Dec. 15, 1925.

1,565,696

T. C. WHITEHEAD

ROTARY PUMP

Filed July 23, 1923

2 Sheets-Sheet 1

Fig. 1.

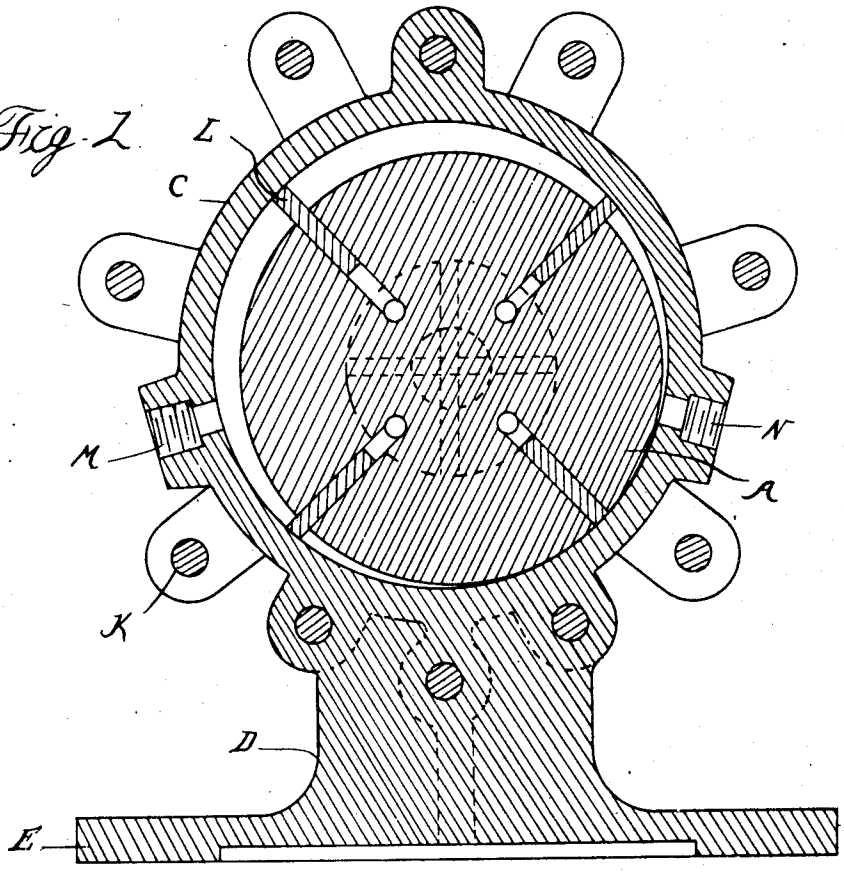
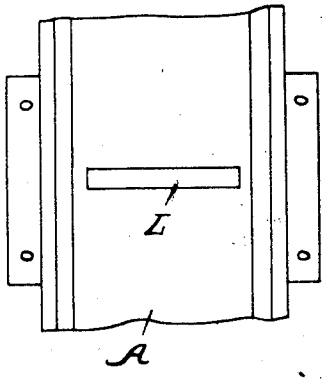


Fig. 3.



Inventor

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2 Sheets-Sheet 2

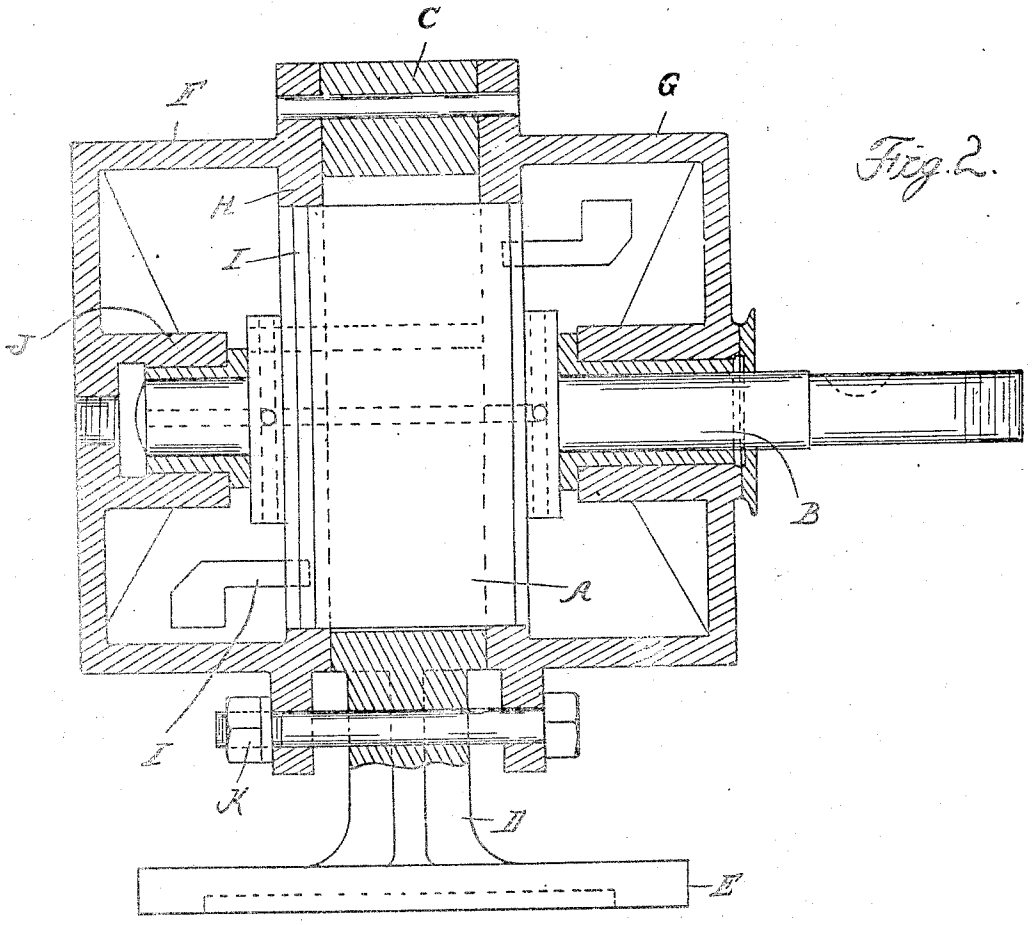


Fig. 2.

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Patented Dec. 15, 1925. 1,565,696

UNITED STATES PATENT OFFICE.

THOMAS C. WHITEHEAD, OF DETROIT, MICHIGAN.

ROTARY PUMP.

Application filed July 23, 1923. Serial No. 653,234.

To all whom it may concern:

Be it known that I, THOMAS C. WHITEHEAD, a citizen of the United States of America, residing at Detroit, in the county of Wayne and State of Michigan, have invented certain new and useful Improvements in Rotary Pumps, of which the following is a specification, reference being had therein to the accompanying drawings.

The invention relates to rotary pumps, being more particularly designed for use as a gas pump, and the invention consists in certain features of construction as hereinafter set forth.

In the drawings:

Figure 1 is a cross-section through the pump;

Figure 2 is a longitudinal section therethrough;

Figure 3 is a plan view of a portion of the rotor showing the peripheral seal therefor.

A is a rotor of cylindrical form which is mounted upon a spindle B and is arranged within an outer casing. This casing has a central portion C of a length less than that of the rotor and having its inner wall eccentric to the axis of said rotor. This portion is preferably supported upon a standard D rising from a base E. On opposite sides of the portion C are the housing members F and G. These are provided with inwardly extending flanges H, which fit about the projecting end portions of the rotor and engage packing rings I surrounding said rotor in grooves therein. Beyond the flanges H the sections F and G form chambers for a lubricant and have centrally therein the bearings J for the spindle. The sections C, F and G are bolted or otherwise secured to each other by the bolts K engaging registering ears.

The rotor A is provided with radially extending slots in the portion thereof which registers with the housing section C and in these slots are the wings L. These wings are moved outward by centrifugal action whenever the rotor is revolving, while the eccentric wall of the housing member C will move the wings radially inward. An inlet port M and an outlet port N are arranged in the section C on opposite sides of the point of tangency between the rotor and the eccentric wall.

In operation, the rotation of the rotor will cause the blades or wings L to travel about the eccentric wall in sealing contact therewith, which will have the effect of drawing the fluid in through the inlet port and expelling it through the outlet port. Leakage of the fluid between the rotor and the housing is prevented by the packing rings I, which latter are coupled by suitable means, such as a driving pin O, with the rotor to revolve therewith. Thus centrifugal action will assist in pressing the rings outward against the flange H of the housing. To lubricate the bearings J properly, I preferably provide suitable arms P which project laterally from the opposite sides of the rotor.

The pump as above described is particularly adapted for use in household refrigerating apparatus where it is desired to compress the refrigerating agent and to avoid noise such as is occasioned by the opening and closing of the valves.

While I have described the specific construction of rotary pump, it is obvious that the sealing means between the rotor and housing is applicable to other specific constructions of pump.

What I claim as my invention is:

1. A rotary gas pump comprising a rotor having one or more radial blades slidably connected therewith and of a length less than the length of the rotor, a housing for the gas surrounding said rotor having an eccentric wall with which said blades contact, and concentric portions containing oil on the opposite ends of said eccentric portion surrounding the end portions of the rotor, and sealing rings mounted upon and movable with said rotor engaging said surrounding concentric wall of the housing.

2. A rotary pump comprising a rotor, a plurality of radial blades slidably engaging slots in said rotor, a housing surrounding said rotor and having an eccentric wall with which the outer edges of said blades contact, and concentric portions on opposite ends of said eccentric portion surrounding extensions of said rotor, and packing rings engaging grooves in said rotor and bearing against the concentric portions of said housing.

3. A rotary pump comprising a housing member for gas supported upon a standard, a rotor having its axis eccentric to said housing member and arranged within the same, complementary housing members for oil clamped at opposite ends of said first-

mentioned housing member concentric with the axis of said rotor and surrounding extensions thereof, packing rings engaging grooves in said rotor and bearing against said concentric portions of the housing to prevent the passage of oil from the complementary housing members to the rotor housing, and bearings for the spindle of said rotor in said complementary housing member.

4. In a rotary pump, the combination with a rotor and a housing having non-concentric portions, of concentric portions on said rotor and casing forming a sealing joint therebetween.

5. In a rotary pump, the combination with a rotor and a housing having non-concentric portions of adjacent concentric portions on said rotor and housing at opposite ends thereof forming a sealing joint therebetween.

6. In a rotary pump, the combination with a rotor and a housing therefor having non-concentric portions, of adjacent concentric portions on said rotor and housing at opposite ends of said concentric portion, and sealing rings engaging said concentric portions.

7. In a rotary pump. the combination with a rotor and a housing therefor, of one or more blades coacting with said rotor and housing, and sealing means at the end of said blades comprising adjacent concentric portions on said rotor and housing, and a ring engaging a groove in the one and bearing against the other.

8. In a rotary pump, the combination with a rotor and a housing therefor, of sealing means between said rotor and housing, a lubricant chamber in the housing outside of said sealing means, a journal bearing for the rotor centrally within said chamber, and means on said rotor for throwing the lubricant over said bearing.

9. A gas pump comprising three communicating casings, the intermediate casing being eccentric to the outer casings, a rotor in the intermediate casing, a shaft supporting the rotor journaled in bearings in the outer casings, flanges projecting inwardly from the intermediate casing, and means carried by said rotor engageable with said flanges for preventing the flow of oil from the outer casings to the intermediate casing.

In testimony whereof I affix my signature.

THOMAS C. WHITEHEAD