No. 666,234. Patented Jan. 15, 1901.

J. D. McRAE.

LINING FOR CENTRIFUGAL PUMPS.

(Application filed June 11, 1900.)

(No Model.)

Fig. 1.

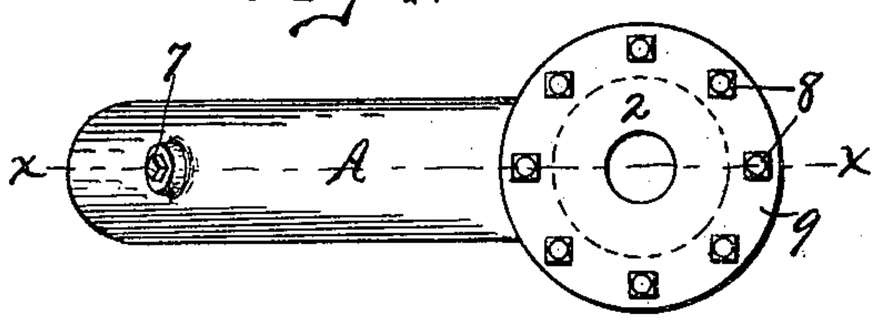


Fig. 2.

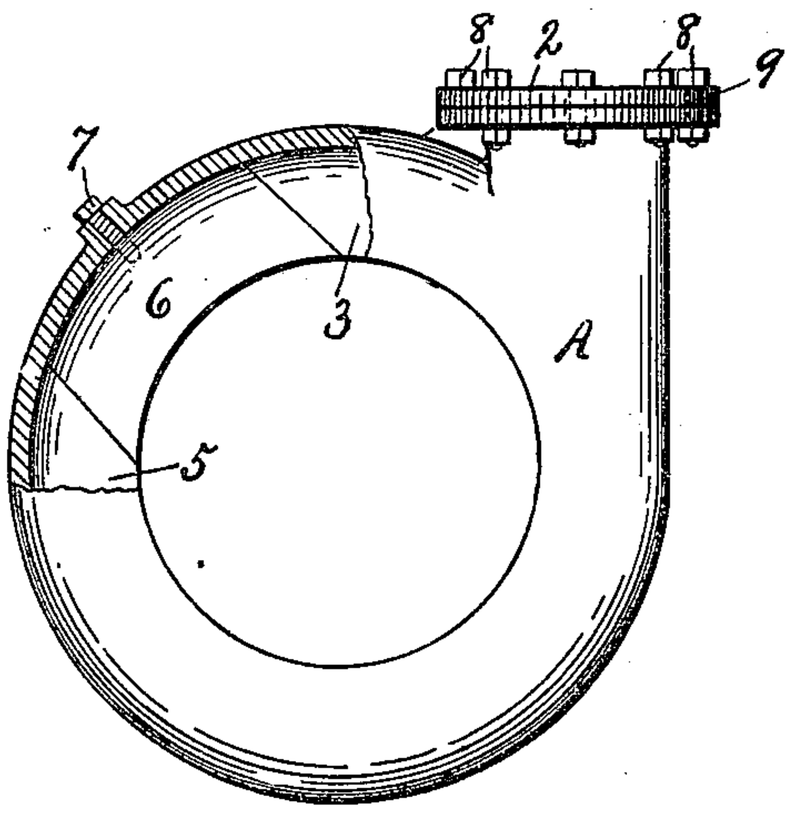


Fig. 3.

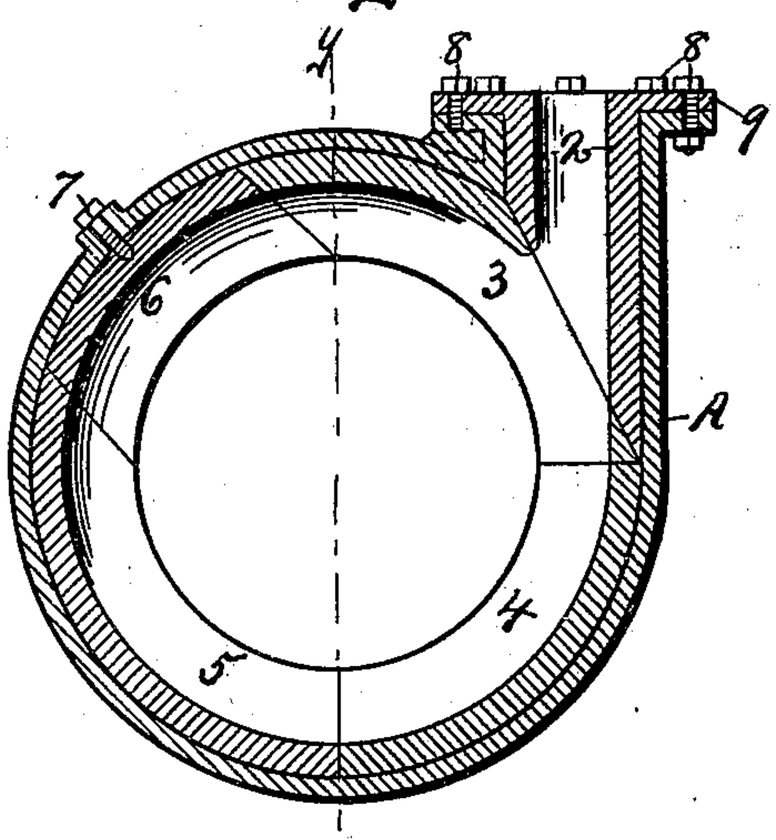


Fig. 4.

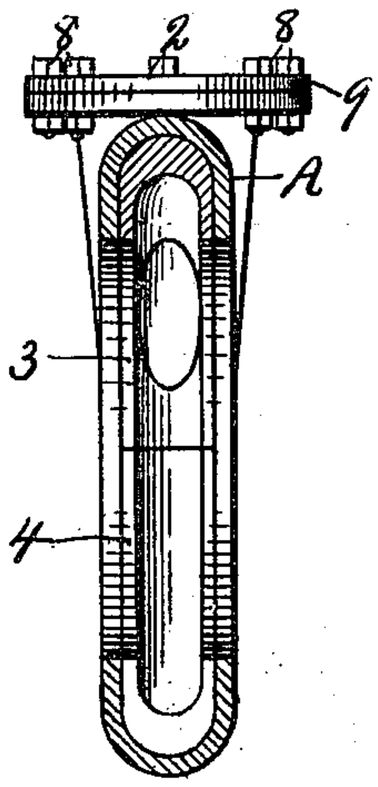


Fig. 5.

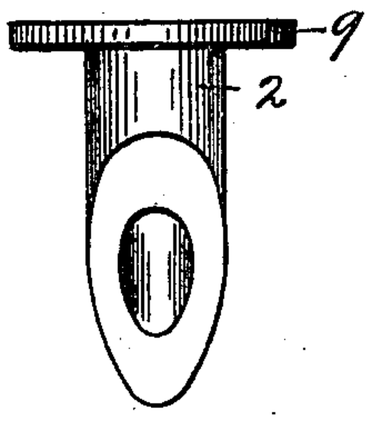
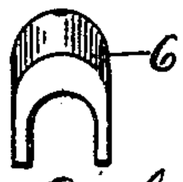


Fig. 6.



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UNITED STATES PATENT OFFICE.

JOHN D. McRAE, OF OSWEGO, NEW YORK.

LINING FOR CENTRIFUGAL PUMPS.

SPECIFICATION forming part of Letters Patent No. 666,234, dated January 15, 1901.

Application filed June 11, 1900. Serial No. 19,887. (No model.)

To all whom it may concern:

Be it known that I, JOHN D. McRAE, of Oswego, in the county of Oswego, in the State of New York, have invented new and useful Improvements in Linings for Centrifugal Pumps, of which the following, taken in connection with the accompanying drawings, is a full, clear, and exact description.

This invention relates to improvements in pumps, having more particular reference to the linings of that class known as "centrifugal" pumps.

My object is to produce as a new article of manufacture a sectional interchangeable lining for pumps of the class described so constructed that all the sections will rest or be held in position by means of one of the sections, which serves as a key, said section being held in position by a screw engaging it and the shell or casing of the pump.

My further object is to produce a lining from cast or shell metal cheap and durable in its construction, of great utility, and which may be readily replaced and thereby allow a sand-pump or a pump for analogous purposes to last almost indefinitely; and to that end my invention consists in the several new and novel features of construction and operation, which are hereinafter described, and specifically set forth in the claims hereunto annexed. It is constructed as follows, reference being had to the accompanying drawings, in which—

Figure 1 is a top plan view of a centrifugal pump. Fig. 2 is a side elevation thereof, showing part of the shell or casing removed. Fig. 3 is a vertical section on line $x\ x$, Fig. 1. Fig. 4 is a section on line $y\ y$, Fig. 3. Fig. 5 is a view of the nozzle-lining. Fig. 6 is a view of the key-section as shown in Fig. 3, detached view from the left.

Similar letters of reference indicate corresponding parts.

A is the shell of an ordinary centrifugal pump, as shown in Figs. 1 and 2, and provided with the nozzle constructed in the ordinary way. The lining is made up of the nozzle 2 and the sections 3, 4, 5, and 6, arranged end to end in the form of a circle, the section 6 being a key-section and having substantially parallel end faces engaging similar end faces of the adjacent sections 3 and 5, as shown in Fig. 2, for the purpose of holding the other sections except the nozzle in position and permitting the section 6 to be removed inwardly when desired to remove the remaining sections 3, 4, and 5. Preferably I construct the section 3 with an opening in its peripheral wall and with a substantially flat inclined outer face for engaging a similar face on the inner end of the nozzle 2, as shown; but the sections 4 and 5 may be divided to adapt themselves to the size of the pump. The sections 3, 4, 5, and 6 are placed in position from the inside, the sections 4 and 5 being first placed in position, then the section 3, and finally the section 6 is forced in between the adjacent ends of sections 3 and 5, where it is secured by a screw or bolt 7 and locks the other sections in position, the end faces of the sections 3 and 5 adjacent to the section 6 being substantially parallel and their opposite end faces being substantially radial.

The nozzle-section is held to the nozzle of the pump by means of bolts 8 passing through its flange and the flange 9 of the nozzle-section.

I do not limit myself to the precise construction of forms shown for the linings, as it will be evident that they may be varied without departing from the spirit of my invention—as, for instance, the meeting faces of the key-section and adjacent segments may converge outwardly from the axis of the lining instead of being parallel, as shown.

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

1. The combination with the outer shell of a centrifugal pump, of a circular lining having a key-opening and a key-section fitting within the opening, the walls of said opening being separated at their inner ends as great a distance as their outer ends for the purpose described.

2. The combination with the outer shell of a centrifugal pump, of a circular lining having a key-opening and a key-section fitting within the opening, the walls of said opening being separated at their inner ends as great a distance as their outer ends, and the end faces of the key-section being disposed in substantially the same plane as the corresponding walls of the opening, and means for securing the key-section to the outer shell.

3. The combination with the outer shell of

a centrifugal pump, of a segmental circular lining, one of the segments and the opening therefor having the chords of their inner arcs of equal or greater length than the chords of their outer arcs for the purpose described, and means for securing said one of the segments to the outer shell.

4. The combination with the outer shell of a centrifugal pump, of a lining comprising a series of circular segments arranged end to end, the end faces of one of the segments and the adjacent end faces of adjacent segments being disposed in substantially parallel planes, and means for securing said one of the segments to the outer shell.

5. A lining for centrifugal pumps, comprising a series of circular segments arranged end to end, the end faces of one of the segments and the adjacent end faces of adjacent segments being disposed in substantially parallel planes.

6. A lining for centrifugal pumps, comprising a series of circular segments arranged end to end, the end faces of one of the segments and the adjacent end faces of adjacent segments being disposed in substantially parallel planes, the adjacent end faces of the remaining segments being disposed in substantially radial planes.

7. A lining for centrifugal pumps, comprising a series of circular segments arranged end to end, one having its peripheral wall formed with an opening and a bearing-face surrounding the opening, and an additional hollow section having one end formed with a bearing-face and its other end provided with an annular flange for the purpose described.

8. A lining for centrifugal pumps, comprising a series of circular segments arranged end to end, the end faces of one of the segments and the adjacent end faces of adjacent segments being disposed in substantially parallel planes, the adjacent end faces of the remaining segments being disposed in substantially radial planes, and an additional substantially straight section having one end bearing against the periphery of one of the circular segments and its other end provided with an annular flange, and means for securing the independently-removable section in position.

In witness whereof I have hereunto set my hand this 10th day of May, 1900.

JOHN D. McRAE.

Witnesses:
W. B. BURR,
HOWARD P. DENISON.