S. J. WEBB.

ROTARY PUMP.

APPLICATION FILED NOV. 14, 1907.

1,003,020.

Patented Sept. 12, 1911.

2 SHEETS—SHEET 1.

Fig. 1.

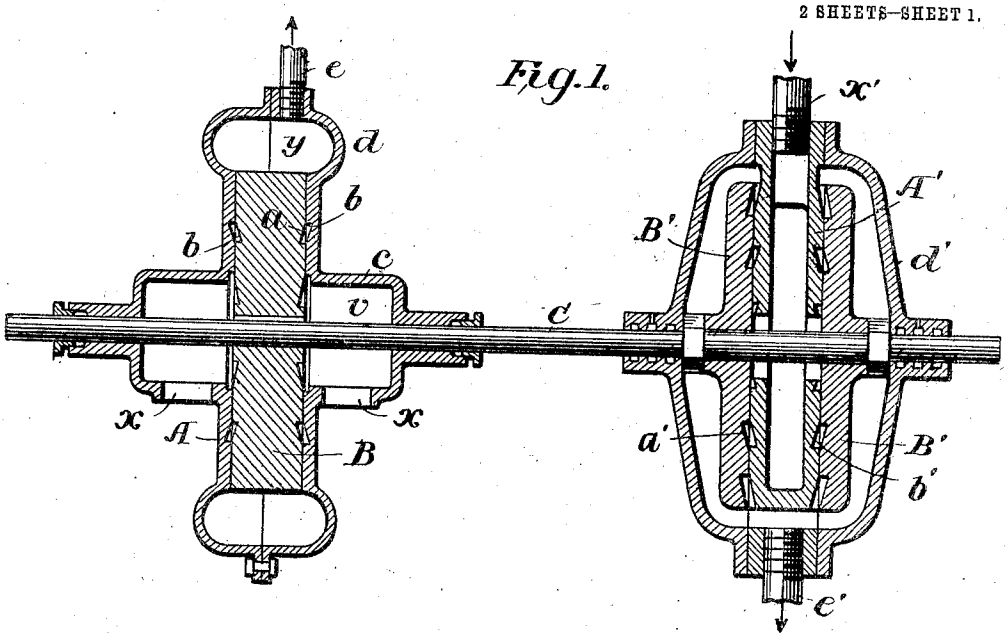


Fig. 2.

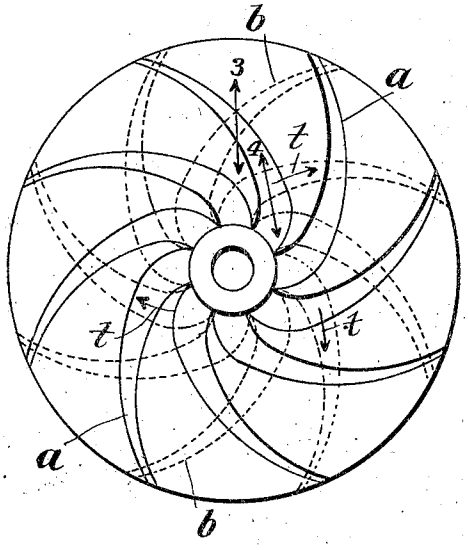


Fig. 3.

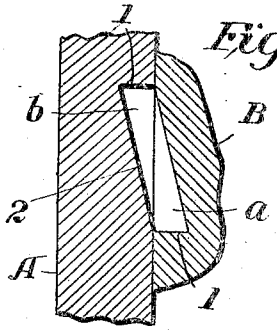
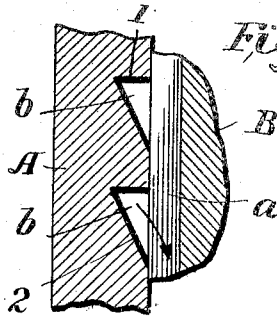


Fig. 4.



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2 SHEETS—SHEET 2.

Fig. 5.

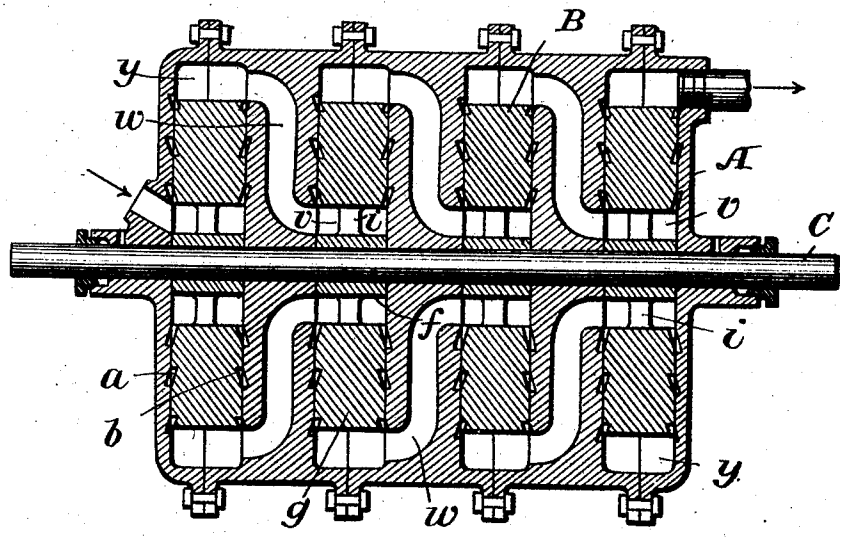
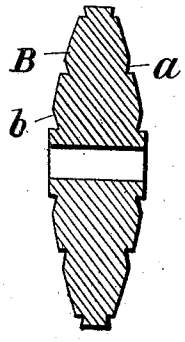
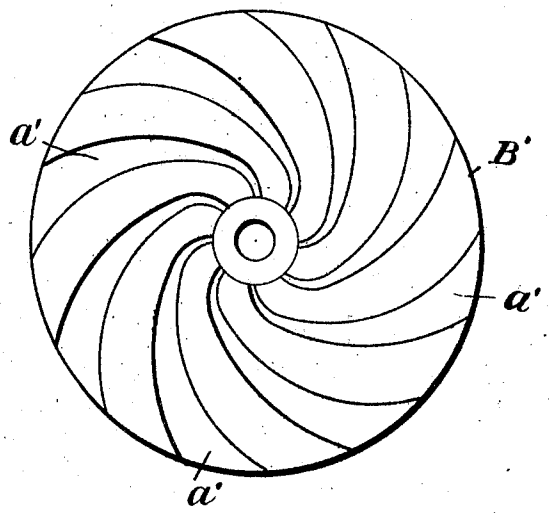


Fig. 6.

Fig. 7.





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ROTARY PUMP.

1,003,020. Specification of Letters Patent. Patented Sept. 12, 1911.

Application filed November 14, 1907. Serial No. 402,169.

To all whom it may concern:

Be it known that I, SAMUEL J. WEBB, a citizen of the United States, residing at Minden, Webster parish, Louisiana, have invented certain new and useful Improvements in Rotary Pumps, of which the following is a specification.

My invention relates to rotary pumps and consists of a plurality of members which may be in the form of disks, either with flat or curved or conical proximate faces, and which have reversely curved channels extending from the centers to the periphery, a high rate of rotative movement being imparted to the movable member whereby fluid admitted at the center is thrown outward by centrifugal force in the channels of the movable member and is also forcibly carried through the channels of the fixed member, as fully set forth hereinafter and as illustrated in the accompanying drawing, in which:

Figure 1 is a sectional elevation of my improved pump showing its connection with an improved motor for driving the movable member; Fig. 2 is a face view of the movable or disk member; Fig. 3 is an enlarged section on the line 3—3 of Fig. 2; Fig. 4 an enlarged section on the line 4—4 of Fig. 2; Fig. 5 a sectional elevation showing a pump embodying a series of fixed and movable elements or members; Fig. 6 is a face view of the movable member of the motor; and Fig. 7 a section illustrating a different form of movable member.

The apparatus consists essentially of a fixed member A and a movable member B, mounted to rotate about a suitable axis, as for instance mounted upon a shaft C to which power is applied to effect the desired rotation, the fixed and movable members having their side faces in as close contact as possible without creating frictional resistance to the rotation of the movable member.

In one or both of the side faces of the movable member is a series of curved channels *a* which extend outward from the central portion of the member and which are contracted in their cross-sectional area from the central to the rim portion of the member. Preferably each channel is formed by a face 1 which is vertical to the face of the member and another face 2 which is at an acute angle to the face of the member, as best shown in Figs. 3 and 4, and the width of the face 2 and the depth of the face 1 gradually reduce toward the periphery of the disk. In the fixed member A there is also a series of curved channels *b* extending outward from a central portion to the periphery, and the curvature of the channels *a* and *b*, preferably that of a section of a parabola, is such that at any point of intersection of the meeting edges of the channels *a* and *b*, the edge of one channel will be very nearly at right angles to that of the other.

At the center of the fixed member is a hollow hub or casing *c* having an inlet port *x* through which water or other fluid may pass to the center of the movable member B so that it may flow freely into the channels *a* and as the movable member is rapidly rotated the water will be carried out by centrifugal action along the channels *a* and will also pass into the ends of the channels *b*, and as the movable member rotates, carrying the channels *a* past the channels *b*, the successive edges or faces 1 of the channels *a* occupying positions as they do at right angles to the channels *b*, as best indicated in Fig. 4, will aid in directing the flow of the water through the channels *b* in the direction of the arrow, *t*, Fig. 2, so as to cause a rapid and forcible expulsion of the fluid through the channels and outward at the periphery, the construction of the channels resulting in compressing the fluid if it is elastic.

While my invention may be carried out in an apparatus where the movable member or disk B has but one channel face it is best to counterbalance this member by channeling each face and by providing the member A with duplicate channeled faces, as shown in Fig. 1, so that there will be no tendency to force the disk B toward either face of the member A. The fluid which is thrown outward at the periphery of the member B may be discharged freely into the open air, but in many cases it is desired to retain it under pressure and the member A therefore is formed into a casing *d* having a peripheral chamber *y* receiving the fluid discharged beyond the periphery of the member B, and from this casing it may be conducted by a suitable conduit *e*.

While any suitable motor may be employed for driving the member B, I prefer to make use of one which is built upon the same principle as that of the pump; that is, there is a fixed member A′ and two movable members B′ fixed to the shaft C, the

member A′ forming part of a casing d', to which steam or other fluid under pressure is admitted through an inlet x', and from which it passes by a conduit e'. The proximate faces of the members A′, B′ have curved grooves a', b', reversely arranged as in the case of the pump, but instead of contracting toward the outer ends they expand toward the outer ends.

It will of course be understood that whatever kind of motor is employed it is one which will rotate the movable member at a very high rate of speed, ten thousand or more rotations per minute.

In Fig. 5 I have shown a pump in which there is embodied a series of movable members and a series of fixed members forming part of the main casing, the fixed members being of sufficient thickness to permit of a channel w extending from each peripheral chamber y to the central or hub chamber v, the movable members in this case having each a hub f, a rim portion g, and radiating connecting arms i.

While I have shown in Figs. 1 to 5 the fixed and movable members having flat proximate faces and consisting substantially of flat disks, the proximate faces may be curved or conical, as indicated in the form of the movable member Fig. 7.

Without limiting myself to the precise construction and arrangement of parts shown, I claim:

1. A rotary pump comprising a plurality of members with radiating channels upon their proximate faces each corresponding to part of a parabolic curve those of one member curved in a reverse direction to those of the other and all the channels communicating with a central channel and open at their outer ends, one of the members being rotatable and the other fixed.

2. A rotary pump comprising fixed and rotatable members with reversed radiating parabolic curved channels upon their proximate faces, each of the said channels having faces at different angles to the face of the member in which the channels are situated.

3. A rotary pump having fixed and rotatable members with radiating curved channels in their proximate faces, each of said channels having a face 1 substantially perpendicular to that of the member containing it, the faces 1 of the channels in one member crossing those of the other substantially at right angles at all meeting points.

4. A rotary pump comprising fixed and rotatable members having radiating curved channels in their proximate faces, each of said channels having faces 1 and 2 which are respectively perpendicular and at an acute angle to the face of the member containing the same, the faces 1 of the channels in one member crossing the corresponding faces of the channels of the other member substantially at right angles at all meeting points.

5. The combination in a pump of fixed and rotatable members, each rotatable member having radiating channels at each side-face corresponding to part of a parabolic curve, each fixed member having radiating channels corresponding to part of a parabolic curve and arranged in an opposite direction to those upon the movable member, the faces of the members being in close proximity, a casing forming part of the fixed member and having a central hollow hub and a peripheral chamber and inlet and outlet openings.

6. A rotary pump comprising a plurality of members with radiating channels upon their proximate faces, each corresponding to part of a parabolic curve, said channels contracting toward their outer ends, those of one member curved in a reverse direction to those of the other, and means for imparting rapid rotation to one of the members and retaining the other in a fixed position.

In testimony whereof I affix my signature in presence of two witnesses.

SAMUEL J. WEBB.

Witnesses:

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