

Jan. 26, 1932.

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1,842,940

ROTARY COMPRESSOR

Filed June 4, 1929

2 Sheets-Sheet 1

Fig. 1.

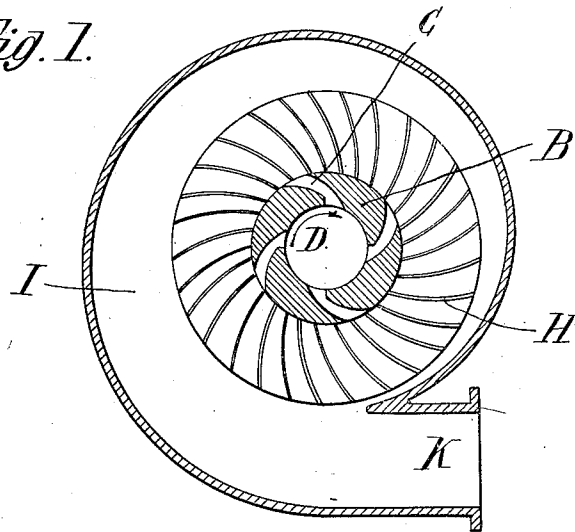
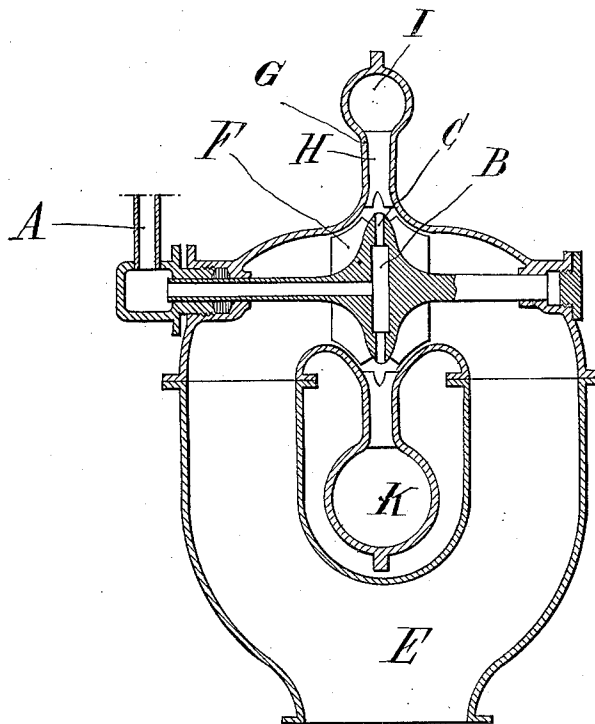


Fig. 2.



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Fig. 3.

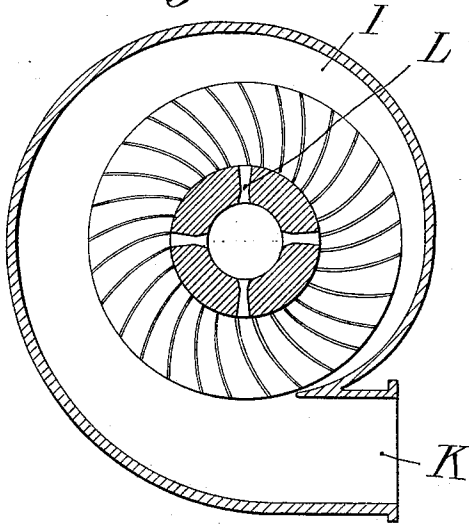


Fig. 4.

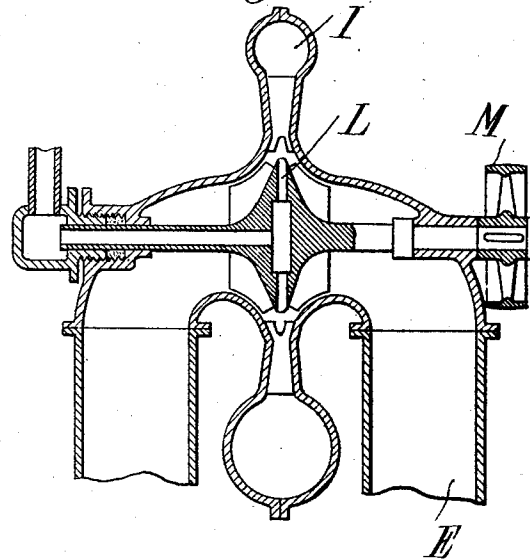
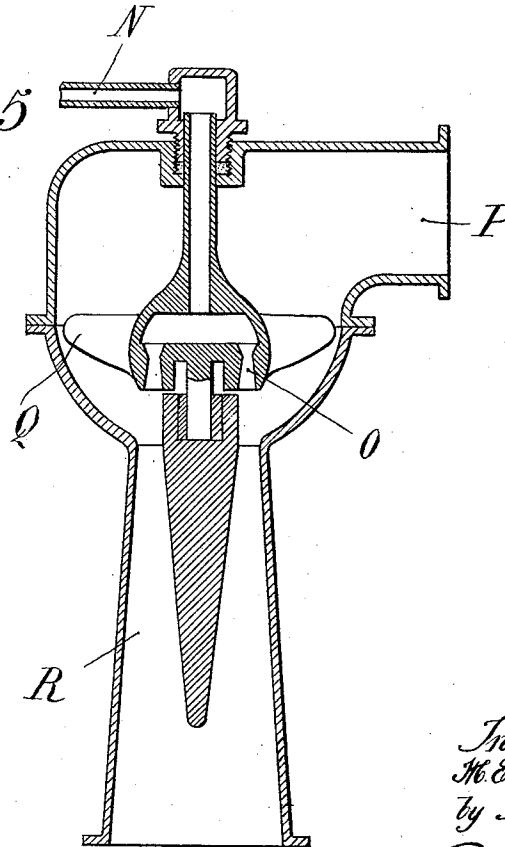


Fig. 5.



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ROTARY COMPRESSOR

Application filed June 4, 1929, Serial No. 368,328, and in France June 5, 1928.

The present invention relates to rotary compressors.

One of the objects of the invention is to provide a form of gaseous fluid compressor in which the energy necessary for compression is derived from the expansion of a gaseous motor fluid introduced into the compressor at a pressure exceeding that of a mixture of the motor fluid and the gaseous fluid to be compressed.

Another object is to provide a rotary compressor in which the energy necessary for rotation is derived from the reaction of a motor fluid on the walls of a plurality of specially positioned rotatable tuyères.

Further objects will appear in the course of the detailed description now to be given with reference to the accompanying drawings, in which:—

Fig. 1 is a section taken at right angles to the axis of rotation of one illustrative embodiment of the invention;

Fig. 2 represents a longitudinal section of the same apparatus;

Figs. 3 and 4 are a pair of sections similar to Figs. 1 and 2 showing a second form of the invention;

Fig. 5 is an axial section through a third constructive embodiment of the invention.

Referring to Figs. 1 and 2, there is shown a passage for a gaseous motor fluid A extending through the rotor shaft,—a hollow rotor B, having a plurality of non-radial tuyères C formed therein,—a plurality of ribs or blades F formed on the exterior of rotor B,—a diffuser G provided with non-radial partitions H,—a volute I terminating in discharge conduit K,—and a bilateral inlet E for a gaseous fluid to be compressed.

The hereinabove described assembly functions as follows:—

The motor fluid entering through A passes through tuyères C and reacts on the non-radial walls of the latter to cause rotation of rotor B in the direction of arrow D (Fig. 1); as soon as the rotor is set in motion, blades F aspirate the fluid to be compressed from feed inlet E into diffuser G; at the same time the motor fluid discharging from tuyères C enters diffuser G and increases the velocity of

the fluid being discharged into the latter by blades F; the combined fluids enter the neck of element G, traverse the passages formed by partitions H, which function to counteract possible losses due to local eddy currents, and discharge through volute I into conduit K. It is obvious that the use of partitions H and of blades F is optional, the apparatus being operative, though less efficient, when they are eliminated. It is further to be observed that the motor fluid and the fluid to be compressed may be similar or dissimilar, as desired.

The form of apparatus shown in Figs. 3 and 4 differs from the one already described only in the manner in which rotor B is set in motion. Here, tuyères L are radial, and the energy necessary for actuating element B is derived from a pulley M, a direct connected motor or the like. This structure functions substantially in the same manner as the one represented in Figs. 1 and 2, the fluid discharging through tuyères L serving merely to increase the velocity of those aspirated from feed conduits E.

In the modification illustrated in Fig. 5, motor fluid under pressure is fed through conduit N and discharges in a direction substantially parallel to the axis of rotation of the rotor through tuyères O into a flaring diffuser R, fluid to be compressed or ejected being aspirated through feed conduit P by means of propeller blades Q. The rotor may be rotated by either inclining tuyères O or by adding a pulley in the manner suggested by Figs. 1 and 4.

The invention is particularly adapted for use in evaporating, concentrating or distilling apparatus in which steam under low pressure is to be compressed and used for heating.

What I claim is:—

1. In combination, a rotor having a passage formed therethrough, a conduit positioned to provide gaseous fluid under pressure to said passage for turning said rotor, a conduit positioned to feed gaseous fluid exteriorly to said rotor, and a fluid discharge system of continuously increasing section positioned to receive the combined discharge of fluid

from the passage through the rotor and that fed to the exterior of the latter, said fluid discharge system being positioned adjacent the periphery of the rotor and in line with the discharge end of the passage in the rotor.

2. In combination, a rotor having a passage formed therethrough, a conduit positioned to feed gaseous fluid under pressure to said passage, a chamber positioned exteriorly with relation to said rotor and positioned to feed gaseous fluid to the rotor, a plurality of blades rigidly attached to said rotor and adapted to exert an impelling effect on fluid contained in said chamber, and a fluid discharge system positioned to receive the combined discharge of fluid from the passage through the rotor and that fed to the exterior of the latter from said chamber, said fluid discharge system being positioned adjacent to the periphery of the rotor and in line with the discharge end of the passage therethrough, said fluid discharge system being of continuously increasing section at those portions thereof adjacent to said rotor.

3. In combination, a rotor having a passage formed therethrough, a conduit positioned to feed gaseous fluid under pressure to said passage, a chamber inclosing a portion of said rotor and positioned to feed gaseous fluid to the exterior surfaces thereof, a plurality of blades rigidly attached to said rotor, and a fluid discharge system positioned to receive the combined discharge of fluid from the passage through the rotor and that fed to the exterior of the latter from said chamber, said fluid discharge system including a first portion positioned adjacent to the periphery of the rotor and in line with the discharge end of the passage therethrough, said fluid discharge system being of continuously increasing section at those portions thereof adjacent to said rotor, said fluid discharge system also including a second portion in the form of a volute positioned to receive fluid discharged from said first portion.

In testimony whereof I affix my signature.

JANNIN, MARCEL EMILE LUCIEN.