May 22, 1956 H. C. SWAY 2,746,393

CENTRIFUGAL DRAINAGE PUMP

Original Filed Feb. 9, 1949

Fig. 1.

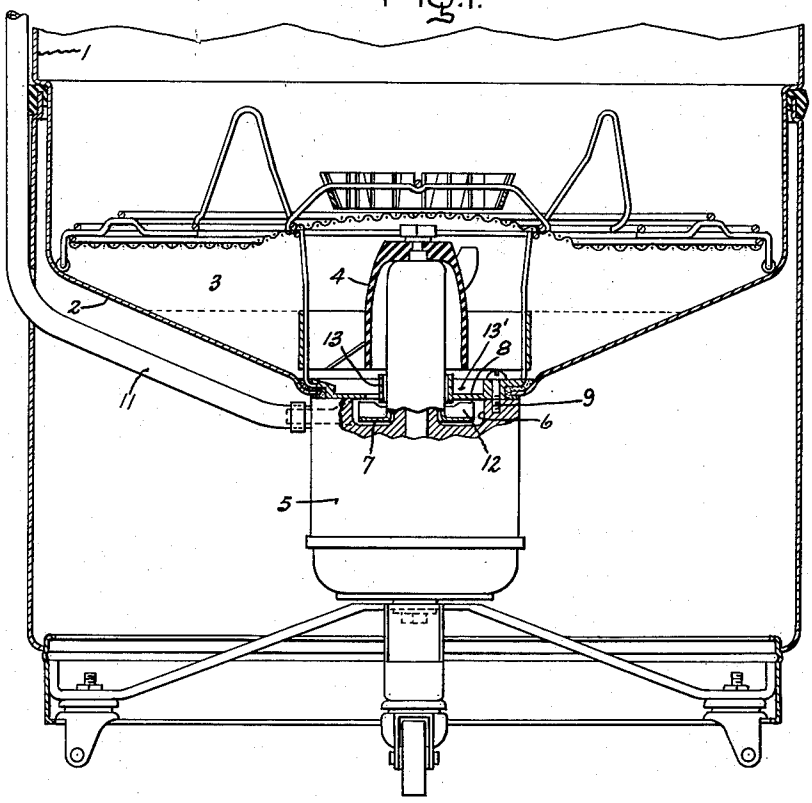


Fig. 2.

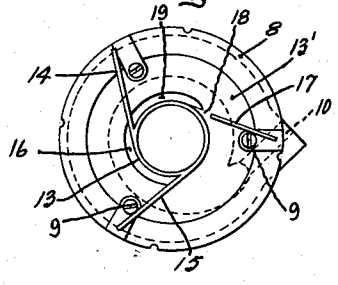
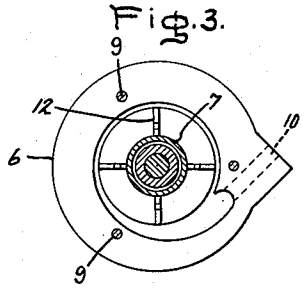


Fig. 3.



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CENTRIFUGAL DRAINAGE PUMP

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Original application February 9, 1949, Serial No. 75,466, now Patent No. 2,654,377, dated October 6, 1953. Divided and this application May 10, 1952, Serial No. 287,149

2 Claims. (Cl. 103—103)

This application is a division of my application S. N. 75,466 filed February 9, 1949, now Patent 2,654,377, for a Dishwashing Machine.

The present invention relates to centrifugal drainage pumps for the tubs of dishwashing machines and the like wherein the waste water drains down from the tub into the pump by gravity. Heretofore, so far as I am aware, such drainage pumps have had an inlet opening or openings extending about the full hub circle. In such constructions, noisy splashing and expulsion of water occur through the opening every time a pump blade passes the cutoff point at the outlet. In dishwashers, this undesirable characteristic is most apparent when the pump is operating at the end of the drain cycle. It should also be considered that in dishwashers this splashing and noise may be of considerable magnitude, for in adapting a centrifugal pump to a desired tub construction it is impossible to have the inlet passage at the very center of the pump cover as in conventional centrifugal pump design.

The primary object of my invention is to provide an improved pump construction which substantially eliminates such splashing and noise.

According to my invention, I provide a centrifugal pump with a cover having a wall which defines a sump and in the bottom wall of such sump, I provide ports over the lower pressure zones only of the pump housing; and I then provide vanes on the cover for directing drainage water to such ports whereby no water is fed to the pump in the vicinity of its higher pressure zone, i. e., adjacent to and just in advance of the pump's discharge port.

In the drawing, Fig. 1 is a sectional view of a part of a dishwashing machine the tub of which has a drainage pump embodying my invention, the pump being shown in transverse section; Fig. 2 is a top plan view of the drainage pump; and Fig. 3 is a top plan view of the drainage pump with the cover removed.

Referring to the drawing, 1 indicates the tub of a dishwashing machine having a tapered bottom wall 2 which defines a well 3 in which is positioned a dishwasher impeller 4 driven by an electric motor 5. Built as a part of the electric motor and driven by it is a drainage pump comprising a casing 6 which may be integral with the motor casing, an impeller 7 connected to the motor shaft and a cover 8. The motor and pump are connected over an opening in the bottom of well 3 by screws 9, the arrangement being clearly shown in Fig. 1. The discharge port for pump casing 6 is shown at 10, there being connected with it a drain pipe 11. The vanes of pump impeller 7 are indicated at 12.

The structure so far described forms no part of my present invention and is to be taken as typical of any suitable dishwashing machine or the like in connection with which my invention may be used, it being understood that my invention is not limited necessarily to use with dishwashing machines but may be used wherever found applicable.

According to my invention, I form the pump cover 8 with a central cavity or sump 13' at the center of which is an upwardly extending circular wall 13. Extending tangentially from said wall to the periphery of the cover are vanes 14 and 15, said vanes being approximately the height of the wall 13. In the cover portion or sector defined by the two vanes 14 and 15, the pump cover is slotted to provide an arcuate inlet slot or port 16 at the base of the circular wall 13. In the sector between vane 15 and a third tangentially extending vane 17, there is no bottom wall opening because this sector is adjacent to the discharge or high pressure area of the pump housing. Accordingly, vane 17 terminates short of the ring 13 to provide a flow passage 18 into a cover sector defined by the vanes 17 and 14, in which sector there is another slot 19 communicating with the pump chamber. It will be apparent then that the slots 16 and 19 are in the low pressure area of the pump chamber farthest removed from the discharge port. The slot size is such that water will drain rapidly from the tub, but objects which might damage the pump are prevented from entering.

With the above-described arrangement, water is fed through slots 16 and 19 to the lower pressure regions of the pump casing, no water being fed to the pump casing at the higher pressure region, i. e., the region just in advance of discharge port 10.

My invention provides an improved inflow condition at the pump inlet, the tangential vanes nullifying the natural vortex action of the incoming water which might otherwise detract from the proper functioning of the pump. The absence of an inlet port adjacent to the high pressure cut-off point prevents a conflicting flow of water, thus also minimizing the noise when operating with only residual water in the pump cavity.

What I claim as new and desire to secure by Letters Patent of the United States is:

1. A centrifugal drainage pump comprising a pump casing having a discharge port, a rotary impeller mounted therein, a cover for the pump casing shaped to form a sump to receive drainage fluid, said cover being provided with a plurality of vanes located in said sump substantially tangential to the pump shaft so as to divide said cover into a plurality of sectors including one sector overlying the discharge port in the pump casing, each of said sectors except said one sector having a port through which fluid may flow into the pump casing.

2. A centrifugal drainage pump comprising a pump casing, a rotary impeller mounted therein, a cover for the pump casing shaped to form a sump to receive drainage fluid, said cover being provided with a plurality of vanes located in said sump and extending from the central portion of the cover to the periphery thereof to divide the cover into areas which are respectively above low pressure and high pressure zones of the pump casing, the cover portions above the low pressure zones having ports through which fluid may enter the pump casing, one of said vanes defining a boundary between a ported cover portion and a nonported cover portion being interrupted to provide a flow passage between said ported and nonported cover portions.

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