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B. LINDBERG

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WATER HEATER AND MIXER

Filed July 7, 1928

Fig. 1.

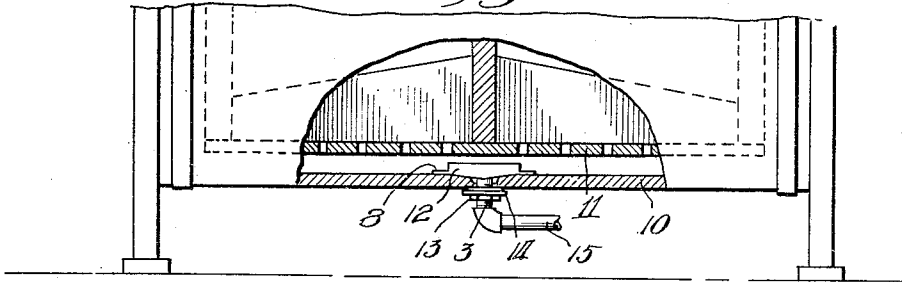


Fig. 2.

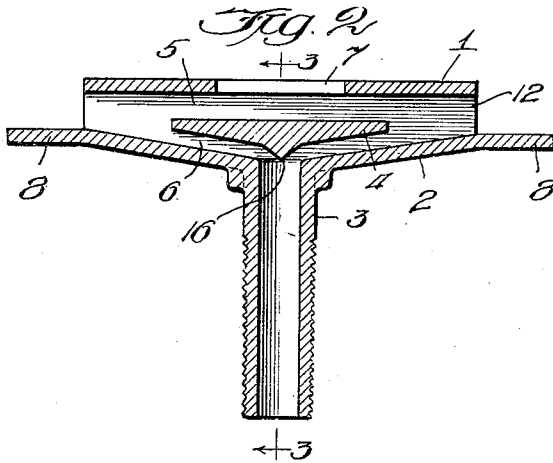


Fig. 3.

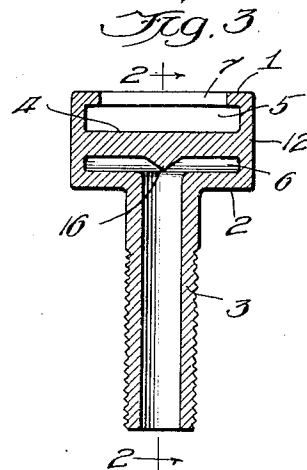
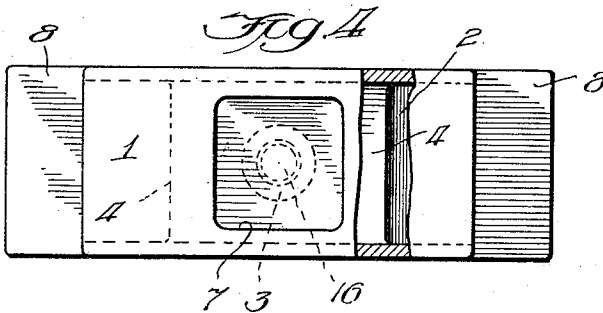


Fig. 4.



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UNITED STATES PATENT OFFICE

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WATER HEATER AND MIXER

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The water in large washing machines employed in laundries for washing clothes is commonly heated by means of steam introduced into the same. When the steam, under
5 pressure, strikes the walls of the casing or housing rapid wear of the latter takes place if the walls are made of wood.

One of the objects of the present invention is to make it possible to deliver steam into a
10 washing machine without causing any deterioration in the structure of the machine.

In carrying out my invention, I employ a head through which the steam is discharged, the steam mixing with the water in the machine before leaving the head, so that the
15 steam is not discharged as such but as part of a mass composed of water and steam. The water carried along with the steam must be replaced by other water, with the result that
20 the water in the machine is caused to circulate; uniform heating being quickly effected and the creation of suds being expedited.

Therefore, viewed in one of its aspects the present invention may be said to have for
25 its object quickly and uniformly to heat the water in a washing machine, while at the same time producing a good suds.

The various features of novelty whereby my invention is characterized will hereinafter be pointed out with particularity in the
30 claims; but, for a full understanding of my invention and of its objects and advantages, reference may be had to the following detailed description taken in connection with
35 the accompanying drawing, wherein:

Figure 1 is a view, partly in side elevation and partly in section, of the lower portion of a comparatively small washing machine equipped in accordance with the present in-
40 vention; Fig. 2 is a vertical longitudinal section, on a larger scale than Fig. 1, through the distributing and mixing head, the section being approximately on line 2—2 of Fig. 3; Fig. 3 is a section taken on line 3—3 of Fig. 2; and
45 Fig. 4 is a top plan view of the head, a fragment of the top wall being broken away.

Referring to Figs. 2, 3 and 4 of the drawing, 1 and 2 represent the top and bottom
50 walls of a shallow elongated shell open at both ends. The bottom wall preferably

slopes downwardly from both ends toward the middle. Extending downward from the middle of the bottom wall of the shell, and preferably integral therewith, is a tubular stem 3, the bore in which opens into the
55 chamber within the shell. Within the shell, and extending completely across the same, is a horizontal partition 4 considerably shorter than the shell. The partition divides the chamber in the interior of the shell into
60 an upper compartment 5 and a lower compartment 6 merging into each other within the ends of the shell. In the top wall of the shell or head is a large opening or window 7 spaced apart, in the longitudinal direction,
65 from the ends of the partition.

It will be seen that if the head is submerged in water and steam is blown up through the tubular stem, the steam will flow laterally toward the left and the right, viewing the
70 head as it appears in Fig. 2. However, the steam meets the water in the head so that the water is carried along with the steam and it is a mixture of steam and water that is discharged laterally in both directions from
75 the head. As the water moves out through the ends of the head more water enters through the opening or window 7. The result is, that the body of water will circulate
80 in two streams both of which enter the window or opening in the top of the head while one leaves the head at the right hand end and the other at the left hand end.

Since the bottom wall of the head is inclined upwardly in both directions from the
85 zone in which the steam enters, the moving stream as it leaves the head is traveling upward as well as laterally, so that it will not be driven at right angles to an end wall of a washing machine casing in which the head
90 may be mounted. Furthermore, the ends of the bottom wall of the head are extended outwardly a considerable distance beyond the main or body portion of the head in the form of lips 8, 8. These lips lie between the out-
95 going streams and any underlying parts of the casing or housing of a washing machine and thus prevent wear until the force of the streams is reduced.

Any desired number of these heads may be 100

placed in a washing machine, depending upon the size of the latter. In Fig. 1 I have shown a comparatively small machine having a water-containing casing 10 and a rotatable cylinder 11. The mixing and distributing head, indicated as a whole at 12, is supported on the bottom wall of the casing about midway between the ends of the latter. The material of the bottom wall of the casing is preferably cut away to receive the inclined bottom of the head while the lips 8 rest on the normal surface of the wood or other material. The stem or nipple passes out to the exterior of the casing through a suitable opening in the bottom wall of the casing. The stem or nipple is preferably provided with external pipe threads so that the head may be locked in place by means of a nut 13 screwed on to the stem or nipple. Suitable washer means 14 adapted to make a watertight joint, may be placed between the nut and the bottom of the casing. Steam is supplied to the head through a pipe 15 connected to the projecting end of the stem or nipple.

It will be seen that if there is water in the casing and steam is turned on, the steam mixed with water will be discharged toward the right and left from the head, while the water in the casing is drawn down into the center of the head as previously explained. The result is that the force of the steam is dissipated and cannot injure the casing; while at the same time the water is thoroughly agitated and circulated so as to secure a rapid and uniform distribution of the head and insure a rapid formation of suds.

If desired, the horizontal partition in the head may have on its underside a central conical projection 16 whose long axis is coincident with the long axis of the stem or nipple; thereby causing a spreading of the steam as it rises into the head.

While I have illustrated and described with particularity only a single preferred form of my invention, I do not desire to be limited to the exact structural details thus illustrated and described; but intend to cover all forms and arrangements which come within the definitions of my invention constituting the appended claims.

I claim:—

1. The combination with the stationary water-containing casing of a washing machine, of an open-ended shell in the casing, a longitudinal partition extending across the interior of the shell and terminating at a considerable distance inwardly from each end of the shell, there being an opening through the wall of the shell on one side of the partition to admit water, and there being a steam inlet into the shell on the opposite side of the partition.

2. The combination with the stationary water containing casing of a washing machine, of a member located in the bottom of

the casing and containing a chamber open at the ends of said member, the chamber in the central portion of said member being divided into two compartments merging into each other toward the ends of said member, there being an opening through the side of said member into one of the compartments to admit water from the casing, and means for delivering steam into the other compartment.

3. The combination with the stationary water-receiving casing of a washing machine, of an open-ended shell within the casing and lying against the bottom wall thereof, the bottom wall of the shell extending a considerable distance beyond the ends of the shell, a horizontal partition considerably shorter than the shell extending across the interior thereof to divide the interior into upper and lower compartments merged into each other within the ends of the shell, the top wall of the shell having a large opening to admit water from the casing, and a steam pipe passing through the bottom wall of the casing and communicating with the lower compartment in the shell at about the middle thereof.

4. A mixing head for a washing machine comprising a shell open at the ends, the bottom wall of the shell being extended beyond the body of the shell at each end, a horizontal partition extending across the interior of the shell, the partition being shorter than the body of the shell and dividing the interior of the latter into an upper and a lower compartment merged into each other within the ends of the shell, the top wall of the shell having a large opening therein, and a tubular stem extending downwardly from the bottom of the shell and having its bore communicating with said lower compartment.

In testimony whereof, I sign this specification.

BERNHARD LINDBERG.