

J. HURST.
CENTRIFUGAL PUMP.
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Fig. 1.

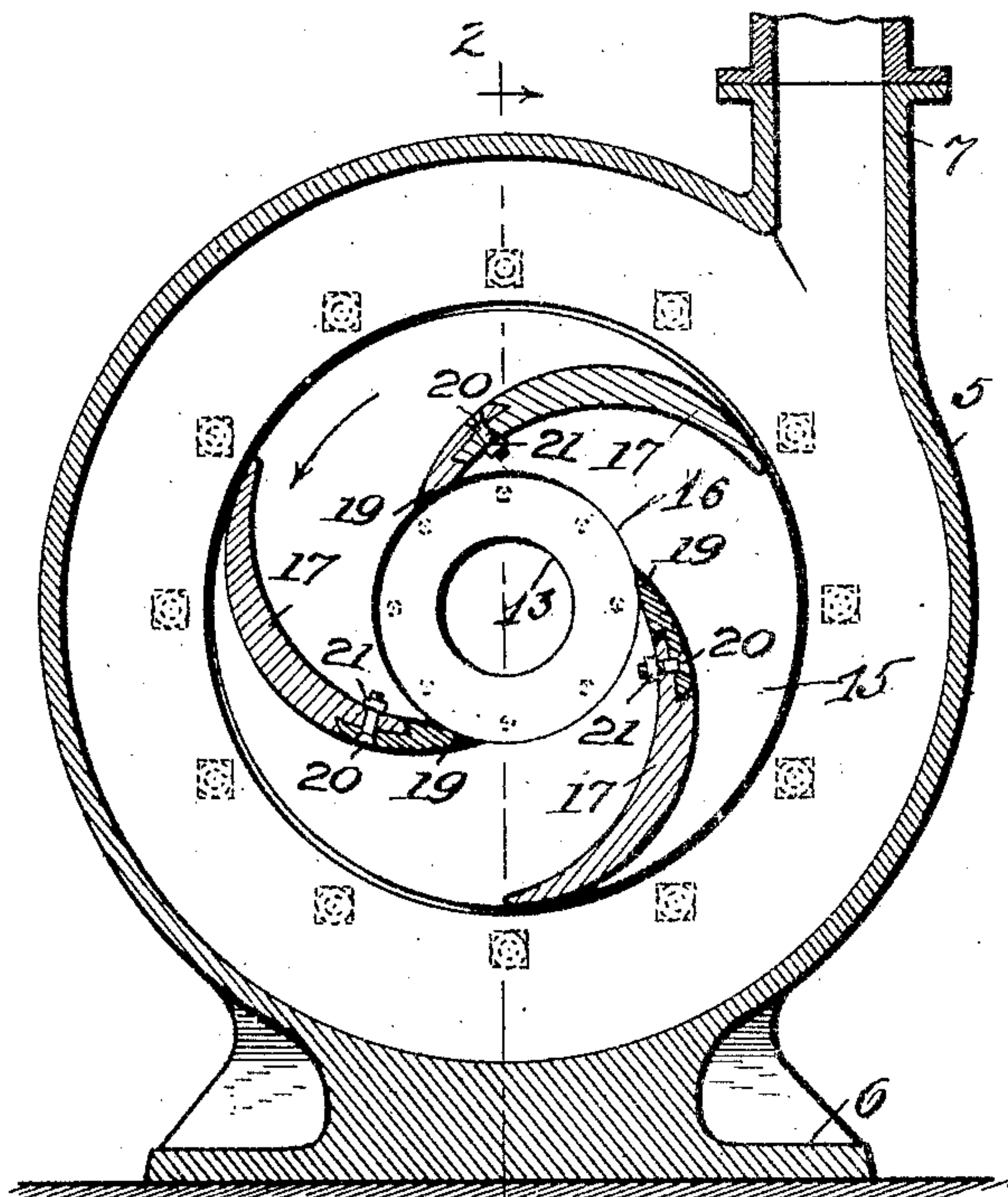
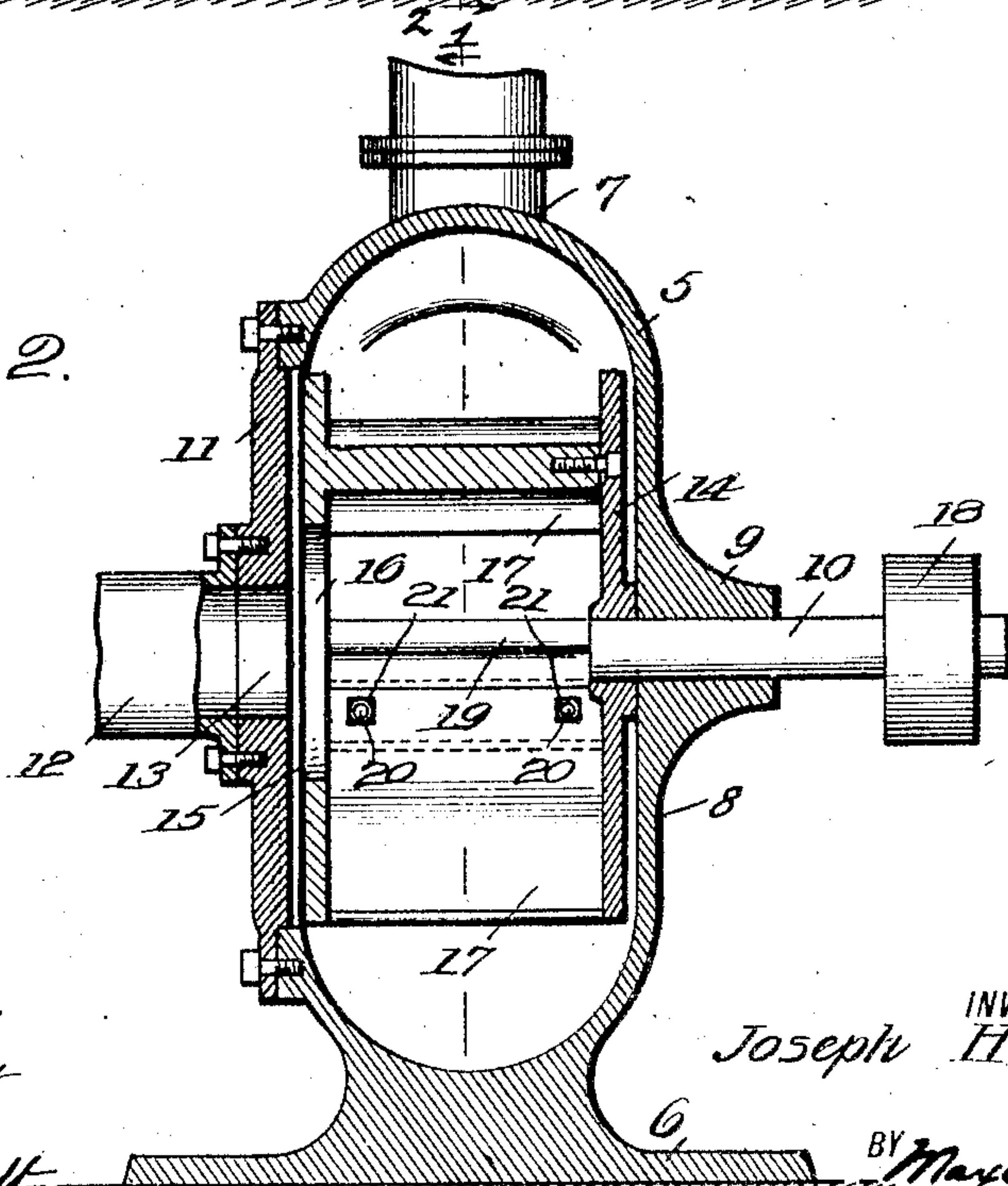


Fig. 2.



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Specification of Letters Patent.

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To all whom it may concern:

Be it known that I, JOSEPH HURST, a citizen of the United States, residing at Louisville, in the county of Jefferson and State of Kentucky, have invented certain new and useful Improvements in Centrifugal Pumps, of which the following is a specification.

This invention relates to centrifugal pumps designed for dredging purposes. In pumps of this kind, the blades soon wear away at their inner ends from the sand, gravel, and other hard substances passing through the pump and coming in contact with the blades at this point.

It is the object of the present invention to fit the blades with removable wear blocks, so that when worn they may be removed and replaced by new ones, and with this object in view, the invention consists in a novel construction and arrangement of parts to be hereinafter described and claimed.

In order that the invention may be better understood, reference is had to the accompanying drawing forming a part of this specification, in which drawing,—

Figure 1 is a vertical section of the pump on the line 1—1 of Fig. 2. Fig. 2 is a section on the line 2—2 of Fig. 1.

In the drawing, 5 denotes the casing of the pump which is mounted on a suitable base 6. To the casing is connected a delivery pipe 7. The casing is circular and its rear wall 8 has a bearing 9 in which is supported the shaft 10 of the rotor. The rear wall may be formed integral with the casing. The front wall is a circular plate 11 which is bolted or otherwise secured to the casing, so that the rotor may be placed in the casing. At the center of the plate 11 is an opening 13 which is the inlet of the pump, the suction pipe 12 being connected to the plate so as to communicate with said opening. The rotor comprises spaced circular disks 14 and 15, respectively, the former being made fast to the shaft 10, said shaft extending into the casing through the bearing 9. In the center of the disk 15 is an opening 16 which registers with the opening 13 in the plate 11. Between the disks 14 and 15 are located radially extending blades 17 which are curved in the direction of their length, as usual in centrifugal pumps. These blades radiate from the opening 16, and extend to the periphery of the disks 14

and 15, said disks having the same diameter. The blades also extend entirely across the space between the two disks. The blades may be formed integral with the disk 15, and bolted to the disk 14, so that both disks and the blades will rotate with the shaft 10, the latter having a belt pulley 18, or other power transmitting device for imparting a rotary motion to the shaft.

In operation, the material enters the casing 5 through the opening 13, and passes into the space between the disks 14 and 15, through the opening 16, whereupon it is forced by the blades 17 to the delivery pipe 7.

In actual practice, it has been found that the blades 17 wear rapidly at their inner ends, or their ends nearest the opening 16. This wear is caused by the sand, gravel, and other hard substances coming in contact with the blades at this point. Inasmuch as this wear greatly reduces the efficiency of the pump, I have fitted the blades with removable wear blocks 19, these blocks being located at the inner ends of the blades, or next to the opening 16, and their main body portion having a thickness and shape so that the continuity of the curved surfaces of the blades will not be interrupted, and forming the tips of the blades. The blocks 19 are secured by bolts 20 which are countersunk in the convex or working sides of the blades so that there will be no parts projecting therefrom to interfere with the proper working of the blades. The nuts 21 of the bolts are screwed against the concave sides of the blades. The ends of the blades to which the blocks 19 are secured, and the contiguous ends of said blocks are reduced in thickness, the extremities of the reduced ends of said parts being undercut, so that a rigid connection may be made. The reduced end of the blade forms a recess to receive the reduced end of the block. The sections 19 will be made of hardened steel, and when worn they can be readily removed and replaced by new ones.

I claim:

A centrifugal pump having its blades fitted with removable wear blocks at their ends nearest to the axis of the pump, said blocks forming the tips of the blades, and the main body portion of the blocks having a thickness and shape to form a solid con-

tinuation of the blades, the inner ends of the blocks being reduced in thickness, and one side of the blades being similarly reduced to form a recess to receive said reduced ends of the blocks, and fastening means passing through the reduced portions of the blocks and blades.

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

JOSEPH HURST.

Witnesses:

THOMAS C. SMALL,
G. M. DIFFENDERFER.