

Sept. 22, 1942.

F. BRECKENRIDGE

2,296,259

LAUNDRY APPARATUS

Filed Sept. 30, 1938

3 Sheets-Sheet 1

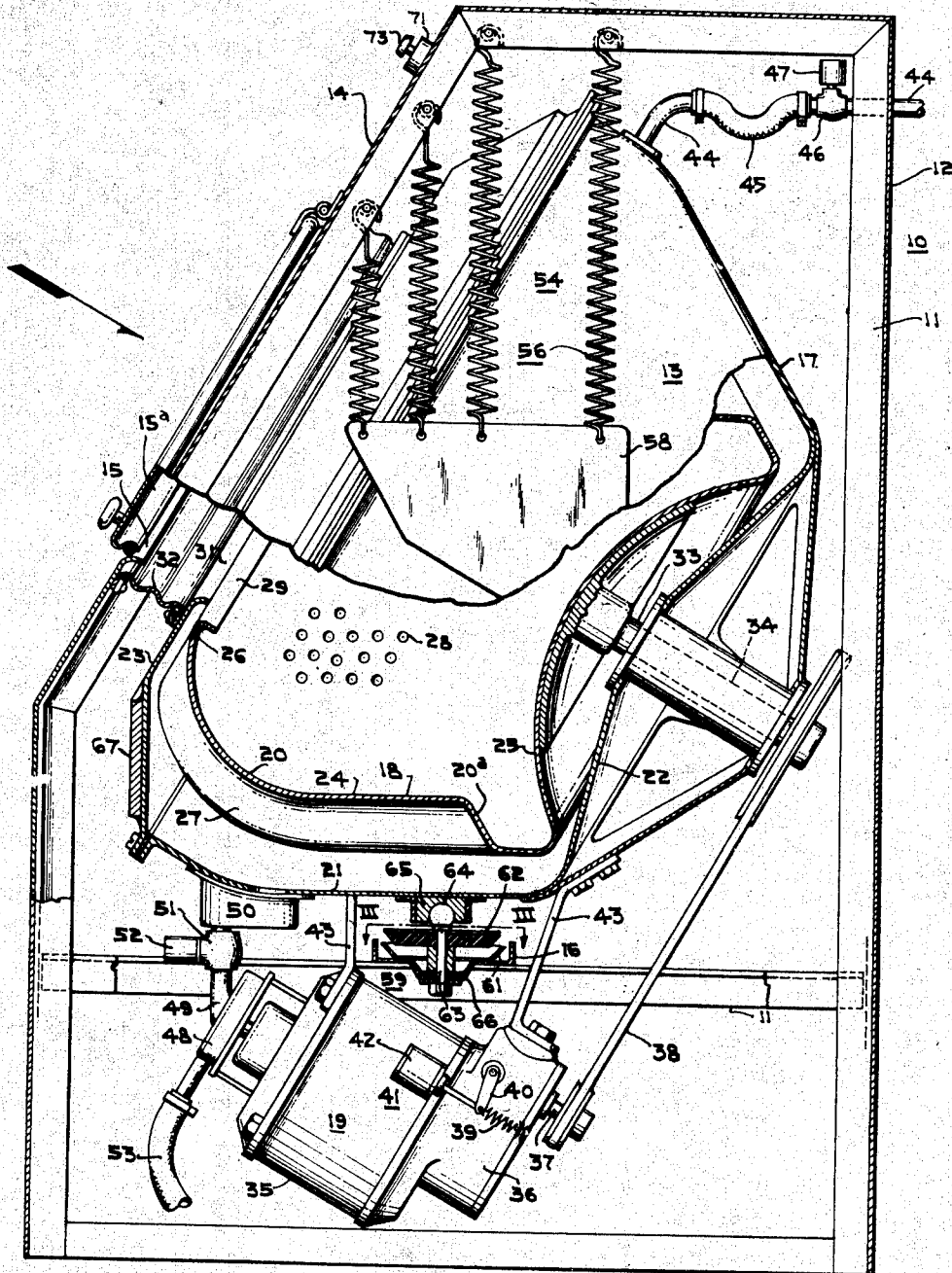


FIG. 1.

WITNESSES:

R. H. Lutz
E. H. Lutz

INVENTOR
FRANK BRECKENRIDGE

BY *W. Steig*
ATTORNEY

Sept. 22, 1942.

F. BRECKENRIDGE

2,296,259

LAUNDRY APPARATUS

Filed Sept. 30, 1938

3 Sheets-Sheet 2

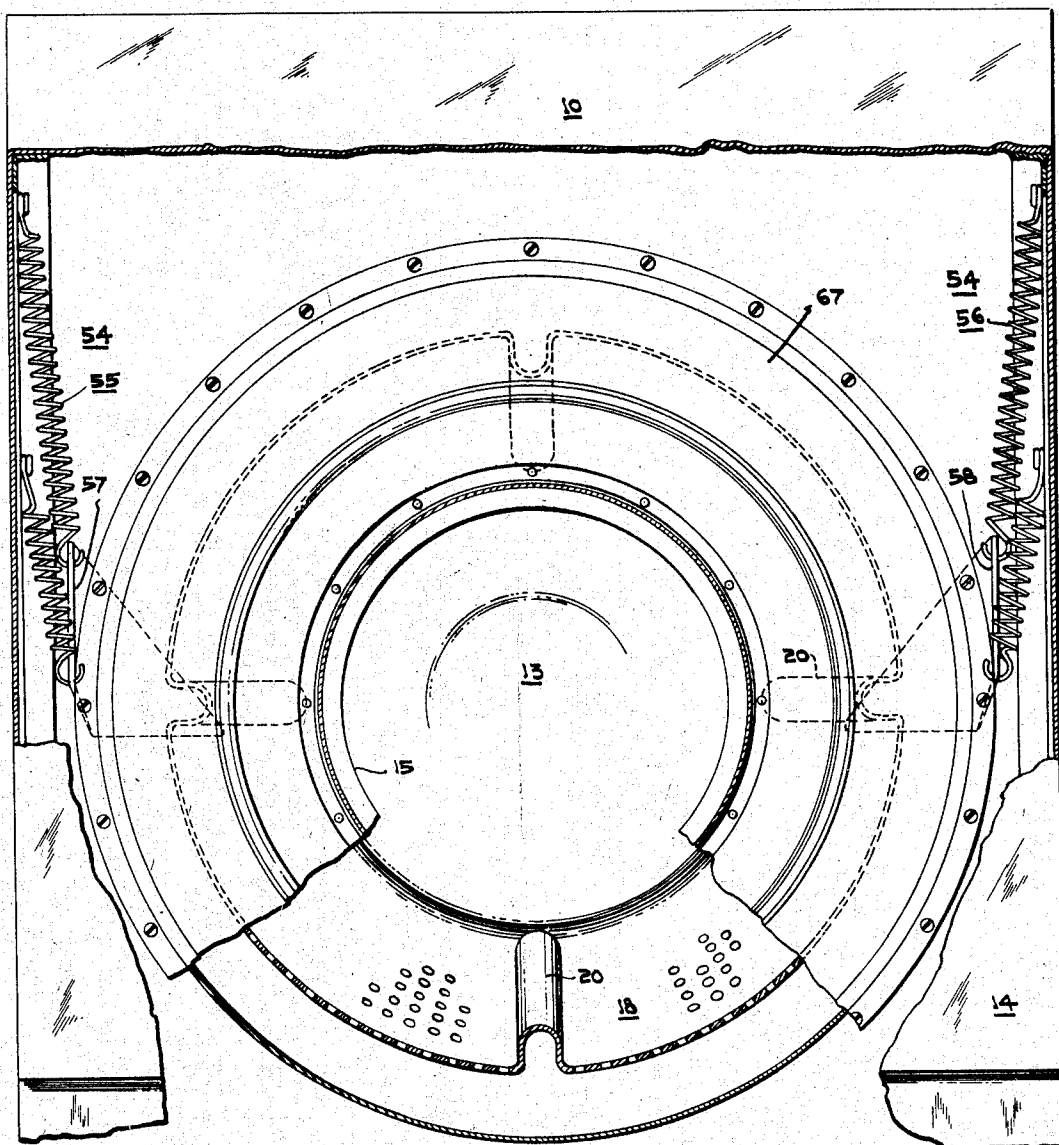


FIG. 2.

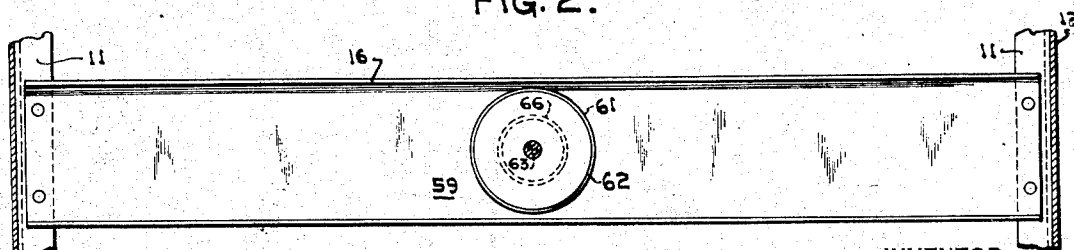


FIG. 3.

WITNESSES:

R. A. Ridge
E. H. Lutz

INVENTOR

FRANK BRECKENRIDGE.

BY

W. A. Steiner
ATTORNEY

Sept. 22, 1942.

F. BRECKENRIDGE

2,296,259

LAUNDRY APPARATUS

Filed Sept. 30, 1938

3 Sheets-Sheet 3

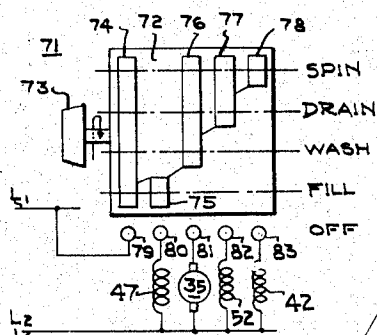


FIG. 5.

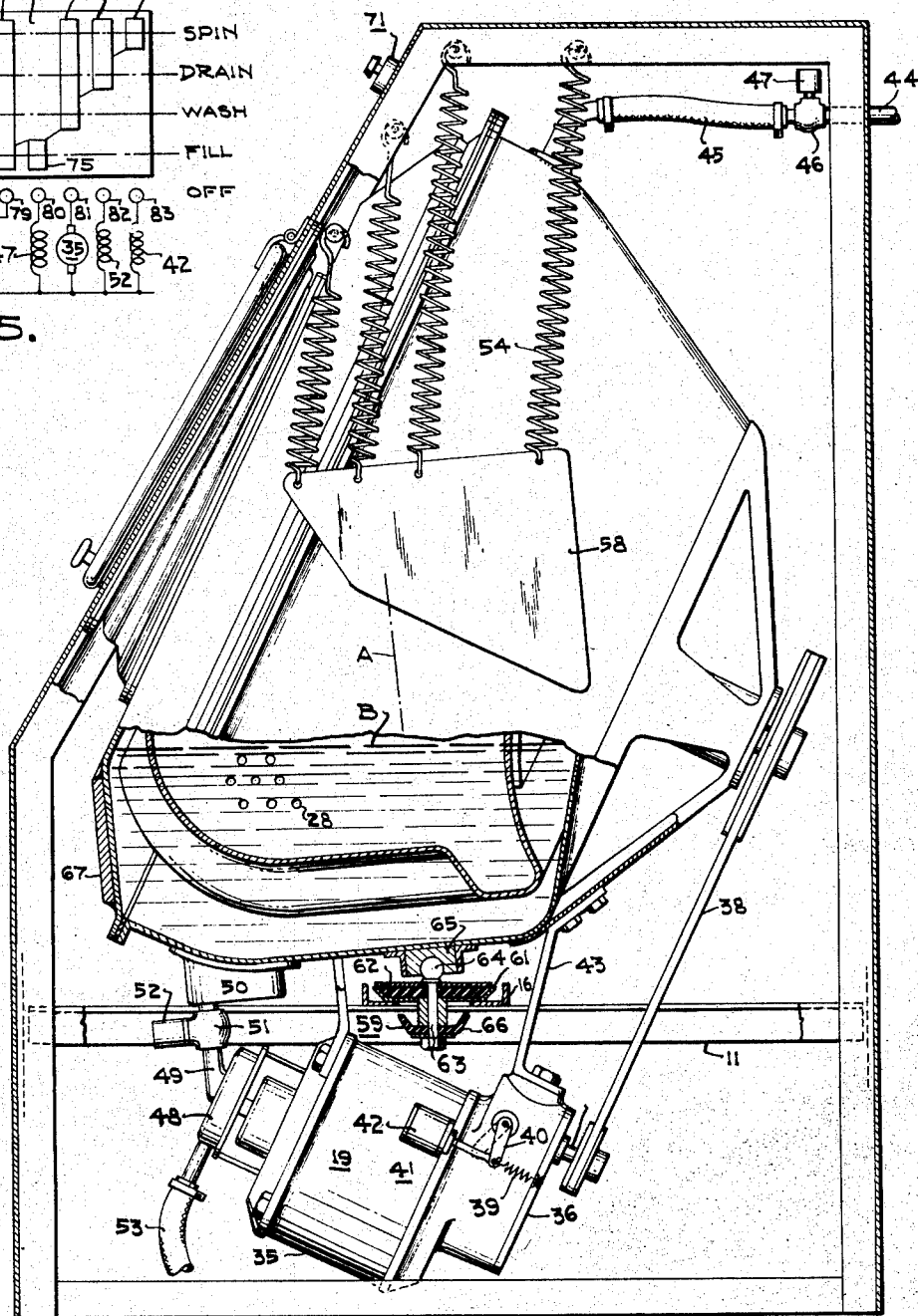


FIG. 4.

WITNESSES:

R. G. Ridge
E. H. Lutz

INVENTOR
FRANK BRECKENRIDGE
BY *W. A. Ottagio*
ATTORNEY

UNITED STATES PATENT OFFICE

2,296,259

LAUNDRY APPARATUS

Frank Breckenridge, Mansfield, Ohio, assignor to
Westinghouse Electric & Manufacturing Com-
pany, East Pittsburgh, Pa., a corporation of
Pennsylvania

Application September 30, 1938, Serial No. 232,511

17 Claims. (Cl. 68—24)

My invention relates to laundry apparatus and has for an object to provide improved apparatus of this kind.

A further object of the invention is to provide a machine for washing fabrics and centrifuging fluid therefrom wherein improved distribution of the fabrics in the machine is effected prior to the centrifuging operation.

A further object of the invention is to improve the washing action and distribution of the fabrics in the basket of a washing machine of the inclined axis type.

It is a further object of the invention to provide an improved laundry machine having an inclined rotatable container for the fabrics being treated, wherein the inclination of the container is varied between the washing and centrifuging steps in the cleansing program.

It is a still further object of the invention to reduce vibration of a laundry machine of the character set forth during both the washing and centrifuging steps of the cycle of operation.

These and other objects are effected by my invention as will be apparent from the following description and claims taken in accordance with the accompanying drawings, in which:

Fig. 1 is a side view, in one operating position, of a laundry machine constructed and arranged in accordance with my invention; portions of the machine being broken away;

Fig. 2 is a front view of the apparatus shown in Fig. 1 looking in the direction of the arrow;

Fig. 3 is a sectional view of a detail and taken along the line III—III of Fig. 1;

Fig. 4 is a view similar to Fig. 1 and shows the apparatus in a second operating position; and,

Fig. 5 is a diagram of a control mechanism for the machine.

Reference will now be had to Figs. 1 to 3, inclusive, of the drawings wherein I have shown my invention applied to a laundry machine of the general type disclosed and claimed in my copending application Serial No. 203,804, filed April 23, 1938, and assigned to Westinghouse Electric & Manufacturing Company. In this type of machine, the basket for the fabrics being treated is rotatable about an inclined axis.

The laundry apparatus includes a casing structure 10 formed by a skeleton frame 11 having finishing panels 12 secured thereon for enclosing a washing unit, generally indicated at 13. A portion 14 of the front of the casing 10 is inclined as shown and provided with a round access opening 15 that is closed by a hinged, gasketed door

15a. The frame 11 includes a channel member 16 that extends transversely of the machine for a purpose to be referred to hereinafter.

The washing and spinning unit, generally indicated at 13, includes a container or tub structure 17 of substantially frusto-conical configuration, a rotatable basket structure 18 of similar configuration disposed therein and a driving mechanism, generally indicated at 19, for rotating the basket 18. The tub structure 13 has side walls 21 and end walls 22 and 23 at the small and large ends thereof, respectively.

The basket structure 18 includes a side wall 24, an end wall 25 which is dished inwardly to define a dome, and an end wall 26 at the large end thereof. The side wall 24 is well rounded, as shown at 27, where it joins the end wall 26 and is perforate, as shown at 28, throughout substantially its extent. A plurality of vanes 20 are circumferentially spaced within the basket 18 for agitating the clothes in the water as the basket is rotated. The vanes 20 extend from adjacent the end wall 26 toward the domed end wall 25 but terminate short of the latter as shown at 20a. Accordingly, the portion of the side wall 24 between the ends 20a of the vanes 20 and the domed end wall 25 is not provided with any vane structure. This form of basket and vane structure is more fully described and claimed in the copending application of Stuart R. Baird, Serial No. 268,103, filed April 15, 1939 and assigned to the Westinghouse Electric & Manufacturing Company.

The end wall 26 of the basket 24 and the end wall of the tub structure 17 are provided with respective access openings 29 and 31 which register with the access opening 15 in the position of the apparatus shown in Fig. 1. A flexible wall 32 connects the inclined portion of the casing structure 14 and the end wall 23 peripherally of the access openings 15 and 31 for affording relative movement between the tub structure 17 and the casing 11 and preventing the passage of water from the tub structure 17 to the interior of the casing 11.

The basket 18 is supported by a shaft 33 secured within the dome 25 and journaled in a bearing 34 carried by the end wall 22 of the tub structure 17. As described more in detail hereinafter, the basket 18 is rotated by the driving mechanism 19 at relatively low speed of, for example, 55 revolutions per minute during washing periods and at relatively high speed of, for example, 500 R. P. M. during water extracting periods.

The driving mechanism 19 includes a motor 35, a two-speed mechanism 36 driven thereby and having a driven shaft 37 belted to the shaft 33, as shown at 38. As the specific form of two speed mechanism 36 forms no part of the present invention, it has not been shown in detail for the sake of brevity. The mechanism 36 is adjusted for operating its driven shaft 37 at high and low speeds by means of an arm 40. In the position of the arm 40 shown in full lines (Fig. 4), slow speed operation of the shaft 37 and basket 18 is effected. When the arm 40 is adjusted to its other position shown in dotted lines, Fig. 4, and full lines, Fig. 1, the shaft 37 and basket 18 are operated at high speed for centrifuging water from the fabrics in the basket 18. The arm 40 is biased to its slow speed position by a spring 39 and moved to its high speed position by a magnet 41 when energized. The magnet 41 includes a winding 42, further reference to which is made hereinafter. The driving mechanism 19 is carried in any suitable manner by the tub structure 17, preferably by brackets 43 so that the tub 17 and driving mechanism define a unit structure.

Water is supplied to the tub structure 17 through a conduit 44, having a flexible portion 45, under control of a suitable electrically operated valve 46. The conduit 44 is connected to hot and cold water sources through the valves, not shown, so that water at a suitable temperature may be admitted to the tub. The electrically operated valve 46 may be of the solenoid type and includes an operating coil 47 which, when energized, effects opening of the valve 46 and, conversely, when the coil 47 is deenergized the valve 46 is closed. As solenoid operated valves of this type are well understood in the art, no further description of them is deemed necessary.

Washing fluid is discharged from the tub 17 by means of a pump 48, preferably operated by the motor 35. The inlet of the pump 48 is connected by a conduit 49 to the tub 17. A strainer (not shown) is preferably connected between the tub 17 and the conduit 49 for preventing the passage of solid objects to the pump 48. The strainer is disposed within a housing shown at 50. Flow of water from the tub 17 to the pump 48 is controlled, preferably, by an electrically operated valve 51 having an operating coil 52. During periods when the coil 52 is deenergized, the valve 51 is closed and, when the operating coil 52 is energized, the valve 51 is opened. The water discharged by the pump is conveyed through a flexible conduit 53 connected to a suitable drain, not shown.

There is described and claimed in my copending application, Serial No. 226,853, filed August 26, 1938, and assigned to the Westinghouse Electric & Manufacturing Company a washer of the character described heretofore wherein the unit structure 13 is flexibly mounted during periods when water is centrifugally extracted from the fabrics at high basket speeds and, during washing periods, the unit structure 13 is snubbed for restraining movement thereof, whereby vibrations, originating in the basket because of unbalance of the load, are not transmitted to the casing structure.

In the embodiment disclosed in the present specification, the flexible support of the unit 13 is effected by a plurality of springs 54 arranged in groups 55 and 56 on each side of the tub structure 17. The springs 54 are carried in any suitable manner by the casing structure 10 and

suspend the unit 13 therein. The bottom ends of the springs 54 carry plates 57 and 58 secured to opposite sides of the tub 17. Each group 55 and 56 of springs 54 may contain four springs as shown in Figs. 1 and 4. For the sake of clearness of illustration, I have shown only the terminal springs of each group 55 and 56 in Fig. 2.

The bias of the springs 54 is such that they solely support the unit structure 13 and saturated fabrics contained in the tub 17 when the latter is substantially devoid of water. However, when water is admitted to the tub 17, the added weight effects downward movement of the unit 13 against the bias of the springs 54. A snubbing or restraining device, generally indicated at 59, is employed for limiting the downward movement of the unit 13, and, when a complete charge of washing or rinsing water is present in the container, the restraining device 59 supports in part the weight of the unit 13.

The snubbing or restraining device 59 preferably includes a stationary cup member 61, carried by the transverse channel 16, and a pad 62 which moves upwardly and downwardly with the unit structure 13 and adapted in its lowermost position to fit within the cup-shaped member 61. The pad 62 is fixed to a stud 63, the upper end of which defines a ball 64 that is fitted within a socket 65, secured to the container 17. A resilient compression member 66 is also carried by the stud 63 and engages the under side of the stationary cup member 61 in the elevated position of the unit structure 13. Accordingly, the resilient compression member 66 opposes the bias of the springs 54 during periods when the unit 13 is resiliently supported. The resilient member 66 and the connection formed by the ball 64 and socket 65, therefore, define an element of the resilient supporting structure for the unit 13 and permit limited movement of the unit structure 13 in all directions.

During washing periods, or when a complete charge of washing water is present in the container 17, the pad 62 is seated within the cup member 61 and supports a portion of the weight of the unit 13. Movement of the unit 13 is, therefore, restrained by the seated pad 62 so that the support for the unit structure 13 at this time is less flexible. The purpose of resiliently supporting the unit structure 13 during high speed operation of the basket 18 and reducing the resiliency of the support during low speed operation is to reduce, substantially, the vibrations transmitted to the casing structure 10. Vibrations originating in the basket 18 due to unbalanced load therein are transmitted to the tub structure 17 through the shaft 33 and a journal 34. The vibrations may be damped materially by means of an inertial stabilizer, shown by way of example as an annular ring 67 of suitable mass and spaced from the journal 34 or point of application of the vibrations to the container 17. During slow speed operation of the basket 18, the frequency of vibration is reduced so that the inertia stabilizer 67 is less effective in damping the amplitude of the vibrations than at high speed. Accordingly, low frequency vibrations of relatively large amplitude may be experienced which will cause the unit structure 13 to wobble within the casing 11. The restraining device 59 prevents excessive wobbling of the unit structure 13 as the pad 62 at this time is seated within the cup member 61. In this connection, the pad 62 is preferably formed of a resilient material which permits some movement of the unit

structure 13 through the ball and socket connection 64 and 65 which restrain excessive wobbling.

I have found that by resiliently mounting the unit structure 13 during high speed operation and reducing the resiliency of the mounting during low speed operation, that the application of vibrations to the casing structure 10 is substantially reduced.

In accordance with the present invention, the unit structure 13 is suspended by the springs 54 so that its center of gravity with the tub 17 containing a full charge of water is forwardly of the center of the restraining device 59. The approximate center of gravity of the unit structure 13 at this time is in a vertical plane indicated at A (Fig. 4). Accordingly, during washing periods, or when the full charge of water is in the tub 17, the unit structure 13 is tilted forwardly, as shown in Fig. 4, so that the angle between the axis of the basket 18 and the vertical is greater during washing periods than during water extracting periods. I have found that improved washing and extracting results are obtained by this operation in a machine of the character described with an angle difference of as little as 3°. This improved result will be apparent from the description of the washing and extracting operations which appear hereinafter.

My improved laundry apparatus is adaptable for manual or automatic operation wherein a predetermined program of washing and drying steps are effected without the attention of the operator. For the sake of brevity, I have shown a manually-operated machine wherein handling of the clothes by the operator subsequent to the washing operation or prior to the extracting operation is not necessary.

In the present embodiment, control of the various electrically-operated elements is manually effected by a control switch 71 carried by the casing structure 10 where it is convenient to the operator. The control switch 71 may include a drum 72 shown in development in Fig. 5 and movable in the direction of the arrow when actuated by a knob 73. The drum 72 carries a plurality of electrically-connected movable contact segments 74 to 78, inclusive, which are engageable with respective contact fingers 79 to 83, inclusive. As is clearly shown in Fig. 5, the contact finger 79 is connected to one side of a source of power indicated by the line conductor L₁, the opposite side L₂ of which is connected to one terminal of each of the operating coils 47, 52 and 42 and the motor 35. The opposite terminals of the coil 47, the motor 35 and the coils 52 and 42 are respectively connected to the contact fingers 80 to 83, inclusive.

Operation

In the operation of the laundry apparatus, the fabrics to be washed are first deposited in the basket structure 18 through the access opening 15 and the control switch 71 turned to its "fill" position as indicated in Fig. 5. Accordingly, the operating coil 47 of the inlet valve 46 is energized and water is admitted to the container 17. At this time, a suitable quantity of detergent may be placed in the container 17 through the access opening. When the proper amount of water is admitted to the container 17, the control switch 71 is adjusted to its "wash" position wherein the flow of water to the container 17 is terminated and the motor 35 started. As the magnet coil 42

is deenergized, the motor 35 drives the basket 18 at relatively low speed.

During filling of the tub 17, the unit structure 13 moves downwardly in opposition to the bias of the springs 54. The pad 62 seats in the cup shaped member 61 during the downward movement of the tub 17, and tilting of the tub structure 17 to the position shown in Fig. 4 is effected as described heretofore. The level of the water in the tub 17, when containing a full charge of water, is shown by the broken line B in Fig. 4.

The vanes 20, during rotation of the basket structure, engage the fabrics in the water and carry them to an upper region of the basket from which region the fabrics are dropped.

It will be apparent that the vanes 20 become more inclined as they move upwardly due to the inclination of the basket 18, so that the fabrics carried thereby are directed rearwardly of the basket 18 toward the end wall 25 prior to dropping of the fabrics. The fabrics as they descend from the vanes 20 engage the domed end wall 25 and slide downwardly thereof until they engage the surface of the water. The fabrics are directed toward the front of the basket or toward the end wall 26 by the domed end wall 25 so that the movement of the fabrics in the water is forward until again engaged by the vanes 20. This cycle of operation thoroughly agitates the fabrics in the washing fluid for cleansing thereof. The fabrics are maintained throughout the cycle in a substantially loose condition as any tendency for the fabrics to ball due to any rolling action is precluded by the reverse rolling movements imparted thereto by the vanes 20 and the domed end wall 25.

I have found that an efficient washing action is obtained in a washer of the type disclosed having the vanes 20 as shown and having the axis of the basket disposed at an angle of approximately 26° from the horizontal. In this position the vanes 20 and the domed end wall 25 cooperate as described so that collection of the fabrics adjacent the end wall 25 is not effected and the fabrics are uniformly distributed axially of the basket. However, when centrifuging of the fabrics is initiated, it is desirable to have the major portion of the weight of the fabrics in the small diameter of the basket 18 adjacent the end wall 25 or in a region adjacent the axis of the basket, whereby the load on the motor during acceleration is reduced. Accordingly, acceleration of the rotating mass is facilitated so that the rotating mass rapidly passes through critical speed. As is well understood, vibration is maximum when the mass is rotated at critical speed so that it is desirable to pass through critical speed quickly. Furthermore, vibration due to uneven distribution of the fabrics in the basket is reduced with the arrangement of the fabrics in the portion of the basket of relatively small diameter.

Prior to centrifuging the fabrics, the water is drained from the tub by movement of the switch 71 to its "drain" position in which the operating coil 52 is energized. Accordingly, the solenoid valve 51 is opened. Water is withdrawn from the tub 17 by the pump 48 and discharged to the drain through the conduit 53.

As the water is withdrawn from the container 17, the springs 54 move the unitary structure 13 upwardly from the position shown in Fig. 4 to the position shown in Fig. 1. During upward movement of the structure 13 the inclination of its axis increases as described heretofore. The

basket is rotated at washing speed for a relatively short period of time after the water is drained therefrom. At this time, the fabrics, as they slide down the domed end wall, tend to cling thereto and are not carried by the body of water frontward of the basket, which operation is effected during washing periods with water in the tub. Accordingly, the fabrics are gathered in the region of the basket between the ends 20a of the vanes 20 and the end wall 25 or in the region of minimum basket diameter. The operation of collecting the fabrics in this region of the basket is facilitated by increasing the inclination of the axis of the basket. I have found that, in a washer of the type disclosed, that this operation is facilitated by increasing the inclination to an angle of 30° from the horizontal.

High speed operation of the basket for centrifuging fluid from the fabrics is effected by moving the switch 71 to its "spin" position wherein the magnet coil 42 is energized. As set forth heretofore the load on the motor 19 and vibration of the basket during acceleration of the basket are reduced by the disposition of the fabrics in the portion of the basket of relatively small diameter. During acceleration, the fabrics move axially of the basket toward the end of maximum diameter due to centrifugal force. A substantial portion of the fluid in the fabrics is centrifuged therefrom during high speed operation as is well understood. When the centrifuging operation is completed, the fabrics are disposed in the portion of the basket of relatively large diameter or within the curved wall portion 27 thereof. Accordingly, as rotation of the basket is terminated, the fabrics are disposed in the front portion of the basket adjacent the access opening 29 from which position they may be readily removed by the operator.

The described method of washing the fabrics, then collecting the same in a relatively small circular bundle in the portion of the basket of minimum diameter and finally expanding the bundle to a relatively large diameter for centrifuging is described and claimed in my copending application, Serial No. 339,841, filed June 11, 1940, and assigned to the assignee of the present application.

Rinsing of the fabrics may be effected by cycling the machine in the same manner as for washing as described heretofore; this operation, however, being effected without employing a detergent. During the rinsing cycle, water is admitted to the tub, the fabrics are agitated therein, the vitiated rinse water is drained from the tub, distribution of the fabrics in the small diameter of the tub is effected, and, finally, extraction of the rinse water from the fabrics is effected at high speed. A complete washing and rinsing cycle has now been described.

I have found that the angles of 26° and 30°, recited heretofore, are optimum for the specific form of machine disclosed. It will be apparent that these angles will be varied for other forms and that in some cases, an angle differential of greater or less value than the recited 4° may be necessary. My invention broadly contemplates a machine for washing and spinning fabrics wherein the position of the axis is varied for these operations. The means which I have disclosed for automatically shifting the axis is shown by way of example and it is to be understood that other means may be employed for effecting this operation.

I have shown a washing and spinning machine

of the manually controlled type for the sake of brevity, but it will be apparent that it is particularly adaptable to manually or automatically operated machines wherein the fabrics are not handled by the operator between the washing and extracting steps.

While I have shown my invention in but one form, it will be obvious to those skilled in the art that it is not so limited but is susceptible of various changes and modifications without departing from the spirit thereof, and I desire, therefore, that only such limitations shall be placed thereupon as are imposed by the prior art or as are specifically set forth in the appended claims.

What I claim is:

1. In apparatus for cleaning fabrics and the like and for spinning fluid therefrom, the combination of a tub structure for containing the cleaning fluid, means for admitting and discharging fluid from the tub structure, a container for the fabrics disposed within the tub structure and having an axis about which angular movement of the container is effected, said axis of the container being disposed at an angle to the vertical during periods when a predetermined weight of fluid is contained in the tub structure and means responsive to the discharge of cleaning fluid from the tub for moving the axis of the container toward the vertical.

2. In apparatus for washing fabrics or the like and for spinning fluid therefrom, the combination of a tub structure for containing washing fluid, means for admitting and discharging fluid to and from the tub structure, a container for the fabrics disposed within the tub structure and having an axis about which angular movement of the container is effected, said axis being angularly disposed with respect to the vertical, and means responsive to a reduction in the weight of the tub structure as effected by the discharge of fluid therefrom for changing the angular disposition of the tub structure for the spinning of fluid from the fabrics.

3. In apparatus for washing fabrics or the like and for spinning fluid therefrom, the combination of a tub structure for containing washing fluid, means for admitting and discharging fluid to and from the tub structure, a container for the fabrics disposed within the tub structure and having an axis about which angular movement of the container is effected, said axis being angularly disposed with respect to the vertical, and means responsive to the discharge of a predetermined quantity of fluid from the tub structure for changing the angular disposition of the tub structure for the spinning of fluid from the fabrics.

4. In apparatus for washing fabrics and for centrifugally extracting water therefrom, the combination of a container for washing water, means for resiliently supporting the container so that its axis is disposed at a predetermined angle to the vertical when the container is substantially devoid of water, said resilient means affording downward movement of the container as water is admitted thereto, means for resisting downward movement of the container, said resisting means and said resilient supporting means cooperating to increase the angle between the axis of the container and the vertical when a predetermined weight of water is admitted to the container, means for washing the fabrics during periods when said predetermined weight

of water is contained within the container and means for centrifugally extracting water from the fabrics when the container is substantially devoid of water.

5. In a machine for washing fabrics and centrifugally extracting washing fluid therefrom, the combination of a tub for washing fluid having its axis inclined from the vertical, means for resiliently supporting the tub in an elevated position when substantially devoid of fluid and affording downward movement of the tub as fluid is admitted thereto, means for increasing said inclination of the axis of the tub as the latter moves downwardly, means for agitating the fabrics in the fluid during periods when the tub is in its lowermost position and means for centrifugally extracting fluid from the fabrics during periods when the tub is in its elevated position.

6. In a laundry machine for washing and spinning clothes, the combination of a tub, a basket rotatable therein, first means for resiliently supporting the tub so that the axis of rotation of the basket is arranged at an acute angle to the vertical during spinning periods, second means including the first means for resiliently supporting the tub so that the axis of rotation of the basket is arranged at a greater angle to the vertical during washing periods, and means for rotating the basket at relatively low speed for washing the fabrics and for rotating the basket at relatively high speed for spinning fluid from the fabrics.

7. A machine for cleaning fabrics and for centrifuging fluid therefrom, as claimed in claim 16, wherein said angular movement of the axis of the basket between the first and second positions thereof is less than 45° .

8. A machine for cleaning fabrics and for centrifuging fluid therefrom, as claimed in claim 16, wherein said angular movement of the axis of the basket between the first and second positions thereof is of the order of 4° .

9. A machine for cleaning fabrics and for centrifuging fluid therefrom, as claimed in claim 16, wherein the axis of rotation of the basket is disposed at an angle of the order of 26° inclination from the horizontal in said first position of the axis and of the order of 30° inclination from the horizontal in said second position of the axis.

10. In a machine for washing fabrics and the like and for extracting fluid therefrom, the combination of a tub, a container for the clothes disposed in the tub, said container having an axis of revolution, means for driving the container, means for resiliently supporting the container and the tub as a unitary structure with the axis of the container disposed at an acute angle above the horizontal during extracting periods, and additional supporting means cooperating with the first supporting means during washing periods of the machine for changing the angular disposition of the container.

11. In a machine for cleaning fabrics and for centrifuging cleaning fluid therefrom, the combination of a container for a body of cleaning fluid and the fabrics to be treated, said container having an axis about which the container is angularly movable and said axis being movable from a first position arranged at an acute angle to the vertical to a second position arranged at a lesser acute angle to the vertical, said container including an end wall and a side wall connected to the end wall, said side wall extending gener-

ally forwardly and upwardly from the end wall and about said axis, means for actuating the container angularly about its axis at relatively low frequency in the presence of said body of fluid for cleaning the fabrics and in the absence of the body of fluid for collecting the fabrics in circular formation on said end wall of the container, means for rotating the container about its axis at relatively high speed for centrifuging fluid from the fabrics, and adjustable means supporting said container with its axis in said first position during cleaning periods, said supporting means being rendered active at the conclusion of the cleaning period for adjusting said axis from said first position to said second position so that movement of the fabrics toward said end wall for collection thereon is facilitated and for the centrifuging of fluid from the fabrics.

12. In a machine for cleansing fabrics, the combination of a basket for containing cleaning fluid and the fabrics to be treated, said basket having an axis of rotation and including axially-spaced end walls of relatively large and small diameter and a diverging side wall connecting the end walls, means for admitting cleaning fluid to the basket and for draining cleaning fluid from the basket, means for rotating said basket at relatively low speed in the presence of cleaning fluid for effecting the cleaning of the fabrics and in the absence of cleaning fluid for collecting the fabrics on the end wall of the basket of relatively small diameter, means for rotating the basket at relatively high speed for centrifuging fluid from the fabrics, means for supporting the basket during cleaning periods so that its axis is disposed at an acute angle to the vertical and with the large end wall of the basket disposed upwardly with respect to the small end wall thereof, and means for moving the axis of the basket to a second position disposed at an acute angle to the vertical subsequent to the cleaning period for facilitating movement of the fabrics toward the smaller end wall of the basket during the slow speed rotation thereof and for the centrifuging of fluid from the fabrics during the high speed operation of the basket.

13. In a machine for cleaning fabrics and for extracting cleaning fluid therefrom, the combination of a substantially frusto-conical basket structure for containing cleaning fluid and the fabrics to be treated, said basket having an axis of rotation, means for admitting cleaning fluid to the basket and for draining cleaning fluid from the basket, means for rotating the basket at relatively low speed in the presence of cleaning fluid for effecting the cleaning of the fabrics and in the absence of cleaning fluid for collecting the fabrics in the portion of the basket of relatively small diameter, means for rotating the basket at relatively high speed for centrifuging fluid from the fabrics, means for supporting the basket during cleaning periods with its axis disposed at an acute angle to the vertical and with that portion of the basket of relatively small diameter disposed lowermost with respect to the portion of the basket of large diameter and means for moving the axis of the basket to a second position arranged at an acute angle to the vertical subsequent to the cleaning period for facilitating movement of the fabrics toward the portion of the basket of smaller diameter and for centrifuging fluid from the fabrics.

14. In a machine for cleaning fabrics and for extracting cleaning fluid therefrom, the combi-

nation of a basket for containing cleaning fluid and the fabrics to be treated, means for admitting fluid to the basket and for draining fluid therefrom, means for rotating the basket about its axis at relatively low and high speeds, means for supporting said basket so that its axis of rotation is movable between first and second positions, both positions being angularly disposed from the vertical, a control member movable to a plurality of stations, means responsive to movement of the control member to one of its stations for energizing the rotating means for slow speed rotation of the basket about its axis in the first position, whereby cleansing of the fabrics in the cleaning fluid is effected, means responsive to movement of the control member to a second station for discharging fluid from the basket and for effecting movement of the axis of the basket to the second position, and means responsive to movement of the control member to a third station for effecting high speed rotation of the basket with the axis thereof disposed in the second position.

15. In a machine for cleaning fabrics and for subsequently centrifuging cleaning fluid therefrom, the combination of a container for the fabrics having an axis about which angular movement is effected, said axis being movable between different positions, both of which are disposed at acute angles from the vertical, a tub disposed about the container, means for admitting cleaning fluid to and for discharging cleaning fluid from the tub, means connected to the container and operable at relatively low speed for cleaning the fabrics and at relatively high speed for centrifuging cleaning fluid from the fabrics, and motor means energized upon the discharge of cleaning fluid from the tub for moving the axis of the container from one of its positions to another.

16. In a machine for cleaning fabrics and for centrifuging fluid therefrom, the combination of a basket for containing cleaning fluid and the fabrics to be treated and having an axis of rotation, means for rotating the basket about its axis at relatively low and high speeds, means for

supporting said basket so that its axis of rotation is movable between a first position disposed at an angle from the vertical and a second position disposed at a different angle from the vertical, control means adjustable to a plurality of stations, means responsive to adjustment of the control means to one of its stations for energizing the rotating means for slow speed rotation of the basket about its axis in the first position, whereby cleansing of the fabrics is effected, and means responsive to adjustment of the control means to another station for moving the axis of the basket to its second position wherein high speed operation of the basket is effected for centrifuging the fabrics.

17. In a machine for cleaning fabrics and for centrifuging cleaning fluid therefrom, the combination of a container for the fabrics having an axis about which angular movement of the container is effected, means for supporting the container so that its axis is disposed in a first position arranged at an acute angle from the vertical during cleaning periods and in a second position arranged at a lesser acute angle from the vertical during centrifuging periods, said container having portions of relatively small diameter and relatively large diameter and said portions of large diameter being disposed upwardly with respect to the portion of relatively small diameter, and adjustable means movable to a first station for rotating said container about its axis when disposed in said first position and at relatively low speed during cleaning periods, means responsive to adjustment of the adjustable means to a second station for actuating the container to its second position and for rotating the container at relatively low speed for facilitating the movement of fabrics in the container toward the portion thereof of relatively small diameter and means responsive to adjustment of the adjustable means to a third station for rotating the container at relatively high speed about its axis when disposed in said second position for centrifuging cleaning fluid from the fabrics.

FRANK BRECKENRIDGE.