No. 855,050. PATENTED MAY 28, 1907.

C. W. DIETRICH.

COMPRESSOR.

APPLICATION FILED DEC. 15, 1906.

Fig. 1.

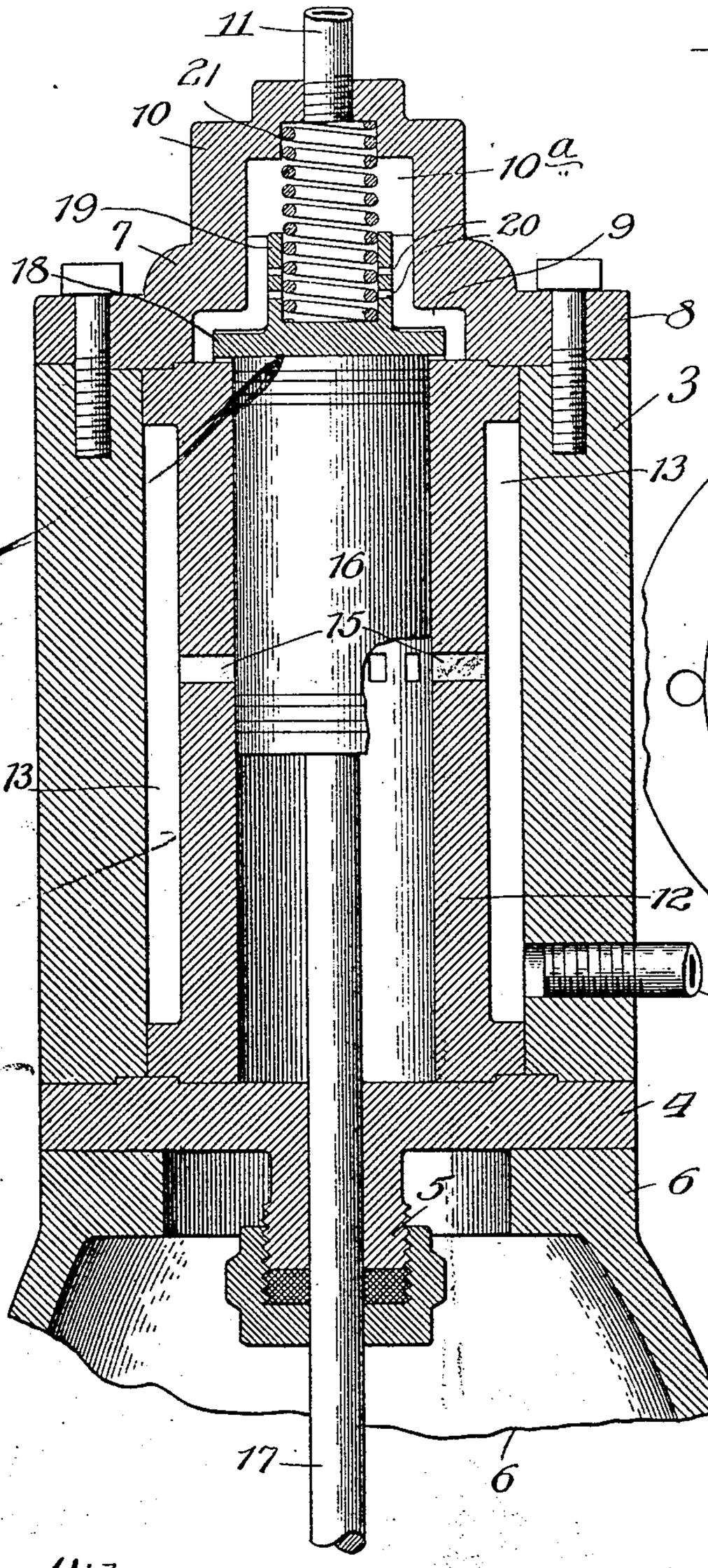
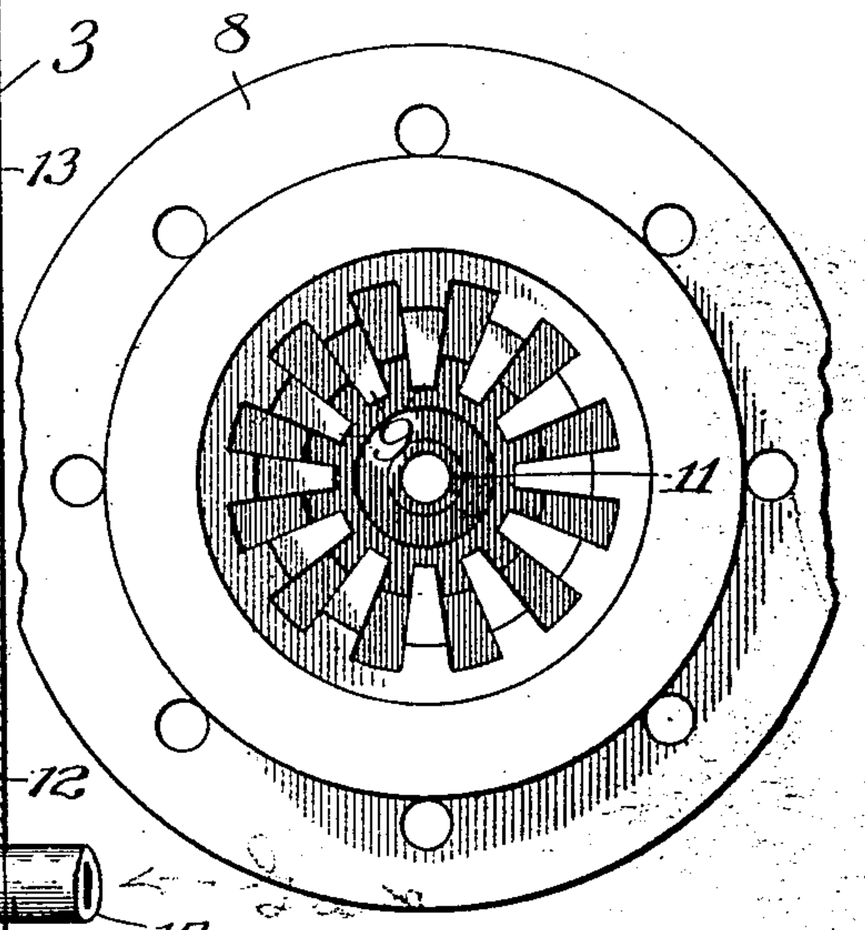


Fig. 2.



Witnesses:
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UNITED STATES PATENT OFFICE.

CHARLES W. DIETRICH, OF CHICAGO, ILLINOIS.

COMPRESSOR.

No. 855,050. Specification of Letters Patent. Patented May 28, 1907.

Application filed December 15, 1906. Serial No. 348,087.

To all whom it may concern:

Be it known that I, CHARLES W. DIETRICH, a citizen of the United States, residing at Chicago, in the county of Cook and State of Illinois, have invented a new and useful Improvement in Compressors, of which the following is a specification.

My invention relates to an improvement in air or gas compressors, and more particularly in gas compressors employed in connection with ammonia ice or refrigerating machines for compressing the gas from the coils into the condenser, in which the discharge-end of the compressor-cylinder is closed by a spring-pressed valve of the full area of that cylinder-end, against which it seats, to be unseated by the compression-stroke of the piston.

My object is to provide a novel and improved construction, in matters of detail, of a compressor in the class referred to, and my invention consists in the particular details of construction hereinafter described and claimed, and illustrated in the accompanying drawing, in which—

Figure 1 is a broken view in vertical sectional elevation of an air or gas compressor embodying my improvements, and Fig. 2, a broken plan view of the bottom of the head of the machine.

A cylinder-casing 3 rising from a base 4 equipped with a stuffing-box 5 and supported on a suitable bed-frame 6, is surmounted by a head 7 of peculiar construction. The annular base-flange 8 of the head, which is bolted to the upper end of the casing 3, has formed about its interior an annular series of Z-shaped inwardly-projecting ribs 9, the upper, vertical sections of which are within the cap-portion 10 of the head, from the upper end of which a discharge-pipe 11 leads to a condenser (not shown). Within the casing 3 is housed the compressor-cylinder 12, forming with the casing (which may contain a plurality of cylinders) a circumferential gas-chamber 13, into which leads a gas-inlet pipe 14 from the ammonia-coils (not shown), and from which a circumferential series of ports 15 lead into the cylinder through its wall above the upper end of a piston 16 when at the lower end of its stroke. The stem 17 of the piston works through the stuffing-box 5 on the base 4, (which is also the cylinder-base) and is connected with any suitable driving-power (not shown) for reciprocating it. On the upper discharge-end of the cylinder 12 is seated a disk-valve 18 having an upper sleeve-extension 19 about its center, provided with series of ports 20 at intervals about its circumference and closely fitting, for guidance, about the sections of the ribs 9 which extend part way into the gas-chamber 10^a within the cap 10. A spring 21 is confined in the sleeve-extension 19 between the valve and the upper end of the cap, to tend to seat the valve. The disk-valve fits accurately within the lower sections of the annular series of ribs, the horizontal sections of which limit the upward movement of the valve to reduce its play to the minimum.

When the piston is at the end of its downstroke, gas from the chamber 13, which is continuously supplied through the pipe 14, enters the cylinder through the ports 15 ahead of the piston, the upstroke of which compresses the gas against the valve 18 and opens the latter, permitting free and quick discharge of the gas past the valve, between the ribs 9 and through the ports 20 into the chamer 10^a, whence it discharges through the pipe 11. The upstroke of the piston carries it slightly beyond the discharge-end of the cylinder to insure complete evacuation of the gas in the latter.

In the type of compressor to which my improvement relates it is of importance that the valve shall seat with accuracy at the beginning of the downstroke of the piston, under the force of the spring 21 and the back-pressure from the condenser. This accuracy is attained by the described sleeve-guiding rib-construction, which, as organized, avoids impediment to the desirable free discharge of gas from the cylinder, besides rendering the construction of the guiding means particularly durable. Moreover, the lower sections of the ribs enhance the true-seating action of the valve while the stoppage of its upward movement by the horizontal rib-sections, reduces wear on the valve which would result from an undue extent of play thereof.

What I claim as new and desire to secure by Letters Patent is—

1. In a compressor of the character described, the combination of a cylinder communicating with the gas-supply and containing a reciprocating piston, a head on the cylinder containing a gas-chamber provided with a discharge-outlet, a circumferential series of Z-shaped ribs in said chamber, and a spring-pressed valve seating against the

discharge-end of the cylinder in said chamber guidingly within the lower sections of said series of ribs to co-operate with the horizontal sections thereof, and provided with a sleeve-extension fitting guidingly within the upper sections of said series.

2. In a compressor of the character described, the combination with a cylinder communicating with the gas-supply and containing a reciprocating piston, a head on the cylinder containing a gas-chamber provided with a discharge-outlet, a circumferential series of Z-shaped ribs in said chamber, and a spring-pressed valve seating against the discharge-end of the cylinder in said chamber guidingly within the lower sections of said series of ribs to co-operate with the horizontal sections thereof, and provided with a sleeve-extension having ports and fitting guidingly within the upper sections of said series.

CHARLES W. DIETRICH.

In the presence of—
W. B. DAVIES,
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