portion 12 of large diameter and an elongated portion 13 of smaller diameter than the portion 12. The portion or disc 12 has a plurality of intake passages 14 which are adapted to place pockets 15 in communication with a cylinder 16ª of the compressor. These pockets are formed by means of a sleeve 16 and slots 17, the slots being provided in a sleeve 18.

The cylindrical portion 13 of the disc 12 is provided with a central passage 19 having a plurality of radial slots 20 and 21 which connect the passage 19 with an annular chamber 22 formed by cutting away a portion of the inner wall of the sleeve 18. The passages 20 and 21 are normally in communication with the pockets 15 and likewise the cylinder 16ª through the passages 14. The upper end of the passage 14 is normally threaded, at 23, to receive a connection for conducting compressed air or gases to a suitable point for use. The outer end of the member 13 is threaded, as shown at 24, to receive a nut 25 which is adapted to maintain the sleeve 18 in its proper position on the cylindrical portion 13, the sleeve 18 being provided with a shoulder 26 adapted to normally rest on the top of the sleeve 16.

The sleeve 18 has downwardly projecting lugs 27 which are provided with recesses 28 at their free ends to receive springs 29 which are adapted to force a ring-shaped valve 30 normally upon the outer end of the passages 14 for maintaining said passages closed.

The sleeve 16 is provided with a plurality of vertical passages 31 which extend entirely through said sleeve and are normally closed at their lower ends by a ring valve 32 normally pressed into engagement with the lower ends of the passages by a plurality of springs 33 seated in pockets 34 in the disc 12 and adjacent the periphery of said disc.

The outer face 35 of the sleeve 16 is threaded, whereby the combined intake and exhaust valve as a unit may be secured within the open end of the cylinder 16ª. The sleeve is provided with a shoulder 36 adapted to engage the upper outer end 37 of the cylinder 16ª.

The operation of our device is as follows: The combined intake and exhaust valve as a unit is screwed into the upper end of a cylinder 16ª and the spring-pressed valves 30 and 32 are normally closed. On the suction stroke of the piston 40 the valve 32 is forced away from the lower end of the passages 31 and air is drawn into the cylinder. At this time the inactive pressure within a cylinder 16ª operates with the springs 29 to maintain the valve 30 in closed position. Upon the return stroke of the piston 40 the said piston is building up pressure against the action of the springs 29 in maintaining the valve 30 upon its seat. When the pressure is sufficient to overcome the springs 29 the valve 30 is lifted and compressed air or gas enters the pocket 15 through the slot 17, annular chamber 22 and into the communicating passages 20

and 21. The tubing which has been screwed into the threads 23 of the passage 19 conducts the compressed gases to the point where the same is employed.

We claim:

1. A combined intake and exhaust valve comprising a disc having a plurality of passages, hollow cylindrical member projecting from the disc and provided with a plurality of radial passages connecting the interior of the hollow cylindrical member with the exterior, a sleeve embracing the cylindrical member and provided with a plurality of slots adjacent its inner end, a second sleeve enclosing the first-mentioned sleeve and provided with a plurality of passages extending through said sleeve, a spring-pressed valve controlling the inner ends of the passages in the last-mentioned sleeve, and a spring-pressed valve controlling the outer ends of the passages in the disc, the passages in the last-mentioned sleeve being in communication with the atmosphere, the radial passages being adapted to be placed in communication with the passages in the disc by the second-mentioned valve.

2. A combined intake and exhaust valve comprising a disc having a plurality of transverse passages and a hollow cylindrical member extending from the disc, a sleeve on the cylindrical member and having its inner end spaced from the disc to provide an annular chamber, the inner end of the sleeve being slotted, the cylindrical member being provided with a plurality of passages in communication with the slots and with the annular chamber, a spring-pressed valve slidably mounted on the cylindrical member and adapted to normally engage the outer end of the passages in the disc, a second sleeve embracing the first-mentioned sleeve and provided with a plurality of transverse passages, and a ring-shaped valve adapted to normally engage the inner ends of the passages in the first-mentioned sleeve.

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