

No. 633,477.

Patented Sept. 19, 1899.

R. J. NORTHAM.  
GUIDE FOR ROTARY PUMPS.

(Application filed Feb. 3, 1899.)

(No Model.)

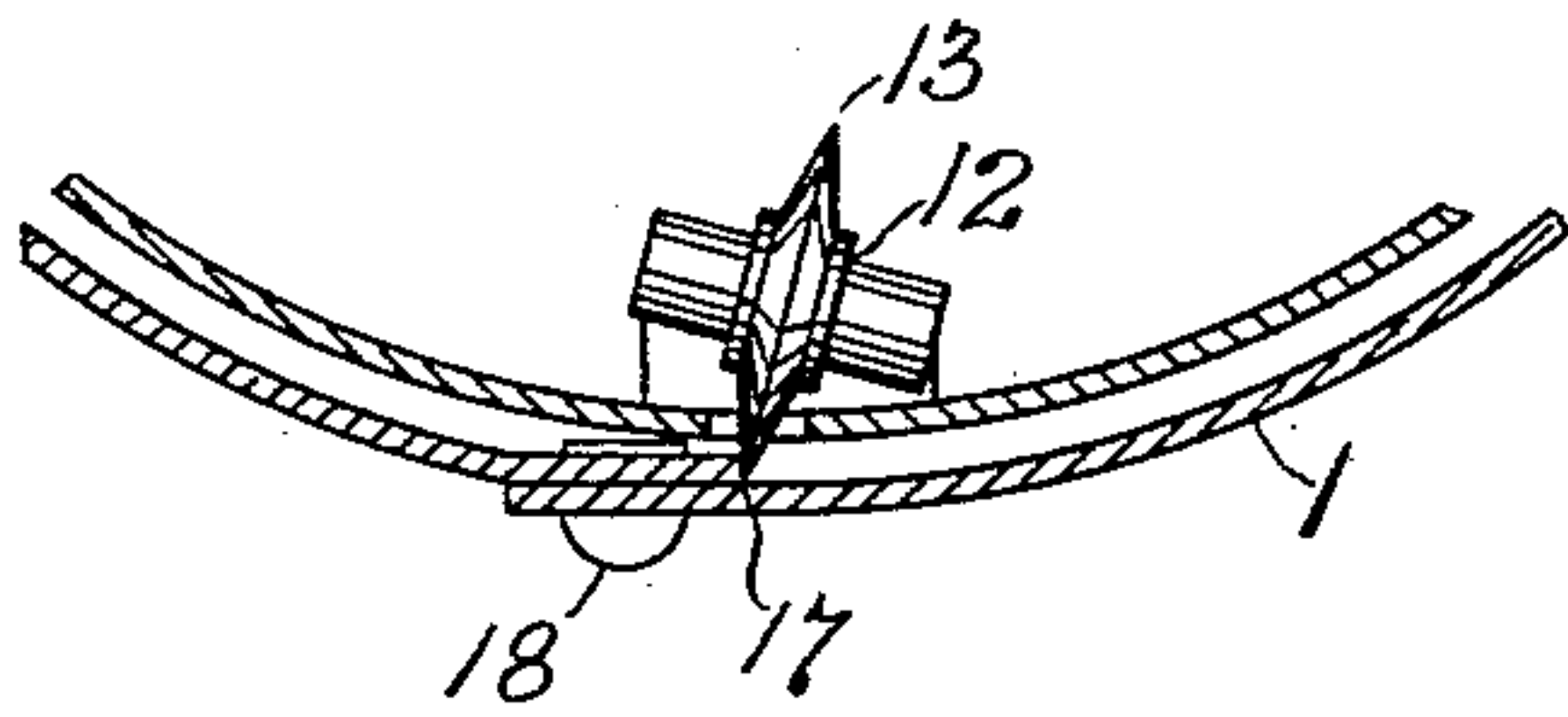


Fig. IV.

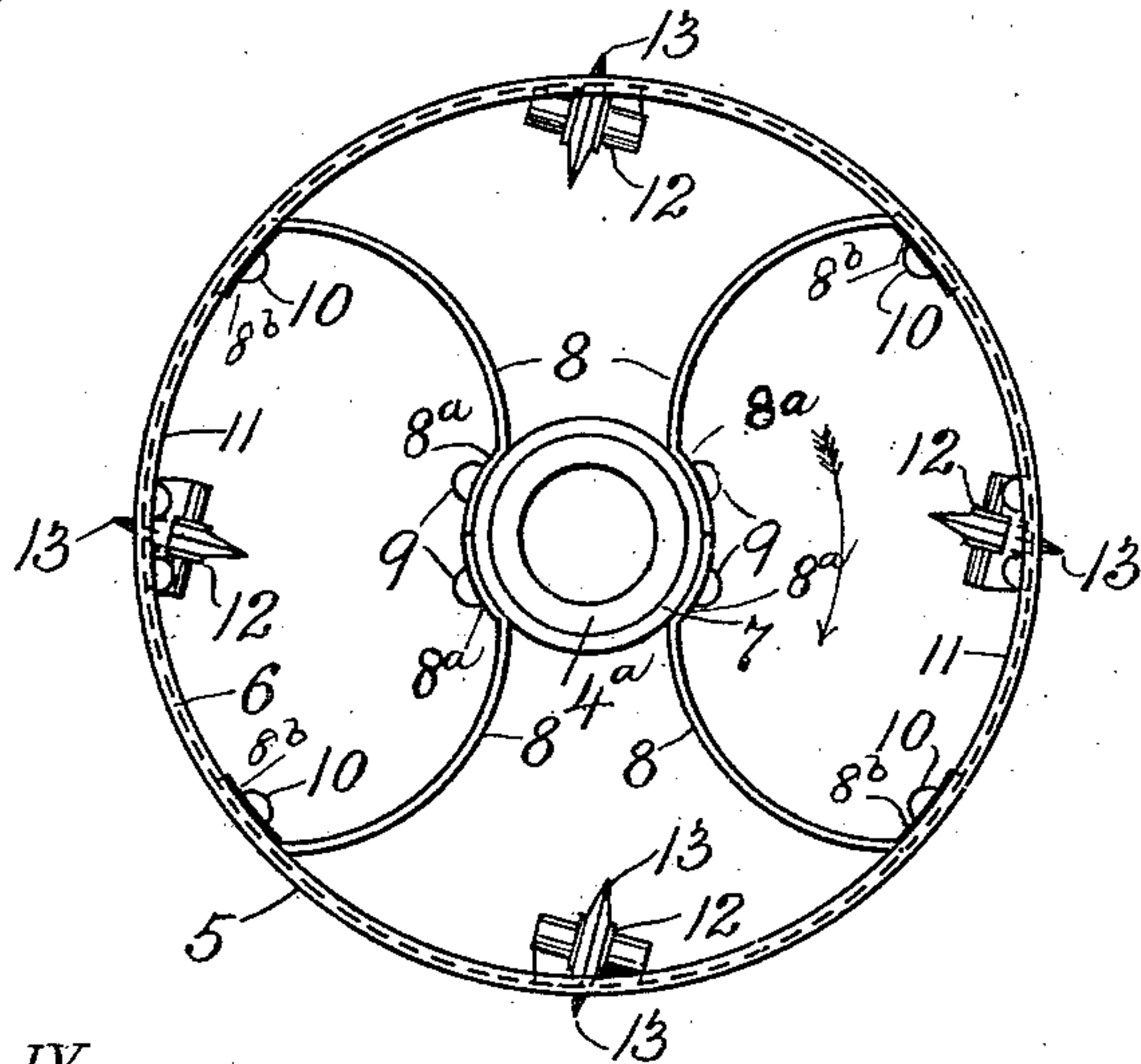


Fig. I.

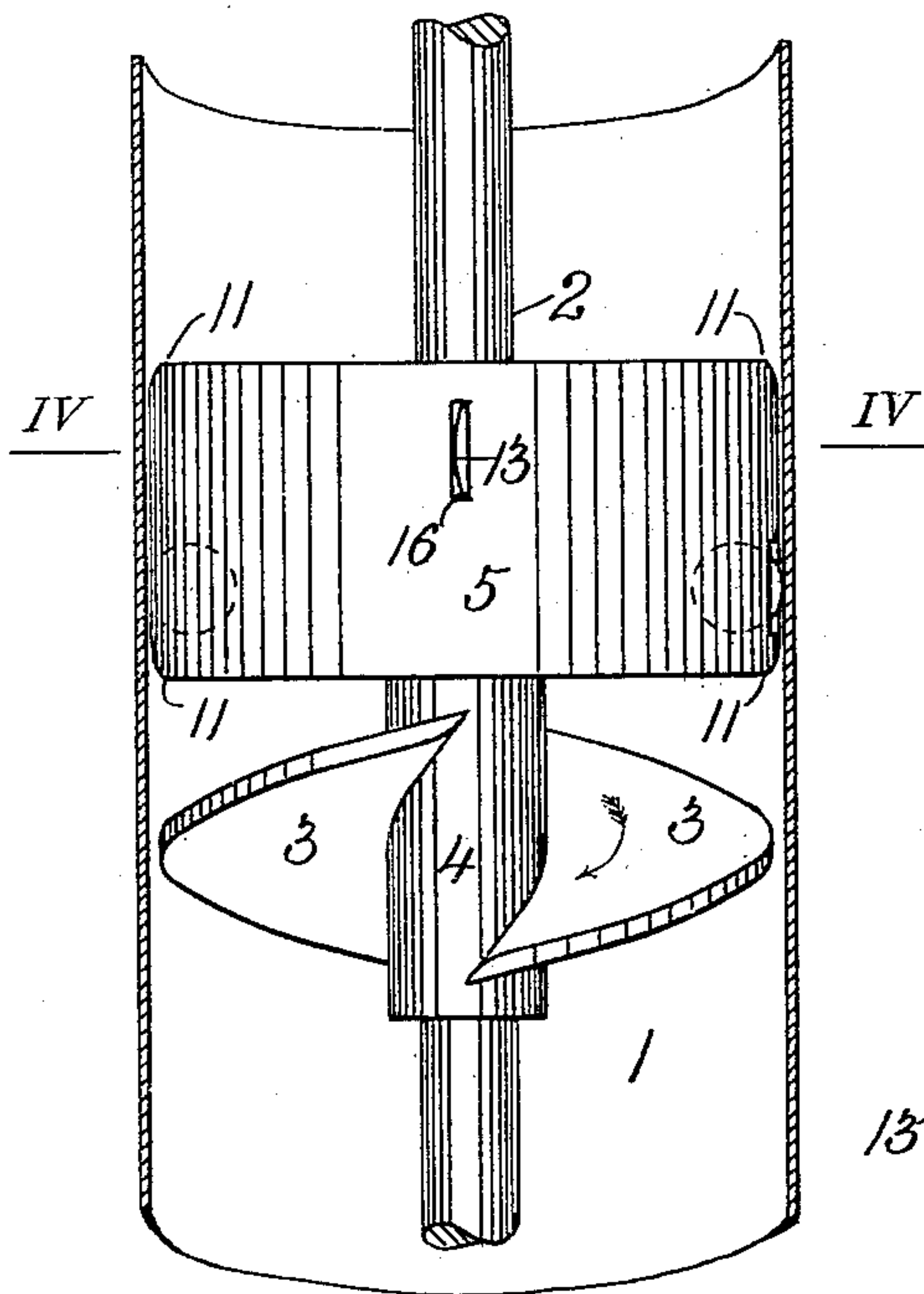


Fig. III.

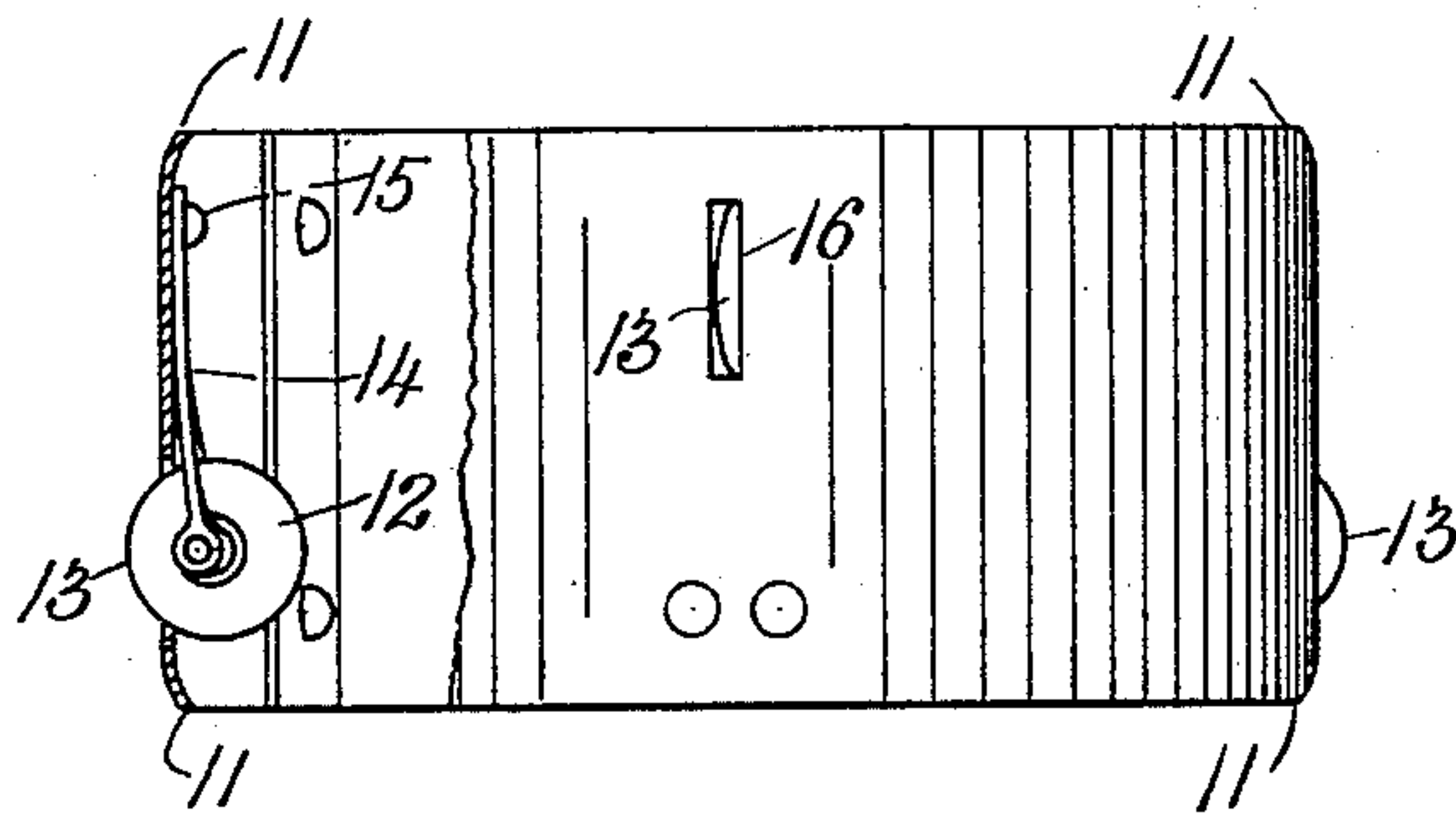


Fig. II.

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# UNITED STATES PATENT OFFICE.

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## GUIDE FOR ROTARY PUMPS.

SPECIFICATION forming part of Letters Patent No. 633,477, dated September 19, 1899.

Application filed February 3, 1899. Serial No. 704,416. (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 improvements in guides for rotary pumps; and my invention consists in certain features of novelty hereinafter described and claimed.

Figure I is a top view of the guide. Fig. II is a side elevation, a part of the ring being broken away to show construction. Fig. III is a side elevation showing guide and screw-blade mounted on shaft with a section of casing. Fig. IV is a transverse view taken on line IV IV, Fig. III.

Referring to the drawings, 1 represents a well-casing; 2, a vertical pump-shaft; 3, screw-blades for raising the water, and 4 the hub of the blades, mounted on the shaft 2.

5 represents my improved guide loosely journaled on the shaft by a boxing 4<sup>a</sup>, said guide consisting of a ring 6 and a hub 7, with wings 8 connecting the ring with the hub. The wings 8 are preferably of the same depth as the ring 6 and are preferably bow-shaped in contour, as shown in Fig. I; but I do not confine myself to any special contour of the wings, as they may be changed without altering their function. The inner ends 8<sup>a</sup> of the wings are secured at 9 to the hub and the outer ends 8<sup>b</sup> secured at 10 to the ring 6. The ring 6 is curved inwardly at its upper and lower ends, as shown at 11, in order to facilitate placing it within or withdrawing it from the casing.

12 represents a series of wheels or cutters provided with sharp edges 13. Said wheels are journaled to the lower ends of paired springs 14 on the inside of the ring 6, the opposite ends of the springs 14 being secured at 15 to the ring 6.

16 represents a series of slots in the ring 6, through which the edge 13 of the wheels 12 extend, a part of the edge normally extending through the slot 16 and held therein by means of the springs 14. The wheels 12 may

be sprung inwardly beyond the outer line of the slot if sufficient pressure is brought to bear against the outer edge of the wheels, the object of said wheels being to come in contact with any obstruction in the casing to prevent the rotation of the guide. For instance, in a riveted pipe the outer edge of the wheel would come in contact with the end of the inner lap 17, as shown in Fig. IV, thus arresting the turning of the guide as the shaft 2 is rotated, or the edge of the wheel may come in contact with the inner end of the rivets 18, used in forming the casing, or the springs 14 may be made of sufficient strength that the edge 13 of the wheel will cut into the casing, thus forming a groove in which the wheel remains seated and preventing the rotation of the guide, or the wheel may come in contact with any other obstruction on the inner surface of the casing. By reason of the wheel springing inwardly the guides are readily placed or removed from the casing as the wheels recede when coming in contact with an obstruction. The wheels 12 are placed at irregular intervals in the ring 6, so that if one of the wheels should miss an obstruction one of the others would catch and prevent the guide from turning. I preferably place the wheels with their edges extending on an acute angle with the surface of the ring in order that a better hold may be taken upon the obstruction in the casing.

My improved guide is reversible to accommodate itself to any form of riveted pipe and to whichever direction the inner lap of the pipe may extend, it being understood that where the guide is reversed the screw would also be reversed and the shaft operate in the opposite direction.

The object of the guide 5 is to present an obstruction above the screw, which stops the rotary motion imparted to the water by the screw. The water coming in contact with the wings 8 causes the rotary motion to be broken up and the water to ascend vertically within the casing.

I claim as my invention—

1. A guide for rotary pumps comprising a ring having upper and lower staggered slots, the paired springs located on opposite sides of the slots, the wheels or cutters journaled to the free ends of the springs, working through



the slots and adapted to engage the casing, a hub whereby the guide is loosely mounted on the operating-shaft, and wings secured, at their inner ends, to the hub and at their outer ends to the ring; substantially as described.

2. A guide for rotary pumps comprising a ring having upper and lower staggered slots, and intumed upper and lower edges, the paired springs located on opposite sides of the slots, the wheels or cutters journaled to the free ends of the springs, working through the slots and adapted to engage the casing, a hub whereby the guide is loosely mounted on the operating-shaft, and wings secured to the hub and to the ring; substantially as described.

3. A guide for rotary pumps comprising a ring having upper and lower staggered slots, the paired springs located on opposite sides of the slots, the wheels or cutters journaled to the free ends of the springs, working through the slots, and adapted to engage the casing,

a hub whereby the guide is loosely mounted on the operating-shaft, and the bow-shaped wings having their inner ends lapping the hub and secured thereto, and their outer ends lapping the ring and secured thereto; substantially as described.

4. A guide for rotary pumps comprising a ring having upper and lower staggered slots, the paired springs located on opposite sides of the slots, the wheels or cutters journaled to the free ends of the springs working through the slots, and adapted to engage the casing, a hub whereby the guide is loosely mounted on the operating-shaft, the wings secured at their inner ends to the hub and at their outer ends to the ring, and the screw-blade secured adjacent to the guide; substantially as described.

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