

P. H. MUSSWITZ.  
 ROTARY PUMP.  
 APPLICATION FILED MAR. 1, 1920.

1,378,891.

Patented May 24, 1921.  
 2 SHEETS—SHEET 1.

Fig. 1.

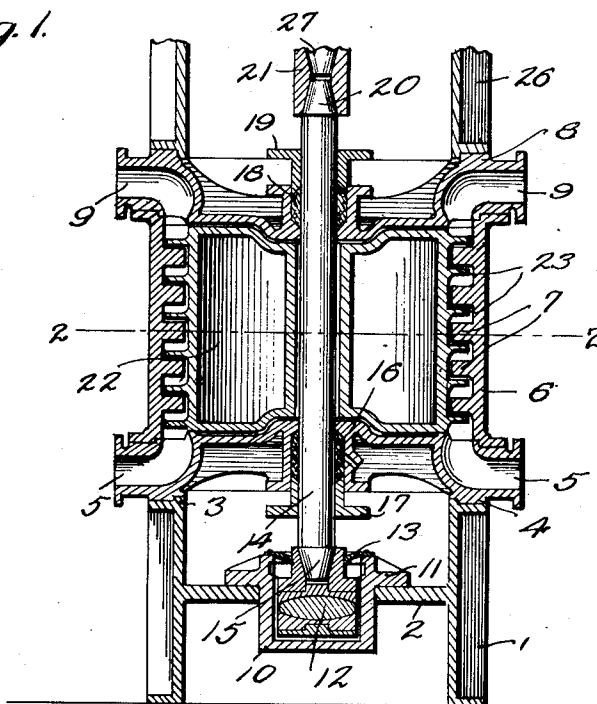
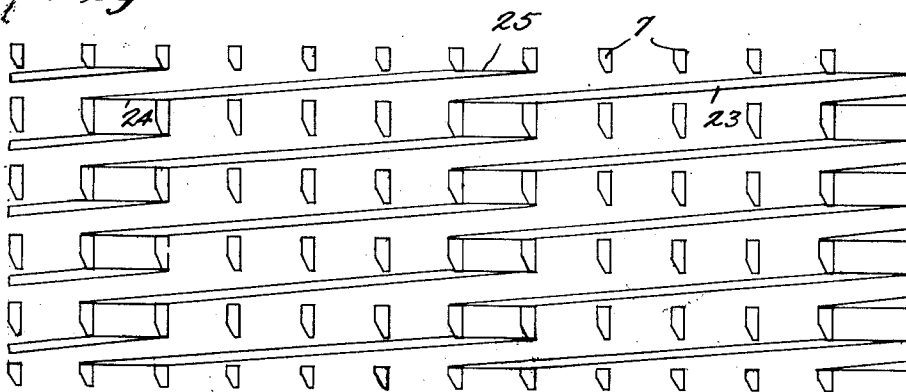


Fig. 4.



Witnesses

*J. P. McCallahan*  
*J. P. Campbell.*

Inventor

*Paul H. Musswitz*

By

*Richard B. Owen,*

Attorney

P. H. MUSSWITZ,  
 ROTARY PUMP.  
 APPLICATION FILED MAR. 1, 1920.

1,378,891.

Patented May 24, 1921.  
 2 SHEETS—SHEET 2.

*Fig. 2.*

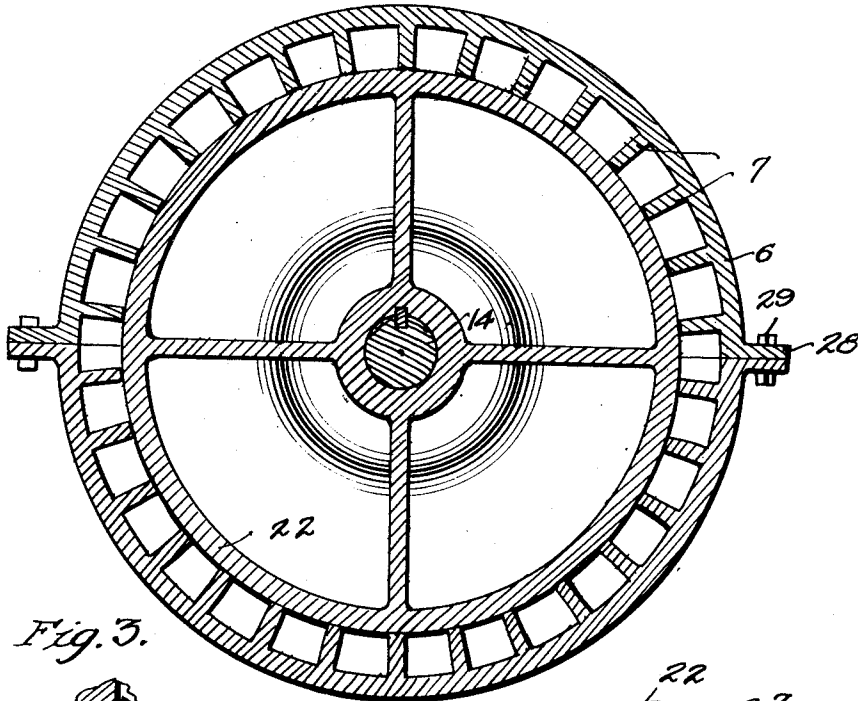


*Fig. 3.*

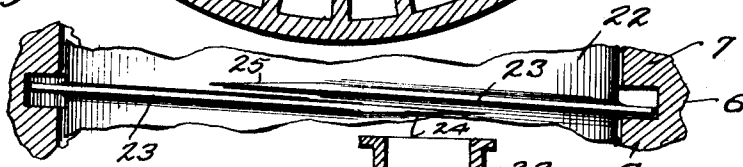
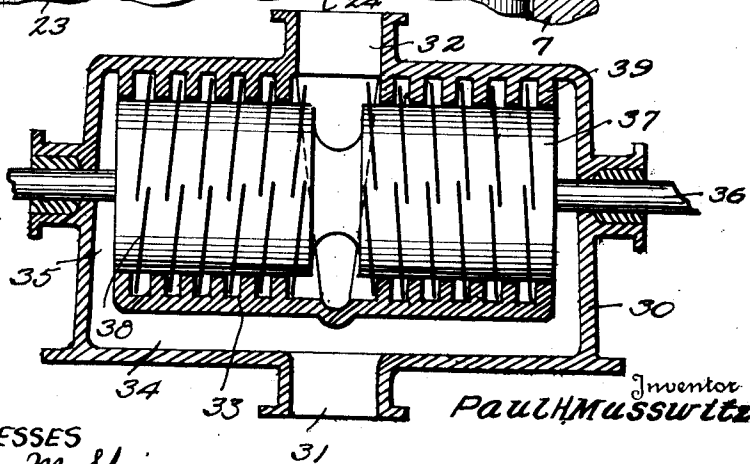


*Fig. 5.*



WITNESSES

*Guy M. Spring*  
*J. P. Campbell*

By

*Richard Blum*  
 Attorney

Inventor  
 PAUL H. MUSSWITZ

# UNITED STATES PATENT OFFICE.

PAUL H. MUSSWITZ, OF VALLEJO, CALIFORNIA.

## ROTARY PUMP.

1,378,891.

Specification of Letters Patent.

Patented May 24, 1921.

Application filed March 1, 1920. Serial No. 362,373.

*To all whom it may concern:*

Be it known that I, PAUL H. MUSSWITZ, a citizen of the United States, residing at Vallejo, in the county of Solano and State of California, have invented certain new and useful Improvements in Rotary Pumps, of which the following is a specification.

My invention relates to new and useful improvements in pumps and more particularly to a rotary pump.

The primary object of the invention is the provision of a rotary pump which will draw the water and discharge the same under pressure.

Another object of the invention consists in a novel form of stator and rotor adapted to cooperate for elevating the water and discharging the same under pressure.

A further object of the invention consists in a novel form of mounting for the stator and motor.

With these and other objects in view my invention consists in the novel details of construction and arrangement of parts which will be more clearly understood from the following specification and drawings in which:—

Figure 1 is a longitudinal vertical section.

Fig. 2 is a horizontal section on the line 2—2 of Fig. 1.

Fig. 3 is a fragmental sectional detail through the stator, the rotor being shown in side elevation.

Fig. 4 is a diagrammatic view showing the relative position of the blades on the rotor and projections or abutments on the stator, and

Fig. 5 is a longitudinal vertical section showing a slightly modified form of the invention.

In the drawings the numeral 1 indicates the base which is preferably circular in top plan and this base is provided, interiorly, intermediate the top and bottom, with a plate 2 having a central opening for a purpose to be later described. A flange 3 is formed around the inner edge of the base, at the top, and a casting 4 is received upon the top of the base 1 and engages the flange 3. This casting 4 is provided on each side with an inlet opening 5 and is provided with a central opening for a purpose to be later described.

A casing 6 is received upon the top of the casting 4 and is provided on the interior with a plurality of circumferentially and vertically spaced projections or lugs 7. A casting 8 is mounted upon the top of the casing 6 and is provided on each side with an outlet opening 9 as more particularly illustrated in Fig. 1 of the drawings. This casting 8 is also provided with a central opening registering with the central opening in the casting 4 and this opening is for a purpose to be later described. The castings 4 and 8 in connection with the casing 6 goes forward to make up the stator of the pump.

A cup-shaped member 10 is adapted to pass through the opening in the plate 2 and said cup-shaped member is provided with a flange 11 engaging the upper face of the plate 2. A thrust bearing indicated generally at 12 is received in the cup-shaped member and a cap plate 13 is secured over the top of the cup-shaped member to hold the oil therein which is used for lubricating the thrust bearing.

A vertical shaft 14 extends through the openings in the center of the castings 4 and 8 and the lower end 15 of the shaft extends into the thrust bearing as shown more particularly in Fig. 1 of the drawings. As shown this end 15 is tapered so as to snugly fit within the upper portion of the thrust bearing. A packing 16 surrounds the shaft in the central opening in the casting 4 and a packing nut 17 securely forces the packing into position. Packing 18 is received around the shaft in the opening in the casting 8 and is held in position by means of the packing nut 19 of usual construction. The upper end of the shaft 14 is beveled as indicated at 20 to receive a coupling sleeve 21 which connects the shaft to a driving shaft operated in a manner to be later described.

A cylindrical rotor 22 is mounted within the casing 6 and is preferably hollow as shown in Fig. 1 of the drawings and is keyed to the shaft 14 in any desired manner. As shown the rotor is preferably provided with a central opening through which the shaft passes and the shaft may be keyed to the rotor in the usual manner. The rotor is provided exteriorly with a plurality of

vertically spaced blades 23. These blades are circumferentially spaced and staggered so that the ends of adjacent blades will overlap as more particularly shown in Fig. 4 of the drawings. One end of each blade is beveled on the lower face as indicated at 24 and the opposite end is beveled on the upper face as shown at 25. Each blade 23 is also inclined as shown and engages or operates between the vertically spaced rows of projections 7 on the interior of the casing 6.

A frame 26 is mounted upon the top of the casing 8 and is used for supporting a steam turbine or other motor which drives a shaft 27 connected to the shaft 14 by the sleeve 21.

As shown more particularly in Fig. 2 of the drawings the casing 6 is preferably formed in sections each of which has a flange 28 to which bolts 29 pass for securing the sections together.

From the above detailed description it is thought that the preferred form of my invention will be clearly understood as to the construction and operation. The shaft 27 is rotated through means of a steam turbine or other suitable motor and in turn drives the shaft 14 which rotates the rotor 22. The rotation of the rotor 22 draws the water through the inlet openings 5 of the casing 4 and said water is elevated by the blades 23 and discharges through the outlet openings 9 in the casing 8. The blades 23 on the rotor being inclined will properly elevate the water and the projections 7 on the stator will act to prevent the water being thrown circumferentially instead of properly raised. In other words the projections 7 cooperate with the blades 23 to properly elevate the water. By beveling the upper face of one end of the blades 23 and the lower face of the opposite end the blades will properly engage the under surface of one row of projections 7 and the upper surface of the adjacent row of projections.

In Fig. 5 of the drawings I have illustrated a slightly modified form of rotary pump wherein the rotor is mounted horizontally and draws the water through a single inlet opening and discharges in through a single outlet opening. In this form of the invention the casing or stator is indicated at 30 and may be supported in any usual manner. An opening 31 is formed in the underside of said casing 30 and acts as an inlet opening for the water. An opening 32 is formed in the top of the casing and acts as a discharge opening. An interior cylinder 33 is mounted in the casing 30 in such a manner as to leave a passage 34 thereunder and passages 35 at each end. A shaft 36 extends through the ends of the casing 30 and carries a rotor 37 provided with a plurality of blades 38 which are arranged at an angle and the ends of adjacent blades overlap as more particularly illustrated in the draw-

ings. A plurality of projections 39 are formed on the inner face of the cylinder 33 and the blades 38 operate between these projections. As shown the rotor 37 is centrally reduced as indicated at 40 and the blades on the opposite ends of the rotor extend in opposite directions.

In the modified form of the invention the rotor is operated through any suitable motor and will draw the water through the inlet opening 31. The water will pass through the passage 34 toward each end of the casing 30, through the passages 35 at each end, and will be discharged toward the center of the rotor and out through the opening 22. The projections 39 will cooperate with the blades 38 to properly direct the water toward the center.

The foregoing description and the drawings have reference to what may be considered the preferred, or approved form of my invention. It is to be understood that I may make such changes in construction and arrangement and combination of parts, materials, dimensions, etc., as may prove expedient and fall within the scope of the appended claims.

Having thus fully described my invention, what I claim as new and desire to secure by Letters Patent, is:—

1. A rotary pump comprising a base, a plate having a central opening mounted intermediate the top and bottom of the base, a cup-shaped member situated in the opening, a thrust bearing positioned in the member, a vertical shaft having its lower end in the thrust bearing, a stator mounted upon the base and provided with an inlet and an outlet opening, and a rotor mounted in the stator and keyed to the shaft.

2. A rotary pump comprising a base, a plate having a central opening mounted intermediate the top and bottom of the base, a cup-shaped member situated in the opening, a thrust bearing positioned in the member, a vertical shaft having its lower end in the thrust bearing, a stator mounted upon the base and provided with an inlet and an outlet opening, a rotor mounted in the stator and keyed to the shaft, projections formed on the interior of the stator, and blades formed on the exterior of the rotor and operating between the projections of the stator.

3. A rotary pump comprising a stator having an inlet and an outlet opening, a rotor mounted in the stator, means for driving the rotor, blades formed on the exterior of the rotor, said blades being arranged in staggered relation and inclined with the ends of the adjacent blades overlapping, one end of each blade being beveled on the lower face and the opposite end beveled on the upper face.

4. A rotary pump comprising a stator having an inlet and an outlet opening, verti-

5 cally spaced rows of circumferentially spaced  
projections formed on the interior of the  
stator, a rotor mounted in the stator, means  
for rotating the rotor, and vertically spaced  
inclined blades formed on the exterior of the  
rotor and operating between the rows of  
projections on the stator, each blade having  
its upper end beveled upon its upper side

and its lower end beveled upon its lower  
side.

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

PAUL H. MUSSWITZ.

Witnesses:

MICHAEL CROCKER,  
NIELS PETERSON.