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SUDS DIVERSION AND RETURN SYSTEM

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Fig. 1.

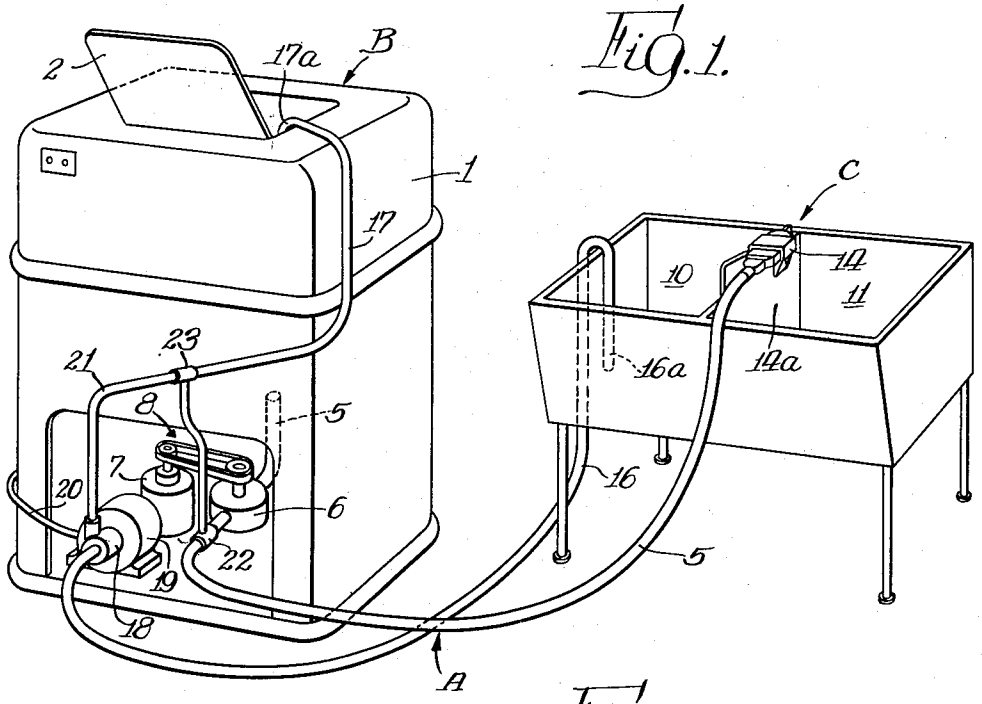
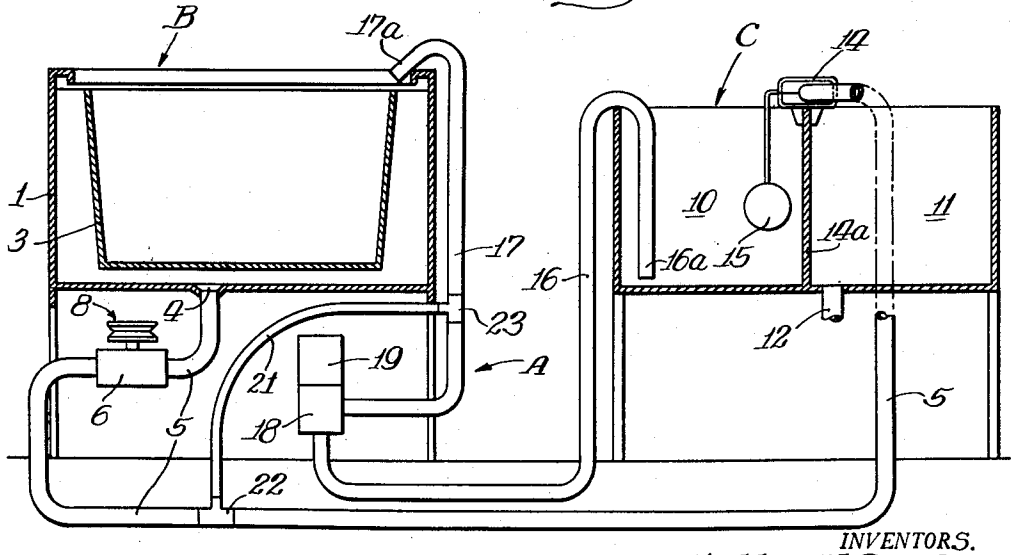


Fig. 2.



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SUDS DIVERSION AND RETURN SYSTEM

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3 Claims. (Cl. 137—566)

This invention relates to a suds diversion and return system and, more particularly, to a suds diversion and return system having a suds return pump which is primed by the fluid exhausted from a washing machine.

An object of this invention is to provide a suds diversion and return system which is of a simple construction, economical to manufacture and easily installed for use with a washing machine wherein the storage of suds water is necessary or desirable.

Another object of this invention is to provide a suds return system having a suds return pump for returning the suds water from a storage receptacle to the washing machine which is primed by the suds or rinse waters discharged from the washing machine.

Another object of the invention is to provide a suds diversion and return system having a discharge conduit extending from the washing machine to a diverter mechanism for controlling the passage of suds water into a storage receptacle, a return conduit extending between the storage receptacle and the washing machine, a suds return pump disposed in the return conduit for pumping the suds water from the storage receptacle to the washing machine and a pump priming conduit operatively connected between the exhaust conduit and the outlet side of the suds return pump for priming the suds return pump.

The objects of the invention generally set forth, together with other ancillary advantages, are attained by the construction and arrangement shown by way of illustration in the accompanying drawing, in which:

Fig. 1 is a perspective view of the suds diversion and return system connected to a washing machine and a pair of conventional laundry tubs, and;

Fig. 2 is a diagrammatic view of the suds diversion and return system with the washing machine and laundry tubs in section.

While this invention is susceptible of embodiment in many different forms, there is shown in the drawings and will herein be described in detail an illustrative embodiment of the invention with the understanding that the present disclosure is to be considered as an exemplification of the principles of the invention and is not intended to limit the invention to the embodiment illustrated. The scope of the invention will be pointed out in the appended claims.

The suds diversion and return system, indicated generally at A is adapted for use with any washing machine having wash and rinse operations which render it desirable that means be provided to save the suds water which must be discharged from the machine while the rinse operations are in progress. In illustrating the invention a washing machine, indicated generally at B, and a pair of laundry tubs, indicated generally at C, are shown. One of these tubs may be used as a storage receptacle for receiving the suds water from the washing machine.

The washing machine B may be of any commercially available type and, as generally shown in Figs. 1 and 2, has a housing 1 which is provided with a cover 2 providing access to the inside of the machine and a basket 3 in which the clothes are placed for the washing and rinse operations. A discharge outlet 4 is provided for discharge of fluid from the washing machine. A discharge conduit 5 is connected to the outlet 4. An exhaust pump 6 driven by a motor 7 by means of a belt and pulley arrangement, indicated generally at 8 is connected in the discharge conduit 5.

The laundry tub unit C may be the conventional type found in a home laundry and has individual tubs 10 and 11. As stated previously, the tub 10 may be used as a storage receptacle, and the tube 11 may be used to receive water which is to be discharged directly through a drain 12. The function of these tubs will be more fully set forth in the following description of the suds diversion and return system.

The suds diversion and return system has two functions. The first is to direct the suds water exhausted from the washing machine to the storage receptacle and the second to return the suds water from the storage receptacle to the washing machine. The first of these functions is performed by a diverter mechanism 14 secured to the vertical dividing wall 14*a* between the tubs 10 and 11 and which is connected to the discharge conduit 5. This diverter mechanism has a diverter valve member therein having two positions, one of which causes the suds water to pass into the storage tub or receptacle 10 and the other causes the subsequent fluid to pass into the receptacle or tub 11 and on out the drain 12. The diverter valve member is originally set to cause the suds water to flow into the tub 10 and when the desired amount of suds water has passed into this tub, a float 15 rises to permit the diverter valve member to shift and cause subsequent fluid to pass into tub 11. The operation of this diverter mechanism is fully set forth in our copending application filed August 27, 1953, Serial No. 376,932, and reference may be had thereto for a detailed description of the diverter mechanism 14.

The return conduit for returning suds water from the storage receptacle 10 to the washing machine B comprises a hose 16 and a hose 17. The hose 16 has one end 16*a* disposed within the storage receptacle 10 adjacent the bottom thereof and has its other end connected to the suction side of pump 18 which may be of the rotary impeller type. This pump is driven by a motor 19 having a motor cord 20. One end of hose 17 is connected to the outlet side of the pump 18 and is of a length sufficient to enable its other end 17*a* to be positioned over the top of the washing machine B. This enables the return of the suds water to the wash basket 3 which may be imperforate and therefore requires filling from its open top. During the operation of the machine, the end 17*a* of the hose 17 may be moved away from the machine.

In order to have a suds diversion and return system which is not unduly expensive, it is desirable to use a suds return pump which is relatively inexpensive. To satisfy this requirement, it is preferable to use a pump for return of the suds water which does not have the property of positive fluid displacement. One example of such a pump is a rotary impeller pump. With such a pump, it is necessary to provide means for priming the pump.

We have devised means for priming such a pump by the exhaust fluid which is discharged from the washing machine. This may be either the suds water or subsequent rinse water. A pump priming hose or conduit 21 is connected at 22 to the discharge conduit 5 and at 23 to the hose 17 forming a part of the return conduit. The pump priming conduit 21 is of a cross-sectional area substantially less than that of the discharge conduit 5 as only a relatively small amount of the fluid passing through the discharge conduit 5 is needed for priming the pump 18. The fluid which passes through the pump priming conduit 21 passes into the pump 18 at the outlet side thereof and on through the pump and out the suction side thereof into the hose 16.

It is therefore obvious that after the suds water has been discharged into the storage tub 10, an adequate amount of the suds water will have passed through the pump priming conduit 21, the pump 18, and into the hose 16 up to a level the same as that of the connection 23 between the pump priming conduit 21 and the hose 17. Also, of course, the suds water has risen in the end 16*a* of the hose 16 to the same level as that of the suds water in the tub 10.

When it is desired to return the suds water to the washing machine from the storage receptacle 10, the motor 19 is started to drive the suds return pump 18 which, because of its having been previously primed, pumps the

fluid out of hose **16** and, as a result thereof, draws the suds water out of the receptacle **10**.

We claim:

1. A suds diversion and return system for use with a washing machine having wash and rinse operations and a storage receptacle comprising, a suds diversion mechanism secured to the storage receptacle for passing suds water into the storage receptacle and subsequent rinse water to drain, a discharge conduit extending between the outlet of the washing machine and said suds diversion mechanism for conducting fluid exhausted from the washing machine to the diversion mechanism, a return conduit having one end disposed adjacent the bottom of the storage receptacle and the other end in communication with said washing machine for conducting fluid from the storage receptacle back to the washing machine, a suds return pump disposed in said return conduit for pumping the suds water in said storage receptacle back to the washing machine, the return conduit having vertically extending portions on both sides of said pump extending to a level above the pump, a priming conduit of a cross-sectional area substantially less than the area of said discharge conduit extending between the discharge conduit and the vertically extending portion of the return conduit connected to the outlet side of the pump for priming the pump from the exhaust fluid, the level of fluid in the vertically extending portions of the return conduit being substantially the same.

2. A suds diversion and return system for use with a storage receptacle and a washing machine having wash and rinse operations comprising, diverter means secured to the storage receptacle for passing suds water into the storage receptacle and subsequent rinse water to drain, a discharge conduit extending between the outlet of the washing machine and said diverter means, means defining a return conduit extending between the storage receptacle and the washing machine and having one end thereof disposed adjacent the bottom of the storage receptacle, a suds return pump disposed in said return conduit, the return conduit having vertically extending portions on both sides of said pump extending to a level above the pump, a priming conduit extending between the discharge conduit and the vertically extending portion of the return conduit connected to the outlet side of the pump for priming the pump by the fluid exhausted from the washing machine.

3. A suds return system for use with a storage receptacle and a washing machine having wash and rinse operations comprising, a discharge conduit extending between the outlet of the washing machine and the storage receptacle for passing the fluid exhausted from the washing machine to said storage receptacle, a return conduit between the storage receptacle and the washing machine and having one end disposed adjacent the bottom of the storage receptacle, a suds return pump connected in said return conduit, a priming conduit of a cross sectional area substantially less than the area of said discharge conduit operatively connected between the discharge conduit and the outlet side of said suds return pump for priming the pump by the fluid exhausted from the washing machine.

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