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PUMP FOR WASHING MACHINES

Original Filed April 2, 1938

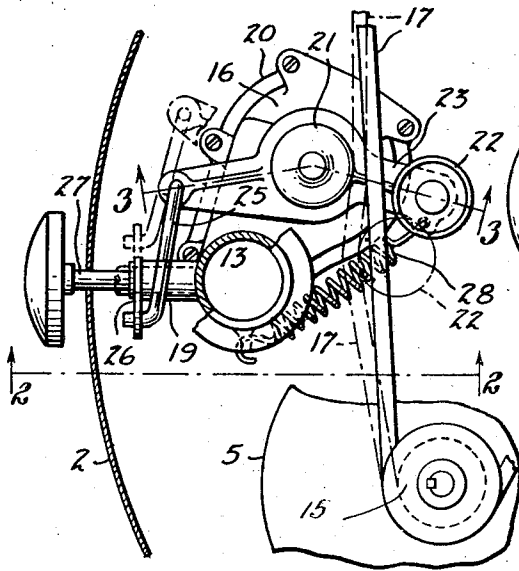


Fig. 1.

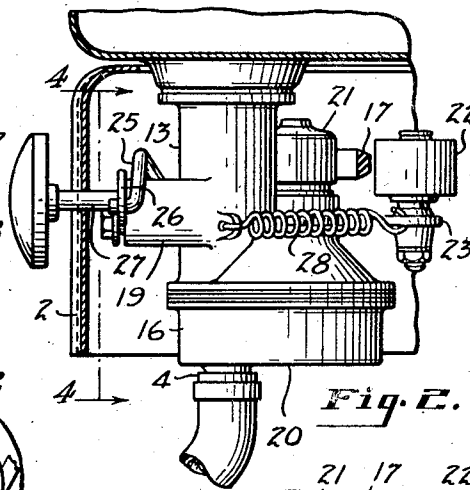


Fig. 2.

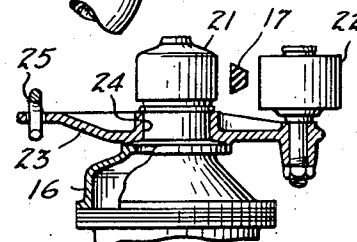


Fig. 3.

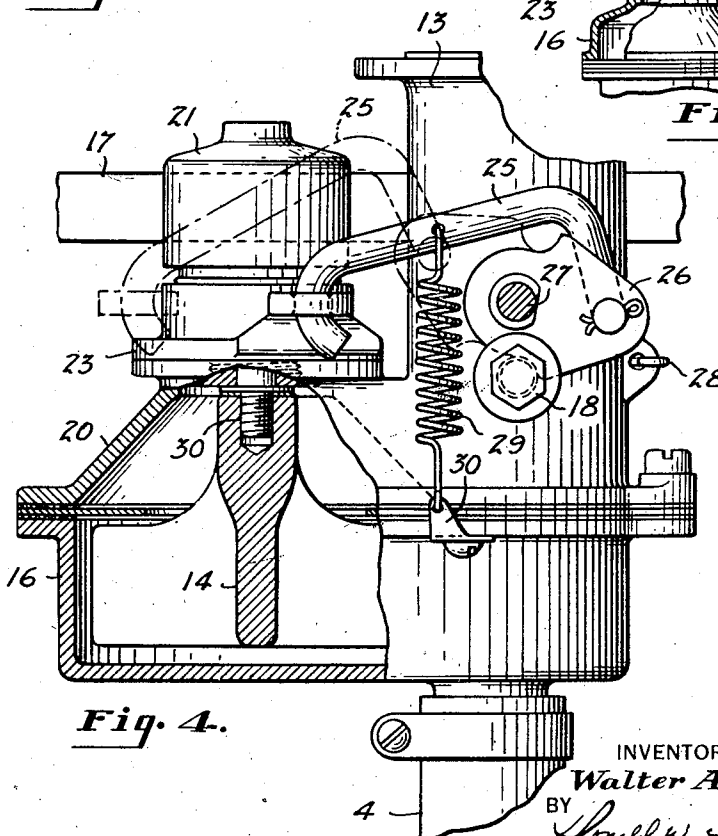


Fig. 4.

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PUMP FOR WASHING MACHINES

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Original application April 2, 1938, Serial No.
199,678. Divided and this application August
11, 1941, Serial No. 406,281

1 Claim. (Cl. 103—205)

This invention relates to washing machines and more particularly to a pump and drain arrangement for a washing machine such as disclosed in my copending application Serial No. 199,678, filed April 2, 1938, of which this is a division.

It is among the objects of my invention to provide a washing machine with a motor, an agitator drive mechanism and a pump wherein a belt connecting the motor and agitator drive mechanism normally follows a path spaced from the pump and wherein the belt may be moved slightly from its normal path to effect a drive of the pump.

Further objects of my invention provide a washing machine in accordance with the preceding object wherein the belt movement is controlled by a novel spring and toggle arrangement which may be easily manipulated by the user of the washing machine and which will efficiently perform the functions for which it is designed.

It is a further object of my invention to provide a pump drive according to the preceding objects, wherein a V-belt is employed and the pump is driven from the back surface of the V-belt.

Further objects and advantages relating to efficiency in operation and economies in manufacture will appear from the following description and the appended drawing, wherein:

Figure 1 is a plan view with parts in section showing the fluid pump and drive arrangement therefor;

Figure 2 is an elevation with parts in section taken along the line 2—2 of Figure 1;

Figure 3 is a partial, sectional view taken along the line 3—3 of Figure 1; and

Figure 4 is an elevation taken as indicated at 4—4 of Figure 2.

Prior art fluid pump installations for washing machines, which have included a drive taken off of the main driving belt between the power unit and the gearing mechanism drive, have necessitated the continuous operation of the pump impeller blades. Among the disadvantages of the last-mentioned arrangement is the noise and attendant wear occasioned by operating the pump without fluid therein and at a time when the pump operation was unnecessary. Other prior art arrangements have included a pulley constantly driven by the main driving belt and a clutch intermediate this pulley and the pump impeller. This arrangement presents an advantage over that first described in that it requires pump impeller operation only when it is desired

to exhaust the washing fluid from the tub. The last-mentioned arrangement, however, requires the continuous operation of an idler pulley and the expense of installation and maintenance growing out of the use of a clutch between the pulley and pump.

According to my invention I have provided a pump and drive therefor which possesses all of the advantages and none of the disadvantages associated with the above-described prior art fluid pump mechanisms. I have achieved the advantages mentioned by mounting a pump indicated in its entirety as at 20 at the under side of the tub with a driving pulley 21 arranged immediately adjacent the path of the main driving belt 17, in that portion of the belt path normally tangential to the driving pulley 15 of the motor and the driven pulley on the agitator driving mechanism. As shown in Fig. 1, during the normal operation of the washing machine with the fluid pump idle, the belt 17 follows a path indicated in its full-line position. When, however, it is desired to operate the fluid pump, a means including an idler pulley 22 is actuated so as to bring the idler pulley 22 against the inside of the belt and cause a deviation of the belt from its straight path to a path wherein the back side of the belt bears against the pulley 21 of the fluid pump. The last-mentioned position of the belt is shown in dotted lines in Fig. 1, and this condition is maintained as long as it is desired to operate the pump. It will be observed that a movement of the idler pulley causing a change in the path of the driving belt 17 also effects a tensioning of the belt so that the belt may more efficiently transmit the additional load imposed thereon by the driving of the fluid pump.

The means which I have provided in a preferred embodiment of my invention to effect the pump drive includes a bracket 23 pivoted intermediate its ends on the pump casing 16 as at 24 to rotate about the axis of the pump impeller pulley 21. One end of the bracket 23 carries the idler pulley 22 and the other end is apertured to receive a link 25 carried by the plate 26 keyed to a manually controlled shaft 27 which is rotatably carried in boss 19 on the pump casing and projects beyond the side wall of the tub in a position accessible by the operator. A spring 28 anchored to the pump casing 16 at one end and to the bracket 23 adjacent the pulley 22 at the other end, constantly tends to pull the idler pulley 22 against the driving belt 17 to establish a pump drive, is controlled by the link 25 and plate 26 which is biased to maintain either a

drive or non-drive position of the bracket 23 by a spring 29. As shown best in Fig. 4, the spring 29 is anchored at one end as at 30 to the pump casing 16 and is secured to the mid portion of the link 25 at its other end. In the position 5 shown in Fig. 4, the plate 26 is swung beyond a dead center position, whereby to hold the idler pulley 22 in a non-drive relation and the spring 29 functions to maintain this non-drive relation of the parts. The rotation of the plate and link 10 may be limited by a bolt or the like 18. Rotation of the shaft 27 in a counter-clockwise direction through the medium of the operating knob at the outer end thereof, will swing the plate 26 and associated link 25 to its dotted-line position, and 15 the spring 29 will then supplement the action of spring 28 in holding the idler pulley 22 against the belt 17 to establish a pump drive relation.

The specific details of the pump may vary from that shown which includes a passage 13 20 leading from the tub to the impeller blades 14 and an outlet 4 having a hose connection to conduct the waste water away from the tub to the sink or drain. Upon rotation of the impeller blades 14, water is drawn from the tub 25 through passage 13 and exhausted through outlet 4 and associated hose. The maintenance of the free end of the hose above the level of the water in the tub obviates the need for a valve at the pump.

From the above described pump and drive arrangement, it will be appreciated that pump operation may be established whenever desired by the operator and that there are no moving or rotating parts of the pump actuated by the power unit 5 until pump drive is established. It will also be appreciated that the driving of the pump is established without the use of any auxiliary belts or clutches such as would increase the cost or complexity of the pump installation. The 40 driving belt 17 is the driving belt which would

ordinarily be employed between the motor and driven pulley of the agitator-wringer drive mechanism and I have merely provided an arrangement whereby the normal path of said driving belt is slightly varied so as to drive a fluid pump. It is not essential that the pump and its driven pulley 21 be arranged to contact the outer side of the belt 10 as shown, since the invention is suited to arrangements wherein the belt is deflected inwardly and a pump impeller is arranged inside of the closed belt path.

Although I have described a preferred embodiment of my invention and the several elements entering into the combination which comprises my invention, in considerable detail, it will be appreciated by those skilled in the art that numerous modifications and colorable variations may be made therein without departing from the scope of the invention as defined in the following claim.

I claim:

A pump comprising a pump body, an impeller within the body, an impeller shaft projecting through a wall of the body and having a pulley 25 on the projected portion thereof, an idler pulley bracket pivotally carried by the body and arranged to swing the idler pulley in an arc about said impeller pulley, a flexible V-shaped driving belt arranged between said pulleys with the outside 30 side of the V-belt toward the impeller pulley and the inside of the V-belt toward the idler pulley, whereby an arcuate movement of the idler pulley changes the belt path and causes the outside of the belt to be moved into driving engagement 35 with the impeller pulley, and means to control the position of said idler pulley comprising a spring acting to pull the idler pulley to deflecting position and a folding toggle having a spring, said toggle spring acting alternatively to hold 40 a toggle in its folded or in its unfolded position.

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