Oct. 2, 1928. 1,686,285

M. C. MASON

ROTARY PUMP

Filed Sept. 9, 1926

Fig. 1.

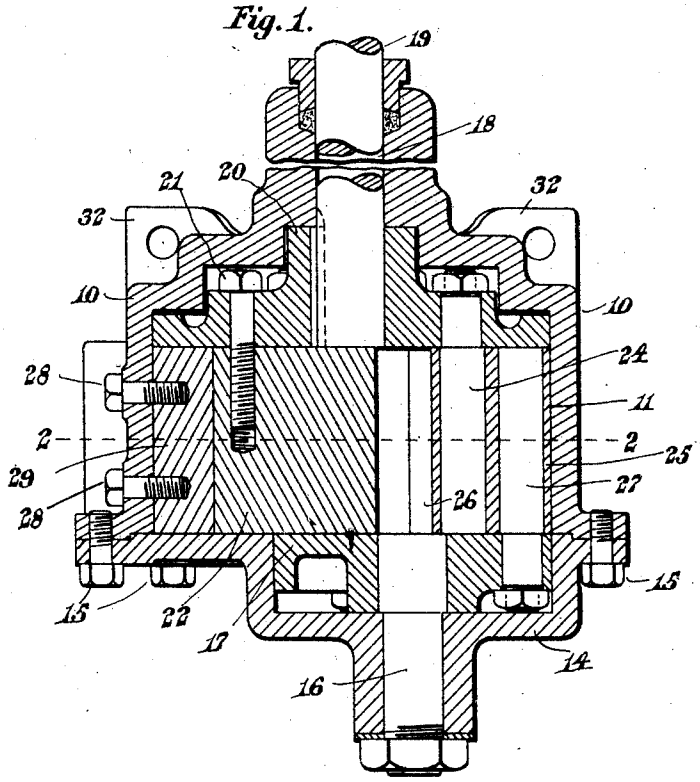
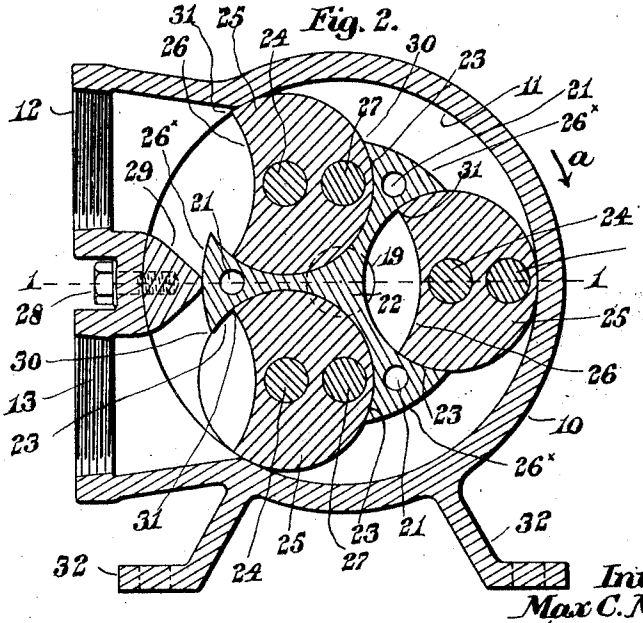


Fig. 2.



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UNITED STATES PATENT OFFICE.

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ROTARY PUMP.

Application filed September 9, 1926. Serial No. 134,552.

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.

This object is attained by the mechanism illustrated in the accompanying drawings.

For the purpose of illustrating the invention, one preferred form thereof is illustrated 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 the invention is not limited to the precise arrangement and organization of these instrumentalities as herein shown and described except as required by the scope of the appended claims.

Of the drawings

Figure 1 represents a horizontal section of a pump embodying the principles of the present invention, the cutting plane being on line 1, 1, on Fig. 2, and

Figure 2 represents a vertical section of the same on line 2, 2, on Fig. 1.

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

In the drawings 10 is a casing provided with a cylindrical chamber 11 having an inlet 12 thereto and with an outlet 13 therefrom.

The casing 10 has a cover plate 14 secured to the open end thereof by bolts 15. This cover plate 14 has a stud 16 secured therein about the inner end of which rotates an idler disk 17.

The closed end of the casing 10 has a long bearing 18 for a driving shaft 19, the inner end of which has keyed thereto a disk 20 which is rotatable in the chamber 11.

To the disk 20 is secured by bolts 21 a block 22, this block 22 having formed in its periphery a plurality of semi-cylindrical pockets 23.

The disk 20 has secured therein a plurality of pins 24 one of which is centrally disposed in each semi-cylindrical pocket 23.

Mounted on each pin 24 and movable relatively thereto is a blade 25 having a concaved recess 26 in the periphery thereof.

The block 22, between the pockets 23, has a cylindrical wall $26^{\times}$ which is spaced from the inner cylindrical wall of the chamber 11.

The axis of the stud 16 is offset from the axis of the driving shaft 19 as shown in Fig. 1 of the drawings. Or in other words, the axes of these two members is out of alinement.

The idler disk 17 has secured thereto a plurality of pins 27, one of which extends through each blade 26 at one side of the supporting pin 24 therefor.

Between the inlet port 12 and outlet port 13, there is secured to the casing 10 by means of bolts 28 a projection 29 which extends into the chamber 11 a sufficient distance for its end to contact with the cylindrical portions $26^{\times}$ of the block 22 as said block rotates within the chamber 11.

Normally, some portions of the blades 26 are continuously in contact with the inner cylindrical wall of the chamber 11 while these blades are travelling from the inlet port 12 in the direction of the arrow *a* on Fig. 2 of the drawings to the outlet port 13.

The actuating pins 27 for the blades 25 carried by the idler disk 17 retain the recessed sides of the blades 25 in position toward the ports 12 and 13 and projection 29.

The projection 29 is tapered as indicated in Fig. 2 of the drawings with its innermost end rounded.

As previously stated when the block 22 is rotating this rounded inner end will contact and wipe over the cylindrical surfaces $26^{\times}$ as they pass the projection 29, preventing any material being pumped returning to the inlet port 12.

As the rear end 30 of each cylindrical surface $26^{\times}$ reaches the rounded end of the projection 29, the forward end 31 of the concaved recess in each blade 25 will coincide with this rear end 30, and as the block 22 continues to rotate the rounded inner end of the projection 29 will contact with the concaved wall of the recess 26 and wipe over the same, preventing any material from returning to the inlet port while the blades 25 are passing the projection 29.

The casing 10 is provided with feet 32 upon which the casing is supported.

This makes a very simple construction of pump which is very effective in use as a great quantity of material may be carried through the chamber 11 from the inlet port 12 to the outlet port 13 without any loss thereof.

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

Having thus described my invention, I claim

1. The combination of a casing having per-

manently closed immovable ends between which is a cylindrical chamber with inlet and outlet ports and a projection between said ports extending into said chamber from the cylindrical wall of said casing; a block rotatable in said chamber provided with peripheral pockets between which the peripheral wall is cylindrical and adapted to contact with the inner end of said projection; blades each having a convex portion contacting with the wall of each pocket and normally projecting beyond the same into contact with the cylindrical wall of said chamber, each blade having a concaved peripheral recess; and means within said chamber for retaining said recess toward said projection during the entire rotation of said block.

2. The combination of a casing having permanently closed immovable ends between which is a cylindrical chamber with inlet and outlet ports and a projection between said ports extending into said chamber from the cylindrical wall of said casing; a block rotatable in said chamber provided with peripheral pockets between which the peripheral wall is cylindrical and adapted to contact with the inner end of said projection; blades each having a convex portion contacting with the wall of each pocket and normally projecting beyond the same into contact with the cylindrical wall of said chamber, each blade having a concaved peripheral recess, the wall of which is adapted to contact with the end of said projection as, during the rotation of the block, said blade passes said projection; and means within said chamber for retaining said recess toward said projection during the entire rotation of said block.

3. The combination of a casing having permanently closed immovable ends between which is a cylindrical chamber with inlet and outlet ports and a projection between said ports extending into said chamber from the cylindrical wall of said casing; a driving shaft centrally disposed in said chamber and rotatable in bearings in said immovable ends; a block secured to said shaft and rotatable in said chamber provided with peripheral pockets between which the peripheral wall is cylindrical and adapted to contact with the inner end of said projection; blades each having a convex portion contacting with the wall of each pocket and normally projecting beyond the same into contact with the cylindrical wall of said chamber, each blade having a concaved peripheral recess; and means within said chamber for retaining said recess toward said projection during the entire rotation of said block.

4. The combination of a casing having permanently closed immovable ends between which is a cylindrical chamber with inlet and outlet ports and a projection between said ports extending into said chamber from the cylindrical wall of said casing; a driving shaft centrally disposed in said chamber and rotatable in bearings in said immovable ends; a block secured to said shaft and rotatable in said chamber provided with peripheral pockets between which the peripheral wall is cylindrical and adapted to contact with the inner end of said projection; blades each having a convex portion contacting with the wall of each pocket and normally projecting beyond the same into contact with the cylindrical wall of said chamber, each blade having a concaved peripheral recess; a pin carried by the block and extending through the center of each blade; an idler disk within said chamber and rotatable about an axis offset from that of the driving shaft; and an actuating pin for each blade carried by said disk.

5. The combination of a casing having permanently closed immovable ends between which is a cylindrical chamber with inlet and outlet ports and a projection between said ports extending into said chamber from the cylindrical wall of said casing; a block rotatable in said chamber provided with peripheral pockets between which the peripheral wall is cylindrical and adapted to contact with the inner end of said projection; and blades each having a convex portion contacting with the wall of each pocket and normally projecting beyond the same into contact with the cylindrical wall of said chamber, each blade being movable about its center and having a concaved peripheral recess, the wall of which is adapted to contact with the inner end of said projection while said blade is passing said projection.

6. The combination of a casing having permanently closed immovable ends between which is a cylindrical chamber with inlet and outlet ports and a projection between said ports extending into said chamber from the cylindrical wall of said casing; a driving shaft centrally disposed in said chamber and rotatable in bearings in said immovable ends; a block secured to said shaft and rotatable in said chamber provided with peripheral pockets between which the peripheral wall is cylindrical and adapted to contact with the inner end of said projection during the rotation of said block; a blade fitting each pocket and normally adapted to project beyond the same into contact with the cylindrical wall of said chamber, each blade having a concaved peripheral surface adapted to contact with said projection as said blade, in the rotation of said block, passes said projection.

7. The combination of a casing having permanently closed immovable ends between which is a cylindrical chamber with inlet and outlet ports and a projection between said ports extending into said chamber from the cylindrical wall of said casing; a driving shaft centrally disposed in said chamber and rotatable in said bearings in said immovable ends; a block secured to said shaft and ro-

tatable in said chamber provided with peripheral pockets between which the peripheral wall is cylindrical and adapted to contact with the inner end of said projection; a blade fitting each pocket and normally adapted to project beyond the same into contact with the cylindrical wall of said chamber, each blade having a concaved peripheral surface adapted to contact with the inner end of said projection as said blade passes said projection; a pin carried by the block and extending through the center of each blade; an idler disk rotatable within said chamber about an axis offset from that of the driving shaft; and means on said disk coacting with each blade to limit its movement about said pin.

8. The combination of a casing having permanently closed immovable ends between which is a cylindrical chamber with inlet and outlet ports and a projection extending into said chamber from the cylindrical wall of said casing; a block rotatable in said chamber provided with semi-cylindrical peripheral pockets between which the the peripheral wall is cylindrical and adapted to contact with the inner end of said projection; and blades movably positioned in said pockets with convex portions thereof contacting with the walls thereof and adapted during the greater part of the rotation of said block to contact with the cylindrical wall of said chamber and each blade having a peripheral surface adapted to continuously contact with the inner end of said projection as said blade passes said projection during the rotation of said block.

9. The combination of a casing having permanently closed immovable ends between which is a cylindrical chamber with inlet and outlet ports and a projection extending into said chamber from the cylindrical wall of said casing; a block rotatable in said chamber provided with semi-cylindrical pockets between which the peripheral wall is cylindrical and adapted to contact with the inner end of said projection; a semi-cylindrical blade in and contacting with the wall of each pocket and movable about a central axis and having a peripheral surface continuously in contact with said projection when the blade is passing said projection; an idler disk within said chamber and movable about an axis at one side of the axis of said block; and means extending from said disk into said blades to limit the movement thereof about their axes.

Signed by me at 746 Old South Bldg., Boston, Mass., this 7th day of September, 1926.

MAX C. MASON.