United States Patent

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Osaka, Japan
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[33] **Japan**
[31] **42/72094**

[54] **WASHING MACHINE**
1 Claim, 2 Drawing Figs.

[52] **U.S. Cl.** **68/208,**
134/104, 134/186, 137/247.35
[51] **Int. Cl.** **D06f 39/08,**
D06f 39/10
[50] **Field of Search** 137/247.35,
247.51, 247.39, 546, 544; 134/104,
186; 68/208, 18

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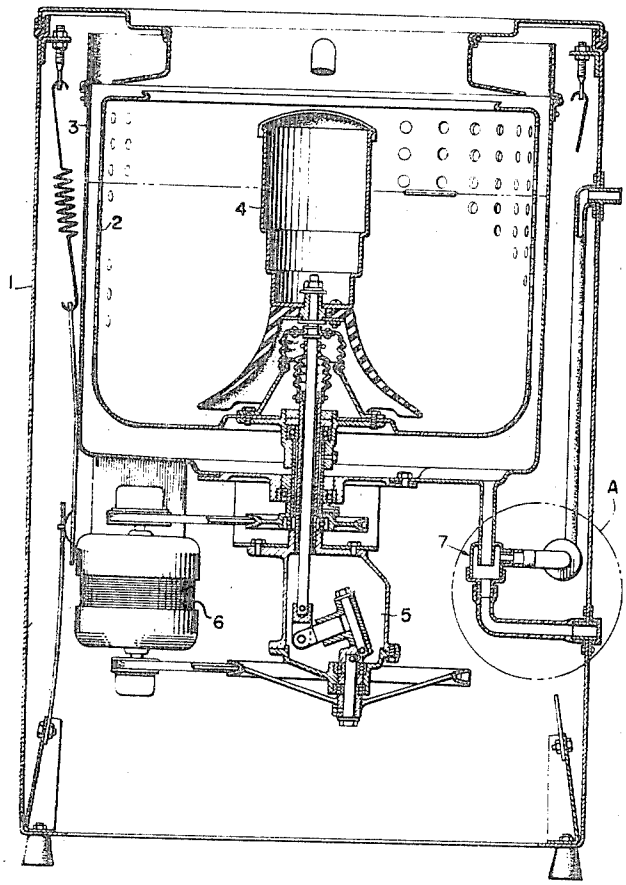
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Attorney—Stevens, Davis, Miller & Mosher

ABSTRACT: A washing machine wherein a trap is provided in a drain passage leading from the drain port of the washing tub to a drain pump to separate objectionable materials present in the washing water being drained therefrom, thereby to provide for smooth drainage of said washing water.

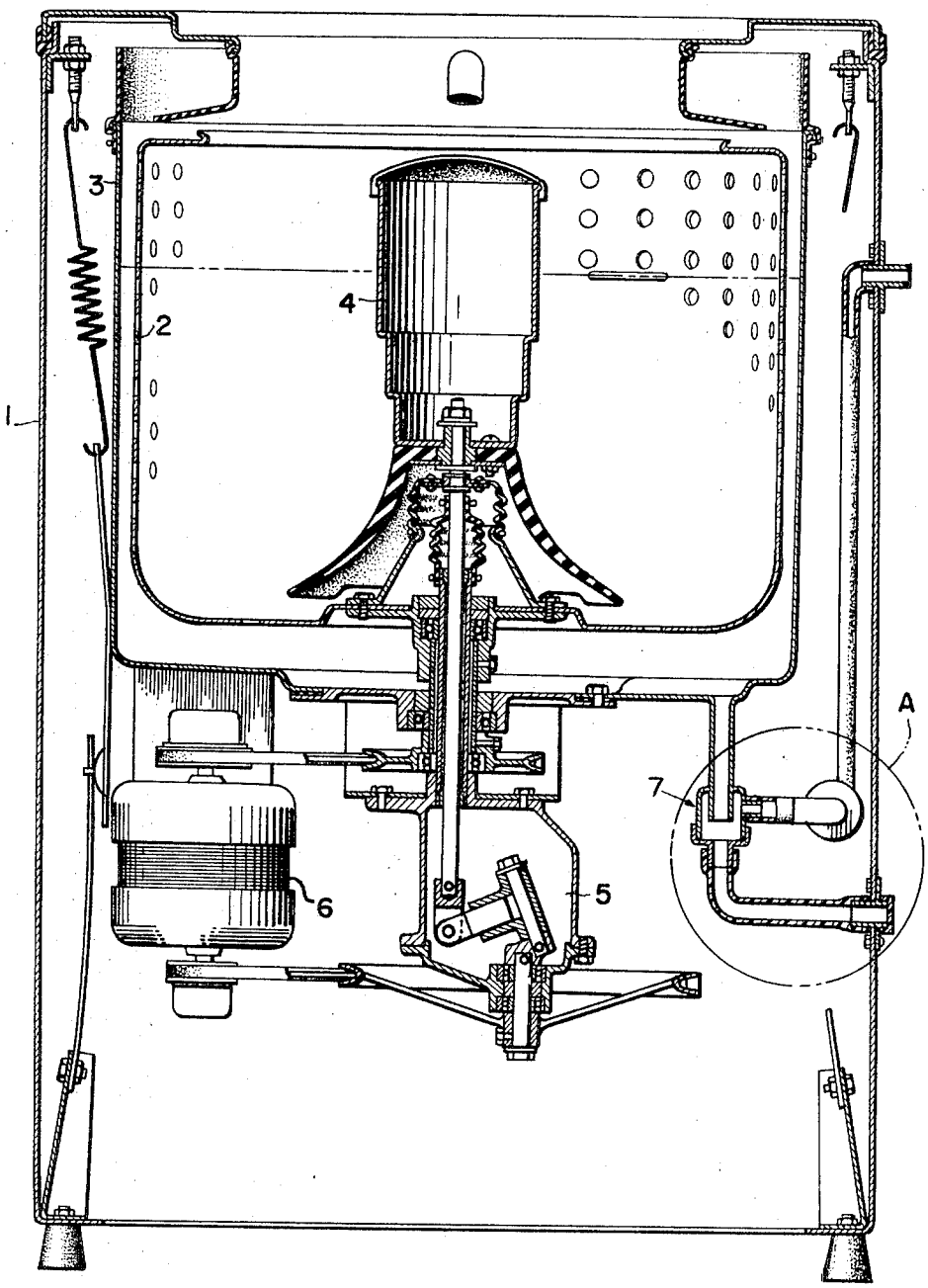


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SHEET 1 OF 2

FIG. 1

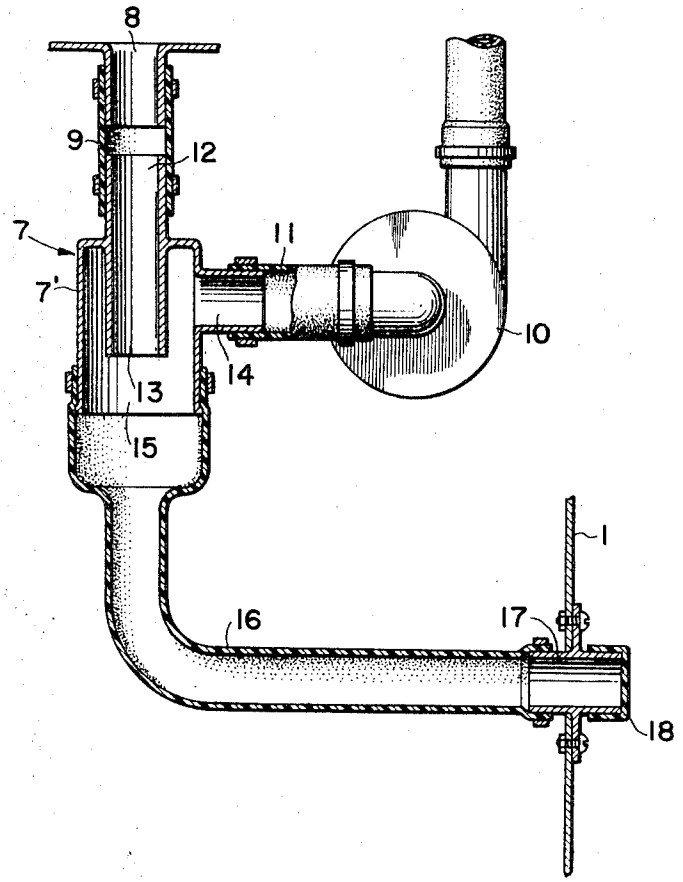


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FIG. 2



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WASHING MACHINE

BACKGROUND OF THE INVENTION

The present invention relates to a washing machine and more particularly to such a washing machine wherein a trap assembly: is provided in a drain passage leading from the drain port of the washing tub to a drain pump to separate objectionable materials present in the washing water being drained therefrom, thereby to provide for smooth drainage of said washing water.

SUMMARY OF THE INVENTION

An object of the present invention is to provide an improved washing machine which is provided with means to preclude malfunction of a drain pump or a drain valve caused by such objectionable materials as pebbles, buttons, hair pins and match sticks carried into the washing machine along with washings and introduced into the drain pump or the drain valve during drainage of the washing water.

Another object of the present invention is to provide a washing machine of the type described above, wherein a trap assembly; used as means for separating the objectionable materials is, unlike a filter, simple in structure and capable of positively removing the objectionable materials without lowering the drainage capacity.

BRIEF DESCRIPTION OF THE DRAWING

FIG. 1 is a vertical cross-sectional view of an embodiment of the washing machine according to the present invention and

FIG. 2 is a cross-sectional view, or enlarged scale, of a trap assembly; and the parts associated therewith.

DESCRIPTION OF THE PREFERRED EMBODIMENT

Referring to FIG. 1 reference numeral 1 designates the body of a washing machine, 2 a washing tub having a number of apertures perforated through the peripheral wall thereof and serving simultaneously both as a washing tub and as a spin tub, 3 an outer tub for storing washing water therein, 4 an agitator adapted to be moved up and down to cause streams of washing water, 5 a driving mechanism provided beneath the outer tub and 6 a driving motor operatively connected with said driving mechanism. Reference character A generally indicates a portion where a trap assembly 7 is provided and the detailed arrangement of said portion is shown in FIG. 2.

Referring now to FIG. 2, reference numeral 7 designates the trap assembly communicating with the drain port 8 of the outer tub 3 through a hose 9 and with a drain pump 10 through a hose 11. Reference numeral 12 designates a pipe comprising a drain inlet port formed at the top end of the trap chamber 7', 13 a pipe projecting into the trap chamber from the top end thereof successively to the drain inlet port and 14 a drain outlet port formed in the sidewall of the trap chamber. At the bottom end of the trap chamber is provided a discharge

opening 15 for objectionable materials to which a hose 16 is connected and the other end of the hose 16 is connected to a discharge port 17 provided in the sidewall of the body 1. Numeral 18 designates a cap fitted on the tip end of the discharge port 17.

In operation, the washing liquid discharged through the drain port 8 enters the trap chamber 7' and first reaches a point near the objectionable material discharge opening 15 by being guided by the pipe 13. Then, the washing liquid flows upward and enters the drain pump 10 through the drain outlet port 14 to be forcibly drained to the outside by said drain pump. In this case, since the drain outlet port 14 is located upwardly of the lower end of the projecting pipe 13, the washing liquid is always caused to flow in the upward path leading from the projecting pipe 13 to the drain outlet port 14, while allowing precipitable materials, e.g. pebbles, buttons and hair pins, to drop through the objectionable material discharge opening 15 to be accumulated in the hose 16. Floatable materials, such as match sticks, are caught in the aforesaid upward path of the washing liquid and thereby prevented from entering the drain pump 10. For this purpose, the distance between the sidewall of the projecting pipe 13 and the drain outlet port 14 is narrow but only to such as extent as not to lower the drain capacity.

The objectionable materials accumulated in the hose 16 can be removed to the outside simply by taking off the cap 18. Such operation is not required frequently but may be necessary usually once in 6 months or a year.

According to the present invention, the projecting pipe 13 is provided interior of the trap as described above. This is for the purpose of completely separating the objectionable materials from the drain circuit and owing to such structure, the objectionable materials can be positively led into the hose 16 through the discharge opening 15 under their own weight and the force of the washing liquid jetting through the projecting pipe 13.

Although in the embodiment described and illustrated herein, use is made of a washing machine equipped with a drain pump, the advantage of the present invention can be similarly obtained when the invention is applied to a washing machine having a drain valve instead of the drain pump.

I claim:

1. A washing machine having a trap assembly connected to a drain port in the bottom wall of a washing outer tub for separating objectionable materials present in the drain liquid from a drain circuit, a hose communicating an objectionable material discharge opening with an objectionable material discharge port provided in the outer wall of the body of the washing machine and a cap fitted on the outer end of said discharge port, said trap including a projecting pipe provided interior thereof and extending downwardly and a drain outlet port provided in the sidewall thereof at a level higher than the lower end of said projecting pipe so as to have said drain circuit make a detour from the lower end of said projecting pipe upwardly to said drain outlet port, said objectionable material discharge opening being located below the lower end of said projecting pipe in opposed relation thereto.

UNITED STATES PATENT OFFICE

CERTIFICATE OF CORRECTION

Patent No. 3,590,606 Dated July 6, 1971

Inventor(s) Kojiro Takeyama

It is certified that error appears in the above-identified patent and that said Letters Patent are hereby corrected as shown below:

On the title page, the priority date should read
--- August 22, 1967 ---.

Signed and sealed this 14th day of March 1972.

(SEAL)
Attest:

EDWARD M.FLETCHER,JR.
Attesting Officer

ROBERT GOTTSCHALK
Commissioner of Patents

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