Dec. 31, 1929. G. W. DUNHAM 1,741,686

MULTIPLE COMPARTMENT LAUNDRY MACHINE

Filed Oct. 5, 1926 2 Sheets-Sheet 1

Fig 1

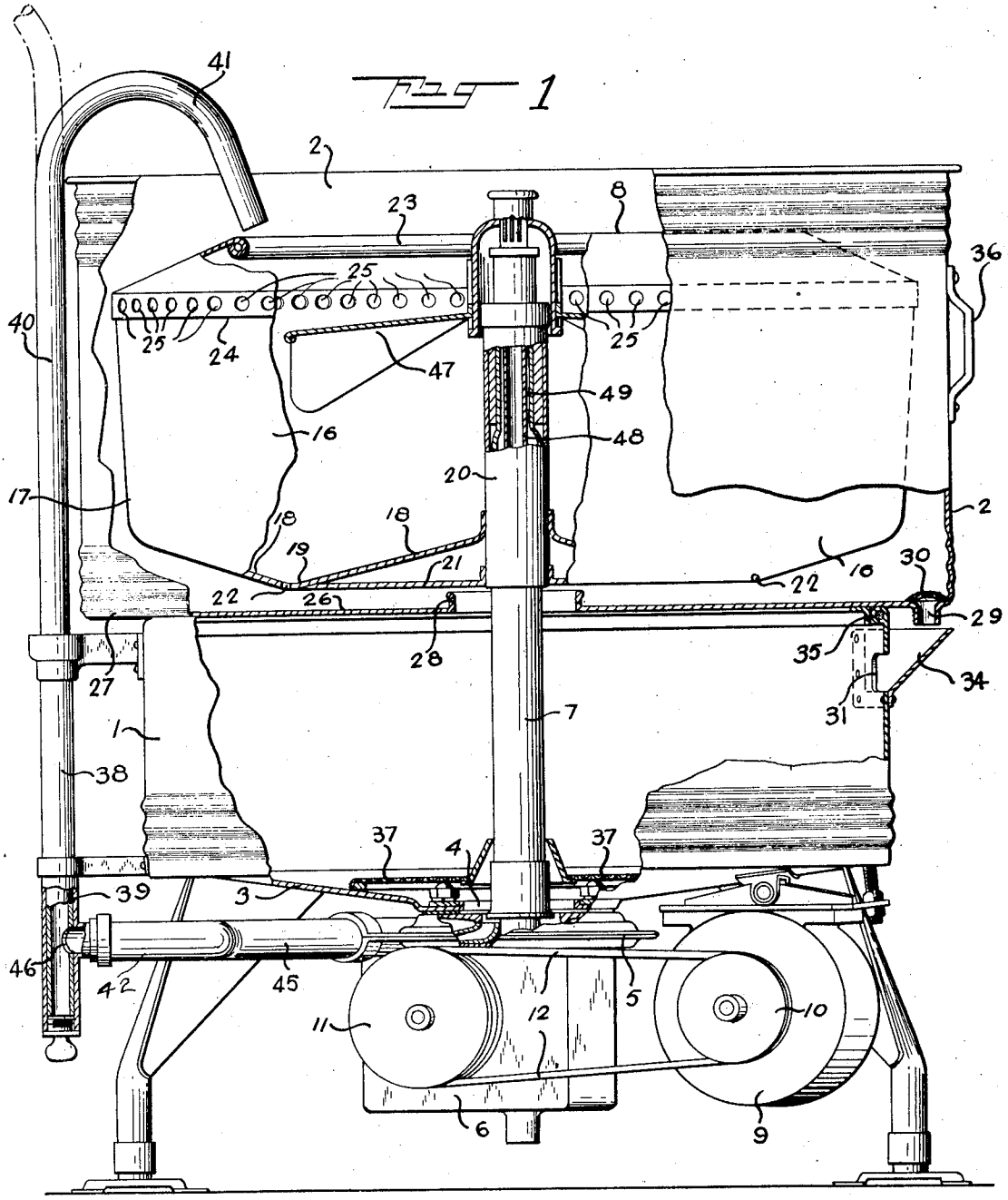
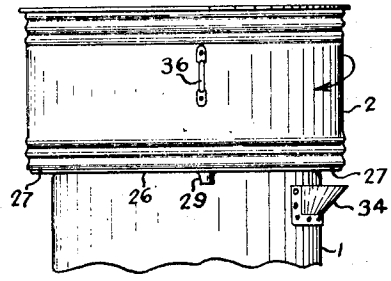


Fig 2



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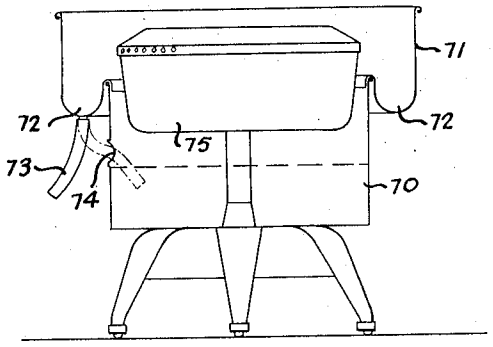


Fig 3

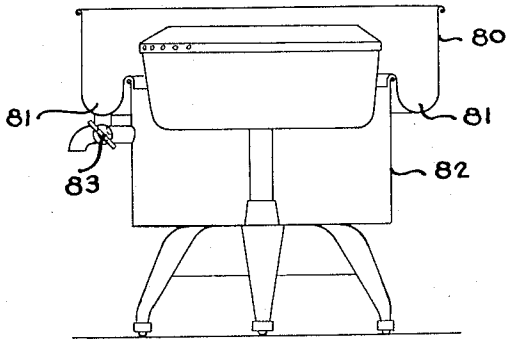


Fig 4

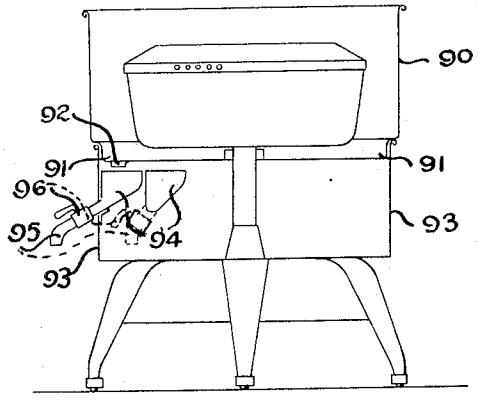


Fig 5

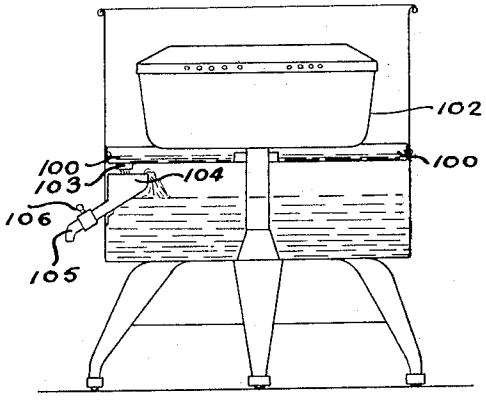


Fig 6

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UNITED STATES PATENT OFFICE

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MULTIPLE-COMPARTMENT LAUNDRY MACHINE

Application filed October 5, 1926. Serial No. 139,582.

The invention relates to laundry machines, and more particularly, to laundry machines of the type performing both washing and drying operations.

According to the invention, a laundry machine is provided in which a bath of laundry may be subjected to the several operations, such as washing, rinsing, bluing, drying, etc., without manually handling the laundry or shifting the laundry receptacle, without removing the laundry from the machine, and without discarding any of the several liquids used for performing the several operations. A machine of this kind is very desirable in cases where the total laundry to be treated must be divided into two or more batches. By means of the invention a single batch may be put through the several desired operations and placed on the line to dry while succeeding batches are being treated, the same laundry liquids being used for the different batches, thereby conserving heat, as well as water and cleansing substance.

Broadly speaking the desired results are obtained by using a multiple compartment tank, and more specifically the tank is divided into an upper and a lower section, the upper section being provided with a gallery from which laundry liquid may be selectively discharged into the lower section or clear of the machine. There are several additional advantages flowing from the use of a two section tank. A filter device may be placed in the bottom of the upper section to filter the liquid which is thrown from the laundry receptacle into the upper section before it reaches the lower section. Another advantage is that the entire tank may be made of larger diameter and still be of such dimension as to be able to go through a 27 inch door of a building. Furthermore, the upper section may be made larger than the lower section to allow more clearance between the laundry receptacle and tank wall.

Various other objects and advantages of the invention will be obvious from the following particular description of forms of mechanism embodying the invention or from an inspection of the accompanying drawings; and the invention also consists in certain new and novel features of construction and combinations of parts hereinafter set forth and claimed.

In the drawings:

Fig. 1 represents an elevation with parts broken away of the laundry machine according to the invention;

Fig. 2 is an outside elevational view of the machine in Fig. 1 showing the upper section rotated relatively to the lower section to allow discharge into an auxiliary receptacle (not shown); and

Figs. 3, 4, 5 and 6 represent, diagrammatically, modifications of the invention.

In the following description and in the claims parts will be identified by specific names for convenience, but they are intended to be as generic in their application to similar parts as the art will permit.

Referring now to the drawing and more particularly to Figs. 1 and 2, a particular form of laundry machine is shown for the purpose of illustrating the invention. It will be understood, however, that the invention is applicable to any kind of a laundry machine which may embody and benefit from the teachings of the invention.

The laundry machine may comprise a tank made of a lower section 1 and an upper section 2. The lower section 1 is generally cylindrical and may be supported by the usual legs. The bottom 3 may slope downwardly to a central opening 4 through which may pass a pedestal assembly. The pedestal assembly may comprise, in general, a horizontally disposed centrifugal type pump 5, a gear box 6, a hollow pedestal 7 and a laundry receptacle 8. The pump 5 may have its upper wall secured to the tank bottom 3 and its intake communicating with the opening 4. Suspended from the pump 5 may be a gear box 6 in which gears are provided for imparting the necessary mechanical motions to cause the machine to perform the several functions. Suspended from the bottom of the lower section 1 may be a motor 9 having drive connections comprising a pulley 10 on the motor, a pulley 11 on the gear box and a connecting belt 12.

Rising from the upper wall of the pump

casing may be a hollow pedestal 7 on the top of which may be journalled an imperforate type receptacle 8 by means of a suitable bearing 15. The receptacle 8 may comprise a body 16 having an upwardly and outwardly extending annular side wall 17 running into a bottom 18 which is shaped to provide an annular trough 19. The receptacle 8 may also comprise a hub 20 which is journalled on the hollow pedestal, the bottom 18 being secured to the hub 20 by any suitable means. A strengthening plate 21 may be provided connecting the bottom of the trough 19 to the bottom of the hub 20. In order to retain the laundry in the receptacle 8 during the several operations a guard ring 23 may be provided extending upwardly and inwardly and secured to the body by a lap joint 24. Holes 25 may be provided to allow discharge of the laundry liquid during the several operations. Sediment disposing holes 22 may be provided in the bottom of the trough 19.

Surrounding the receptacle 8 and located above the lower tank section 1 is an upper tank section 2 which may be of larger diameter than the lower tank section. The upper tank section may be generally cylindrical and have its bottom 26 formed in the shape of a gallery 27 having an annular inner wall 28 spaced from the pedestal 7. A discharge conduit 29 may be provided in the bottom of the gallery 27 near the outer wall in which may be located a strainer or other suitable filtering medium 30.

An opening 31 may be provided in the side wall of the lower tank section 1 which may be surrounded by a cup or spout 34 which is adapted to receive liquid from the discharge conduit 29 in the upper section when the upper section is rotated to the proper position. The upper section 2 may be provided with an annular ring 35 fitting inside the rim of the lower section to hold the upper section in position, and may be provided with a handle 36 to assist in turning the upper section.

A suitable strainer 37 may be provided in the bottom of the lower section having a large foraminous flat portion, the entire area of which is effective for straining the liquid even though it gets low in the lower section. Secured to the side of the lower tank section may be a standpipe 38, which may comprise a riser tube 39 in which may be telescopically mounted a flow pipe 40 having its upper end ending in a goose neck discharge nozzle 41. A branch conduit 42 may be provided in the side of the riser tube having connection by a flexible conduit 45 to the discharge side of the pump 5. The lower end of the flow pipe 40 may be open and an opening 46 may be provided in its side wall near the lower end to register with the lateral branch, as shown in Fig. 1 to allow liquid to be pumped from the bottom of the lower section 1 through the standpipe 38 into the receptacle 8.

In order to wash the laundry, the laundry and laundry liquid may be placed in the receptacle. An additional amount of liquid may be placed in the bottom of the lower section to insure sufficient liquid to enable the pump to discharge continuously liquid through the flow pipe into the receptacle. An agitator 47 may be placed in position on the central shaft 48 and may be oscillated by the gear mechanism in the gear box, at the same time the driving mechanism may drive the tubular shaft 49 to which the pump impeller is connected, thereby causing the pump to continuously circulate washing liquid from the bottom of the lower section 1 into the receptacle 8. The discharge conduit 29 in the upper section will be in the position over the receiving cup 34 in the lower section, as shown in Fig. 1. The position of the flow pipe will also be as shown in Fig. 1, to allow liquid to pass therethrough and into the receptacle. It will be understood that as washing liquid is pumped into the top of the receptacle it will overflow through the discharge openings into the gallery 27, whence, after being filtered by filter 30, it will pass into the lower section, whence it will be strained by strainer 37 before it enters the pump 5 to be pumped back into the receptacle.

The sediment loosened from the laundry will settle to the bottom of the receptacle, whence it will be discharged through the sediment disposing holes 22 by the agitation during washing. The holes 22 are sufficiently small that the liquid lost therethrough is negligible when compared to the liquid supplied by the discharge nozzle 41.

After the washing action is completed, the upper section may be rotated to the position shown in Fig. 2 to bring the discharge conduit 29 over an auxiliary receptacle (not shown) to catch the wash liquid and to save it for the next batch of laundry while the preceding batch is subjected to the successive operations such as rinsing, bluing and drying, in the machine.

The agitator 47 may be allowed to continue to function, the pump continuing to pump liquid from the bottom of the lower section into the top of the receptacle until all the liquid has been transferred to the auxiliary receptacle except that which remains in the bottom of the receptacle and is impossible to kick or splash out by agitation.

The receptacle may now be rotated for centrifugal extraction of the laundry liquid by operating the clutch 50, the liquid discharged from the receptacle being caught in the gallery 27, whence it is allowed to flow to the auxiliary receptacle. It will be understood that the clutch 50 is for the purpose of connecting and disconnecting the receptacle 8 to the continuously rotating tubular shaft 49.

The kicking or splashing out of the surplus liquid by the agitator before centrifugal dry-

ing causes the receptacle to become much lighter, and therefore the receptacle is enabled to attain centrifugal extracting speed much more quickly, thereby causing the liquid remaining in the receptacle to more uniformly rise off the laundry, carrying whatever sediment there may be left off from the laundry out through the discharge holes 25.

As an alternative manner of getting the wash liquid into the auxiliary receptacle, after washing, the receptacle may be immediately rotated to drive the liquid off by centrifugal extraction, the liquid remaining in the bottom of the lower section, either being pumped into the laundry receptacle 8 with the riser tube arranged as shown in Fig. 1, or the flow pipe 40 may be raised and the discharge nozzle 41 allowed to direct the liquid alongside the receptacle 8 directly into the upper section.

In order to rinse the laundry, rinse water may be supplied to the laundry from any outside source, and, if desired, the receptacle may be rotated at centrifugal discharging speed while the rinse water is being supplied as by means of a hose (not shown) directing a stream of water into the top of the receptacle. The upper section may be in the position shown in Fig. 1 and the standpipe may either be raised and turned so that its open lower end is above the lateral branch 42 in order to discharge the liquid clear of the machine, or the standpipe 38 may be operated to act as a valve to prevent the pump from discharging the liquid, the liquid thereby collecting in the bottom of the lower section. An alternate method of rinsing may be to allow the receptacle to remain stationary and to allow the agitator to function as during washing with the rinsing liquid circulating through the standpipe 38 as the wash liquid does during washing.

After the laundry is rinsed, the upper section 2 may be rotated to the position shown in Fig. 2 and the receptacle 8 may be rotated to discharge the rinsing liquid by centrifugal extraction into the gallery 27, whence it will flow through the discharge conduit 29 into a second auxiliary outer container (not shown). At the same time the flow pipe 40 may be adjusted to allow the remaining liquid to be pumped from the bottom of the lower section into the receptacle. When all the rinse water is discharged out of the machine and out of the laundry, the upper section may be rotated to allow the discharge conduit 29 to register with the catch cup 34, and bluing liquid may be introduced into the machine. During bluing the receptacle may be stationary and the laundry may be agitated by means of the agitator with the flow pipe adjusted so as to give continuous circulation from the bottom of the lower section into the top of the receptacle, if desirable. After bluing the upper section may be rotated to the position shown in Fig. 2, and the bluing liquid may be discharged from the laundry by centrifugal extraction, any liquid remaining in the bottom of the lower section being pumped through the flow pipe into the top of the receptacle, thence discharged into the gallery and thence into a third auxiliary container (not shown).

The machine is now ready for washing a second batch of laundry and the several laundry liquids saved from the first batch may be utilized, the second batch being put through the several operations in a manner similar to the first batch.

It should be understood that the manner of operating the machine may be varied, and that the method of operating the machine above described is given for purposes of illustration only.

Referring now to Fig. 3, in this modification the tank may comprise a lower section 70 and an upper section 71, the upper section having an annular gallery 72 overhanging the wall of the lower section. A flexible hose 73 may be connected to a discharge opening in the gallery, and may be optionally insertable into a hole 74 in the side of the lower section, or adapted to communicate with an auxiliary container (not shown). It will be appreciated that on rotation of the receptacle 75, the liquid will be discharged through the discharge openings into the gallery 72.

Referring now to Fig. 4, this modification has an upper section 80 provided with a gallery 81 overhanging the wall of the lower section 82, the gallery having connected thereto a two-way cock 83 which allows liquid to be conveyed from the gallery 81 either into the lower section 82 or clear of the machine into an auxiliary container (not shown).

In Fig. 5 the upper section 90 may be provided with a gallery 91 having a discharge conduit 92 within the lower section 93. The lower section may be provided with a plurality of receiving cups 94 within the section, the receiving cups having outlet pipes 95 passing through the wall of the lower section, the outlet pipes having valves 96 therein. It will be appreciated that the upper section 90 may be rotated to allow the discharge conduit 92 to register with either one of the receiving cups 94, and that liquid may be conveyed clear of the machine through the outlet pipes 95 when the valves 96 are open, into external auxiliary containers (not shown), or, if the valves 96 are closed, the cups 94 will overflow and the liquid will be conveyed from the upper section 90 into the bottom of the lower section 93. It is obvious that the discharge conduit 92 may be brought out of register with said cups 94 to allow liquid to flow directly to the bottom of the lower section 93.

In Fig. 6 the tank is shown in one piece but provided with a gallery 100 under the

receptacle 102, the gallery having a discharge conduit 103 under which is positioned a catch cup 104 within the tank, the catch cup having an outlet pipe 105 passing through the wall of the tank, the outlet pipe 105 being provided with a valve 106 outside the tank. It will be appreciated that liquid discharged into the gallery may be conveyed clear of the machine by opening the valve and allowing the liquid to pass into a container (not shown), or it may be caused to flow into the bottom of the lower section by closing the valve, thereby causing the cup to overflow.

Thus a laundry machine is provided which is simple in construction and efficient in operation. When the laundry must be divided up into two or more batches each batch may be put through the several operations in the machine, using different laundry liquids, without manually handling the laundry, and without loss of the several laundry liquids. The remaining batches may be subjected to the several operations in turn.

While I have shown and described and have pointed out in the annexed claims certain novel features of the invention, it will be understood that various omissions, substitutions and changes in the forms and details of the device illustrated and in its operation may be made by those skilled in the art without departing from the spirit of the invention.

Having thus described my invention, I claim:

1. A laundry machine comprising a lower tank section, an upper tank section having an annular trough in its bottom, said trough having a discharge conduit said lower section having a cup on the one side of a wall thereof communicating with the other side of the wall, a laundry receptacle rotatably mounted in said upper section, said upper section being relatively rotatable to said lower section.

2. A laundry machine comprising a tank made up of lower and upper sections, the upper section being seated upon the lower section, said upper section having a bottom being bounded by an upstanding flange to form an annular trough, said trough having a drain opening a plurality of catch cups within said lower section and having conduits extending through the wall thereof, valves in said conduits, said upper section being rotatable relative to said lower section to bring the drain opening optionally in register with any one of said cups.

3. A laundry machine comprising a tank, an annular trough disposed therein, said trough having a drain opening, a cup within said tank under said opening and having a conduit to the outside of said tank, means for rotating said trough to change the position of said drain opening, and a receptacle rotatably mounted in said tank and adapted to discharge liquid into said trough.

4. A laundry machine comprising a tank, an annular trough disposed therein, said trough having a drain opening, a receptacle rotatably mounted in said tank and adapted to discharge liquid into said trough, means associated with said tank including a plurality of containers, and means for moving said trough to convey liquid selectively to said containers.

In testimony whereof I have hereunto set my hand.

GEORGE W. DUNHAM.