Sept. 11, 1923.

1,467,944

M. C. MASON

ROTARY PUMP

Filed Jan. 5, 1922

2 Sheets-Sheet 1

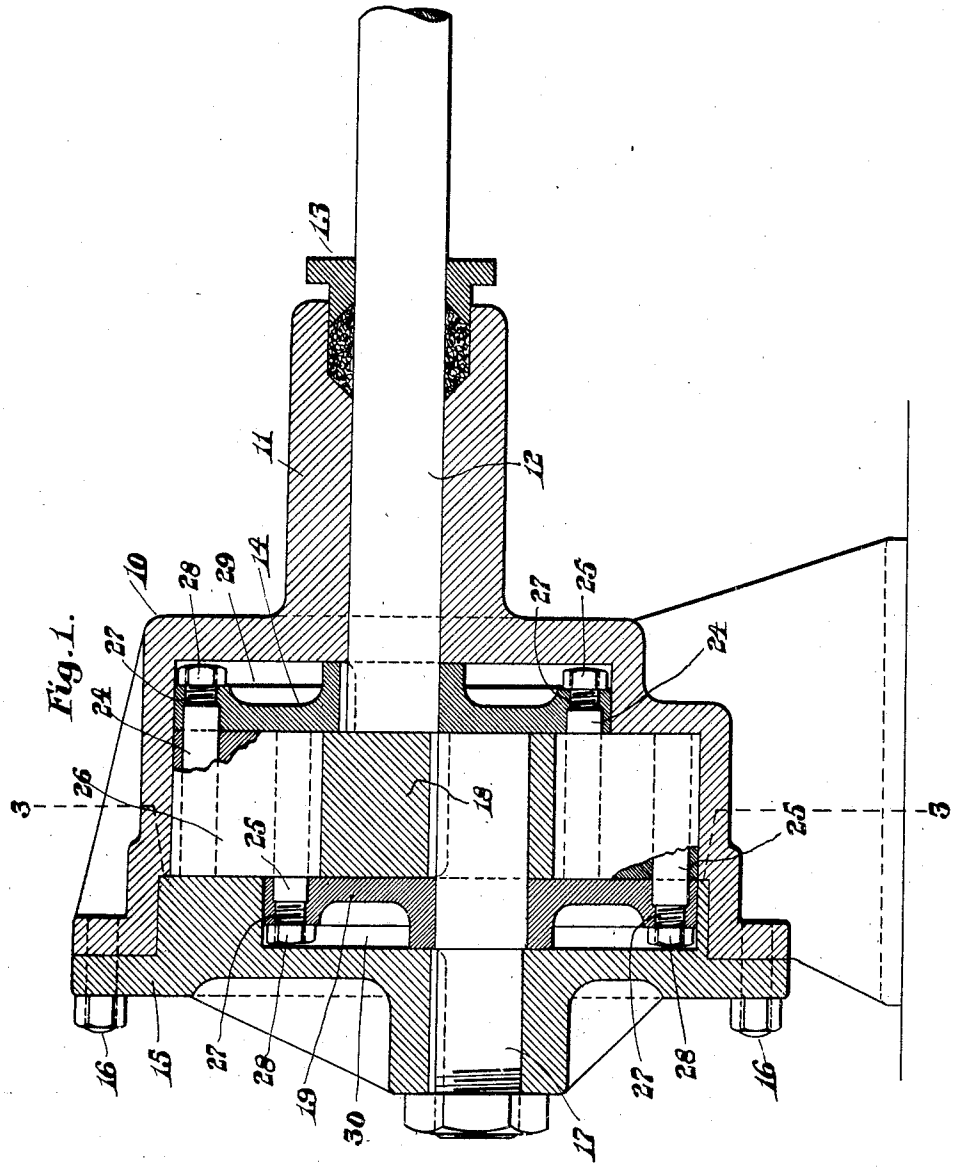


Fig. 1.

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Fig. 3.

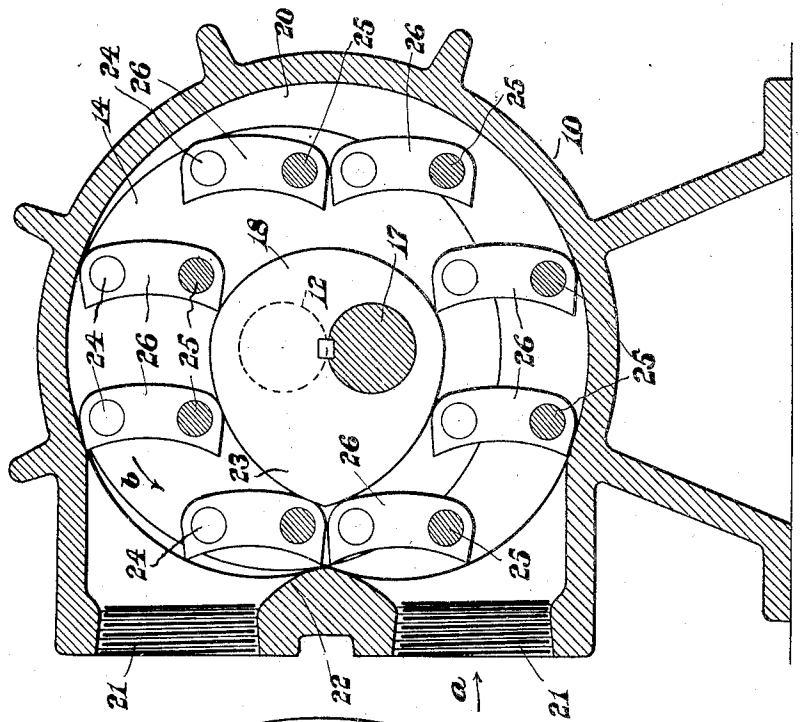
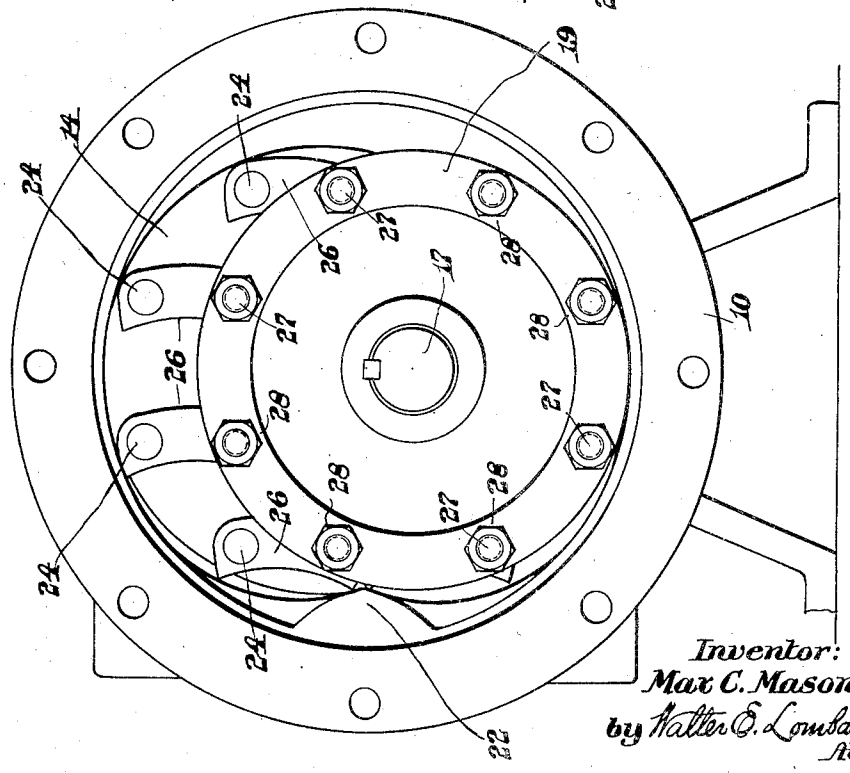


Fig. 2.



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Patented Sept. 11, 1923. 1,467,944

UNITED STATES PATENT OFFICE.

MAX C. MASON, OF KEENE, NEW HAMPSHIRE.

ROTARY PUMP.

Application filed January 5, 1922. Serial No. 527,234.

To all whom it may concern:

Be it known that I, MAX C. MASON, a citizen of the United States of America, and a resident of Keene, in the county of Cheshire and State of New Hampshire, have invented certain new and useful Improvements in Rotary Pumps, of which the following is a specification.

This invention relates to rotary pumps and has for its object the production of a pump which is simple in construction, effective in operation, and which is particularly adapted for use in pumping liquids.

The invention consists in a casing having a chamber in which are rotatably mounted two disks on opposite sides of a stationary cam-shaped member and between which are mounted a plurality of blades, one end of each of which is pivoted to one disk while the opposite end is pivoted to the other disk, said disks being so constructed as to continuously close a restricted path therefor between the inlet and outlet passages of said casing.

The invention further consists in certain novel features of construction and arrangement of parts which will be understood readily by reference to the description of the drawings and to the claims to be hereinafter given.

For the purpose of illustrating the invention, one preferred form thereof is shown in the drawings, this form having been found to give satisfactory and reliable results, although it is to be understood that the various instrumentalities of which the invention consists can be variously arranged and organized, and that the invention is not limited to the precise arrangement and organization of the instrumentalities as herein shown and described, except as required by the scope of the appended claims.

Of the drawings:

Figure 1 represents a longitudinal section of a pump embodying the principles of the present invention.

Figure 2 represents an elevation of the same with the enclosing plate removed, and

Figure 3 represents a transverse section of same on line 3, 3 on Figure 1.

Similar characters indicate like parts throughout the several figures of the drawings.

In the drawings, 10 is a casing having at one end a hub 11, in which is disposed a rotatable shaft 12. The outer end of the hub 11 is provided with a stuffing box 13 of usual construction. The inner end of the shaft 12 has keyed, or otherwise secured thereto a disk 14. The opposite end of the casing 10 is formed open and is closed by means of a plate 15 secured to the casing 10 by means of bolts 16. The plate 15 has mounted therein and keyed thereto a stud 17, the inner end of which has keyed, or otherwise secured thereto, the stationary cam-shaped member 18.

One face of the stationary cam-shaped member abuts one face of the disk 14, and between the opposite face of said cam-shaped member 18 and inner wall of the plate 15 is disposed a second disk 19, freely revoluble about the stud 17.

As shown in Figure 1 of the drawings, the axes of the shaft 12 and the stud 17 are out of alinement with each other, and they are also out of alinement with the center of the chamber 20 in the casing 10. This casing 10 is provided with two passages 21, communicating with the chamber 20 and either of which may be used as an inlet passage, while the other is used as an outlet or discharge passage.

Between these passages 21, the inner wall of the casing 10 is provided with a cam-shaped projection 22 extending inwardly toward the center of the chamber 20. In like manner the cam-shaped stationary member 18 is provided with a projecting portion 23 extending toward said projection 22, thereby forming a narrow restricted path between said projections 22 and 23 at a point midway between the inlet and outlet passages 21.

Each disk 14 and 19 has concentrically disposed thereon and secured thereto the bearing pins 24 and 25, the bearing pins 24 being mounted on the disk 14 and extending toward the disk 19, while the bearing pins 25 are secured to the disk 19 and extend toward the disk 14.

Each bearing pin 24 extends through a cylindrical opening in one end of a blade 26, while each bearing pin 25 extends through a cylindrical opening in the opposite end of a blade 26.

These blades 26 are so shaped as to contact with the walls of the projections 22 and 23 as they pass through the narrow passage between these projections, and there are within the chamber 20 a sufficient number of blades 26 to permit the narrow path between the

projections 22 and 23 being always closed by at least one blade being positioned therein during the rotation of the shaft 12. In other words, a median line extending transversely of each blade 26 will have a length equal to the width of the said path at its narrowest point and the thickness of the blade on any line on either side of said median line and parallel thereto will also be equal to the width of said path at its narrowest point.

If the lower passage 21 is used as an inlet passage, the material being pumped will enter the chamber 20 in the direction of arrow *a* on Figure 3, and the rotatable disks 14 and 19 will be rotated in the direction of the arrow *b* on Figure 3 of said drawings.

As the blades 26 move downwardly in the rotation of said disks 14 and 19, they will cut through the material and force it ahead of the blades 26 until the material is discharged through the upper passage 21. As in the rotation of the disks 14 and 19 the narrow path between the projections 22 and 23 is closed by one or more blades 26 therein, it is obvious that the material being pumped cannot return to the intake passage 21, after following the course of the blades about the stationary cam-shaped member 18.

It is self-evident that in the operation of the pump the blades 26 will remain substantially in parallelism at all times.

The pins 24 are preferably provided with reduced threaded ends 27, which extend through the disks 14 and 19 and have mounted thereon the clamping nuts 28.

It is obvious, however, that these pins may be secured to the disks in any well-known manner, provided that they are concentrically disposed upon the disks and parallel to each other and to the driving shaft 12.

The disk 14 rotates in a recess 29 formed in the casing 10, at one side of the chamber 20, while the disk 19 rotates in a similar recess 30 formed in the inner wall of the closing plate 15 on the opposite side of said chamber 20.

This makes a very simple form of pump which may be easily maintained in working order at all times.

It is believed that the operation and many advantages of the invention will be readily understood without further description.

Having thus described my invention, I claim:

1. A casing having a chamber therein with inlet and outlet passages; a stationary member in said chamber coacting with the wall of said chamber between said passages to form a restricted path; a plurality of blades adapted to move within said chamber about said member, each having a thickness on its median line and lines on opposite sides thereof and parallel thereto equal to the narrowest part of said restricted path whereby the path will be entirely closed during the passage of the blades therethrough; and means preventing the rotation of said blades about their individual axes.

2. A casing having a chamber therein with inlet and outlet passages; a stationary cam-shaped member in said chamber having one end adjacent the wall of said chamber between said passages and forming a restricted path; a plurality of blades adapted to move within said chamber about said member, each blade having a thickness on its median line and lines on opposite sides thereof and parallel thereto equal to the narrowest part of said restricted path and a concaved side extending from edge to edge, adapted to contact continuously with the wall of said chamber during the passage of said blades through said path; and means preventing the rotation of said blades about their individual axes.

3. A casing having a chamber therein with inlet and outlet passages; a stationary cam-shaped member in said chamber having one end adjacent the wall of said chamber between said passages to form a restricted path; a plurality of blades adapted to move within said chamber about said member, each blade having a concaved side, and a convex side disposed oppositely to said concave side a distance on its median line and lines on opposite sides thereof and parallel therewith equal to the narrowest part of said restricted path; and means preventing the rotation of said blades about their individual axes.

4. A casing having a chamber therein with inlet and outlet passages; a stationary cam-shaped member in said chamber having one end adjacent the wall of said chamber between said passages to form a restricted path; disks on opposite sides of said member rotatable about axes out of alinement; a plurality of blades interposed between said disks and all pivotally connected at one end to one of said disks and at the opposite end to the other disk, each blade having a thickness on parallel lines extending transversely thereof equal to the narrowest part of said restricted path whereby said blade in its movement through said path will continuously close the same; and means for rotating one of said disks.

5. A casing having a chamber therein with inlet and outlet passages; a stationary cam-shaped member in said chamber having one end adjacent the wall of said chamber between said passages to form a restricted path; disks on opposite sides of said member rotatable about axes out of alinement; a plurality of blades interposed between said disks and all pivotally connected at one end to one of said disks and at the opposite end to the other disk, each blade having a con-

caved side extending from edge to edge and thickness on parallel lines extending transversely thereof equal to the narrowest part of said restricted path whereby said blade in its movement through said path will continuously close the same; and means for rotating one of said disks.

6. A casing having a chamber therein with inlet and outlet passages; a stationary member in said chamber coacting with the wall of said chamber between said passages to form a restricted path; a plurality of blades adapted to move within said chamber about said member, each blade having oppositely disposed flat edges, a concaved side extending from one flat edge to the other and a convex side disposed from said concaved side on parallel lines extending transversely thereof a distance equal to the narrowest part of said path; and means preventing the rotation of said blades about their individual axes.

7. A casing having a chamber therein with inlet and outlet passages between which is a cam-shaped projection extending into said chamber; a stationary member in said chamber having a portion extending toward said projection to form a restricted path; disks on opposite sides of said member rotatable about axes out of alinement; a plurality of blades interposed between said disks and all pivotally connected at one end to one of said disks and at the opposite end to the other disk, each blade having flat edges, a convex wall on one side adapted to contact continuously with said stationary member while passing through said path, and an oppositely disposed concave wall extending from edge to edge adapted to contact simultaneously with the wall of said projection; and means for rotating one of said disks.

Signed by me at 746 Old South Bldg., Boston, Mass., this 29th day of December, 1921.

MAX C. MASON.

Witnesses:
WALTER E. LOMBARD,
NATHAN C. LOMBARD.