Feb. 14, 1933. M. W. KENNEY 1,897,199

COMPRESSOR

Filed March 30, 1931

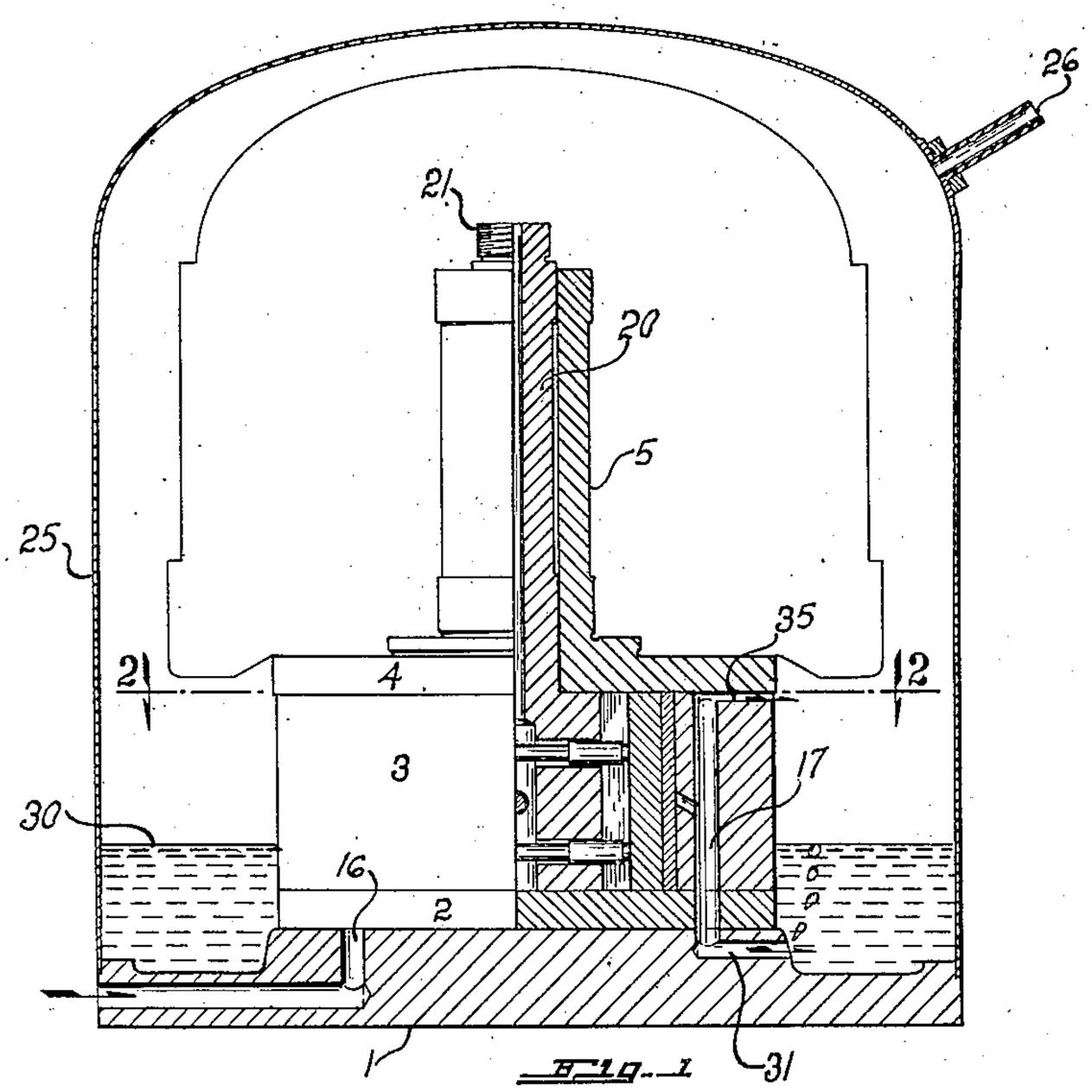

Fig. 1

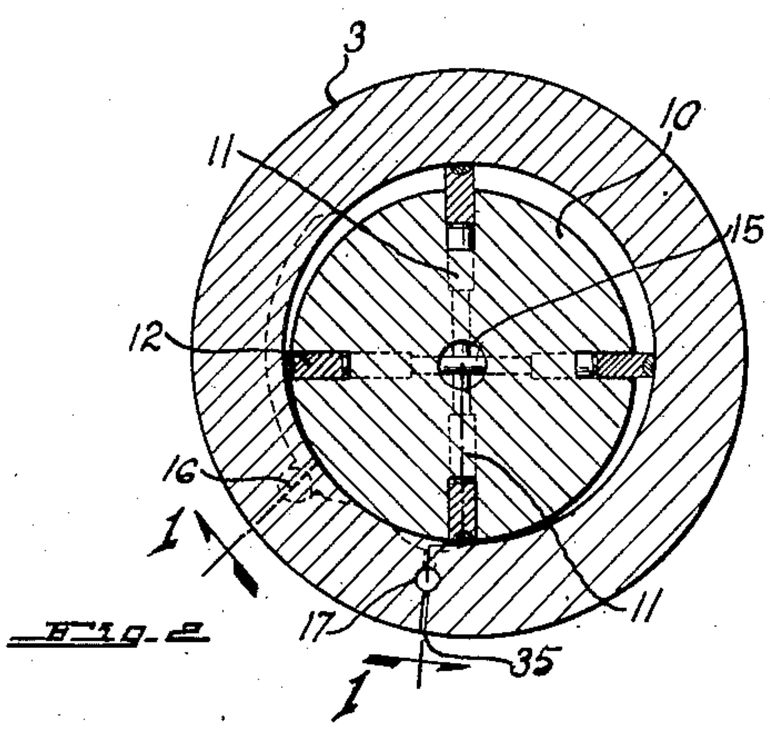

Fig. 2

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COMPRESSOR

Application filed March 30, 1931. Serial No. 526,312.

This invention relates to compressors and particularly to rotary compressors. In certain systems, such as refrigerating units, it is desirable that a compressor operate with a minimum of noise. It has been determined that in such systems, rotary compressors generate disturbing noises due, in a large measure, to the high frequency pulsations of gas at the exhaust thereof.

An object of this invention is to devise a compressor in which the above objection is eliminated.

In general, this object is accomplished by causing substantially all of the exhaust to occur beneath the surface of a liquid. In order that such liquid may not be sucked back into the pump upon the stoppage thereof, an auxiliary exhaust vent is provided giving access to the compressed gas. Thus, upon the stoppage of the compressor, the back flow of high pressure gas will prevent any substantial influx of liquid.

In the drawing:

Figure 1 is a sectional view of a compressor embodying this invention;

Figure 2 is a view on line 2—2 of Figure 1.

The compressor comprises a base 1 upon which is mounted a bottom bearing plate 2. Above this bearing plate is rigidly mounted a cylindrical stator body 3 whose upper end carries a top bearing plate 4. Bearing plate 4 is preferably formed integral with an elongated vertically extending journal 5. Disposed within stator 3 is a cylindrical rotor 10 provided with a plurality of radially disposed apertures 11. Within each aperture is a vane 12, the diametrically opposed vanes having disposed therebetween pins 15. As is well-known, rotor 10 is eccentrically mounted with respect to stator 3 and upon rotation thereof is adapted to cause vanes 12 to reciprocate. An inlet port 16 and an outlet port 17 are formed in the stator. Rotor 10 bears an upwardly projecting shaft 20 adapted to rotate within journal 5. Shaft 20 is threaded at its free end at 21 and may be joined to the armature of an electric motor shown in outline for energization. Base 1 of the compressor has secured thereover a dome 25 with which outlet port 17 communicates. A pipe 26 leads the compressed gas to any desired apparatus.

The compressor is preferably adapted to be partially immersed in a body of liquid 30, preferably lubricant. In order to render the discharge of the compressor noiseless, exhaust port 17 communicates with a port 31 in base 1. This port 31 is below the level of lubricant 30. In order to prevent any lubricant from being sucked back into the compressor upon the stoppage thereof, I preferably provide an auxiliary port 35 communicating directly with the high pressure region within dome 25. This port may be obtained by cutting or grinding a small channel in the side of the stator body. Inasmuch as the parts of a compressor of this type are customarily made of hardened steel, this manner of obtaining the auxiliary port is highly advantageous on account of the ease and cheapness of manufacture.

If used in connection with a refrigerating system, a compressor of this type, operating on sulphur dioxide with a mineral oil as lubricant, has been found to be operated with a minimum of noise.

I claim:

1. A rotary compressor comprising a stator body, a rotor eccentrically mounted within said stator body, bearing plates closing the ends of said stator body, means for mounting said compressor within a chamber into which said compressor is adapted to discharge, means for maintaining a body of liquid in said chamber, said body of liquid being adapted to partially submerge said compressor, exhaust and intake ports for said compressor, said exhaust port communicating with said liquid below the surface thereof and an auxiliary exhaust port formed in the side of said stator body and communicating with the high pressure region in said chamber.

2. A rotary compressor comprising a cylindrical stator body disposed so that its axis is vertical, a rotor eccentrically mounted in said stator, bearing plates closing the ends of said stator, means for mounting said compressor in a chamber into which said compressor is adapted to discharge, means for maintaining a body of liquid in said cham-

ber to partially submerge said compressor, exhaust and intake ports for said compressor, said exhaust port communicating with said liquid below the surface thereof, and a port formed in said stator body communicating with said high pressure region in said chamber communicating with said exhaust port.

3. A rotary compressor comprising a cylindrical stator body, a rotor eccentrically mounted therein, bearing plates closing the ends of said stator body, means for supporting said compressor within a chamber into which said compressor is adapted to discharge, means for maintaining a body of lubricant in said chamber to partially submerge said compressor, inlet and exhaust ports formed in said compressor, said exhaust port communicating with said liquid below the surface thereof and an auxiliary exhaust port communicating directly with said chamber, said auxiliary port being formed as a channel along the side of said stator body adjacent one of said bearing plates.

4. A rotary compressor comprising a cylindrical stator body provided with an aperture therethrough parallel with its axis, said aperture communicating with the interior of said stator body through a radially disposed aperture, a rotor eccentrically disposed within said stator, flat bearing plates closing the ends of said stator, means for mounting said compressor within a chamber into which said compressor is adapted to discharge, means for maintaining a body of lubricant within said chamber for partially submerging said compressor, one of said bearing plates and supporting means being apertured whereby said exhaust port communicates with said liquid below the surface thereof, said stator body having a channel cut therein along a side thereof adjacent a bearing plate whereby an auxiliary exhaust port in direct communication with said chamber is formed.

5. A compressing system comprising a compressor adapted to operate upon a gas, said compressor being provided with intake and exhaust ports, a chamber having a body of liquid therein in communication with said exhaust port, said exhaust port being adapted to release a substantial portion of the compressed gases beneath the surface of the liquid, and an auxiliary port within the high pressure region in said chamber above said liquid in communication with said exhaust port, whereby when the compressor stops back-flow of said liquid into said compressor will be avoided.

6. A system of the character described, comprising a compressor adapted to operate on a gas and deliver the same in the form of a series of pulsations of substantially high frequency, said compressor being provided with intake and exhaust ports, a chamber having a body of liquid therein, said exhaust port communicating with said chamber beneath the surface of said liquid and creating a high pressure region in said chamber above the surface of said liquid, and an auxiliary port communicating with said exhaust port and opening into said chamber above said liquid and being just large enough to prevent the influx of liquid into said compressor upon the stoppage thereof.

7. A system of the character described, comprising a compressor, said compressor having intake and exhaust ports, means for mounting said compressor within a chamber, a body of liquid in said chamber, said compressor being adapted to discharge a substantial portion of gas beneath the surface of said liquid, and an auxiliary conduit opening into said chamber above the surface of said liquid and communicating with said exhaust port.

In testimony whereof he affixes his signature.

MAHLON W. KENNEY.