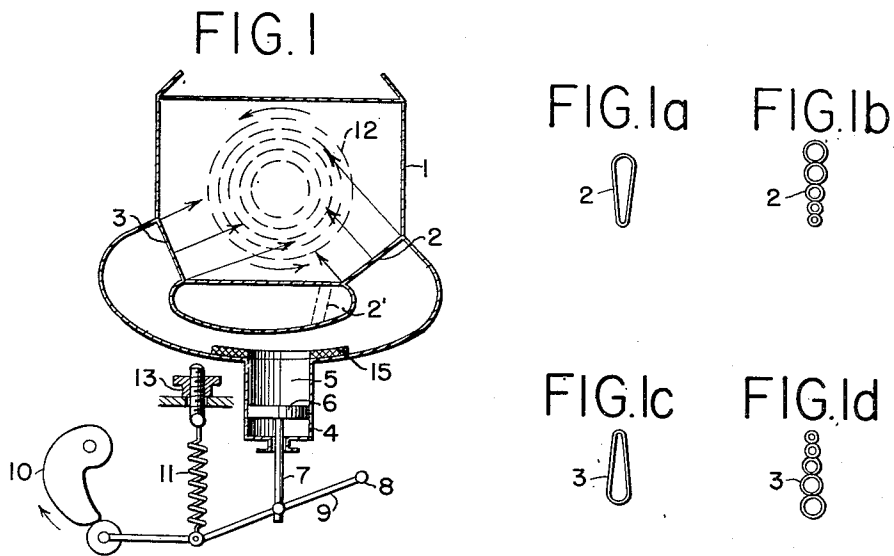
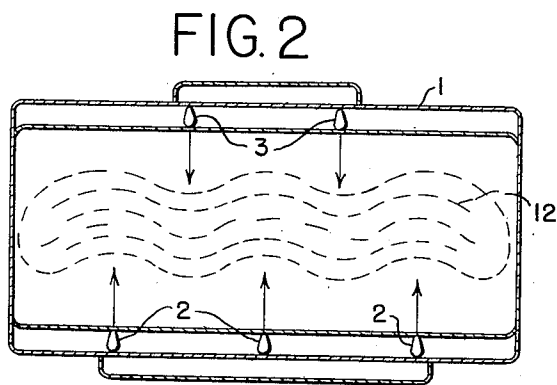
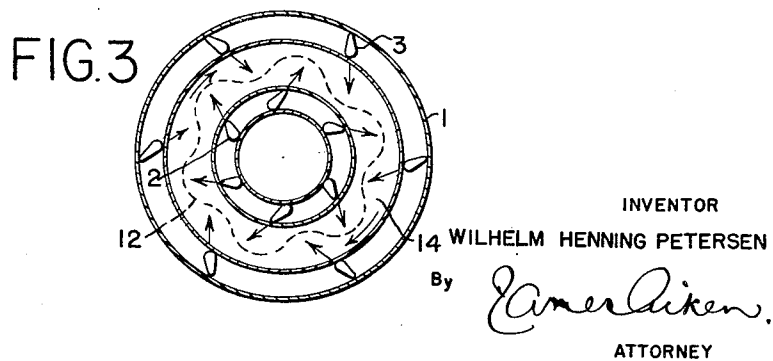


Nov. 14, 1950

W. H. PETERSEN
MACHINE FOR WASHING CLOTHES
Filed Oct. 6, 1945

2,530,028



UNITED STATES PATENT OFFICE

2,530,028

MACHINE FOR WASHING CLOTHES

Wilhelm Henning Petersén, Vasteras, Sweden,
 assignor to Allmanna Svenska Elektriska Ak-
 tiebolaget, Vasteras, Sweden, a corporation of
 Sweden

Application October 6, 1945, Serial No. 620,670
 In Sweden November 28, 1944

4 Claims. (Cl. 68—190)

1

In washing clothes by machine the clothes are treated by a washing liquid consisting of water and soap or other washing means generally in connection with a mechanical treatment of the clothes in order to increase the dirt dissolving effect of the washing liquid. Many people are of the opinion that the mechanical treatment is so injurious that it accelerates the wear of the clothes. They consider that the mechanical treatment must be entirely omitted in the washing procedure, which undoubtedly is going too far. Certainly, it cannot be denied, that a powerful treatment of the clothes by various tools, by machine or by hand is detrimental to the clothes being washed, especially in the case of delicate materials, but on the other hand it cannot be denied, that a mechanical treatment adapted to the nature of the material to be washed, gives a result which is superior in regard to clean washing.

The present invention has for its object to provide a machine for the washing of clothes in which no solid parts or tools driven by machine act upon the clothes. According to the invention the clothes are exposed to simultaneous local intermittent currents of washing liquid directed obliquely upwards and inwards from nozzles on each side of the lower part of the long sides of the washing chamber. As the nozzles on the two sides of the washing chamber are placed in staggered relation to each other, the clothes will bend in a number of curves, the number of which will depend upon the number of nozzles. Through this intermittent bending a certain rubbing action is effected between the different parts of the clothes. In order to get all parts of the clothes exposed to this rubbing action the clothes must turn around their longitudinal axis. This is effected by so arranging the nozzles that those on the one side have a transverse section increasing upwards, whereas those on the other side have a transverse section increasing downwards. Moreover, the main direction of the liquid currents from the one side may form a smaller angle with the horizontal plane than the main direction of the currents from the other side. The very mild treatment, to which the clothes are exposed by the procedure described above, is very effective. It does not wear the clothes as in treatment with hard objects. During service it can easily be adjusted for the treatment of different kinds of articles by regulating the power of the liquid currents.

According to this procedure different washing machines may be designed. The attached draw-

2

ing shows two such machines diagrammatically. Fig. 1 is a transverse section of a washing machine. Figs. 1a and 1b are cross-sections showing different forms of the nozzles 2, and Figs. 1c and 1d are similar views showing different forms of the nozzles 3. Figs. 2 and 3 show plan views of washing machines with other forms of the washing chamber.

1 indicates in Fig. 1 the washing chamber with its nozzles 2, 3 arranged at the bottom. These nozzles may have either oblong tapered section, as shown in Fig. 1a, or in order to obtain a better guiding of the liquid current may consist of a group of small nozzles arranged in the vertical plane, as shown in Fig. 1b. In both cases the nozzles 2 on the one side of the washing chamber have a section increasing upwards and on the other side 3 a section increasing downwards as shown at Figs. 1c and 1d.

The nozzles are connected to a pumping plant, known per se. As a suitable type of pump may be mentioned for instance a diaphragm pump, a piston pump or an intermittently working centrifugal pump, but other types of pumps may also be used. The drawing shows a piston pump 4 with housing 5 and piston 6, which is by means of the rod 7 connected to the lever 9, pivoted on the shaft 8. The free end of the lever 9 is actuated by a cam 10 and a spring 11. The cam is rotatable either by hand or by means of an electrical motor. The purpose of the cam is to push the lever 9 downwards, thereby stretching the spring 11 and then to quickly release the lever. The piston 6 connected to the lever is thereby quickly pulled upwards pushing the washing liquid enclosed in the pump housing 5 out through the nozzles 2, 3. For every revolution of the cam 10 the clothes 12 in the washing chamber 1 are exposed to an impact of washing liquid from every one of the nozzles. The impact of the liquid currents may be regulated by regulating the pull of the spring 11 by means of the screw arrangement 13. Between each stroke of the pump a part of the washing liquid flows back when the piston moves downwards.

The nozzles 2, 3 are inclined upwards. This and the form of their section causes the washing clothes to be lifted and turned in the direction of the arrow for every impact of the liquid. Moreover, the mouthpieces 2 on the one side are arranged in staggered relation to the nozzles 3 on the other side. This is shown on Fig. 2, showing an oblong washing chamber. By this arrangement the clothes 12 obtain a laterally bending movement.

3

Fig. 3 shows a washing chamber 1, forming a ring-shaped trough 14, which is on two opposite sides provided with staggered nozzles 2, 3 obliquely arranged in the same direction. By this arrangement the clothes 12, in addition to the turning, lifting and bending movement, described above, also obtain a propulsive movement in the trough.

A heating element 15, arranged for instance round the upper part of the pump housing 5, may be employed for heating the washing liquid to a temperature suitable for washing. If the washing machine is not fitted with a heating element, the washing liquid must be heated outside the washing machine before it is poured into the chamber 1. Also the bottom of the container 1 may be provided with one or more nozzles for the admission of washing liquid (as shown at 2' by dotted lines in Fig. 1) in order to assist the movement of the washing liquid.

I claim as my invention:

1. A washing machine comprising a container for clothes to be washed, nozzles arranged in staggered relation to each other on two opposite sides of the container, the nozzles on the one side having cross sections the width of which increases upwardly, and the nozzles of the opposite side having cross sections the width of which increases downwardly, an intermittently working pump for washing liquid, means con-

4

necting said pump to the nozzles for pushing currents of washing liquid through the same towards the clothes in the container thereby giving them a wave-like turning and lifting movement.

2. Washing machine according to claim 1, in which the container is in the form of a ring-shaped trough.

3. Washing machine according to claim 1, comprising pump control means for regulating the strength of the liquid currents.

4. A washing machine according to claim 1 comprising an additional nozzle at the bottom of the container for the admission of washing liquid thereto.

WILHELM HENNING PETERSEN.

REFERENCES CITED

The following references are of record in the file of this patent:

UNITED STATES PATENTS

Number	Name	Date
764,613	Moreland	July 12, 1904
1,605,412	Williams	Nov. 2, 1926
1,789,272	Cowles	Jan. 13, 1931
1,878,825	Caise	Sept. 20, 1932
2,115,622	Dawson	Apr. 26, 1938
2,276,147	Birr	Mar. 10, 1942
2,331,379	Dyer	Oct. 12, 1943