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CENTRIFUGAL PUMP WITH SEPARABLE IMPELLER CASING

Filed May 29, 1947

2 SHEETS—SHEET 1

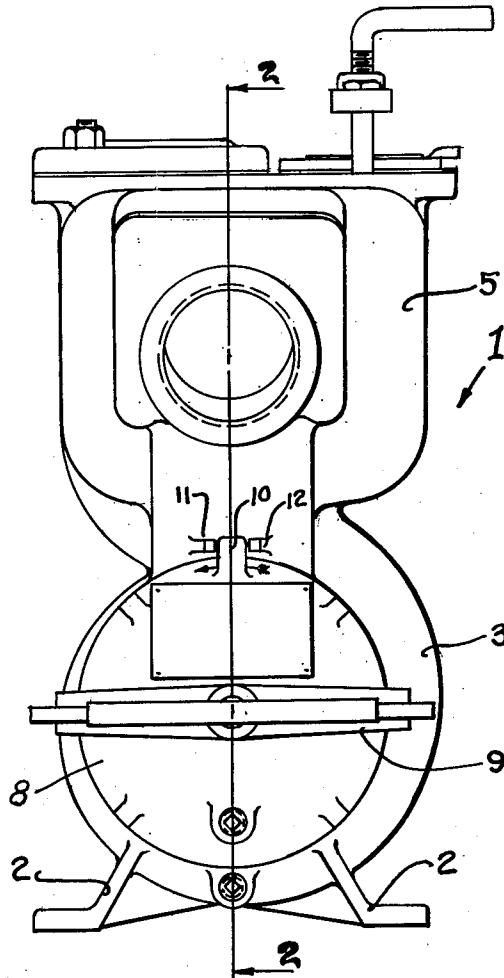


Fig. 1

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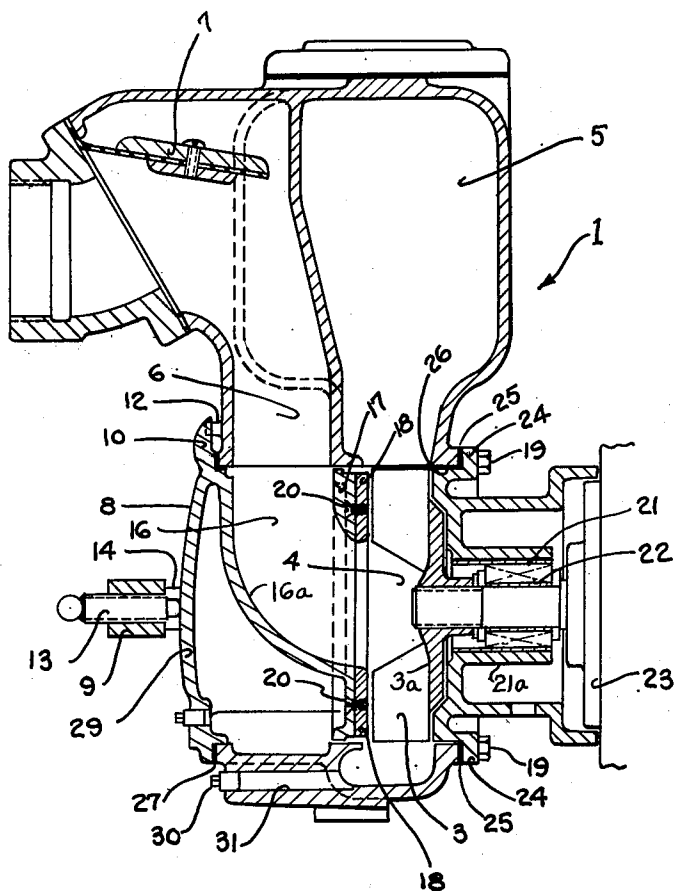


Fig. 2

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CENTRIFUGAL PUMP WITH SEPARABLE
IMPELLER CASING

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1 Claim. (Cl. 103—103)

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This invention relates to a centrifugal pump wherein the casing consists of a supply passageway, a discharge reservoir having a discharge port or outlet, an impeller chamber and a removable wall section providing an intake passageway connecting the supply passageway with the eye of the impeller to facilitate the maintenance of the pump at full efficiency without completely overhauling and rebuilding the same. This removable section supports a removable wear plate and thus permits new wear plates to be provided adjacent the impeller path as well as the ready removal of sludge or foreign matter from the intake passageway adjacent the impeller.

The principal object of the present invention is to provide an improved centrifugal pump construction wherein that portion of the intake passageway, adjacent the intake side of the impeller, consists of a separable section of the pump casing to permit renewal of the wear plates adjacent the impeller and the removal of foreign matter or obstructions from the intake passageway adjacent the impeller.

Another object of the invention is to provide an improved centrifugal pump construction wherein provision is made to permit inspection of the impeller and adjacent parts and renewal and reconditioning of the parts to insure high efficiency of performance.

Another object of the invention is to provide a separable impeller casing for the impeller of a centrifugal pump whereby maintenance and inspection service may require only a minimum of time and insure uniformly high performance of the pump at all times.

Other and further objects of the invention will appear in the course of the following description.

To the accomplishment of the foregoing and related ends, said invention consists of the means hereinafter fully described and particularly pointed out in the claim, the annexed drawings and the following description setting forth in detail certain mechanism embodying the invention, such disclosed means constituting, however, but several of various forms in which the principle of the invention may be used.

Fig. 1 is an end elevation of a centrifugal pump having a separable impeller casing embodying the principle of the invention, and

Fig. 2 is a vertical sectional view of the structure on the line 2—2 of Fig. 1 looking in the direction of the arrows.

As is clearly shown in the drawings the centrifugal pump structure follows conventional lines, having a casing 1, supported on bracket members

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2 adapted to be bolted to a suitable foundation support.

The lower portion of the casing is enlarged to provide a working chamber 4 for the impeller 3, the upper portion of the casing providing a reservoir 5 and discharge port adjacent the supply passageway 6 and check valve 7.

The supply passageway 6 is connected to an intake passageway or conduit 16 leading into the eye of the impeller 3. As shown, the wall forming the intake passageway 16 forms part of the pump casing 1 and consists of a separable closure member 8 preferably held in tightly sealed relation to the outer wall of the impeller chamber 4 by means of a clamping yoke 9 and always fitted in exact registry with companion parts of the casing 1 and outer wall of the impeller chamber by means of a locking lug 10 at its upper edge seated between spaced lugs 11, 12, on the pump casing body. The separable closure member 8 consists of an outer wall engaged by the yoke 9 and inner spaced walls 16a and 17 shaped to form between them the arcuate conduit or passageway 16 connecting the outtake end of the supply passageway 6 with the eye of the impeller.

The yoke is latched by means of a manually operated bolt 13 engaging beneath a shoulder 14 on the body of the separable member 8. The separable member 8 fits in sealed relation against the pump casing and outer wall of the impeller chamber 4 and carries portions of the walls and operative passageways of the internal structure of the pump. When the member 8 is fitted and clamped in position, as above set forth, the intake passageway 16 forms a continuation of the supply passageway 6 of the pump casing and the inner wall 17, to which an annular wear plate 18 is secured by suitable bolts 20, forming one of the walls of the working chamber of the impeller. If desired, the wear plate 18 may be formed as an integral part of the separable casing 8.

3a indicates a disk, which carries the impeller 3, fixed to the inner end of a shaft 22. The shaft 22 is mounted in suitable bearings 21 supported in an annular casing 21a, its outer end being connected to the flange 23 of a drive pulley. The marginal portion of the annular casing 21a is provided with a recessed flange 24 forming a seat for a gasket 25 and engaging a flanged opening 26 in the pump casing 1. The flange 24 is sealingly fixed to the flange of the opening 26.

The flange 24 is preferably secured in position by bolts 19. A sealing ring or gasket 27 is also provided between the marginal portions of separable section 8 and the companion walls of the

casing 1. A drain plug 30 seals a drain passageway 31 leading from the base of the impeller chamber 4 which permits the separable casing section 8 to be freed of liquid before the parts are separated.

To those skilled in the art to which my invention relates, many changes in construction and widely differing embodiments and applications of the invention will suggest themselves without departing from the spirit and scope of the invention. My disclosures and the description herein are purely illustrative and not intended to be in any sense limiting.

I claim:

A centrifugal pump comprising a casing consisting of an upper hollow member having a substantially vertically disposed partition to provide in side-by-side relation supply and discharge passageways and a lower hollow member shaped to form a volute in the plane of said discharge passageway and having communication at its upper end with said discharge passageway, detachable closure members for the opposite sides of said volute and forming between them and within said volute an impeller chamber, the closure member adjacent said discharge passageway being provided with an integral collar extending

outwardly therefrom, bearings mounted in said collar, a shaft mounted in said bearings, and an impeller in said impeller chamber and connected to the inner end of said shaft, the other closure member consisting of an outer wall and inner spaced walls integral therewith and shaped to form between them an arcuate conduit or passageway the inlet end of which is connected to the outlet end of the supply passageway and its outlet end leads to the eye of the impeller.

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