

Nov. 11, 1958

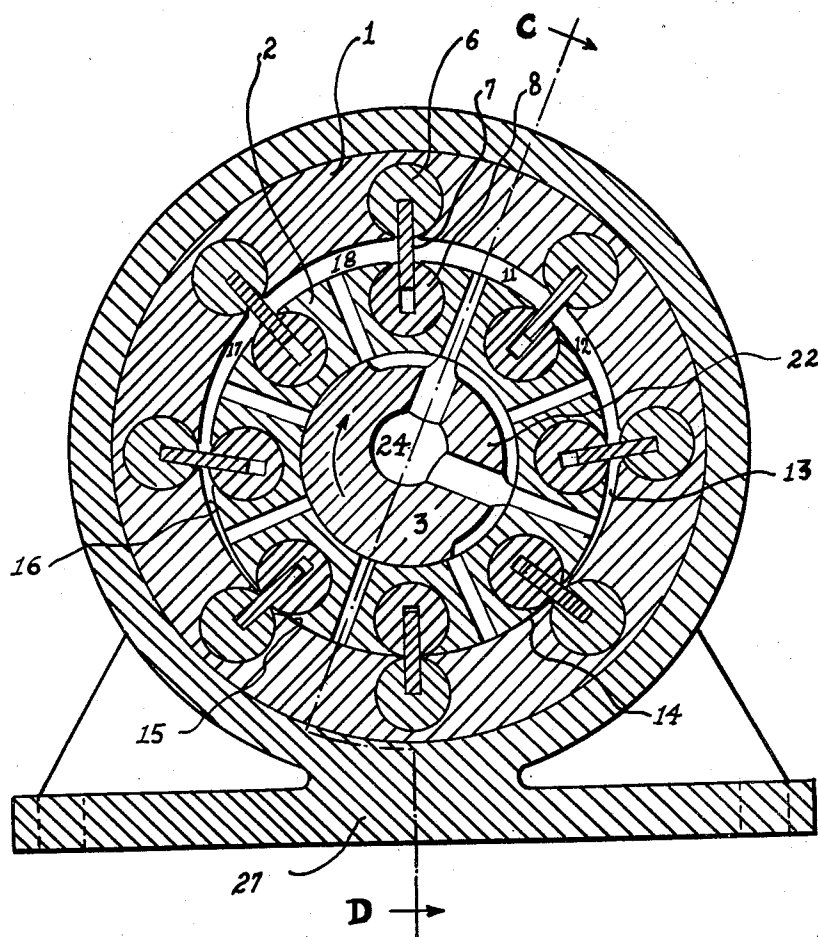
T. REITTER
ROTARY COMPRESSOR

2,859,911

Filed Sept. 8, 1953

4 Sheets-Sheet 1

Fig. 1.



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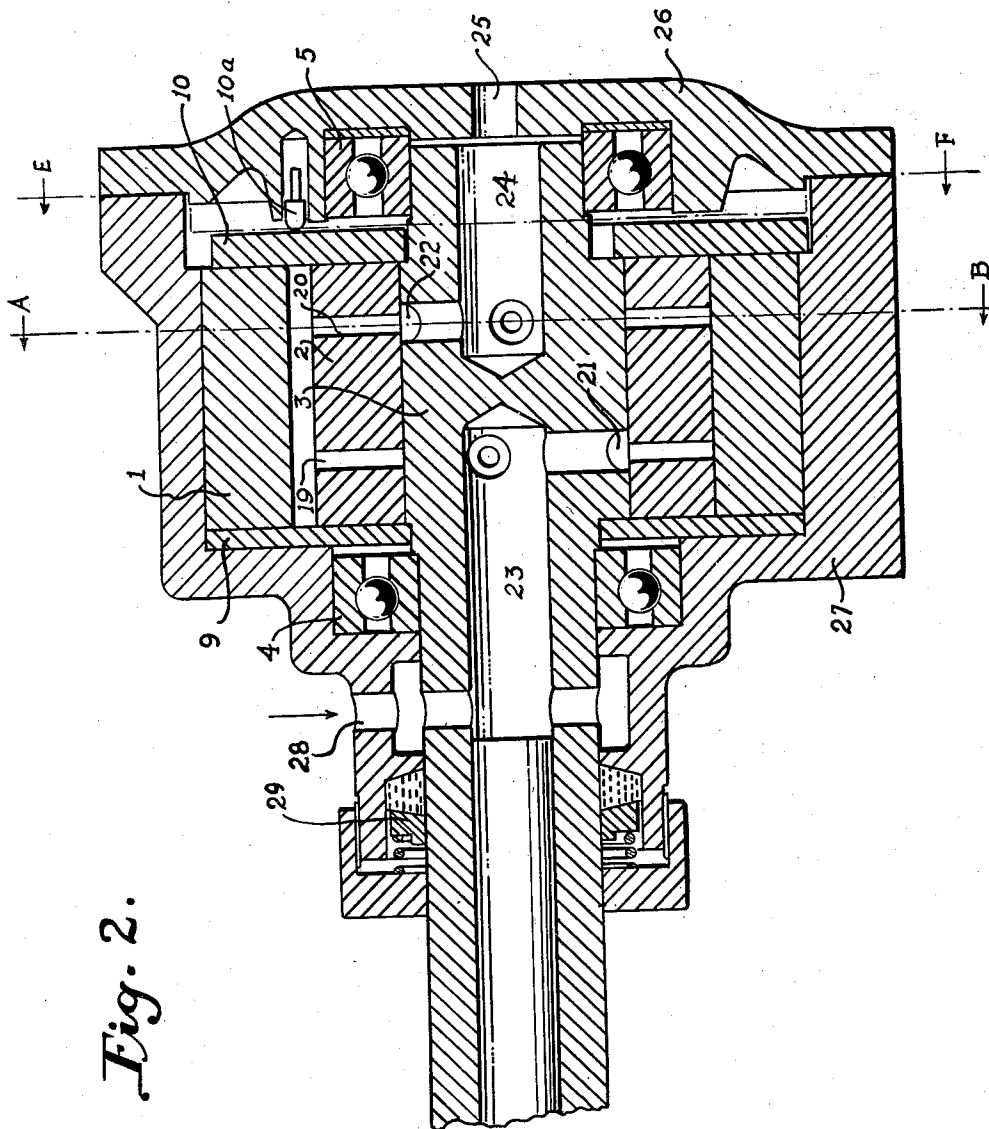


Fig. 2.

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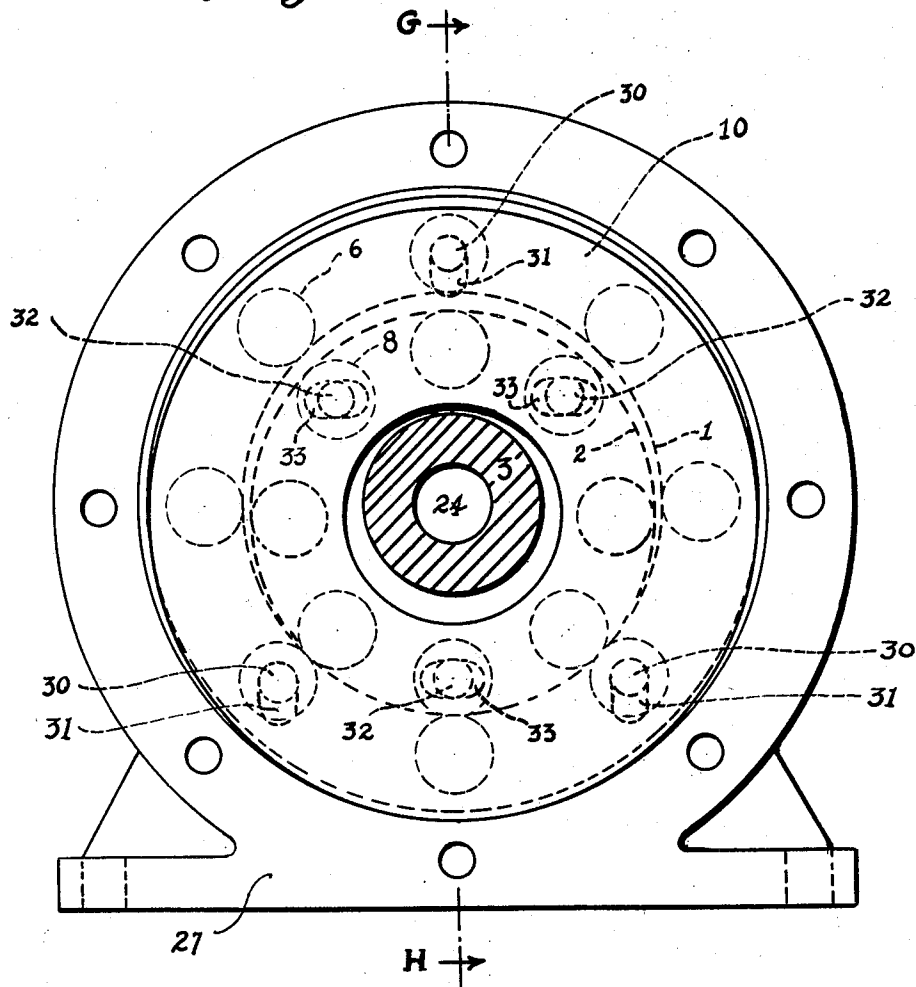
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Fig. 3.



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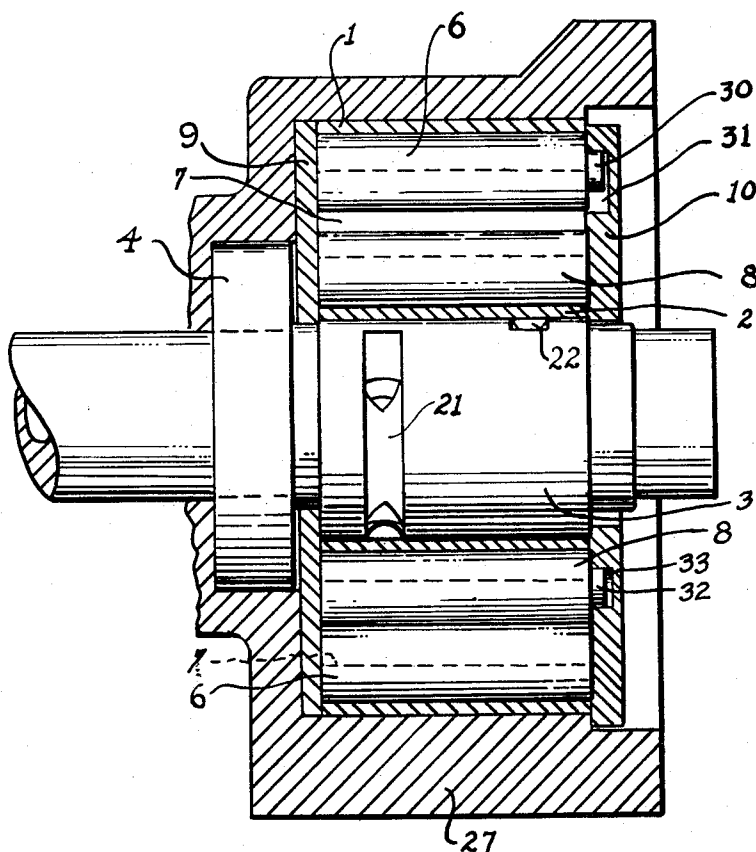
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Fig. 4.



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2,859,911

ROTARY COMPRESSOR

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5 Claims. (Cl. 230-147)

The present invention refers to a rotative compressor for general uses which is different from those previously known due to the fact that the compression is effected in a plurality of cells or chambers determined by a series of separators mounted in a displaceable way on oscillating bolts located respectively in rings. Under such conditions, each of the cells constitutes a compression chamber independent from the rest, which has its corresponding suction, compression and expulsion stage, thus assuring a long and perfect operation.

In order for this invention to be clearly understood, hereunder it will be described in detail, making reference to the illustrative drawings which are attached, in which:

Figure 1 illustrates a section of the compressor of this invention taken on the line A—B of Figure 2.

Figure 2 is a section on the line C—D of Figure 1.

Figure 3 is a section on the line E—F of Figure 2.

Figure 4 is a section on the line G—H of Figure 3.

In all these figures, the same number indicates a like part.

Referring to the illustrative drawings attached, the compressor of this invention is constituted by a ring 1, inside of which is located the interior ring 2. This last ring is loosely mounted on shaft 3 which revolves on bearings 4 and 5. Said shaft 3 is partially eccentric in the part which engages the interior ring 2, in such a way that the revolving of the mentioned shaft produces, in ring 2, a planetary movement, so that the exterior part of said ring 2 moves following the interior circumferential surface of the exterior ring 1. Both rings 1 and 2 are united by sets of separators, each of these sets being composed of three parts which are indicated with numbers 6, 7 and 8, respectively.

The part indicated by number 6 is a bolt which is situated in a perforation of the exterior ring 1, in such a way that its circumference coincides with the interior circumference of the exterior ring 1, thus allowing the bolt 6 to revolve freely in the perforation. In said bolt 6, is situated partially, all along same, plate 7 which inserts in bolt 8, which has for this purpose a longitudinal slot where the mentioned plate can displace itself freely. The depth of this slot of bolt 8 is more than double the eccentricity of the shaft which produces the planetary movement of ring 2. The mentioned rings 1 and 2, as well as the separators 6, 7 and 8 are laterally limited by discs 9 and 10, in this way the spaces or chambers 11, 12, 13, 14, 15, 16, 17 and 18 are formed. These spaces, by the eccentric situation of the interior ring 2 inside exterior ring 1, vary in their volume, as can be clearly seen in Figure 1, where space 11 is larger than space 12, and this one at the same time larger than 13, space 14 being the smaller of the ones drawn. When revolving, shaft 3 determines in the interior ring 2 a planetary movement and during a revolution of 360° the spaces formed between the respective separators vary their initial volume, passing by its stage of maximum and minimum volume.

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The spaces 11 to 18 are in communication with the shaft through the perforations 19 and 20, a pair for each of said chambers, which coincide with the recesses 21 and 22, formed in the shaft 3, which recesses are separated and communicate at the same time with the passages 23, 24 of the shaft. Passage 24 of the shaft communicates with the exterior through hole 25 of the cap 26, while the perforation 23 communicates with the exterior through casing 27 by the hole 28. Shaft 3 extends in the direction of the passage 23 through the casing 27 which is hermetically closed by means of seal 29. The shaft part which comes out of the compressor casing connects with the source of power.

The lateral disc 10 has the function of preventing the rotation of ring 2, without obstructing its planetary movement produced by the eccentricity of the shaft. Disc 10 is secured against rotation by locking means 10a (Fig. 2) fitted in cap 26 of casing 27. For this purpose, two or more bolts 6, of ring 1, are extended as is indicated at 30 and enter partially in slots 31 made in the lateral disc 10. Equally two or more bolts 8 of interior ring 2 are extended as is indicated at 32 and enter into slots 33 of the mentioned disc. These slots of the lateral disc 10, if extended would cross at an angle of 90°. Recesses 22 and 21 on the eccentric part of shaft 3 are made in such a way that when the shaft 3 revolves clockwise recess 21 communicates with the passages 19, only in the spaces formed between rings 1 and 2, limited by separators 6, 7 and 8 from its minimum volume until they reach the maximum volume, while recess 22 communicates with passages 20, only in the part of spaces or chambers limited by separators 6, 7 and 8, from its maximum volume until reaching its minimum volume.

The operation of the device is, as follows:

If shaft 3 revolves clockwise, the interior ring 2 moves around the interior surface of exterior ring 1, as a consequence of this, space 15 is made larger, which increases progressively the volume of spaces 16, 17 and 18 and reaches its maximum when the shaft has revolved 180°. As during this part of the rotation of the shaft 3, space 16 has been in communication (through passage 19, recess 21 and passage 23) with the entrance 28 and the compressor has sucked the gas or liquid, during this period passage 20 has at the same time been closed by shaft 3. The shaft continuing its rotation, space 16 begins to reduce its volume until reaching its minimum. During this time, passage 19 is obstructed by shaft 3, while passage 20 is in communication (by means of recess 22, through hole 24) with the outlet 25, compressing and expelling the gas or liquid by said outlet 25. During all this operation, lateral plate 10 will have followed the planetation of interior ring 2, guided by bolts 6 and 8, avoiding the revolving of interior ring 2.

It is understood that the present invention is not limited in any way by the described and represented example, but that in same could be introduced several modifications of form and/or details, which will be included within the scope of this invention.

This invention having been described as well as the way in which to make it, it is declared that what is claimed as the exclusive property and invention is the following:

1. A rotative compressor, comprising the combination of a casing in which is housed an exterior ring having a cylindrical inner annular wall and an interior ring of an outside diameter substantially less than that of the annular wall of the exterior ring to provide a main chamber between said rings, eccentric means connecting with the two rings for dividing the main chamber into a plurality of independent chambers, oppositely disposed discs for cooperating with said rings for enclosing the main chamber formed between them, a rotary shaft provided

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with an inlet and outlet on which said interior ring is journaled, means on the shaft for separating the inlet and outlet, radial perforations extending through the interior ring and being longitudinally disposed for connecting each of the independent chambers with recesses formed in the shaft leading to the inlet and outlet therein for providing a communicating passage from the inlet and outlet to said independent chambers, and means on said shaft for causing planetary movement of the interior ring and opening some of the longitudinally disposed radial perforations while closing others of said longitudinally disposed perforations.

2. The rotative compressor of claim 1 in which the longitudinally disposed radial perforations are opened when the respective chambers for said perforations are opened to their maximum capacity and closed when the chambers are closed to their minimum capacity.

3. The rotative compressor of claim 1 in which said means on the shaft for opening and closing the perforations is a cam surface.

4. The rotative compressor of claim 2 in which said means on the shaft for opening and closing the perforations is a cam surface.

5. A rotative compressor, comprising the combination of an exterior ring, an interior ring, a rotative shaft passing through the interior ring and having an eccentric portion, which determines the formation, between the two rings, of a free space, said compressor characterized by the fact that said space between the rings is subdivided into a plurality of independent chambers, susceptible of connection alternatively with the entrance and outlet of the compressor, said chambers being formed by plates

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which extend between bolts situated in one ring and another, aligning the ones of one ring with those of the other, and separate passages formed in the shaft, one passage connecting the entrance opening of the compressor and the other passage connecting the outlet opening of the compressor with the space between said rings, and each of said chambers communicating through two perforations made in the interior ring with recesses made in the shaft, which at the same time communicate, through the passages in the shaft, with the entrance and outlet openings of the compressor.

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