Feb. 4, 1941. A. J. WILTSHIRE 2,230,771

WASHING MACHINE

Filed May 12, 1938

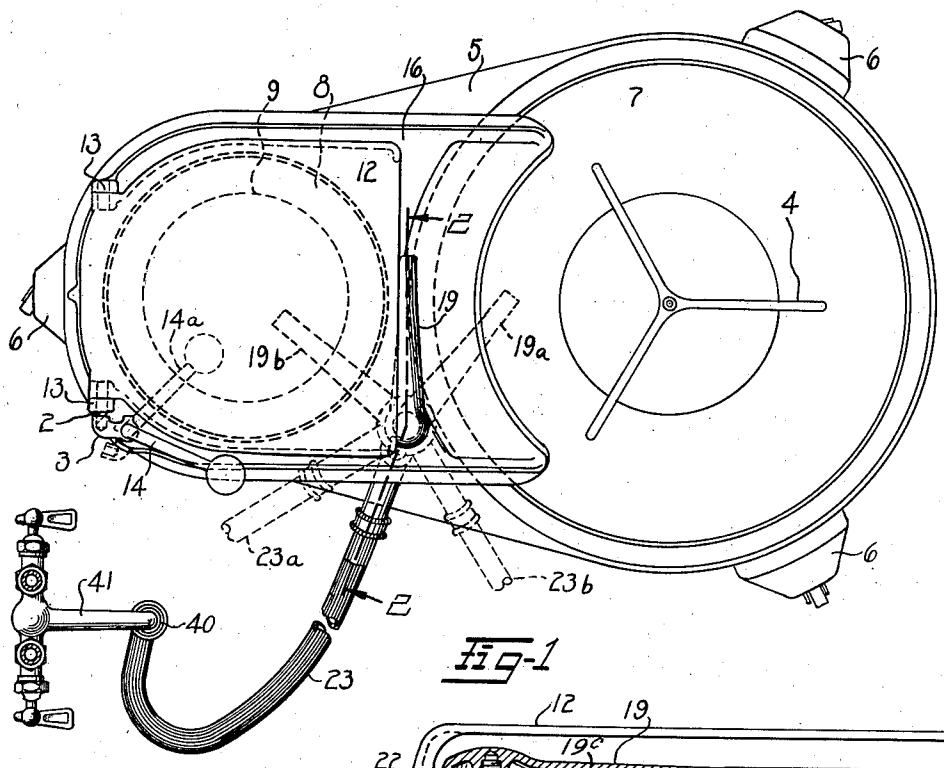


Fig-1

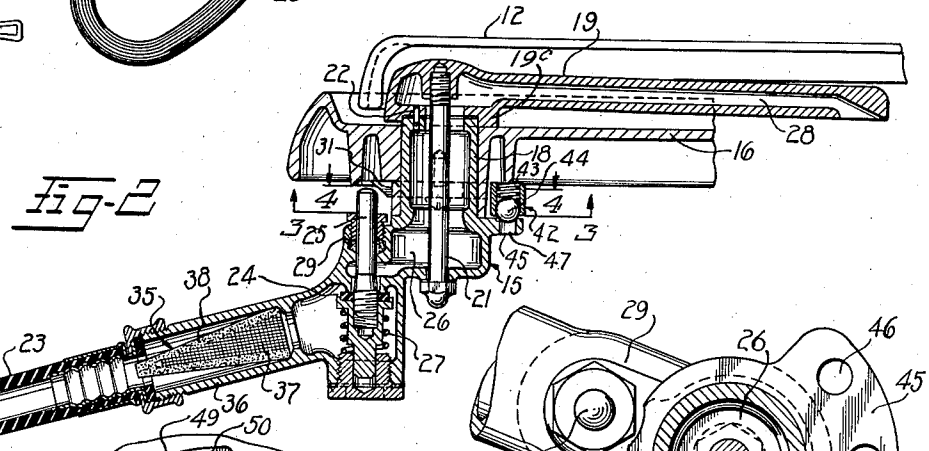


Fig-2

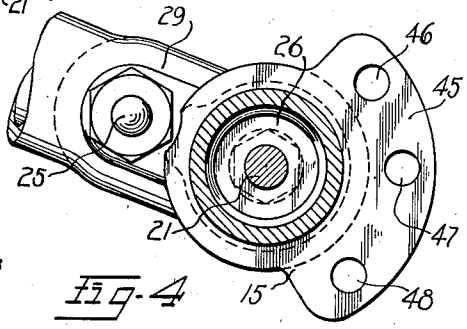


Fig-4

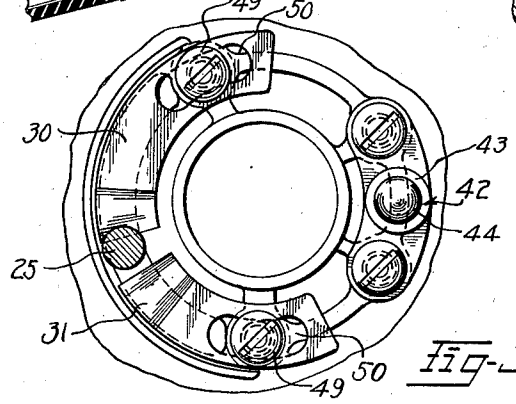


Fig-3

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WASHING MACHINE

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5 Claims. (Cl. 137—21)

This invention relates to washing machines and more particularly to an improved apparatus for controlling the water supply employed to carry out different laundering operations.

It is among the objects of my invention to provide a fluid discharge fixture for controlling the water conducted to a washing machine and directing the water into laundering compartments of the washing machine.

More specifically it is an object of my invention to provide a water discharge fixture for that type of washing machine known as the washer-extractor type, wherein the clothes are washed in one compartment and the water is thereafter extracted from the clothes in an adjacent compartment.

It is also among the objects of my invention to provide a fixture in accordance with the preceding objects, which is an improvement and/or modification of a fixture having certain advantages present in a fixture such as disclosed and claimed in the patent of Walter A. Frantz and John J. McCabe, No. 2,154,566, issued April 18, 1939.

It is a further object of my invention to provide a fluid discharge fixture for washing machines of the type mentioned, wherein a nozzle is arranged to discharge water into either of two laundering compartments and the control of the nozzle is effected by a manipulation of the fluid conduit which leads the fluid to the machine.

It is also an object of my invention to provide a fixture in accordance with the preceding object, wherein a valve is arranged to be automatically controlled by the movements of the nozzle and conduit with respect to the washing machine.

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 of a washing machine provided with a fluid discharge apparatus constructed according to my invention;

Figure 2 is an enlarged sectional view taken along the line 2—2 of Figure 1;

Figure 3 is a view taken along the lines indicated at 3—3 in Figure 2;

Figure 4 is a view taken along the line 4—4 of Figure 2.

Recent developments in the domestic laundry art have led to the general use of a washing machine which is known as the washer-extractor type and I have illustrated in Fig. 1 a machine of this character, wherein a base frame 5 supported by a plurality of legs 6 carries a pair of laundry compartments 7 and 8. The compartment 7 is ordinarily provided with an agitator 4 which is designed to wash the clothes immersed in a solution of soapy water. The compartment 8 is provided with a spinner basket or the like, indicated generally as at 9 and the clothes subsequent to their washing in the compartment 7 are transferred to the spinner basket 9 where they are rotated at a relatively high speed, such as for instance 1000 R. P. M., until the water has been centrifugally extracted from the clothes.

It will be understood by those familiar with this art that the underside of the base frame 5 is provided with an electric motor and suitable gearing or driving mechanism to effect a washing of the clothes in compartment 7 and the spinning of the basket 9 in compartment 8. It will also be understood that both compartments 7 and 8 are provided with suitable drains for emptying said compartments. The extractor compartment 8 is provided with a cover 12, hinged as at 13, and said cover is interlocked with a control lever 14 arranged to start and stop the rotation of the spinner basket. The interlock between the control for the spinner basket and the cover 12 is a safety feature developed to remove danger of injury to the user of the machine and in general the operation between the lever 14 and cover 12 is such that the spinner basket 9 cannot be rotated by turning the control 14 to position 14*a* unless the cover 12 is in its lowered position as in Fig. 1. In the machine illustrated the control lever 14 carries an arm 3 which swings in an arc adjacent a tapered member 2 fixed to the cover hinge pin. When the cover is in an open position the member 2 extends into the arc described by arm 3 and prevents swinging of the control lever 14 to the position 14*a*. The provision of an interlock between the extractor drive and the cover for the extractor compartment 12 is now a statutory requirement in certain states and it is believed that eventually a requirement for such a safety interlock will be universal.

In accordance with the said patent of Walter A. Frantz and John J. McCabe, it has been proposed to rinse the clothes within the extractor basket 9 with fresh, hot water, during the operation of the extractor, by swinging a hot water discharge nozzle beneath the extractor compartment cover. This is found to be a most desirable and efficient method of rinsing the clothes in this type of washing machine.

According to my invention, I propose to follow the teachings of Frantz and McCabe by providing a discharge nozzle which will swing beneath the cover of the extractor basket and also swing so as

to discharge water into the washing compartment 7. The fluid discharge fixture according to my invention comprises a main body part 15 which is mounted for oscillation about a vertical axis in an aperture formed in the deck 16 overhanging the extractor compartment 8 and the washing tub 7. The body portion 15 of the fixture is secured to the deck 16 by passing the cylindrical part 18 upwardly through the aperture in the deck and securing the nozzle portion 19 of the fixture thereon by means such as the bolt 21. A pin or the like as at 22 prevents rotation of the nozzle part 19 with respect to the body portion of the fixture and thus the nozzle and fixture are bodily rotatable as a unit with respect to the deck 16. The part 19 is provided with a shoulder 19c adapted to bear against the deck 16 and prevent axial movement therof when assembled on said deck. Water is conducted to the fixture by means of a flexible hose 23 and a valve 24 is arranged to control the passage of the water from the conduit 23 through chamber 26 and thence to be discharged through the nozzle by way of passage 28.

Since the entire discharge fixture is arranged to swing bodily with respect to the washing machine in directing the water to the proper compartment, I prefer to utilize such swinging movement to effect an opening and closing of the valve 24 in the illustrated embodiment. I have obtained an automatic opening and closing of the valve in response to the swinging movement of the fixture by mounting a pair of arcuate cam plates 30 and 31 on the underside of the deck 16 in a position to bear against the stem 25 of the valve 24. The cam plates 30 and 31 are spaced from each other as shown in Fig. 3 so that the valve 24 will remain in its seated position as the discharge nozzle 19 swings over the imperforate part of deck 16. When, however, the discharge nozzle 19 is disposed over the tub 7, as at 19a, or over the spinner basket 9 as at 19b, the valve stem 25 will be forced downwardly to permit water to flow into either of said compartments. The valve is normally urged to its closed position by means of a spring 27 and the valve stem is provided with a conventional packing gland as at 29.

To prevent the rust and scale ordinarily present in domestic hot water systems from entering the valve 24 and the laundering compartments of the washing machine, I prefer to provide a filter as at 35 in the inlet portion 36 of the fixture. The filter as employed in the illustrated embodiment comprises a conical wire screen 37 surrounded by a cone 38 of fibrous material. The end of the hose 23 remote from the washing machine is connected as at 40 to the service water supply and the length of the hose 23 is such that it will allow the free bodily swinging movements of the end secured to the machine as illustrated at 23a and 23b. With the arrangement of the swinging fixture and flexible conduit which I have provided, it will be observed that manually swinging the conduit to either of the three positions shown in Fig. 1, will effect an automatic control of the valve and positioning of the discharge nozzle 19.

To insure that no casual bumping of the hose or movements of the hose caused by surges of water therethrough will swing the nozzle, I have provided a latching device indicated generally as at 42. The latch device comprises a member 43 secured to the underside of the deck 16 and carrying a spring pressed ball 44. The body portion of the fixture is provided with a flange 45, opposite the member 43, and said flange 45 is apertured as at 46, 47 and 48 to receive the spring-pressed ball. With the latching arrangement above described, the hose member 23 may be manually moved so as to swing the fixture to either of the three positions shown and the fixture will be impositively held in said positions by the ball and recess latch 44, 46, 47 and 48.

Referring briefly to operation of a washing machine embodying my invention, it will be understood that water with a temperature suited for washing operations may be discharged through the service tap 41, thence through the discharge fixture with the hose positioned as at 23a to conduct the wash water into the tub 7. A swinging of the hose to position the nozzle 19 over the deck 16 will bring about a closing of the valve 24. After the clothes have been washed in compartment 7, they may be transferred to the spinner basket 9, the cover 12 closed and the spinner control 14 operated to place the spinner basket in rotation. During the rotation of the spinner basket, the service water taps may be regulated to discharge a very hot or sterilizing rinse water into the hose 23. A manual swinging of the hose from its neutral position, as shown in full lines in Fig. 1, to the dotted-line position 23b, will effect an opening of the valve 24, and direct the hot rinse water into the spinner basket. When the clothes have been sufficiently rinsed, the hose may be again swung to its neutral position so as to close the valve 24 and the spinning operation continued until the rinse water has been extracted from the clothes.

From the construction of the discharge fixture which I have provided, it will be observed that the water pressure in the conduit 23 supplements the action of the spring 27 in holding the valve 24 seated and that the swinging movement of the fixture eliminates the need for large packing glands or packing washers around the rotating parts of the fixture. The simple poppet type of valve is relatively inexpensive to make and will remain leak-proof over long periods of use. The cam plates 30 and 31, being secured to the underside of the deck 16, by means of the screw and slot arrangement 49—50, provide for an accurate adjustment as to the opening and closing of the valve 24 in response to swinging movement of the hose. A further advantage associated with a fixture such as I have provided, flows from the fact that it comprises essentially two castings which are secured to each other and mount the fixture upon its support by means of a single bolt as at 21. This arrangement results in low manufacturing and assembly costs.

From the foregoing description of one form of my invention, it will be appreciated that I have provided a simple, efficient fluid discharge device for a washing machine which will be relatively inexpensive to manufacture and assemble and which will safely facilitate the laundering operations.

Although I have shown and described one embodiment of my invention in considerable detail, it will be understood that numerous changes may be made therein by those skilled in the art, without departing from the scope of the invention as defined in the following claims:

I claim—

1. In combination, a horizontally disposed apertured support, a fluid discharge fixture mounted for oscillating movement upon a vertical axis in the aperture of said support, said fixture comprising a nozzle on the upper side of said

support and a chambered body portion on the underside of said support, a valve in said body portion and a cam carried by said support arranged to bear against and move said valve upon movement of said fixture with respect to the support.

2. A support member provided with an aperture, a fluid discharge fixture carried by said member comprising a hollow portion journaled in said aperture, a nozzle laterally overhanging said support fixed to said hollow portion, a valve mounted to move with said hollow portion provided with a stem, and a cam fixed with respect to said support arranged to bear against said valve stem and move the valve in response to movement of said fixture with respect to the support.

3. A fluid discharge fixture comprising a body portion and a nozzle portion, a support for said fixture, said body portion being journaled for rotation within said support, the nozzle portion extending laterally with respect to the axis of rotation of the body portion, a passageway extending through the body portion, a valve to control passage of fluid through the passageway, a spring within the fixture normally urging said valve to a closed position and a valve tappet projecting through an aperture in said body portion, means on said support arranged to engage said tappet upon movement of said fixture on its axis of rotation to open the valve and permit the flow of fluid through the fixture.

4. In a washing machine, a fixture support thereon, a fluid discharge fixture mounted for rotation about a vertical axis on said support, a nozzle carried by the fixture projecting laterally with respect to the axis of fixture rotation, communicating passageways formed in said fixture and nozzle, a valve carried by said fixture eccentric of said axis of rotation, said valve comprising a head, a spring normally urging said head into a seated position to interrupt the flow of fluid through said passageways, a valve stem operatively connected to said head arranged to project through an aperture in the fixture, cam means carried by said support opposite said projecting valve stem to open the valve against the action of said spring upon movement of the fixture with respect to its axis of rotation, and cooperating latching means arranged between said fixture and support to impositively restrain said fixture from movement with respect to its axis of rotation.

5. In combination a horizontal supporting deck, a fluid discharge fixture mounted for oscillation about a vertical axis through an aperture in said deck, said fixture comprising a hollow body portion adapted to extend through said aperture and provided with a flange exceeding the diameter of said aperture to bear against the under side of said deck and prevent axial movement of the fixture with respect to said deck in one direction, a nozzle extending laterally from the fixture at the upper side of said deck provided with a shoulder to prevent axial movement of the fixture in the other direction, means to secure said nozzle and body portions to each other and secure the fixture in its entirety to the support comprising a fastening member extending through said hollow body portion and being secured to said nozzle and said body portion.

ARTHUR J. WILTSHIRE.