No. 751,014. PATENTED FEB. 2, 1904.

C. REIN.

ROTARY PUMP, BLOWER, &c.

APPLICATION FILED MAY 7, 1903.

NO MODEL.

Fig. 1

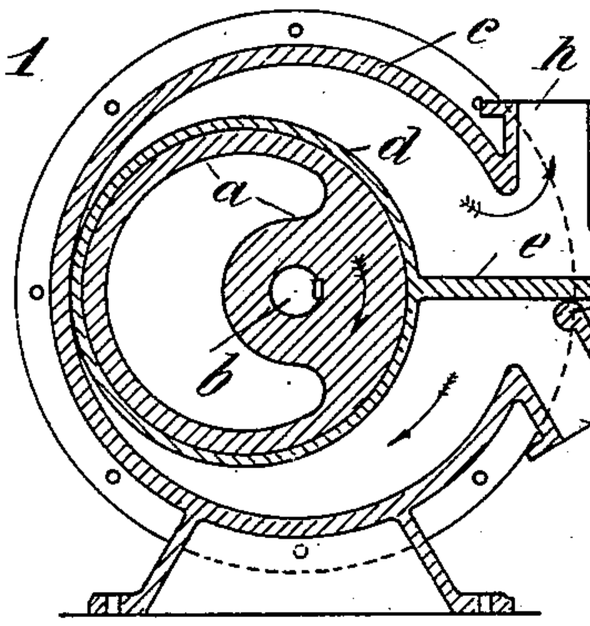


Fig. 2

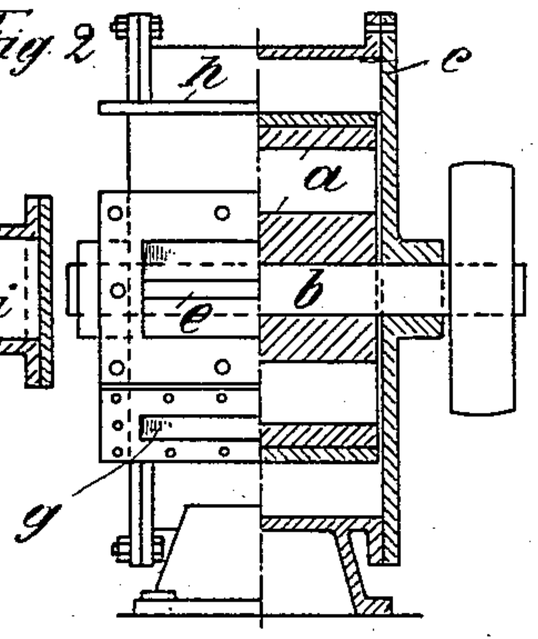


Fig. 3

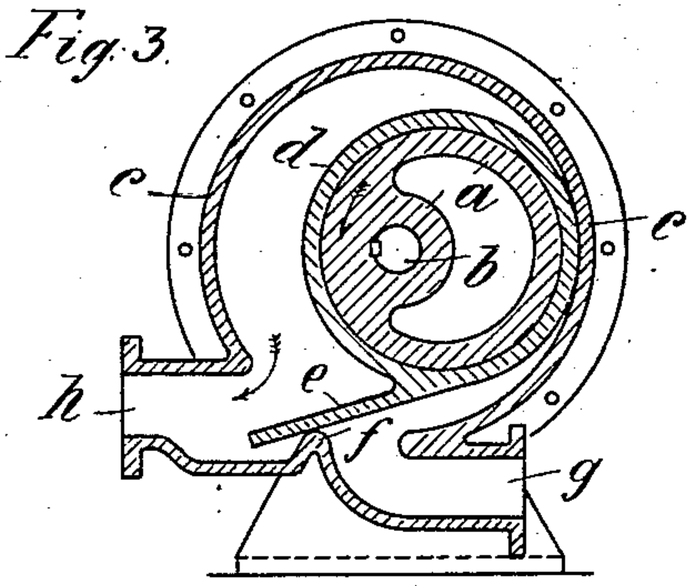


Fig. 4

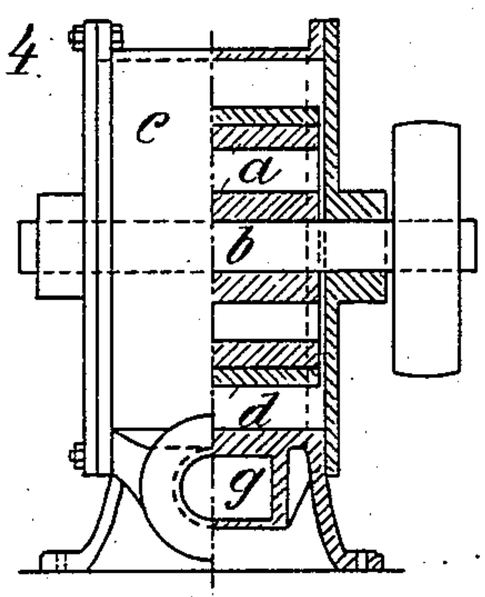


Fig. 5

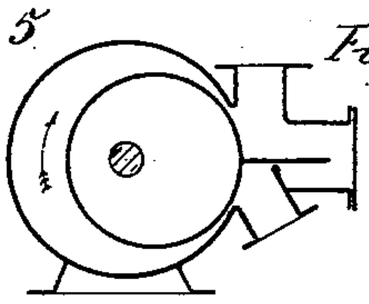


Fig. 6

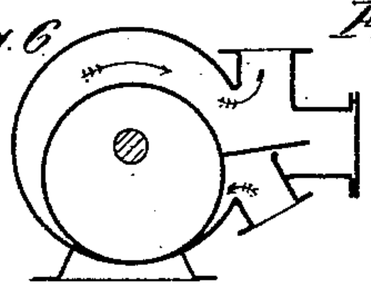


Fig. 7

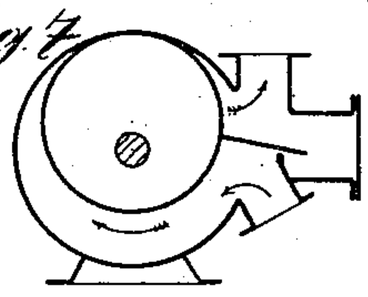


Fig. 8

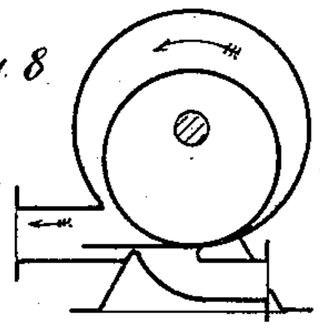


Fig. 9

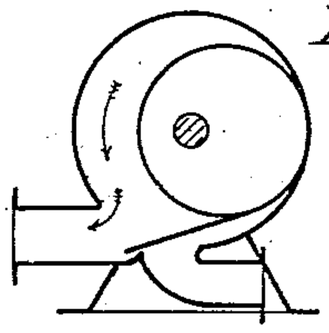
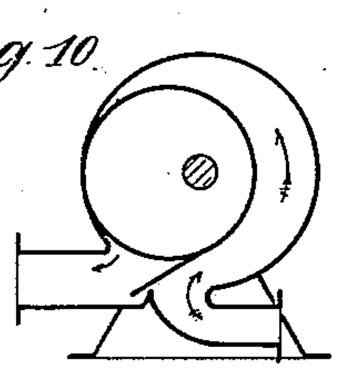


Fig. 10



Witnesses:
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Edward Kay.

Inventor:
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by his attorney
Frank V. Briesen

No. 751,014. Patented February 2, 1904.

UNITED STATES PATENT OFFICE.

CARL REIN, OF HANOVER-LIST, GERMANY.

ROTARY PUMP, BLOWER, &c.

SPECIFICATION forming part of Letters Patent No. 751,014, dated February 2, 1904.

Application filed May 7, 1903. Serial No. 155,986. (No model.)

To all whom it may concern:

Be it known that I, CARL REIN, a citizen of Germany, residing at Hanover-List, Germany, have invented new and useful Improvements in Rotary Pumps, Blowers, &c., of which the following is a specification.

This invention relates to a rotary pump, blower, compressor, or motor, such as an apparatus for pumping gas and liquids, in which an eccentrically-arranged piston rotates in a casing nearly in contact with its inner wall and operates a valve separating the inlet from the outlet opening of the casing.

The pump according to this invention differs from ordinary Root's blowers by the circumstance that the valve operated by the piston besides its reciprocating motion has also an oscillating motion and that in order to avoid unnecessary friction it is supported only at one point and is automatically pressed against its abutment-surface by the pressure acting on it, a tight joint thus being insured.

A pump according to this invention is shown in the accompanying drawings in two different constructions.

Figures 1 and 3 are cross-sections of two forms of construction, Figs. 2 and 4 showing the pump in side elevation and partly in vertical section, and Figs. 5 to 10 show diagrammatically the pumps in various stages of working.

a is a cylindrical piston eccentrically mounted on the spindle *b* in the casing or cylinder *c*, and *e* is the valve mounted concentrically on the piston *a*, preferably by means of a strap or ring *d*.

g is the fluid-inlet, and *h* the outlet from the casing.

The valve *e* is adapted to play in a pocket *i*, formed between the inlet and outlet branches *g* and *h*. The inlet branch *g* is prolonged inwardly beyond its junction with the wall of pocket *i*, so as to form a bridge *f*, that partly traverses the pocket, and consequently extends between the inlet and exit branches. The bridge is arranged at an angle to the valve *e* and terminates in a rounded abutment, against which the valve impinges at one face along a single contact-line, while the other face of the valve is free, so as to permit the flow of the pressure medium to the friction-face of the valve. The valve projects in all its positions to a greater or less extent beyond the abutment *f* and into the pocket *i*. As the pressure of the liquid in the pocket against both faces of the free end of the valve is equal, the valve will be here counterbalanced, and an easy working of the pump is insured.

In Figs. 3 and 4 the pocket *i* is dispensed with and the bridge *f* is formed intermediate the inlet *g* and exit *h*.

The working of the apparatus is as follows: When the piston *a*, which rests against the inside of the casing *c*, with its point farthest away from the spindle *b*, is turned in the direction indicated by the arrow, suction takes place through the inlet *g*, the air, gas, or liquid contained in the space between the casing and the piston being at the same time expelled through the outlet *h*. This working is illustrated by the various positions of the piston in Figs. 5 to 10. The valve action according to this invention consists in the valve *e* executing an oscillatory movement during its reciprocatory motion, and owing to the pressure always acting on one side of it it is constantly forced against the abutment arranged on the inlet side, a tight joint thus being insured. In this way there is always a tight joint in the inlet space or chamber and no special longitudinal guiding of the valve is required.

The ring-support of the valve on the piston may be of ány desired construction.

There must be, of course, provided sufficient free space for the movement of the valve, which space can be formed, as shown in Fig. 1, by a special lateral projection or pocket *i* between the inlet and outlet ports or, as shown in Fig. 3, the valve may project into the discharge-opening.

The apparatus can be used for pumping air and other gases, as well as any liquids, and therefore may be used both as a fan and a pump. Thus, for instance, the construction shown in Figs. 1 and 2 is suitable for forcing air, and the construction shown in Figs. 3 and

4 for pumping liquids without, of course, precluding the possibility of their being used, the first for liquid and the second for air.

What I claim is—

In a rotary pump, a cylinder having an inlet branch, an outlet branch, and a bridge terminating in a rounded abutment intermediate said branches, combined with an eccentric rotatable piston, a surrounding strap, and a valve on the strap which is adapted to project beyond the abutment and to impinge against the same at one face, while the other face of the valve is free, substantially as specified.

Signed by me at Hanover, Germany, this 25th day of April, 1903.

CARL REIN.

Witnesses:
LEONORE KASCH,
C. C. STEVENSON.