

W. L. FORWARD.
 SELF CLEANING BEARING FOR SUBMERGED SHAFTS.
 APPLICATION FILED DEC. 29, 1910.

1,028,564.

Patented June 4, 1912.

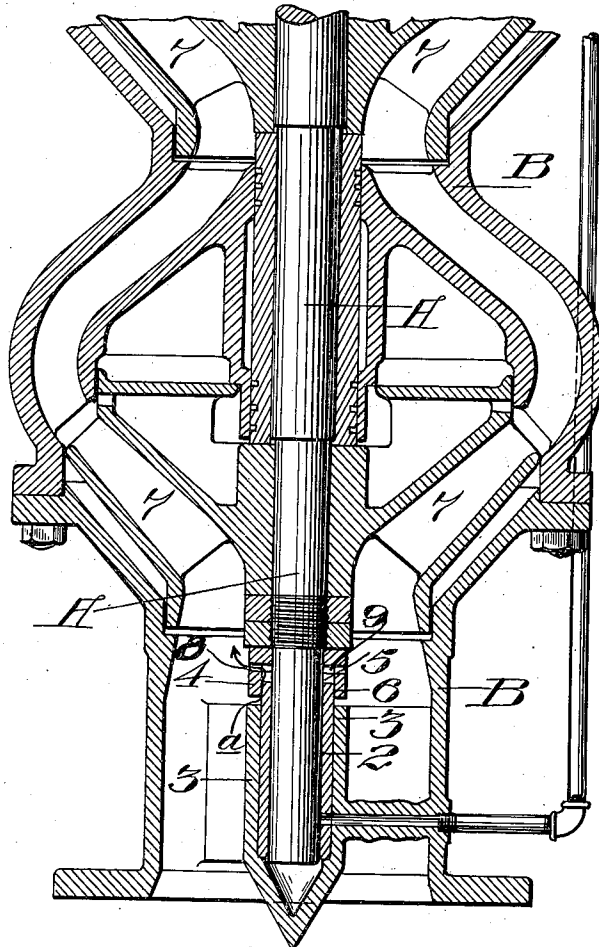


Fig. 1.

Fig. 3.

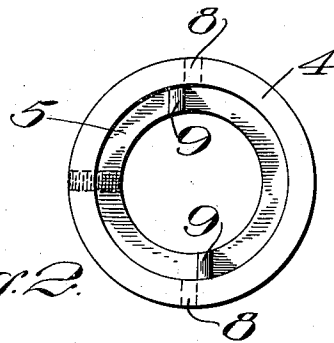
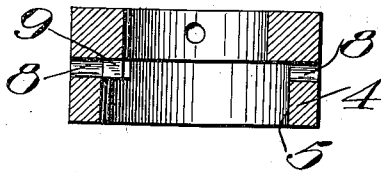


Fig. 2.

Witnesses:
Chas. Lashberg
A. E. Hayward

Inventor:
Walter L. Forward
 by *G. H. Strong*
Atty

UNITED STATES PATENT OFFICE.

WALTER L. FORWARD, OF BERKELEY, CALIFORNIA, ASSIGNOR TO BYRON JACKSON
IRON WORKS, INC., OF SAN FRANCISCO, CALIFORNIA, A CORPORATION OF CALI-
FORNIA.

SELF-CLEANING BEARING FOR SUBMERGED SHAFTS.

1,028,564.

Specification of Letters Patent.

Patented June 4, 1912.

Application filed December 29, 1910. Serial No. 600,000.

To all whom it may concern:

Be it known that I, WALTER L. FORWARD, citizen of the United States, residing at Berkeley, in the county of Alameda and State of California, have invented new and useful Improvements in Self-Cleaning Bearings for Submerged Shafts, of which the following is a specification.

This invention relates to shaft bearings and especially pertains to pump bearings which are submerged.

The object of this invention is to provide a simple, reliable and effective means for automatically cleaning the bearings of submerged shafts to prevent the accumulation of grit, sand, or other abrasive material in and around the bearing.

The invention consists of the parts and the construction and combination of parts, as hereinafter more fully described and claimed, having reference to the accompanying drawings, in which—

Figure 1 is a central section through a portion of a turbine pump showing the improved self-cleaning bearing. Fig. 2 is a plan view of the automatic cleaning cap. Fig. 3 is a transverse section across the cap.

It is desirable to provide a bearing for pumps in which one of the bearings of the driving shaft, as A, may be protected to the greatest possible extent from the grit and accumulation of foreign materials that would be apt to enter the bearing and cut or grind the shaft or the bearing causing rapid wear of the parts. In the present embodiment of my invention the shaft A is supported in a Babbitt sleeve 2 which is shown as lining the hub or bearing 3 of the frame of a pump or other machine, as indicated at B. The upper end of the Babbitt lining 2 projects slightly above the upper end of the bearing hub 3 and is embraced by a suitable cap or collar 4 within the bore 5 of which the babbitt 2 has a running fit on its exterior, as at 6, so that during the operation of the pump impeller 7, fluid under pressure leaks around the running joint 6.

As clearly shown in Fig. 2, the cap or collar 4 is provided with a plurality of diametrically disposed opposite ports or passageways 8 communicating with the bore 5 in the cap 4. Adjacent one edge of each port 8 on opposite sides of the bearing cleaning cap 4 and on opposite sides of the diametrical line projected through the cap 4

are disposed small blades, projections or vanes 9, which, when the shaft A is revolving, impel the water leaking past the running joint 6 into the chamber 5 outwardly by centrifugal force through the ports 8.

When the impeller 7 of the pump is running a suction created in the passageway of the chamber B causes a current of water to ascend through the pump and a small percentage of the water finds access to the chamber 5 through the running joint 6 between the cap 4 and the babbitt 2.

The essential function of the cap 4 with its impelling vanes 9 is to rapidly discharge all fluid and its suspended particles of grit or other foreign material upwardly through the ports 8, thereby preventing their settling upon the exposed end of the babbitt 2, and preventing their traveling downward around the shaft A and into the bore of the babbitt and grinding the parts.

It will be seen that the Babbitt sleeve 2 extends above the cast iron boss 3 in such a manner as to permit the sand cap to come down over the end of the same so that the sand or other grit in the water, if the same were to work toward the bearing, would have to follow a path which leads between the rotating sand cap secured on the shaft and the Babbitt sleeve, as indicated by the arrow *a*. As the particles of sand pass forward between these two members they enter the chamber 5 where they are thrown into contact with the vanes located on the inside of the sand cap and caused to flow outwardly by centrifugal force through the ports 8 of the cap 4.

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

1. A self-clearing bearing comprising a shaft, a sleeve therefor, and a cap chambered to receive the end of the sleeve and having a running fit therewith, said cap being secured upon the shaft and having a plurality of ports and having means upon the interior for positively discharging water by centrifugal force through said ports.

2. A self-clearing bearing comprising a shaft, a sleeve therefor, and a cap secured to the shaft, said cap having a running fit with the upper end of the sleeve and said cap having a chamber with means therein acting upon the water to discharge the same by centrifugal force, said cap having a port

through which the discharge of water takes place.

3. A cleaning device for submerged shaft bearings comprising a shaft, a bearing member adapted to receive said shaft, a cap secured upon the shaft and having a port, said cap having also, a chamber adapted to receive the end of the bearing member and having a running fit therewith, and means on the interior of the cap for discharging fluid leaking past the bearing member into the chamber of the cap, said means including a vane formed upon the interior of the cap and adapted to discharge water by centrifugal force through a port formed in the cap adjacent the vane.

4. A cleaning device for submerged shaft bearings comprising a shaft, a bearing member adapted to receive said shaft, a

cap secured upon the shaft and having a port, said cap having also, a chamber adapted to receive the end of the bearing member and having a running fit therewith, and means for discharging fluid leaking past the bearing member into the chamber of the cap, said means including a plurality of impeller vanes formed upon the interior of a cap and adapted to discharge fluid by centrifugal force through ports formed in the wall of the cap adjacent each of the vanes.

In testimony whereof I have hereunto set my hand in the presence of two subscribing witnesses.

WALTER L. FORWARD.

Witnesses:

G. H. STRONG,
CHARLES EDELMAN.