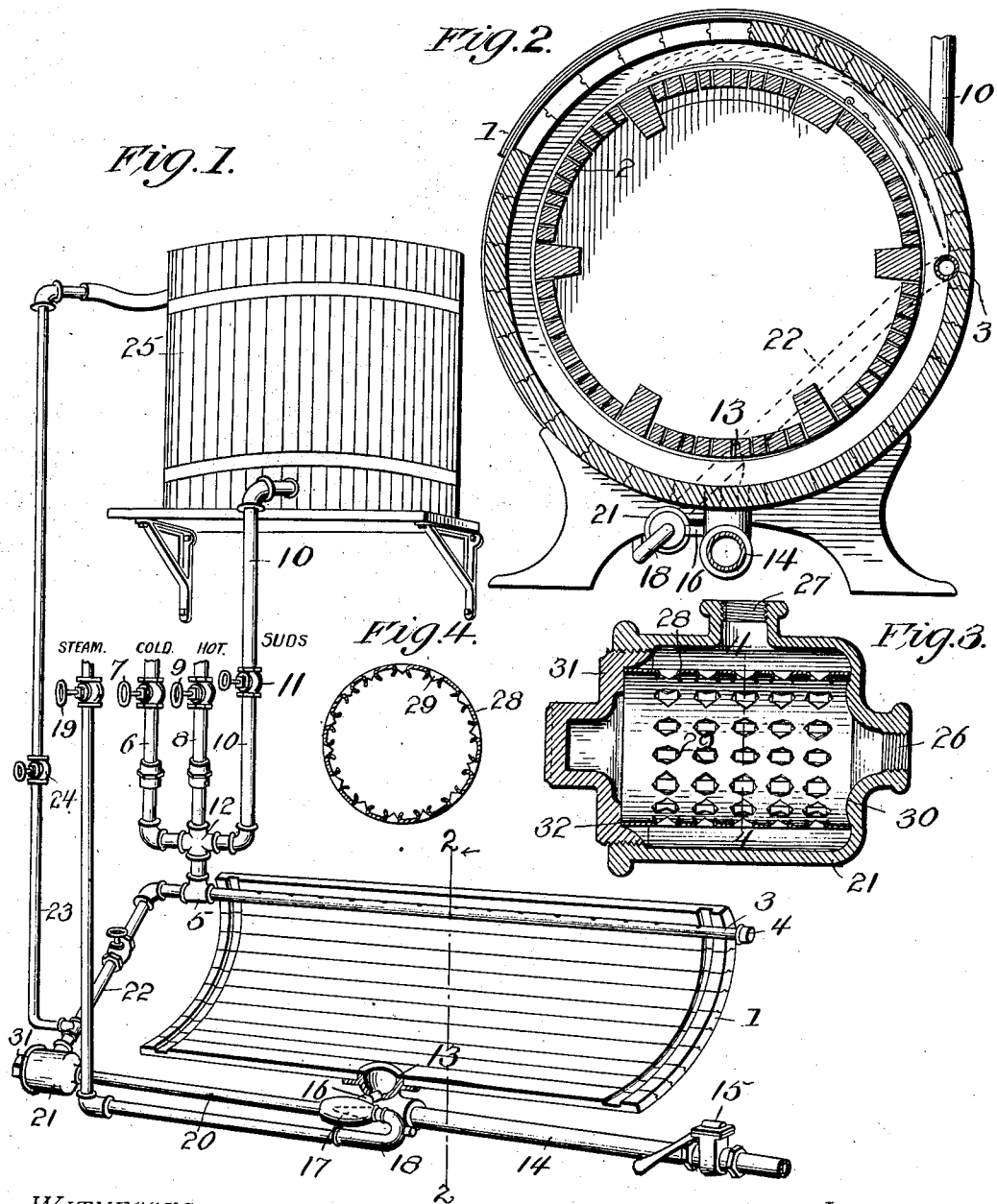


No. 888,576.

PATENTED MAY 26, 1908.

W. BARTHOLOMEW.
CIRCULATING WASHING MACHINE.
APPLICATION FILED APR. 13, 1907.



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CIRCULATING WASHING-MACHINE.

No. 888,576.

Specification of Letters Patent.

Patented May 26, 1908.

Application filed April 13, 1907. Serial No. 368,037.

To all whom it may concern:

Be it known that I, WILLIAM BARTHOLOMEW, citizen of the United States, residing at Chicago, county of Cook, and State of Illinois, have invented certain new and useful Improvements in Circulating Washing-Machines, of which the following is a specification, reference being had therein to the accompanying drawing.

10 This invention relates to a washing machine strainer, and particularly to a machine of that character where the liquid is circulated therethrough.

The invention has for an object to provide
15 a novel and improved construction of strainer interposed between the discharge from the shell and the feed pipe connection therewith so that in the circulation of the suds or liquid any lint or other solid material will be caught
20 in the strainer and the clogging of the feed pipe or other parts of the system entirely avoided.

A further object of the invention is to provide
25 a novel and improved construction of circulating system and the feed connections therewith by which the suds may be circulated through the machine continuously during the washing operation, and an injector also used to convey these suds to a storage
30 tank from which a valved feed pipe extends to the perforated feed within the shell.

Other and further objects and advantages of the invention will be hereinafter set forth and the novel features thereof defined by the
35 appended claims.

In the drawing:—Figure 1 is a perspective illustrating the pipe connections for the circulating system relative to a sector of the shell; Fig. 2 is a vertical section of the shell
40 and cylinder complete taken on the line 2—2, Fig. 1; Fig. 3 is a central longitudinal section of the strainer. Fig. 4 is a cross section thereof on the line 4—4, Fig. 3.

Like numerals refer to like parts in the
45 several views of the drawing.

The numeral 1 designates the shell or casing within which the rotatable perforated washing cylinder 2 is mounted in the usual manner. Disposed in one wall of the shell is
50 the feed pipe 3 which is perforated or apertured so as to discharge a spray therefrom, this being directed upward, as shown in Fig. 2 to strike the upper portion of the shell and

from thence it falls in a shower upon the top of the revolving cylinder. The feed pipe is 55 capped at its outer end 4 and at its opposite end is provided with a coupling 5 by which communication is established with the supply connections. These comprise a cold water pipe 6 provided with a suitable controlling valve 7, a hot water pipe 8 provided with a controlling valve 9 and a suds supply
60 pipe 10 provided with a controlling valve 11, all of these being connected to the coupling 12 in the usual manner. At the lower portion of the shell a discharge connection 13 is
65 disposed so as to drain the liquid therefrom and from the lower portion of this connection the waste pipe 14 supplied with a suitable controlling valve 15 extends to any suitable point. At the upper portion of the discharge connection the pipe 16 is connected with the injector 17 which is supplied from the feed pipe 18 suitably valved at 19 and
70 extending to any suitable source of steam supply. By connecting the injector feed to the upper portion of the discharge any heavy particles, such as buttons or pins fall to the lower portion of the discharge and are not
75 drawn into the injector with the feed thereof.

From the injector the circulating pipe 20 extends to the strainer 21 which is connected by the pipe 22 preferably with the coupling 5 of the feed pipe. This pipe 22 is also connected with the suds return 23 provided
80 with the controlling valve 24 and discharging at its upper end into the suds tank 25. This tank also communicates at its lower portion with the suds supply pipe 10 so as to feed to the system by gravity.

The strainer 21 comprises a casing provided with the inlet 26 and the outlet 27 preferably disposed at right angles to each other, as shown in Fig. 3. Within this casing any desired form of strainer may be disposed, for
85 instance, the reticulated cylinder, as shown at 28 which is provided with angular punched rough edges 29 which readily catch and hold the lint within the straining cylinder. This cylinder when used is maintained in position
90 by the portion 30 of the casing at the feed end thereof, and at the opposite end by the removable cap 31 threaded into the casing and having a seat 32 for that end of the cylinder. The cylinder when mounted is thus
95 retained against movement but can be read-

ily removed by simply unscrewing the cap and thus cleansed whenever necessary or desired.

In the operation of the machine the perforated feed pipe which extends for the full length of the shell gives a uniform heat or feed of hot water and obviates the difficulties experienced when one end of the machine is hot and the other cold. Furthermore, the perforations in this pipe are disposed at such an angle as to throw the water against the inner surface at the top of the shell which allows it to fall onto the top of the cylinder thereby producing a shower or spray on the goods being washed. This washes all lint or other material into the bottom of the machine and prevents their contact with the goods which occurs in constructions where the water enters at the bottom and gradually rises in the machine. Another important advantage of this feed pipe is that whenever the goods being washed are boiled there gathers on the inside of the shell the suds and bleach which accumulate in the machine above that point where the water comes in the rinse by the revolution of the cylinder. This bleach and suds remain at the top and inside of the cylinder and continually drop on the goods; consequently when the bluing operation is performed the blue will not take on the goods owing to the presence of the suds and bleach. This structure thoroughly cleanses the shell and cylinder when the rinse water is turned into it and requires less water for that purpose. The construction of steam injector here shown performs the quickest and most uniform feed by drawing the water from the discharge connection and heating it in its passage back to the feed pipe so that there is a continual circulation of the boiling water in the cylinder without danger of the steam coming in contact with the goods. This is particularly important as the steam is injurious to the wooden parts of the machine as well as to the goods because a high pressure of steam separates the fiber and without such pressure the water cannot be brought to a boiling point in a reasonable time. It has been demonstrated that a pressure in the washer of more than fifteen pounds is injurious to the materials, and in the injector shown the steam pipe may be connected directly to the boiler and not any pressure of steam occur within the washer as it performs its function in heating and lifting the water. Immediately upon introducing the steam into the injector the hot water is thrown back into the machine which heats the remaining water and effects a material saving in the steam required to maintain an even temperature throughout the machine and keep the water in constant circulation. By connecting this injector above the bottom of the discharge connection solid articles such as buttons, pins, etc., will not be drawn therein but

any material so entering the circulating pipe will be caught by the strainer which is disposed in said pipe intermediate of the discharge and feed connections. This strainer having the roughened inturned edges of its perforations catches and holds all lint, threads or other fibers which can be removed from the interior of the strainer by access through the end so that water passing to the feed pipe and also to the suds tank is cleared of any solid material which could clog these parts. The use of this suds tank is a very important feature in the art as the second suds used in the ordinary wash are amply clean for the first wash of the succeeding load in the machine. Therefore the valve in the return pipe to the feed may be closed and that in the return to the suds tank opened when the injector will act to remove the suds from the washer to the suds tank where they can be retained for the subsequent operation. These valves are then restored to their normal condition and when it is desired to use the suds they can be fed directly into the feed pipe through the supply connection from the tank, while either hot or cold water may likewise be introduced into this tank as these connections are made to the unitary coupling, and when the machine is empty and the feed just beginning the steam from the injector passes up to this supply coupling and not only forces the water or suds through the pipe but heats it at the same time. After the second use of the suds they may be discharged through the waste pipe by simply opening the valve thereof.

Having now described my invention and set forth its merits, what I claim and desire to secure by Letters Patent is:—

1. In a circulating washing machine, a shell, a discharge connection therefrom, a rotatable cylinder in the shell, a feed pipe within the shell disposed parallel to said cylinder, an injector connected to said discharge, a circulating pipe extending from the injector to one end of the shell, a connection extending from the feed pipe to the circulating pipe, and a straining device disposed at the end of said shell and connecting the circulating pipe and feed connection.

2. In a circulating washing machine, a shell, a discharge connection therefrom, a feed pipe within the shell, an injector connected to said discharge, a circulating pipe extending from the injector to one end of the shell, a valved connection extending from the feed pipe to the circulating pipe, a straining device disposed between and connected to the circulating pipe and feed connection therefrom, a suds tank, a feed pipe thereto extending from the valved connection, and a supply connection from said suds tank to the feed pipe in the shell.

3. The combination with a washing machine, of a discharge connection from the

bottom of the shell thereof, a feed pipe extending lengthwise in said shell, a circulating connection between said discharge connection and feed pipe and having an injector communicating with the discharge connection, a suds tank, a valved suds feed connection thereto extending from the circulating connection, a supply connection from the suds tank to the feed pipe, and a controlling valve in the circulating connection intermediate of the suds feed and supply pipes.

4. The combination with a washing machine, of a discharge connection from the bottom of the shell thereof, a feed pipe extending lengthwise in said shell, a circulating connection between said discharge connection and feed pipe and having an injector communicating with the discharge connection, a suds tank, a valved suds feed connection thereto extending from the circulating connection, a supply connection from the suds tank to the feed pipe, a controlling valve in the circulating connection intermediate of the suds feed and supply pipes, and hot and cold supply pipes connected to the feed pipe at one end thereof.

5. The combination with a washing machine, of a perforated feed pipe therein, a clear water supply to said pipe, a discharge from said machine, an injector communicating with said discharge, valved circulating pipes extending from the injector to the feed pipe, a suds tank, a valved feed from one of the circulating pipes to the suds tank, and a valved supply from the suds tank to the feed pipe.

6. The combination with a washing machine, of a perforated feed pipe thereto, a discharge therefrom, an injector at the discharge, valve circulating pipes extending from the injector to the feed pipe, a suds tank, a valved feed from one of the circulating pipes thereto, a valved supply from the suds tank to the feed pipe, a valved waste pipe extending from the discharge connection,

a unitary coupling at one end of said feed pipe, and hot and cold water pipes extending to said coupling.

7. In a washing machine shell, a circulating connection comprising a perforated feed pipe disposed longitudinally at one side of the shell, a rotatable cylinder mounted opposite said pipe, a discharge connection at the bottom of said shell, an injector device directly communicating with said discharge connection, and a circulating pipe extending from said injector parallel to the feed pipe and thence upward to the supply end thereof.

8. In a washing machine shell, a circulating connection comprising a perforated feed pipe disposed longitudinally at one side thereof, a rotatable cylinder opposite said pipe, a discharge connection at the bottom of the shell, an injector having a lateral feed pipe communicating with said discharge connection, a circulating pipe extending from said injector parallel to the feed pipe, and a supply connection coupled to one end of said feed pipe and communicating with the circulating pipe.

9. In a washing machine shell, a circulating connection comprising a perforated feed pipe disposed longitudinally at one side thereof, a rotatable cylinder opposite said pipe, a discharge connection at the bottom of said shell, an injector device directly communicating with said discharge connection, a circulating pipe extending from said injector to the feed pipe, a supply connection coupled to one end of said feed pipe and communicating with the circulating pipe, and an independent supply connection coupled with the first mentioned supply.

In testimony whereof I affix my signature in presence of two witnesses.

WILLIAM BARTHOLOMEW.

Witnesses:

C. I. BELKNAP,
WM. S. CROGMAN.