

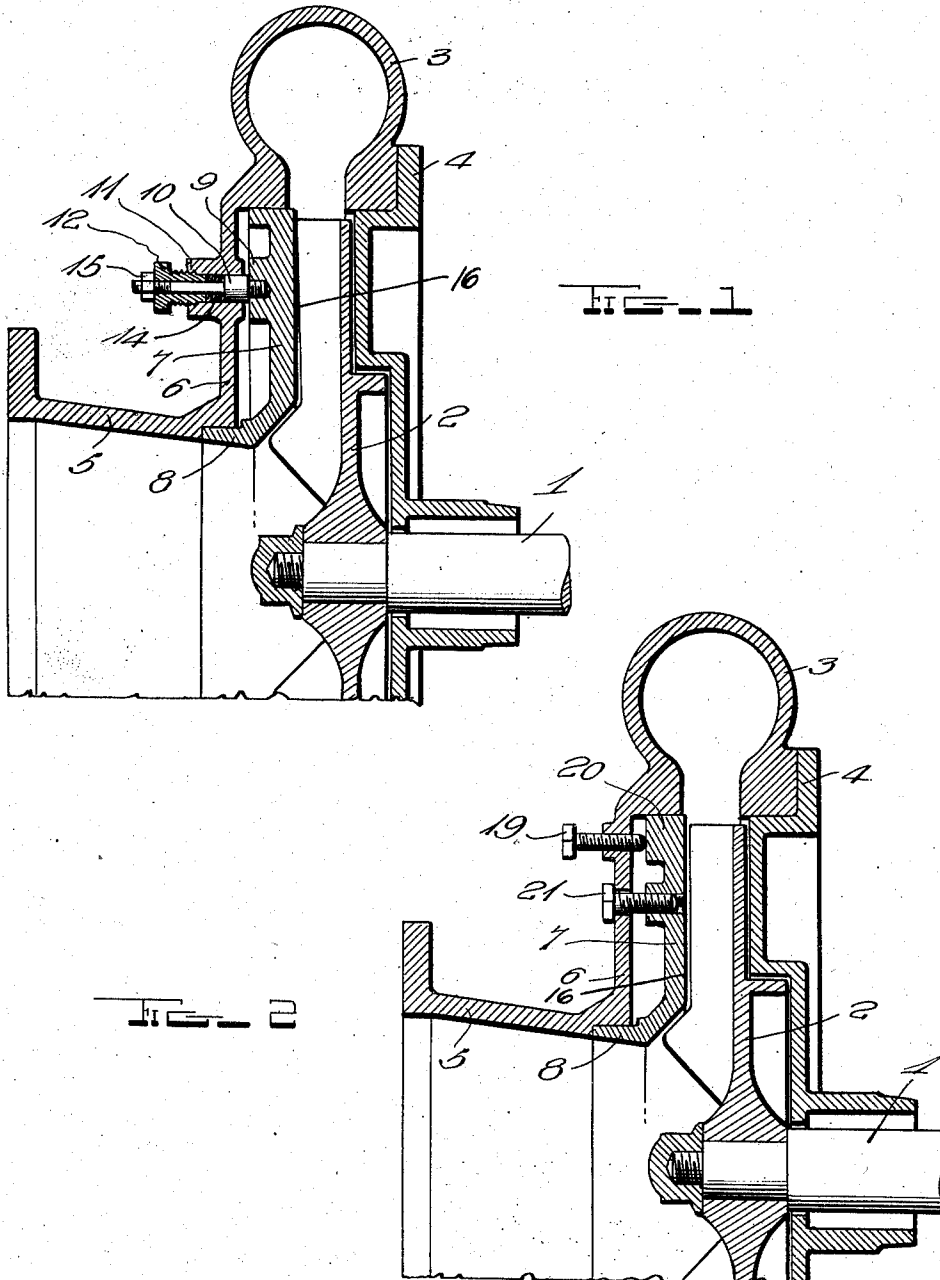
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LINER FOR CENTRIFUGAL PUMPS

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UNITED STATES PATENT OFFICE

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LINER FOR CENTRIFUGAL PUMPS

Original application filed July 22, 1927, Serial No. 207,799. Divided and this application filed April 17, 1929. Serial No. 355,880.

My invention relates broadly to centrifugal pumps and more particularly to an arrangement for adjusting liner plates in centrifugal pumps.

5 This application is a division of my application Serial No. 207,799, filed July 22, 1927, for liner for centrifugal pumps.

One of the objects of my invention is to provide a construction of adjustable liner plate for centrifugal pumps for compensating for the wear which occurs between the impeller and the liner plate in the centrifugal pump.

Another object of my invention is to provide a construction of adjustable renewable liner plate for centrifugal pumps in which the position of the liner may be selectively fixed with respect to the impeller and locked in position to secure that degree of seal necessary in maintaining the pump capacity and efficiency.

Still another object of my invention is to provide a construction of liner plate and securing means for the casing of a centrifugal pump, wherein the liner plate may be advanced to a predetermined position with respect to the impeller at various times during the life of the pump, for compensating for inherent wear, for insuring that degree of clearance necessary and for maintaining the efficiency of the pump.

My invention will be more clearly understood from the specification hereinafter following by reference to the accompanying drawings, in which:

Figure 1 is a fragmentary cross-sectional view through a centrifugal pump showing one form of adjustable renewable liner plate with adjusting and locking device constructed in accordance with my invention; and Fig. 2 shows a modified construction of adjustable renewable liner plate where the liner plate may be locked in position with respect to the impeller.

Referring to the drawings in more detail, reference character 1 designates the rotatable shaft of the centrifugal pump carrying the member 2 rotatable within the centrifugal pump casing 3. The pump casing 3 is closed at one side thereof by wall 4. The

suction intake pipe line is represented at 5 connected by annular wall 6 with the casing 3. The adjustable renewable liner plate of my invention is designated at 7 as having an annular portion 8 which frictionally engages the suction pipe line 5 as a socket.

In Fig. 1 the liner plate 7 is provided with a plurality of bosses 9 into which studs 10 are screw threaded and project through screw threaded apertures 11 in the casing 6. The stud 10 is screw threaded at its outer end to receive the nut 15 to lock into position a follower member 12 which is adjustable against packing 14 within the screw threaded aperture 11 around the stud 10 which is squeezed tight by the follower for preventing any leakage from the pump. A locking nut 15 engages the screw threaded stud 10 and serves to secure the follower 12 in a predetermined position for selectively fixing the distance between the surface 16 of the liner 7 and the blades of the impeller 2.

In Fig. 2, I have illustrated a further modified form of adjustable renewable liner plate wherein two sets of screw members are provided, one set constituting set screws 19 for exerting a thrust force against the flange 20 of the liner plate 7 and the other set of screw members constituting the screw devices 21 for holding the liner plate tightly in position after the special relation between the surface 16 and the edges of the blades on the impeller 2 has been predetermined.

The adjustable liner plate constructions of my invention have been found to be extremely practical in operation for maintaining the capacity and efficiency of the pump throughout a long period of life, and while I have described various embodiments of my invention, I desire that it be understood that modifications may be made and that no limitations upon my invention are intended other than are imposed by the scope of the appended claims.

What I claim as new and desire to secure by Letters Patent of the United States is as follows:

1. In a centrifugal pump, a casing, an impeller rotatable within said casing, a side wall member interiorly positioned in said casing,

and means for advancing or retracting said side wall member within said casing with respect to the face of said impeller comprising a plurality of stud members secured in said side wall member and projecting through said casing, a follower member screw threaded into said casing concentric with each of said studs and securing means engaging said studs and bearing against said follower members for maintaining said side wall member in a selected position within said casing.

2. In a centrifugal pump, a casing, a suction intake pipe leading to said casing, an impeller rotatably mounted in said casing, a side wall member having an integrally connected circular hub portion extending into said suction intake pipe, and means for advancing or retracting said side wall member from said casing with respect to said impeller comprising studs projecting from said side wall member through said casing, separate means screw threaded into said casing for centering said studs, and screw means engaging said studs and bearing against said separate means for locking said side member in a predetermined position with respect to said impeller.

3. A centrifugal pump comprising a casing, a suction intake pipe leading to said casing, an impeller rotatably mounted in said casing, a side wall member, an integral portion of said side wall member fitting into said suction intake pipe, means for advancing or retracting said side wall member with respect to the interior of said casing comprising studs projecting normal to said side wall member through said casing, a screw threaded follower engaging said casing and surrounding each of said studs, and screw means engaging each of said studs and bearing against said screw threaded follower for locking said side wall member in a predetermined position with respect to said impeller.

4. A centrifugal pump comprising a casing, a suction intake pipe leading to said casing, an impeller rotatably mounted in said casing, a substantially circular wall member having a hub portion fitting into the interior of said suction intake pipe and adjustable longitudinally with respect thereto, and means for selectively fixing said wall member in a predetermined position with respect to said impeller comprising a plurality of studs extending normal to said wall member and passing through said casing, each having a cylindrical portion centered within said casing and screw threaded stud portion, a follower screw threaded into said casing and surrounding each stud, and a nut engaging the screw threaded portion of said stud and bearing against said follower.

In testimony whereof I affix my signature.

GEORGE R. HARGIS.