Dec. 18, 1934. A. TEVES 1,984,664

SECTIONAL ROTARY COMPRESSOR

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Fig. 1

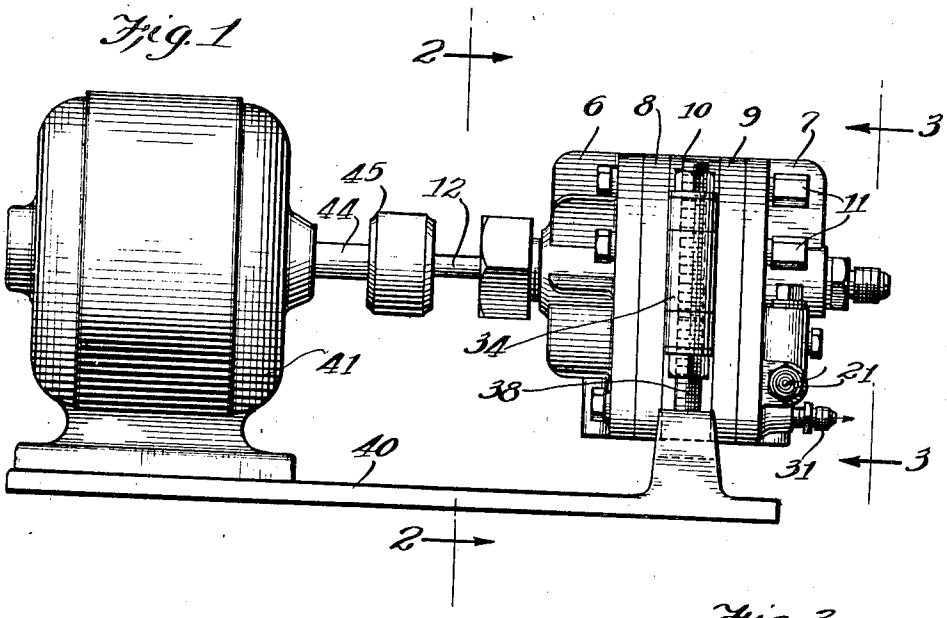


Fig. 2

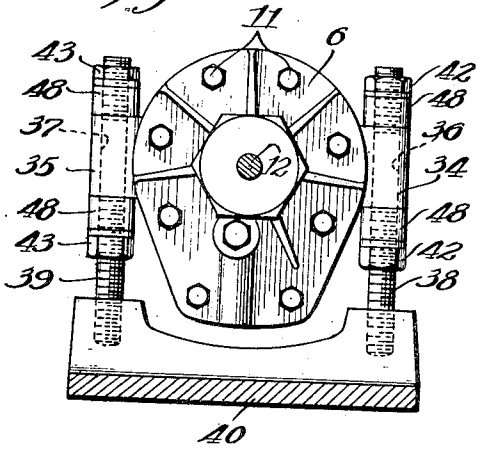
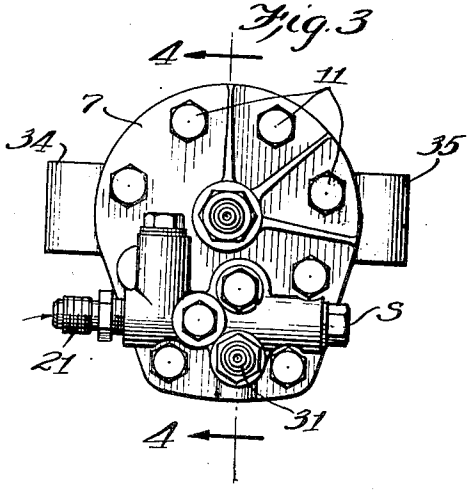


Fig. 3



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Fig. 4

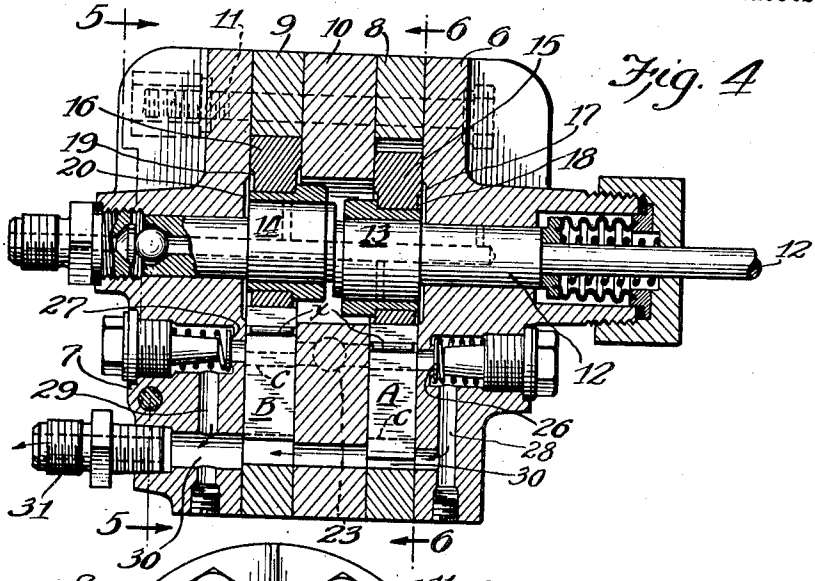


Fig. 5

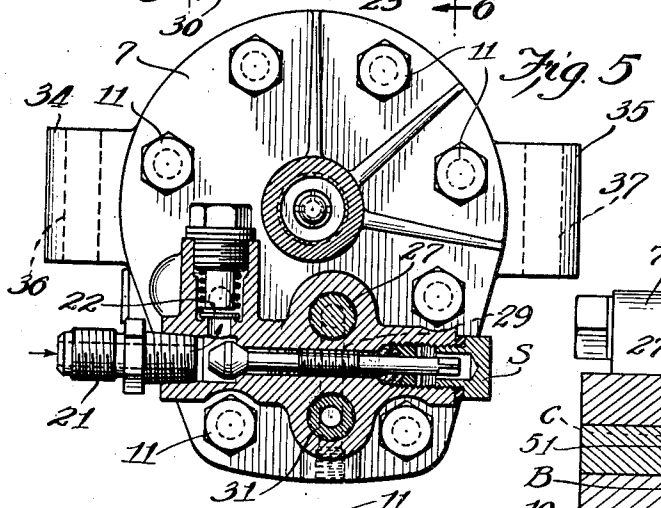


Fig. 6

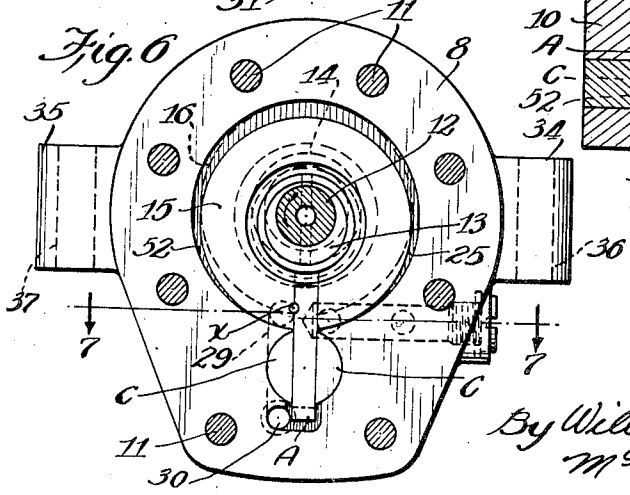
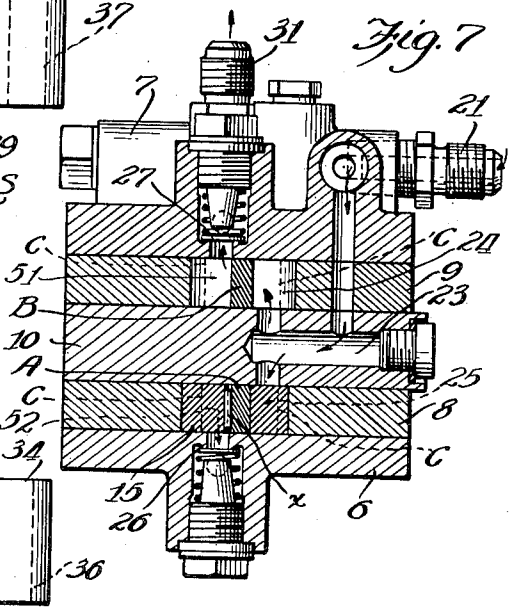


Fig. 7



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Fig. 8

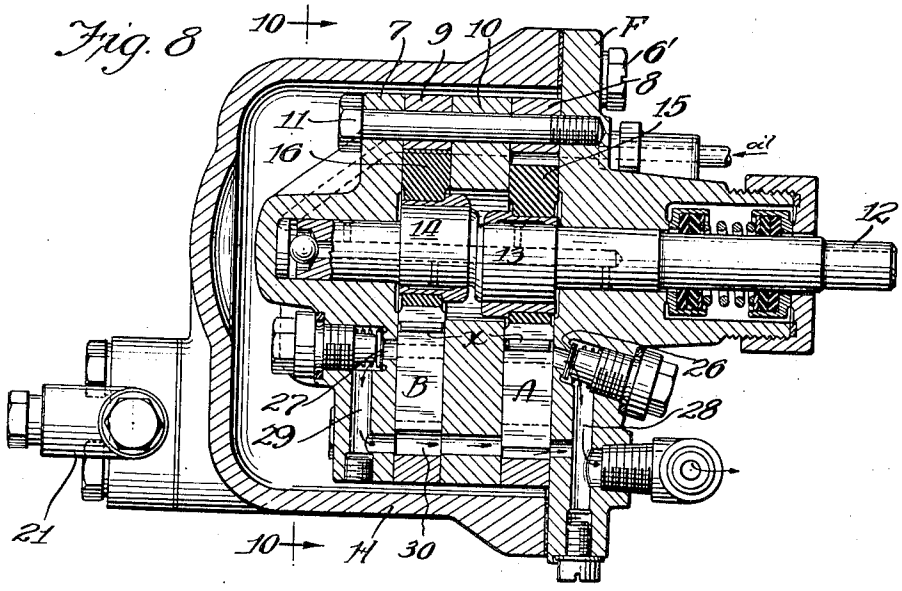


Fig. 9

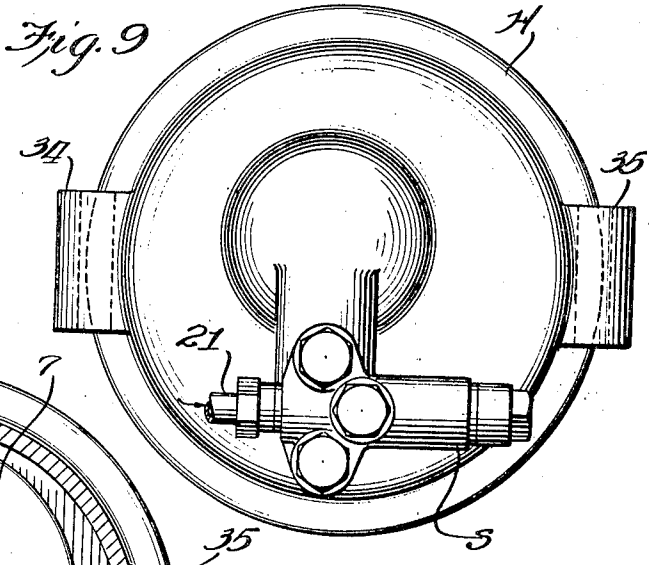
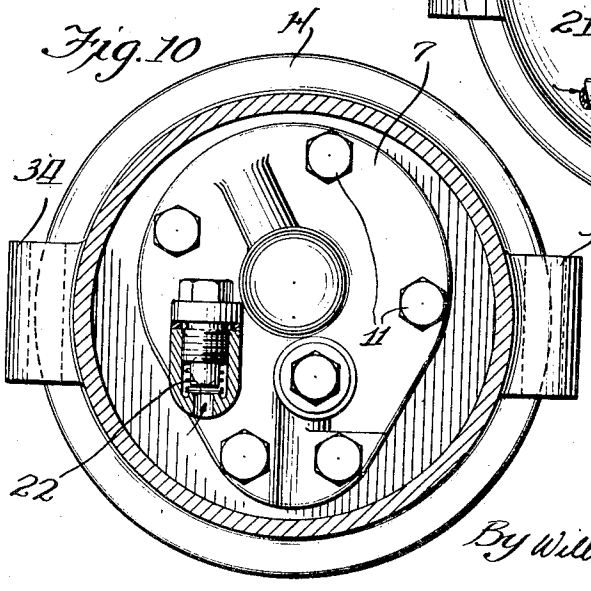


Fig. 10



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UNITED STATES PATENT OFFICE

1,984,664

SECTIONAL ROTARY COMPRESSOR

Alfred Teves, Frankfort-on-the-Main, Germany

Application December 23, 1931, Serial No. 582,816
In Germany December 29, 1930

5 Claims. (Cl. 230—158)

This invention relates to rotary compressors built up of standard sections, especially suitable for the smaller air compressors, electric household refrigerators and similar devices.

A great difficulty in building perfect compressors of this type, especially for refrigerants for household refrigerating plants, has heretofore consisted in making the pistons fit perfectly so as to avoid loss of efficiency, and the devices for assuring tightness against leakage have been cumbersome and expensive.

The main object of this invention is to provide means whereby the pistons of such compressors may be made to fit as nearly perfect as possible in the chambers without much difficulty and expense. This is achieved by building up the compressor of sections having parallel flat smooth surfaces, dimensioning the pistons so as to fit exactly between the side walls of their chambers, and drawing the sections together tightly, so that these surfaces themselves will assure tightness without any packing.

A further object of the invention is to make it possible to build up such compressors to various capacities either by increasing the number of standard sections or by increasing the thickness of the sections.

Another object is to provide such compressors with easily accessible and removable inlet and outlet valves for the purpose of facilitating adjustments which may be necessary.

In a modified form of embodiment of the invention a hood is provided covering the compressor, the object of which is to have the incoming cool gases flow around the compressor and thereby cooling it and also to eliminate to a certain extent the noise created by the operation of the compressor.

Still further objects of the invention will appear hereinbelow as the specification of the devices embodying this invention proceeds.

In the accompanying drawings:

Fig. 1 is a side elevation of a rotary compressor built according to this invention, mounted on a common base plate with a motor directly coupled thereto;

Fig. 2 is a front elevation of the same;

Fig. 3 is a rear elevation of the compressor;

Fig. 4 is a vertical longitudinal section of a compressor built according to this invention, on an enlarged scale;

Figs. 5 and 6 are vertical cross-sections taken on lines 5—5 and 6—6, respectively, of Fig. 4;

Fig. 7 is a horizontal cross-section taken on line 7—7 of Fig. 6.

Fig. 8 is a vertical longitudinal section of the compressor with hood built according to the modified form of embodiment of the invention.

Fig. 9 is a rear view of the same.

Fig. 10 is a section taken on line 10—10 of Fig. 8.

Referring to the drawings by numerals, the rotary compressor consists mainly of a front head 6 and a rear head 7, substantially annual chamber sections 8 and 9, and an also substantially annular dividing section or partition 10, all having smooth perfectly parallel contacting surfaces and held together tightly by bolt and nut assemblies 11.

A shaft 12, with eccentric portions 13 and 14 within the space confined by the heads 6 and 7, is rotatably mounted in these heads and carries loosely mounted pistons 15 and 16 on the eccentric portions 13 and 14, respectively, which work in the chambers formed by the annular members 8 and 9.

The front and rear heads 6 and 7 are recessed, as shown at 17 and 20 and the pistons 15 and 16 are recessed at 18 and 19, respectively, to reduce friction.

Blades A and B are inserted in corresponding slots in the respective pistons 15 and 16 and secured by pins such as x. They project downwardly into recesses formed in the respective chamber sections 8 and 9, in which are also rotatably mounted, for each blade a pair of substantially segment-shaped blocks, C, between which the blades are adapted to slide up and down.

An inlet 21 is provided for the fluid to enter the compressor through the check valve 22 and suction channel 23 leading into the suction side of the piston chambers, 24 and 25.

In the modified form of embodiment shown in Figs. 8, 9 and 10, the inlet 21 is placed on the outside of the hood H which is secured to a flange F formed on the front head 6 by means of cap screws 6'. With the inlet is associated a shutoff valve S which serves to shut off the flow of fluid from the compressor when required for repairs or other purposes. The fluid in this form of embodiment of the invention enters through the inlet into the space within the hood H surrounding the compressor proper and thereby assists in keeping down the temperature of the latter.

It will be easily understood from the above description and the drawings that when the shaft 12 is rotated, the pistons 15 and 16 mounted on the eccentric portions of the shaft will receive a slightly rotating but more pronounced oscil-

lating movement, whereby the space between the pistons and the chamber walls will be decreased in a continuous movement around the periphery of the chamber walls and thus the fluid contained in this space will be impelled forward in the direction of the rotation of the shaft and at the same time gradually compressed against the other side of the blades.

After being compressed in the compression sides of the piston chambers, 51 and 52, the fluid enters through the check valves 26 and 27 into channels 28 and 29 respectively, both of which connect with a common outlet channel 30 leading to a coupling stud 31.

The partition member 10 is provided with a pair of lateral projections 34 and 35 in which vertical holes 36 and 37 respectively are provided. These projections or eyes 34 and 35 serve for the suspension of the compressor on a pair of stay bolts 38 and 39 rigidly and vertically mounted on the base plate 40 on which also the motor 41 is mounted. The upper and lower ends of the stay bolts 38 and 39 are threaded to receive thereon nuts 42 and 43 respectively, between which the eyes 34 and 35 are adjustably secured at a suitable height for lining up the driven shaft 12 of the compressor with the driving shaft 44 of the motor and connecting these shafts by a coupling 45.

In the modified form of embodiment the eyes 34 and 35 are placed on the outside of the hood H instead of on the partition member 10.

Resilient buffers 48 are provided between the eyes and the nuts for an obvious purpose.

It is understood that, while preferred forms of embodiment of this invention have thus been described, deviations from the construction shown and described may be resorted to within the scope of the invention.

I claim:

1. A multi-section rotary compressor having end sections provided with valve and regulating means, in combination with an enclosing hood, providing a cooling chamber about said multi-section compressor communicating therewith through said valve and regulating means, and additional valve and regulating means communicating with said chamber for receiving fluid for said compressor.

2. A rotary compressor comprising a pair of head sections, one or more dividing sections, a plurality of interchangeable chamber sections symmetrical and identical as to shape and size interposed between said head and dividing sections, at least one longitudinal conduit extending through said dividing and chamber sections, a shaft rotatably mounted in said head sections and passing through said dividing and chamber sections, piston members mounted on said shaft, one in each chamber section, and inlet and outlet connections in said head sections associated with said conduit or conduits.

3. A rotary compressor comprising a pair of head sections providing spaced opposed faces, one or more dividing sections having identical opposite faces, a plurality of chamber sections symmetrical and identical as to shape and size and interposed between said head and dividing sections, each said chamber section having identical opposite faces, each of said identical opposite faces of each said chamber section being complementary to each of said faces of said dividing and head sections and adapted to make seals therewith, at least one longitudinal conduit extending through said dividing and chamber sections, piston members mounted on said shaft, one in each chamber section, and inlet and outlet connections in said head sections associated with said conduit or conduits.

4. A rotary compressor comprising a pair of head sections, one or more dividing sections, a plurality of chamber sections symmetrical and identical as to shape and size interposed between said head and dividing sections, at least one longitudinal conduit extending through said dividing and chamber sections, a shaft rotatably mounted in said head sections and passing through said dividing and chamber sections, piston members mounted on said shaft, one in each chamber section, inlet and outlet connections in said head sections associated with said conduit or conduits, said head sections being adapted to accommodate a variable number of chamber and dividing sections therebetween, whereby a variable capacity compressor is provided, and assembly means for removably securing together said head sections and a desired number of said chamber and dividing sections in operative relationship.

5. A rotary compressor comprising a pair of head sections, one or more dividing sections, a plurality of chamber sections symmetrical and identical as to shape and size interposed between said head and dividing sections and providing fluid chambers, a shaft rotatably mounted in said head sections and passing through said dividing and chamber sections, piston members mounted on said shaft, one in each fluid chamber, inlet and outlet connections in said head sections, valve means in said head sections, and communicating channels in said dividing and chamber sections connecting said inlet and outlet connections and said valve means with said fluid chambers.

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