

L. C. BAYLES.
VALVE FOR COMPRESSORS.
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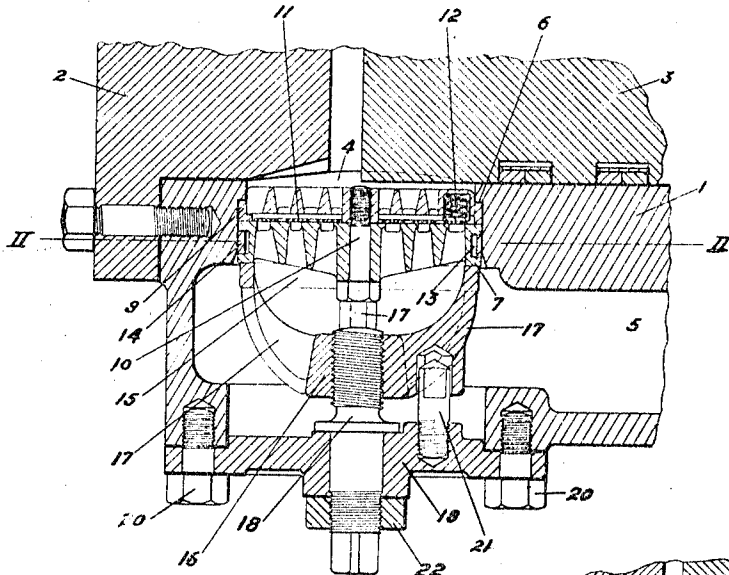


Fig. 1.

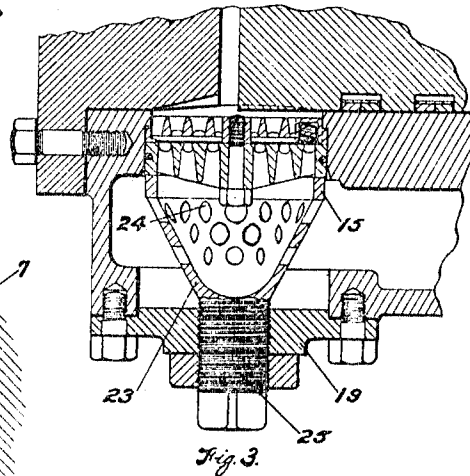


Fig. 3.

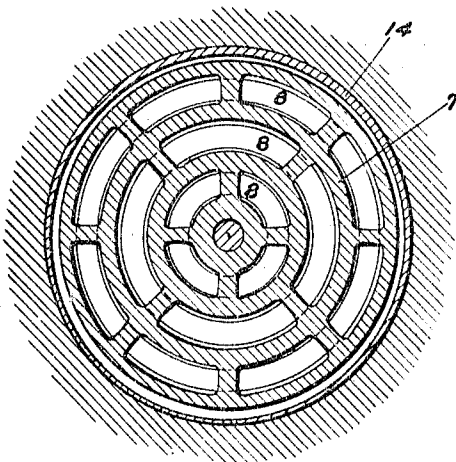


Fig. 2.

WITNESSES:

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LEWIS C. BAYLES, OF EASTON, PENNSYLVANIA, ASSIGNOR TO INGERSOLL-RAND COMPANY, OF NEW YORK, N. Y., A CORPORATION OF NEW JERSEY.

VALVE FOR COMPRESSORS.

1,102,316.

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To all whom it may concern:

Be it known that I, LEWIS C. BAYLES, a citizen of the United States, residing in Easton, in the county of Northampton and State of Pennsylvania, have invented certain new and useful Improvements in Valves for Compressors, of which the following is a specification.

This invention relates to valves for compressors and more particularly to inlet valves of the plate type. In valves of this type as heretofore used considerable difficulty has been encountered in providing a suitable means for securing the valve plate and its seat in position in the aperture in the cylinder provided for it and also in assembling the parts in their proper positions on account of the restricted space in which it is necessary to work.

The object of the present invention is to provide a valve plate and seat therefor together with a holding means of such construction that the valve and the valve seat will be firmly and securely held in position and the various parts can be simply and easily assembled and secured in position even in compressors of small size.

A practical embodiment of the invention is shown in the accompanying drawings in which—

Figure 1 is a vertical section through the valve and a portion of the cylinder, Fig. 2 is a horizontal section on the line 2—2 of Fig. 1 and Fig. 3 is a section similar to Fig. 1 showing a modified form of construction.

The figures show a cylinder 1 to which is secured a cylinder head 2 and in which reciprocates the piston 3. In the extreme end of the cylinder and partly overlapping the cylinder head 2 is an inlet opening 4 which connects the cylinder with the inlet chamber 5. The opening 4 is provided with a shoulder 6 against which abuts the inlet valve of the compressor. This valve comprises a valve seat made up of a lower supporting grid 7 perforated with discontinuous concentric annular ports 8 and an upper grid 9 of similar construction slightly separated therefrom. The two parts 7 and 9 are secured together by a screw bolt 10. Between the two parts 7 and 9 is an apertured valve plate 11 its solid portion covering the ports 8. The valve plate 11 can have a slight movement away from the grid 7 and annular ports 8 but is normally held seated by a plu-

rality of springs 12 only one of which is shown in the figures. The periphery of the grid 7 which fits in the inlet opening, is provided with a depression 13 in which is set a split spring ring 14 the function of which will appear later. Engaging the lower edge of the grid 7 is a supporting ring 15 which is in turn supported by a perforated cup which in Fig. 1 comprises a base piece 16 and supporting arms 17. Threaded into the base piece 16 is a supporting post 18 which is rotatably supported in a plate 19 which is secured by bolts 20 to the outer wall of the inlet chamber 5.

In assembling the parts of the valve and its holding means, the valve proper, comprising the grids 7 and 9 and the valve plate 11, is inserted through the hole in the outer casing of the cylinder covered by the plate 19 and is placed in proper position against the shoulder 6 and temporarily held by means of the frictional engagement of the split ring 14 with the wall of the inlet opening. The plate 19 is then secured in position together with the valve supporting means comprising the supporting ring 15 and its threaded supporting post 18.

After the plate 19 is secured in position by bolts 20, the threaded post 18 is turned to force the ring 15 against the grid 7 thus holding the valve seat securely in position. The valve supporting ring and cup are prevented from turning by means of a dowel 21 while a lock nut 22 holds the threaded post 18 in its final position.

In Fig. 3 a slightly different form of construction is shown, the valve supporting ring 15 being formed integral with a cup 23 provided with perforations 24, the lower end of the cup 23 being extended into a supporting post 23 which is threaded externally and turns in a threaded aperture in the plate 19 to force the ring 15 upwardly to hold the valve in position.

An important feature of the present invention is the fact that the valve seat supporting ring 15 is held in place by a comparatively small supporting post situated centrally of the ring. With this construction if the various parts do not fit with the exact accuracy necessary to bring the valve seat squarely against the shoulder 6 at all points and the ring 15 likewise squarely against the valve seat at all points, as might often occur on account of the number of

parts entering into the combination, the threaded connection of the supporting post will give a little enabling the parts to take their proper positions. Furthermore, it is difficult to get the shoulder 6 machined to just the proper depth to be the same distance in every machine from the outer cylinder casing and the plate 19. By having threads on the post which supports the retaining ring, the parts can be assembled accurately and a slight variation in the distance of the shoulder will not prevent a snug fit.

Although my invention is here described in connection with a compressor inlet valve it would also be applicable to compressor discharge valve or to any other case where such a valve would be advantageous.

It is to be understood that the present showing and description discloses only certain specified modifications of my invention and other forms and modifications are included in the spirit and scope of the invention as expressed in the claims.

What I claim is:

1. In a compressor, a cylinder having an inlet aperture, a valve comprising a valve plate and a valve seat therefor fitting said aperture, means for temporarily retaining said valve in said aperture and means for

positively holding said valve in said aperture.

2. In a compressor, a cylinder having an inlet aperture, a valve comprising a valve plate and a valve seat therefor fitting said aperture, means for temporarily retaining said valve in said aperture and means for positively holding said valve in said aperture comprising a retaining ring, and means to force said ring against said valve.

3. In a compressor, a cylinder having an inlet aperture, a valve comprising a valve plate and a valve seat therefor fitting said aperture, means for temporarily retaining said valve in said aperture and means for positively holding said valve in said aperture comprising a retaining ring and a threaded post mounted centrally thereof for forcing said ring against said valve.

4. In a compressor, a cylinder having an inlet aperture, a valve comprising a valve plate and a valve seat therefor fitting said aperture, and a split spring ring to temporarily retain said valve in said aperture.

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Witnesses:

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