

No. 633,476.

Patented Sept. 19, 1899.

R. J. NORTHAM.  
GUIDE FOR ROTARY PUMPS.

(Application filed Feb. 3, 1899.)

(No Model.)

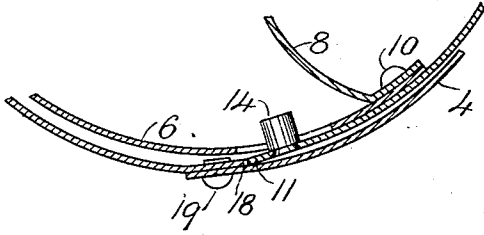


Fig. IV.

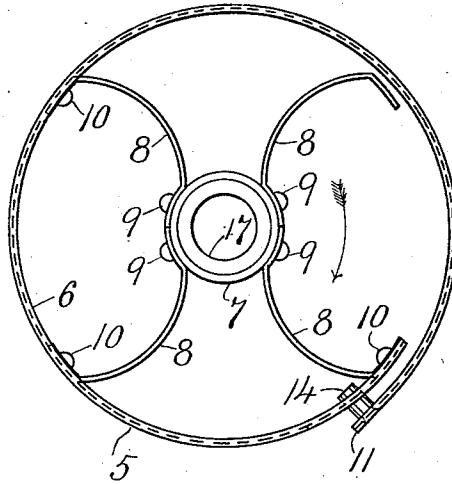


Fig. I.

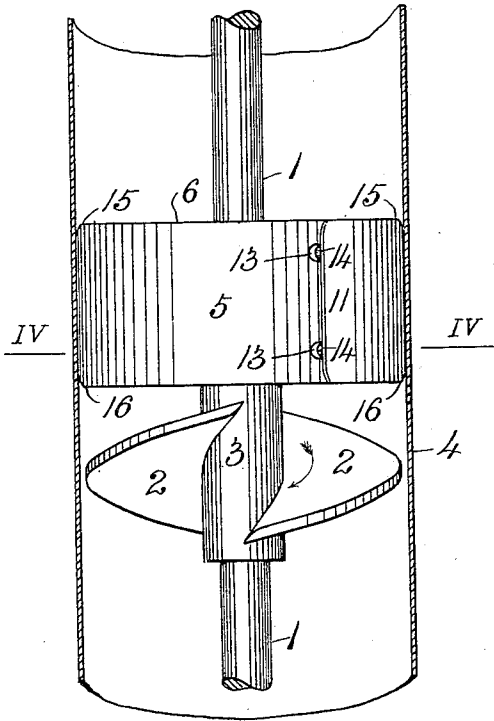


Fig. III.

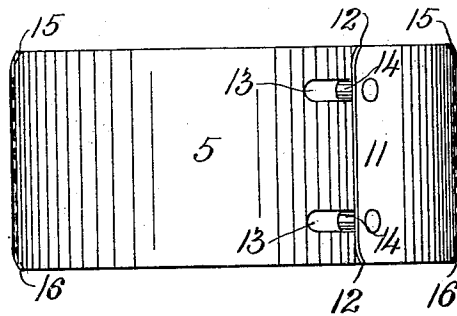


Fig. II.

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# UNITED STATES PATENT OFFICE.

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## GUIDE FOR ROTARY PUMPS.

SPECIFICATION forming part of Letters Patent No. 633,476, dated September 19, 1899.

Application filed February 3, 1899. Serial No. 704,415. (No model.)

*To all whom it may concern:*

Be it known that I, ROBERT J. NORTHAM, a citizen of the United States, residing at Los Angeles, in the county of Los Angeles and State of California, have invented certain new and useful Improvements in Guides for Rotary Pumps, of which the following is a full, clear, and exact description, reference being had to the accompanying drawings, which form a part of this specification.

My invention relates to an improvement in guides for that class of pumps where the water is raised by means of a rotatable screw-blade; and my invention consists in certain features of novelty hereinafter described and claimed.

Figure I is a top view of my improved guide. Fig. II is a side elevation. Fig. III is a side elevation showing the pump-shaft, guide, and screw-blades located within a fragment of a well-casing. Fig. IV is a transverse section taken on line IV IV, Fig. III.

Referring to the drawings, 1 represents a vertical pump-shaft having screw-blades 2 mounted thereon, said blades being secured on a central hub 3, which fits on the shaft 1.

4 represents a well casing or pipe, which may be a lapped-seam riveted pipe, a screw-pipe, or of other suitable construction.

5 represents my improved guide, consisting of an annular split band or ring 6, having a hub 7 adapted to fit on the rotary pump shaft 1, said hub 7 being connected to the ring 6 by means of laterally-extending wings 8, which are preferably of the same depth as the ring 6. The wings 8 may extend in curved lines, as shown in Fig. I, or be of any other suitable contour, so as to connect the hub 7 with the ring 6. I preferably form the wings 8 in the shape of a horizontal double bow or letter H, as shown in Fig. I, the inner ends of the wings being riveted at 9 to the hub and the outer ends riveted at 10 to the ring 6. The ring 6 is not solid, but is provided with an overlapping end 11, adapted to spring outwardly and come in contact with any obstruction within the casing 4—such, for instance, as the seam of the pipe or the heads of the rivets used in forming the seam. The outer end of one of the wings 8 is preferably not secured to the ring 6, so as to permit of a greater expansion of said ring, the ring being

formed with a sufficient spring to its body, whereby the end 11 is inclined to spring outwardly. The vertical edges of the ring 6 are rounded, as shown at 12, to facilitate placing the ring within the casing or withdrawing it therefrom. In placing the ring or guides within the casing the tendency of the end 11, if it catches upon any obstruction, is to bend upwardly or downwardly, according to circumstances. To obviate this difficulty, I form slots 13 in the body of the ring and secure pins 14 to the end 11 of the ring, said pins extending into said slots, and thus preventing any independent vertical movement of the end of the ring, said pins not preventing a sufficient expansion of the end of the ring to perform its functions. When the end of the ring has expanded to a greater degree than would be required when it is confined within the casing, the ends of pins 14 come in contact with the ends of the slot 13, thus limiting the outward movement of the end of the ring. The ring 6 is not only curved at 12 to prevent its catching on any obstruction within the pipe, but the top and bottom of the rings curving inwardly, as shown at 15 16, for a like purpose.

17 represents Babbitt metal placed within the hub 7 for forming a journal-bearing on the shaft 1.

18 represents the inner edge of a lapped pipe, and 19 the rivets for securing the same.

In Fig. IV, I have shown the end 11 of the ring abutting against the inner edge of the lap 18 of the casing. When the ring is in this position, the pin 14 extends its extreme limit inwardly through the slot 13, the outer face of the ring fitting snugly against the inner face of the casing 4. It is immaterial in what direction the inner lap of the casing extends, my improved guide being adapted to lock by turning it in either direction simply by turning the guide upside down. In other words, if the inner lap extends to the right of the rivet, as shown in Fig. IV, the guide is placed to turn to the left. If the inner lap extends to the left, the guide is inverted, so as to travel to the right, it being of course understood that the shaft and screw would have to rotate in the corresponding manner. In the form of pump shown the rotation of the screw causes the water to rotate in a cor-

responding direction, the function of the wings 8 being to arrest this rotation as soon as possible by the water coming in contact therewith and permitting the water to travel vertically upward, where it is either discharged or comes in contact with a similar screw, according to the depth of the well.

I claim as my invention—

1. A guide for a rotary-pump shaft, comprising a split ring having a free edge adapted to engage an obstruction within the casing, a hub adapted to fit the pump-shaft, and means connecting the hub with the ring; substantially as described.

2. A guide for a rotary-pump shaft, comprising an expansible split ring having a free edge, a hub adapted to fit the pump-shaft, and means connecting the hub with the ring; substantially as described.

3. A guide for a rotary-pump shaft, comprising a split ring having an overlapping free edge, a hub adapted to fit the pump-shaft, and means connecting the hub with the ring; substantially as described.

4. A guide for a rotary-pump shaft, comprising an expansible split ring having a free edge, a hub adapted to fit the pump-shaft, means for connecting the hub with the ring, and means limiting the expansion of the ring; substantially as described.

5. A guide for a rotary-pump shaft, comprising an expansible split ring formed with slots, and having a free edge provided with pins adapted to engage the slots, a hub adapted to fit the pump-shaft, and means connecting the hub with the ring; substantially as described.

6. A guide for a rotary-pump shaft, comprising a split ring having a free edge, and its upper and lower edges curved inwardly, a hub adapted to fit the pump-shaft and means connecting the hub with the ring; substantially as described.

7. A guide for a rotary-pump shaft, comprising a split ring having an overlapping free edge formed with rounded corners, a hub adapted to fit the pump-shaft, and means connecting the hub with the ring; substantially as described.

8. A guide for a rotary-pump shaft, comprising a split ring having an overlapping free edge, a hub adapted to fit the pump-shaft, and bow-shaped laterally-extending wings connecting the hub with the ring; substantially as described.

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Witnesses:

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