W. PRELLWITZ.

VALVE MECHANISM FOR FLUID COMPRESSORS.

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1,057,089.

Patented Mar. 25, 1913.

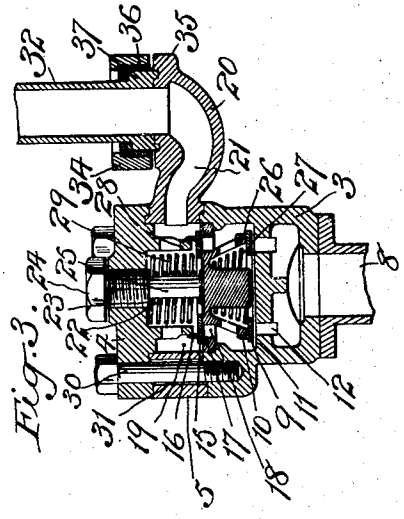

Fig. 3.

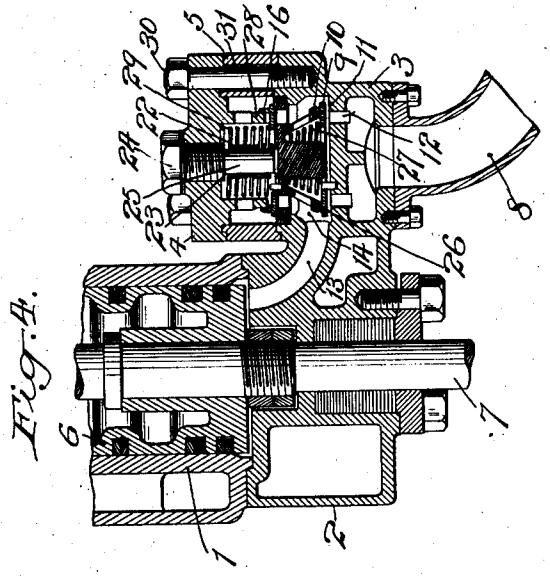

Fig. 4.

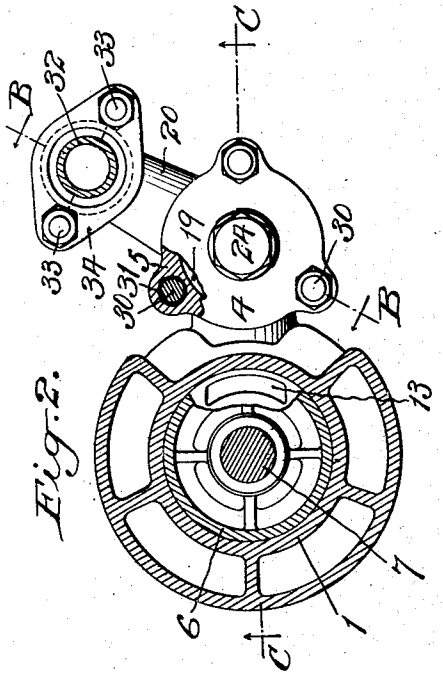

Fig. 2.

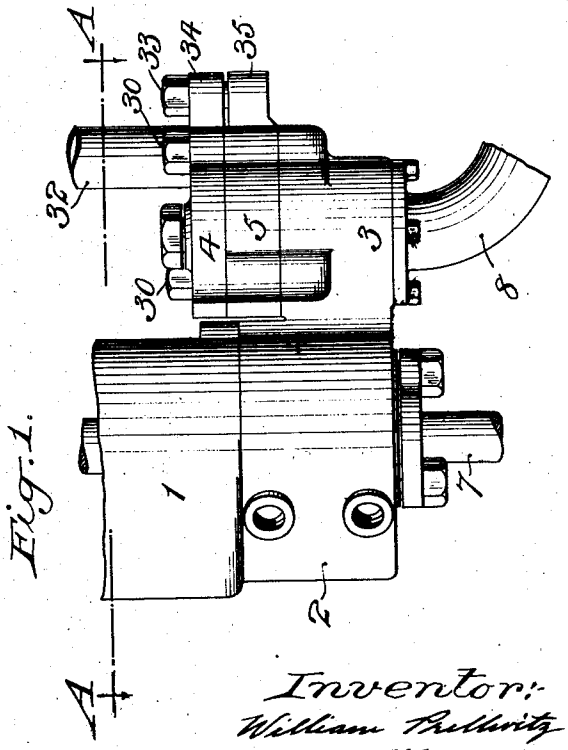

Fig. 1.

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UNITED STATES PATENT OFFICE.

WILLIAM PRELLWITZ, OF EASTON, PENNSYLVANIA, ASSIGNOR TO INGERSOLL-RAND COMPANY, OF NEW YORK, N. Y., A CORPORATION OF NEW JERSEY.

VALVE MECHANISM FOR FLUID-COMPRESSORS.

1,057,089. Specification of Letters Patent. Patented Mar. 25, 1913.

Application filed September 15, 1908. Serial No. 453,154.

To all whom it may concern:

Be it known that I, WILLIAM PRELLWITZ, a citizen of the United States, and resident of Easton, in the county of Northampton and State of Pennsylvania, have invented a new and useful Improvement in Valve Mechanism for Fluid-Compressors, of which the following is a specification.

My invention consists in certain improvements in the construction, form and arrangement of the several parts of the valve mechanism of a fluid compressor whereby the outlet port for the discharge valve may be adjusted to a limited extent to bring it into alinement with its discharge pipe; in which access may be readily obtained to the inlet and discharge valves and in which a simple structure is provided for mounting the inlet and discharge valves.

A practical embodiment of my invention is represented in the accompanying drawing in which,

Figure 1 is a view in side elevation of the inlet and discharge end of a fluid compressor cylinder, Fig. 2 is a section taken in the plane of the line A—A of Fig. 1, looking in the direction of the arrows, a portion of the inner member of the valve being broken away to more clearly show the parts beneath the same. Fig. 3 is a section taken in the plane of the line B—B of Fig. 2, looking in the direction of the arrows, and Fig. 4 is a section taken in the plane of the line C—C of Fig. 2, looking in the direction of the arrows.

The cylinder of the fluid compressor is denoted by 1 and its head by 2, which head is extended laterally to form the outer member 3 of the valve chest, the inner member of which valve chest is denoted by 4 and the intermediate member by 5.

The compressor piston is denoted by 6 and its piston rod by 7. A pipe 8 provides an inlet passage for the fluid, which pipe is secured to the outer member 3 of the valve chest.

The fluid inlet valve is denoted by 9, which valve is of the ring type and it is provided with an annular guide flange 10. The seat 11 for the inlet valve 9 is formed integral with the outer member 3 of the valve chest, through which seats are formed inlet ports 12. A passage 13 connects the interior of the cylinder 1 with the chamber 14 within which the inlet valve 9 is located, which passage 13 serves both as the in-take and discharge for the said cylinder.

The discharge valve is denoted by 15 and is of the ring type and it is provided with an annular guide flange 16.

The discharge valve seat is denoted by 17, through which seat are formed ports 18 which lead from the chamber 14 in the outer member 3 of the valve chest to the chamber 19 within the intermediate member 5 of the valve chest. This intermediate member 5 is provided with a laterally extended arm 20 within which is located the outlet passage 21 for the discharge chamber 19.

The discharge valve seat 17 is separate from the other members of the valve chest and is held yieldingly in its position by means of a centrally arranged coil spring 22 interposed between the said seat and a shoulder 23 on an adjusting screw-bolt 24 engaged with the inner member 4 of the valve chest. This screw bolt 24 is provided with a reduced portion 25 the end of which serves as a stop to limit the movement of the discharge valve seat 17 away from its support. This valve seat 17 is provided with a downwardly extended skeleton frame 26 which serves as a guide for the flange 10 of the inlet valve 9 to guide the valve in its movement toward and away from its seat 11.

A coil spring 27 is interposed between the inlet valve 9 and the discharge valve seat 17 within the skeleton guide frame 26 tending to hold the inlet valve closed. The inner member 4 of the valve chest is provided with an inwardly extended annular skeleton flange 28 which engages the flange 16 of the discharge valve 15 and serves as a guide therefor. A coil spring 29 is interposed between the inner member 4 of the valve chest and the discharge valve 15, which spring surrounds the reduced portion 25 of the screw bolt 24 and serves to yieldingly hold the discharge valve upon its seat.

The intermediate and inner members 5 and 4 of the valve chest are secured to the outer member 3 by a series of bolts 30 which extend through the inner member 4, the intermediate member 5 and have a screw-threaded engagement with the outer member 3. The holes 31 in the intermediate member 5 through which the bolts 30 pass, are made larger than the diameter of the

said bolts so that by loosening the bolts, the intermediate member may be adjusted rotatively to bring the outer end of its arm 20 into alinement with the discharge pipe 32 so that the said pipe 32 need not be forced out of its normal fixed position. The pipe 32 may be secured to the arm 20 by means of bolts 33 which pass through the removable plate 34 and into a laterally extended flange 35 on the free end of the arm 20. A suitable packing 36 may be interposed between the shouldered end 37 of said pipe 32 and the plate 34.

The valve mechanism shown and described herein is one which is very simple in construction and also permits ready access to the several valves, their seats and springs.

What I claim is:

1. In a valve mechanism for fluid compressors, a valve chest, inlet and discharge valves arranged in alinement, an inlet valve seat, a discharge valve seat and a skeleton frame extending from the discharge valve seat and forming a guide for the inlet valve.

2. In a valve mechanism for fluid compressors, a valve chest, inlet and discharge valves arranged in alinement, an inlet valve seat, a discharge valve seat, a skeleton frame extending from the discharge valve seat and forming a guide for the inlet valve, and an inlet valve closing spring housed within said skeleton frame.

3. In a valve mechanism for fluid compressors, a valve chest, inlet and discharge valves arranged in alinement, an inlet valve seat formed integral with the chest, a discharge valve seat separate from the chest, a spring for yieldingly holding the discharge valve seat in position, said discharge valve seat forming a guide for the inlet valve, and springs tending to hold the inlet and discharge valves closed.

4. In a valve mechanism for fluid compressors, a valve chest comprising inner, outer and intermediate members, inlet and discharge valves arranged in alinement, an inlet valve seat and a discharge valve seat forming a guide for the inlet valve, said inner member forming a guide for the discharge valve.

In testimony, that I claim the foregoing as my invention, I have signed my name in presence of two witnesses, this fourth day of September 1908.

WILLIAM PRELLWITZ.

Witnesses:

F. GEORGE BARRY,

OTTO W. HOLMGREN.