

Sept. 27, 1932.

W. SIMONSSON

1,879,770

BOTTLE WASHING MACHINE

Filed Dec. 22, 1928

3 Sheets-Sheet 1

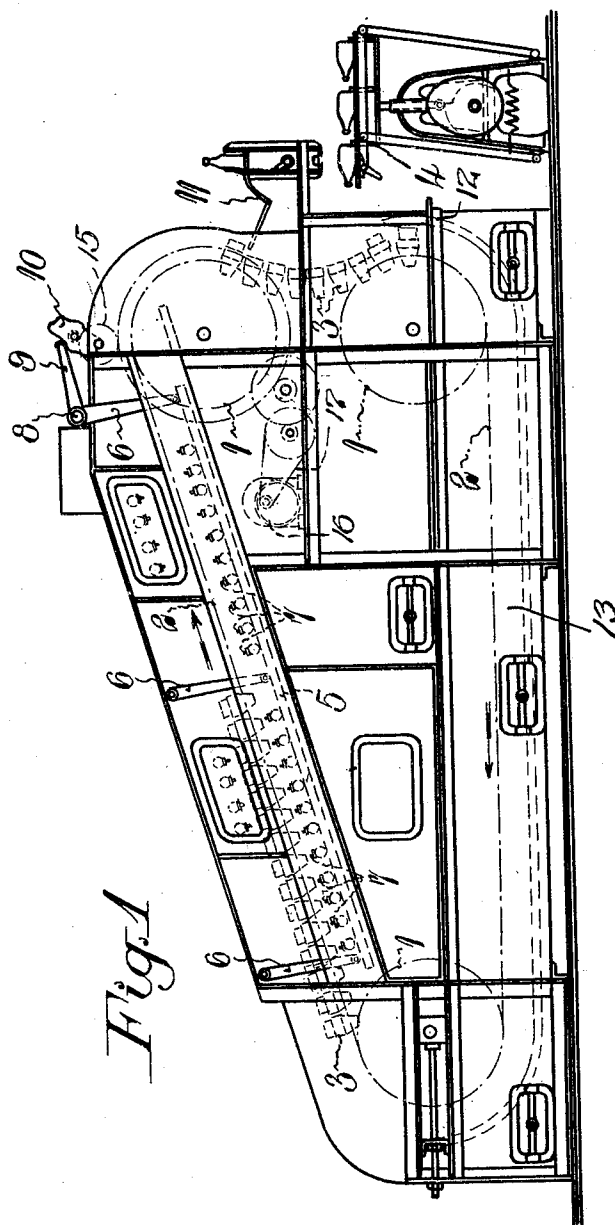


Fig. 1

Inventor:
W. Simonsson
By Laurin Perry, Clerk
Attys.

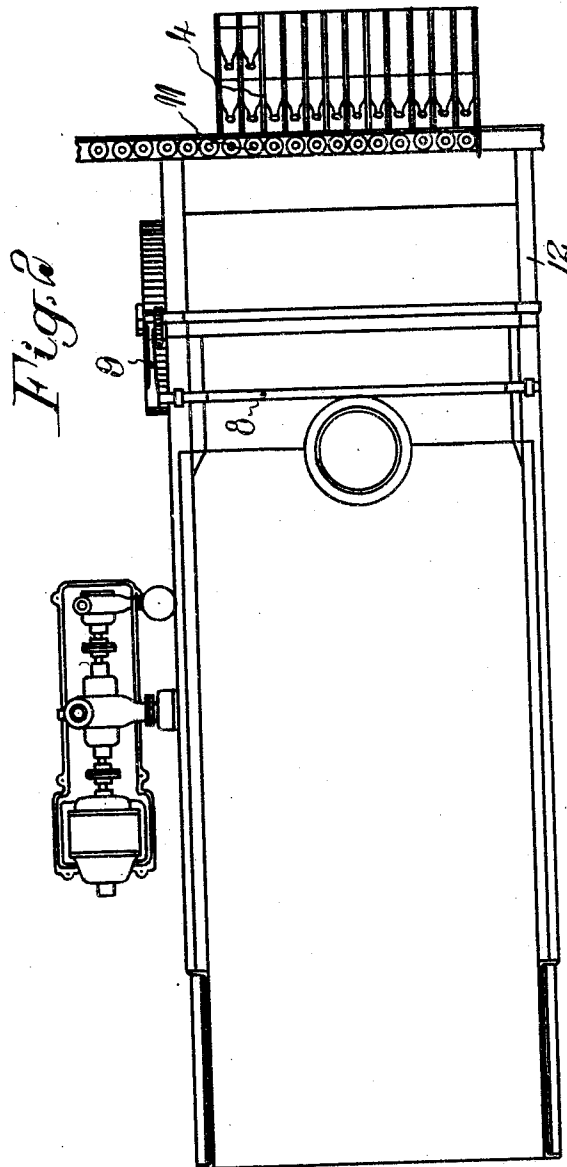
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3 Sheets-Sheet 2



Inventor:
W. Simonsson
By Langer, Parry, Card & Thompson
Attys.

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3 Sheets-Sheet 3

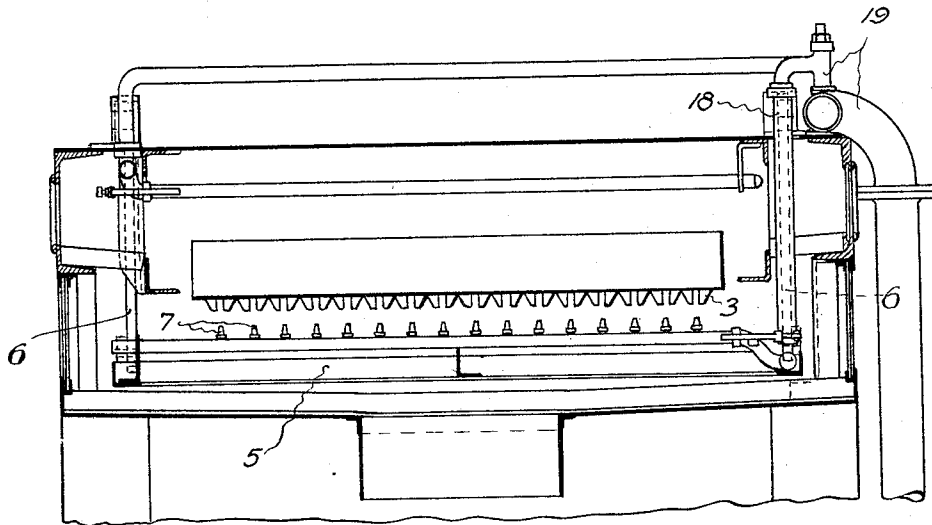


Fig. 3

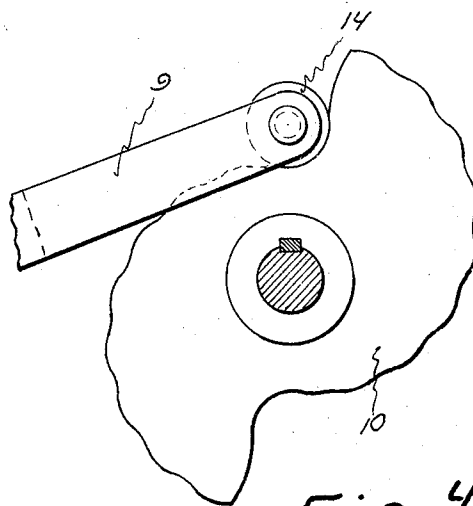


Fig. 4

Inventor
W. Simonsson
By
C. F. Wenderoth
Att'y

UNITED STATES PATENT OFFICE

WILHELM SIMONSSON, OF HALSINGBORG, SWEDEN

BOTTLE WASHING MACHINE

Application filed December 22, 1928, Serial No. 327,973, and in Sweden December 31, 1927.

My present invention relates to bottle washing machines of the kind wherein the bottles are fed into suitable pockets carried by an endless conveyor so as by the movement of such conveyor to be successively brought into a position opposite to different washing nozzles or groups of such nozzles adapted for sprinkling the bottles interiorly or exteriorly or both, for instance by different fluids. In the machines of this kind as previously known the conveyor has generally been given a step by step motion, and thus the pockets together with the bottles have successively been brought in position above the washing nozzles, so that the jets emanating from said nozzles have been thrown into the bottles during the periods of rest of the conveyor, at which periods the bottles have been positioned opposite to the nozzles. If the machine is constructed for treatment of a large number of bottles, for instance 3600 per hour, and if the conveyor is provided with for instance 12 pockets counted transversely, the movable conveyor belt will be very heavy, and the consumption of power by the intermittent motion of the same will be very great, the stresses arising on the bearings and other parts of construction being also very great. Therefore the present invention refers to an arrangement for making possible a continuous and uniform travel of the conveyor. Besides this arrangement involves also the advantage of a better utilization of the washing nozzles and thereby also an increased working capacity of the machine. The said arrangement consists therein that the washing nozzles or a number thereof, i. e. especially the nozzles intended for the interior washing of the bottles, are mounted on a reciprocating frame or the like positioned along one part of the endless conveyor, preferably the upper one. This frame is constructed so as periodically to be driven forward with the same or substantially the same speed as the part of the conveyor concerned, and thereafter to be rapidly moved back again, so that the return motion takes but a fraction of the time spent for the forward motion, during which latter the washing nozzles carried by the frame take a work-

ing position for the interior, or in certain cases also for the exterior, washing of the bottles. The upper part of the conveyor is suitably inclined, so that its forward end, counted in the direction of travel, takes the highest position. The movable frame is preferably suspended by links in the same inclined position, so that the frame performs its return movement due to its own weight and is driven forward for instance by means of a cam disc driven by means of a suitable transmission from any of the rollers or drums supporting the conveyor belt. When feeding into and removing the bottles at the same end of the machine, the lower part of the conveyor may be run through a fluid tank for the purpose of wetting the bottles previous to the washing of the same.

An embodiment of the invention is illustrated in the accompanying drawings, wherein Fig. 1 shows an elevation of the machine, Fig. 2 showing the same seen from above.

Figure 3 is a cross section of the upper part of the machine upon a larger scale, and

Figure 4 shows the corrugated cam upon a larger scale.

Three rollers or drums 1 are mounted in a suitable frame 12, a conveyor belt 2 running on said drums being continuously and uniformly driven in the direction of the arrow shown in Fig. 1. This conveyor, which may be built up from links or constructed in any other suitable manner, is provided with bottle pockets 3, into which the bottles are pushed by a suitable bottle feeding device 4. By means of the movement of the conveyor the bottles thus fed in are at first passed through a tank 13 located at the lower part of the machine and containing a suitable liquid for wetting the bottles. A frame 5 or the like is mounted beneath and along the upper part of the conveyor, such frame being suspended by pivotal links 6. The frame is provided with washing nozzles 7 spaced a distance equal to the distance between two adjacent bottle pockets 3 on the conveyor 2; the washing liquid being transmitted to said nozzles in any convenient manner for instance through a flexible tube or hose 18 connecting the frame to a supply pipe 19 as shown in

Figure 3. Hence, the frame 5 will be permitted to be reciprocated along the upper part of the conveyor, and the upper links 6 are mounted on a shaft 8 provided with a lever 9 the free end of which by means of a roller 14 (Figure 4) is positioned in contact with a cam disc 10 driven from one of the drums 1 by means of gearing 15, said drum 1 being driven from an electric or other motor 16 through suitable transmission means 17 as shown diagrammatically in Figure 1. By means of said cam disc the frame 5 is periodically moved so as substantially to follow the upper part of the conveyor in its movement during a suitable length of travel and thereafter rapidly to go back and then be moved forward again. During the forward movement of the frame the washing nozzles supported by the same are in a position directly beneath the bottles conveyed above said nozzles, so that the jets are thrown into the bottles. The washing nozzles are preferably not entirely stationary in relation to the bottles, but by means of a suitable wavy or corrugated shape of the cam disc 10 the nozzles are given a somewhat oscillating movement in relation to the bottles whereby the jets are caused to impinge on the whole surface of the latter. After the washing the bottles are removed by means of the delivery device 11.

It is to be understood that various modifications of construction can be made without departing from the principle of the invention, and the invention is not limited to the embodiment particularly described above for the sake of explanation.

What I claim and desire to secure by Letters Patent is:—

1. Improvement in bottle washing machines of the kind wherein the bottles are supported in pockets on endless conveyor means running on drums, so as by the movement of said conveyor means successively to be brought into register with washing nozzles, characterized by movable frame means for movably supporting a series of such washing nozzles, means for imparting a reciprocating movement to said frame means, means controlling said reciprocating movement of said frame, to cause said frame means to travel with said conveyor means at the same speed and then be quickly returned to the starting position, said controlling means oscillating said frame during its movement in unison with said conveyor means, said conveyor means having the upper run thereof inclined to the lower portion and said frame means being correspondingly inclined with reference to said bottom portion of said conveyor so that said frame means may be moved in one direction by gravity.

2. A bottle washing machine comprising an endless conveyor for bottles, drums upon which said conveyor is mounted, means for moving said conveyor, said drums being so

positioned that the upper run of said conveyor is inclined to a horizontal plane, means for directing a fluid at said bottles for washing said bottles, means for moving said fluid directing means in unison with said conveyor for a short distance, means for oscillating said fluid directing means during said movement in unison with said conveyor and said fluid directing means being inclined to a horizontal plane in the same manner as the upper run of the conveyor so that said fluid directing means may be quickly returned to its original position by gravity.

3. A bottle washing machine comprising an endless conveyor for bottles, drums upon which said conveyor is mounted, means for moving said conveyor, said drums being so positioned that the upper run of said conveyor is inclined to a horizontal plane, means for directing a fluid at said bottles for washing said bottles, means including a cam and attendant mechanism for moving said fluid directing means in unison with said conveyor for a short distance, said fluid directing means being inclined to a horizontal plane in the same manner as the upper run of the conveyor so that said means may be quickly returned to its original position by gravity and said cam having such configuration as to oscillate said fluid directing means while said means is moving in unison with said conveyor so as to direct said fluid at various portions of said bottles.

4. A bottle washing machine comprising an endless conveyor for bottles, drums upon which said conveyor is mounted, means for moving said conveyor, said drums being so positioned that the upper run of said conveyor is inclined to a horizontal plane, means for directing a fluid at said bottles for washing said bottles, means including a cam and attendant mechanism for moving said fluid directing means in unison with said conveyor for a short distance, said fluid directing means being inclined to a horizontal plane in the same manner as the upper run of the conveyor so that said means may be quickly returned to its original position by gravity and said cam having indentations therein so as to oscillate said fluid directing means while said means is moving in unison with said conveyor so as to direct said fluid at various portions of said bottles.

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

WILHELM SIMONSSON.