Feb. 23, 1926. 1,574,488

H. F. KEIFFER

SUCTION MEMBER FOR WASHING MACHINES

Filed March 16, 1925 2 Sheets-Sheet 1

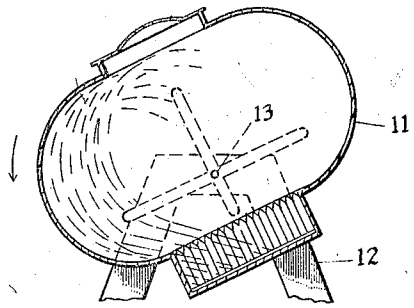

Fig 1

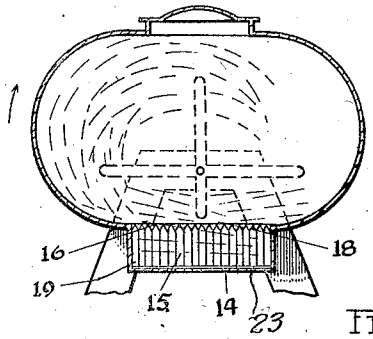

Fig 2

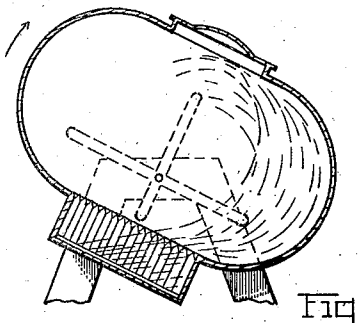

Fig 3

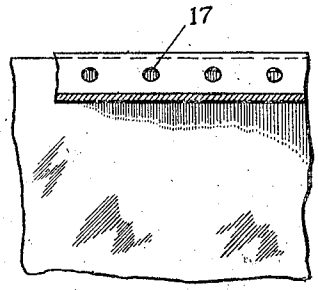

Fig 4

Inventor
Harry F. Keiffer.

By Owen, Owen & Crampton,
Attorney.

Feb. 23, 1926. 1,574,488

H. F. KEIFFER

SUCTION MEMBER FOR WASHING MACHINES

Filed March 16, 1925 2 Sheets-Sheet 2

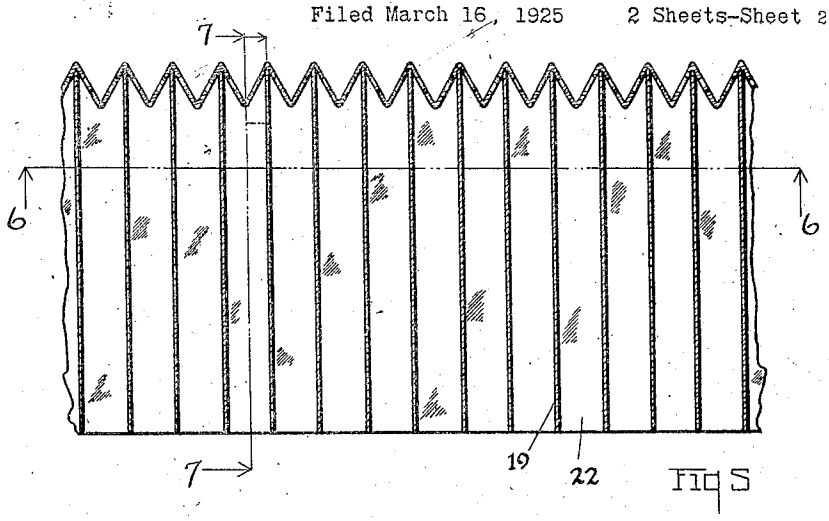

Fig 5

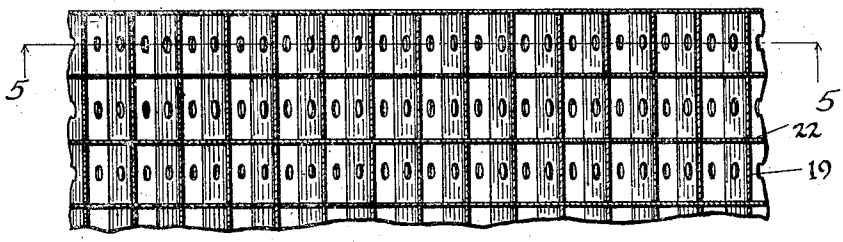

Fig 6

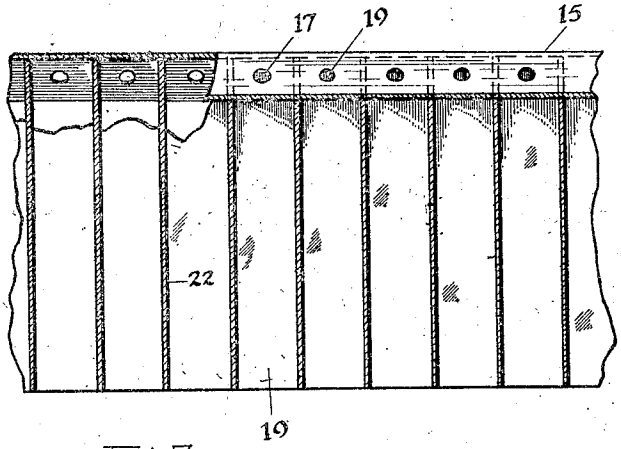

Fig 7

Inventor

Harry F. Keiffer

By Owen, Owen & Crampton

Attorne

Patented Feb. 23, 1926. 1,574,488

UNITED STATES PATENT OFFICE.

HARRY F. KEIFFER, OF PERRYSBURG, OHIO.

SUCTION MEMBER FOR WASHING MACHINES.

Application filed March 16, 1925. Serial No. 15,754.

To all whom it may concern:

Be it known that I, HARRY F. KEIFFER, a citizen of the United States, and a resident of Perrysburg, in the county of Wood and the State of Ohio, have invented a new and useful Suction Member for Washing Machines, which invention is fully set forth in the following specification.

My invention has for its object to produce a means for greatly increasing the efficiency of the tilting or "wave" form of washing machine, wherein the agitation of the soapy water and the clothes is produced by a means for causing the water to rise above and dash upon the clothes such as by swinging or tilting a receptacle containing water and the clothes. The improvement may be embodied in any well known type of tilting washing machine as well as in any type of machine having means for raising and lowering the water level in any part of the container that contains the water and the clothes. In the preferred form of the invention there is provided a member having a plurality of openings, the member being spaced from the bottom portion of the container and so located that portions of the member will be alternately brought above the surface of the water by the movement of the water in the container, or relative to the container, whereby air and water vapor will be drawn by the lowering of the water or will be forced therefrom by the rising of the water beneath portions or parts of the member. In a more specific form the member is provided with a plurality of cells to assure a distribution of the suction over the surface of the member.

The invention may be contained in structures that vary in form and may be used in connection with washing machines of different types. To illustrate a practical application of the invention and to fully describe a structure containing the invention, I have selected as an example a structure containing the invention and shall describe it hereinafter. The structure selected is shown in the accompanying drawings.

Figure 1 illustrates a typical "wave" action washing machine containing my invention, in section. Fig. 2 illustrates the washing machine in a position different from that shown in Fig. 1, and Fig. 3 illustrates the third extreme position of the machine. Fig. 4 illustrates a section of a suction producing member. Fig. 5 illustrates a modified form of suction member and shows a section taken on the plane of the line 5—5 indicated in Fig. 6. Fig. 6 illustrates a view of a section taken on the plane of the line 6—6 indicated in Fig. 5. Fig. 7 is a broken sectional view taken on the broken line 7—7 indicated in Fig. 5.

In applying my invention to the ordinary tilting or "wave" type of washing machine the bottom wall of the container for the clothes and water is preferably provided with a depression and a perforated member is so located as to substantially cover the depression, whereby the air and vapor pressure will be varied to produce increased or decreased pressure of the air and vapor and cause movement of the air and vapor to and from the depression and consequently through the clothes or fabric that may be lying upon the surface of the member.

In Figs. 1 and 2 the container 11 may be supported on a suitable standard such as the standard 12 and actuated by means of the shaft 13, to produce tilting movements in the manner well known in connection with such machines.

The container 11 is provided with a member that separates the container into two parts or chambers. Preferably the bottom of the container is provided with the depression 14 and a cellular member 15 is located in the depressed portion of the container and so that the top of the cellular member 15 will be located substantially in the plane of the bottom of the body portion of the container, that is, the plane that forms a continuation of the curved walls with which the containers of such washing machines are usually provided. The member 15 is provided with a top 16 having openings 17. Preferably the top 16 is corrugated, it being provided with corrugations 18, that extend across the direction of movements of the water and the clothes when the container 11 is agitated by the oscillatory movements produced by the shaft 13. The member 15 is sub-divided into chambers or cells by means of the parallel walls 19. The chambers that are thus formed extend across the member 15, that is, along the under side of the top 16 and the corrugations 18. It will be observed that the lower ends of the walls 19 are spaced from the bottom of the depression 14 thereby forming a channel 23 for the pas-

sage of liquid, this passage being common to all the cells.

When the container is tilted about the axis of the stub shaft 13, the water moves along the top 16 of the member 15 and the curved side wall, and is thrown over towards the opposite side in wave breaker form and dashes on to the top of the clothes in the manner well known in the art. This movement of the container 11 carries the bulk of the water from the bottom of the container, and the water that was in one end of the member 15 moves along the bottom of the depression 14 through the channel 23, and thus the water in the cells of the member 15 and one end of the member is carried down to the lower end of the tilted member. This draws the mist or vapor formed by the dashing water within the container 11 through the clothes, particularly, those parts that are in contact with that end of the top of the member 15. On the return of the container 11 the air is forced out of that part and through the clothes located on the top. On further movement of the container 11 the other end of the member 15 is emptied, the water flowing along the bottom of the depression in the channel 23. This again produces suction at that end and on the reverse movement of the container 11 the air and vapor is forced from that end of the member and drawn in to the end first referred to above. Therefore, as the container is oscillated back and forth throwing practically all the water from the bottom, and a large part of the water from the depression, there is an alternate change of pressure above and below atmospheric to cause movement of the air and vapor through the openings 17 of the top 16. This would also occur if the member was formed only of the top 16, but by subdividing the space below the top 16 into small chambers, a distribution of the movement of the air into and out from the member 15 is insured. This movement through each and all of the openings may be made more positive and more certain if the chambers are subdivided by partitioning walls that extend the length of the member 15. In the form of construction illustrated in Figs. 5, 6, and 7, the member 15 is provided with the partitioning walls 22 that are located in a direction transverse to the partitioning walls 19. The openings 17 are located on opposite sloping sides of the corrugations and between the walls 22 so that the upper ends of the cells formed by the partitions 19 and 22 communicate with the interior of the body portion of the container 11, through two openings through which the vapor and steam may be drawn into each of the cells or forced therefrom depending upon the change of level of the liquid in each of the cells.

I claim:

1. An oscillatory washer having a chamber in the bottom thereof, cells in said chamber having open outer ends spaced from the bottom of said chamber thereby providing a channel common to all of said cells, and the inner ends of said cells being provided with restricted openings to afford communication with said chamber through said restricted openings.

2. In a tilting fabric washing machine, a container having a recessed part in the bottom thereof and for containing a washing fluid and the fabrics, an open bottomed cellular member spaced from the bottom of said recessed part thereby providing a channel and having openings extending over the recessed part of the container and located in the recessed part of the container, the openings being located in the upper ends of the cells.

3. In a tilting fabric washing machine, a container having a recessed part in the bottom thereof and for containing a washing fluid and the fabrics, an open bottomed cellular member spaced from the bottom of said recessed part thereby providing a channel and having openings extending over the recessed part of the container, and located in the recessed part of the container, the openings located in the upper ends of the cells, the top surface of the member having corrugations extending across the path of the movement of the water and fabric when agitated by the operations of the machine.

4. In a tilting fabric machine, a container having an oblong depressed portion, a normally submerged member having a perforated corrugated top and located in the depressed portion, said member also having longitudinally and transversely extending walls forming open bottomed cells that communicate with the body portion of the container through the perforations, the lower ends of said walls being spaced from the bottom wall of the depressed portion thereby providing a channel common to said cells for the passage of fluid therethrough.

5. An oscillatory washer comprising a receptacle, a cellular member in said receptacle the cells having open outer ends spaced from the bottom of said receptacle, thereby providing a channel common to all of said cells and the inner ends of said cells being provided with restricted openings to afford communication with said receptacle.

In testimony whereof I have hereunto signed my name to this specification.

HARRY F. KEIFFER.