

May 31, 1927.

1,630,799

D. G. MURRAY

COMPRESSOR

Filed June 8, 1925

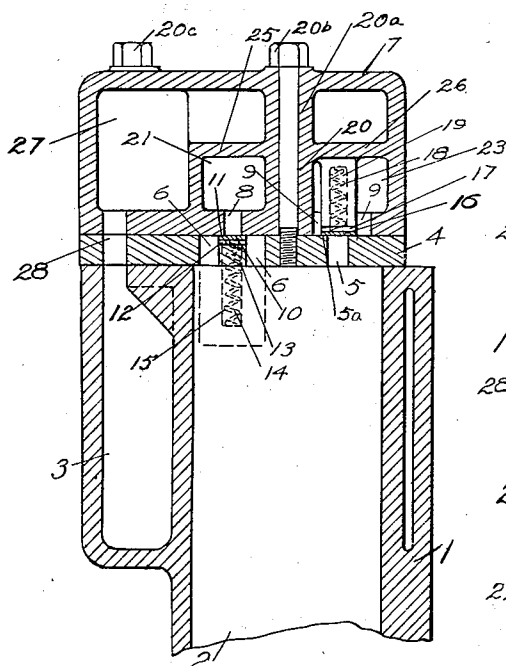


FIG. 1.

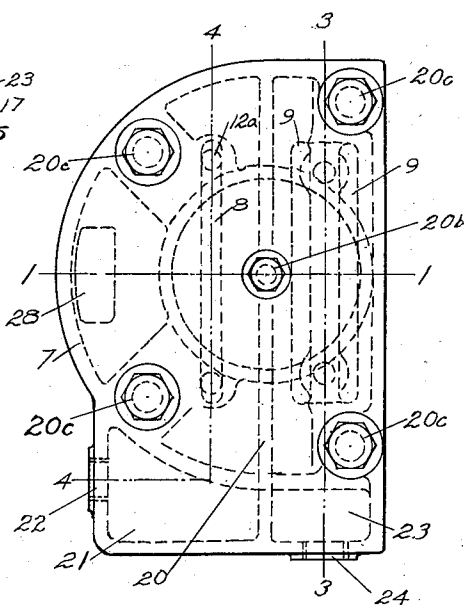


FIG. 2.

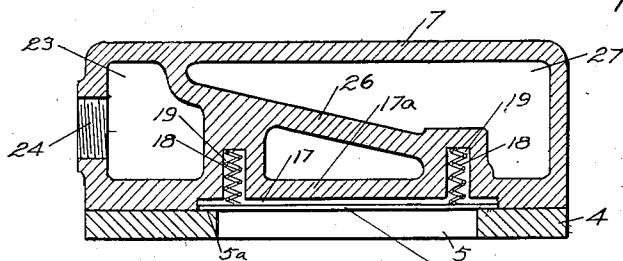


FIG. 3.

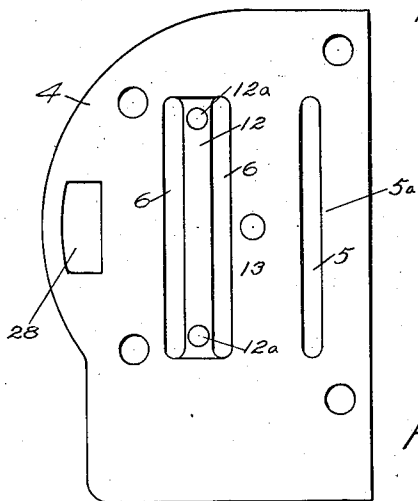


FIG. 4.

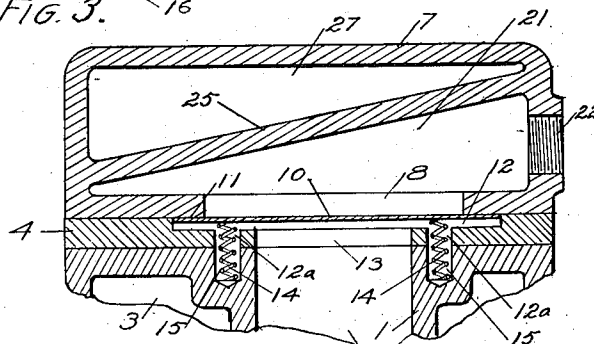


FIG. 5.

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UNITED STATES PATENT OFFICE.

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COMPRESSOR.

Application filed June 8, 1925. Serial No. 35,654.

The invention is particularly directed to the valve construction of compressors. According to the present invention leaf valves are used and are of a type and construction that particularly adapt them for use at the ends of the cylinders giving a very small clearance and a very efficient closure. Features and details of the invention will appear more fully from the specification and claims.

The invention is illustrated in the accompanying drawings as follows:—

Fig. 1 shows a central section through the upper end of a compressor cylinder on the line 1—1 in Fig. 2;

Fig. 2 a plan view of the cylinder;

Fig. 3 a section on the line 3—3 in Fig. 2;

Fig. 4 a section on the line 4—4 in Fig. 2;

Fig. 5 a plan view of the valve plate.

1 marks the cylinder having the bore 2 and water jacket 3. A valve plate 4 is secured to the cylinder. As shown this is of a form to operate in connection with a second cylinder immediately adjacent (not shown). The valve plate has an exhaust port 5 and the inlet passages 6. A cylinder head 7 is arranged on the valve plate. It has the inlet port 8 and the exhaust passages 9. A leaf valve 10 operates on a seat 11 on the underside of the cylinder head and controls the inlet port 8. A leaf valve 10 operates in a pocket 12 in the valve plate 4 and the valve plate is provided with a guard 13 permitting the opening of the valve. Coil springs 14 operate upon the leaf valve to assist in the seating of the valve and these springs extend downwardly through openings 12^a in the plate 4 into pockets 15 in the cylinder walls.

An exhaust valve 16 is in the form of a small plate, commonly termed a leaf valve, and it is arranged in a pocket 17 in the cylinder head. It operates on a seat 5^a on the valve plate and the opening of the valve is limited by a guard 17^a on the cylinder head. Coil springs 18 assist in seating the valve and these springs extend upwardly into pockets 19 arranged in the cylinder head, the cylinder head being chambered as hereinafter described and these pockets being arranged in the chambers. As before stated the cylinder head is chambered and a central partition 20 extends across the cylinder head between the exhaust side and in-

let side of the head. The partition has an enlargement 20^a through which a screw 20^b extends clamping the head on the plate. The head is also secured by screws 20^c which extend through the head and plate into the cylinder walls. An inlet chamber 21 is formed in the head which has an inlet opening 22 and an exhaust chamber 23 formed in the head having a discharge opening 24. These chambers have the inclined upper walls 25 and 26, these being opposingly inclined thus making the chambers gradually enlarge toward the inlet or outlet passage so as to provide for a uniform resistance to flow to and from the inlet and exhaust ports. A water chamber 27 is arranged in the head and communicates through the passage 28 with the water jacket of the cylinder.

What I claim as new is:—

1. In a compressor, the combination of a cylinder; a valve plate on the cylinder having an exhaust port and an inlet passage therethrough; a head on the plate having an inlet port and an outlet passage therefrom; inlet and exhaust straight-sided leaf valves controlling the ports; coil springs pocketed in the head acting on the exhaust valve; and coil springs in the plate acting on the inlet valve.

2. In a compressor, the combination of a cylinder; a valve plate on the cylinder having an exhaust port and an inlet passage therethrough; a head on the plate having an inlet port and an outlet passage there-through; inlet and exhaust straight-sided leaf valves controlling the ports; coil springs pocketed in the head acting on the exhaust valve; and coil springs extending through the plate and pocketed in the cylinder acting on the inlet valve.

3. In a compressor, the combination of a cylinder; a valve plate on the cylinder having an exhaust port and an inlet passage therethrough; a head on the plate having an inlet port and an exhaust passage there-through, said head having inlet and exhaust chambers with their outer walls inclined; and inlet and exhaust straight-sided leaf valves controlling the ports.

4. In a compressor, the combination of a cylinder; a valve plate on the cylinder having an exhaust port and an inlet passage therethrough; a head on the plate having an inlet port and an exhaust passage there-

through, said head having inlet and exhaust chambers with their outer walls inclined; inlet and exhaust straight-sided leaf valves controlling the ports; coil springs pocketed in the head acting on the exhaust valve; and 5 coil springs in the plate acting on the inlet valve.

5. In a compressor, the combination of a cylinder; a valve plate on the cylinder having an exhaust port and an inlet passage therethrough; a head on the plate having an inlet port and an exhaust passage there- 10 through, said head having inlet and exhaust chambers with their outer walls inclined; 15 inlet and exhaust straight-sided leaf valves controlling the ports having chambers with

the outer walls oppositely inclined; and a water chamber.

6. In a compressor, the combination of a cylinder; a valve plate on the cylinder hav- 20 ing an exhaust port and an inlet passage therethrough; a head on the plate having an inlet port and outlet passages therethrough, the head and plate assembled forming leaf 25 spring seats, guards and pockets; inlet and exhaust straight-sided leaf valves controlling the ports; coil springs pocketed in the head acting on the exhaust valve; and coil springs in the plate acting on the inlet valve.

In testimony whereof I have hereunto set 30 my hand.

DONALD GRAHAM MURRAY.