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J. L. HEROLD

SOAKING APPARATUS

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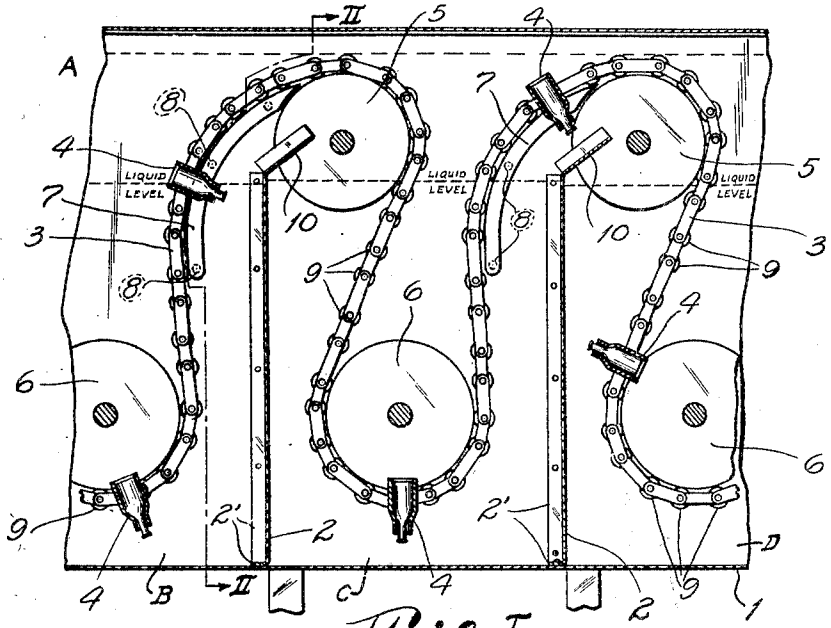


Fig. I.

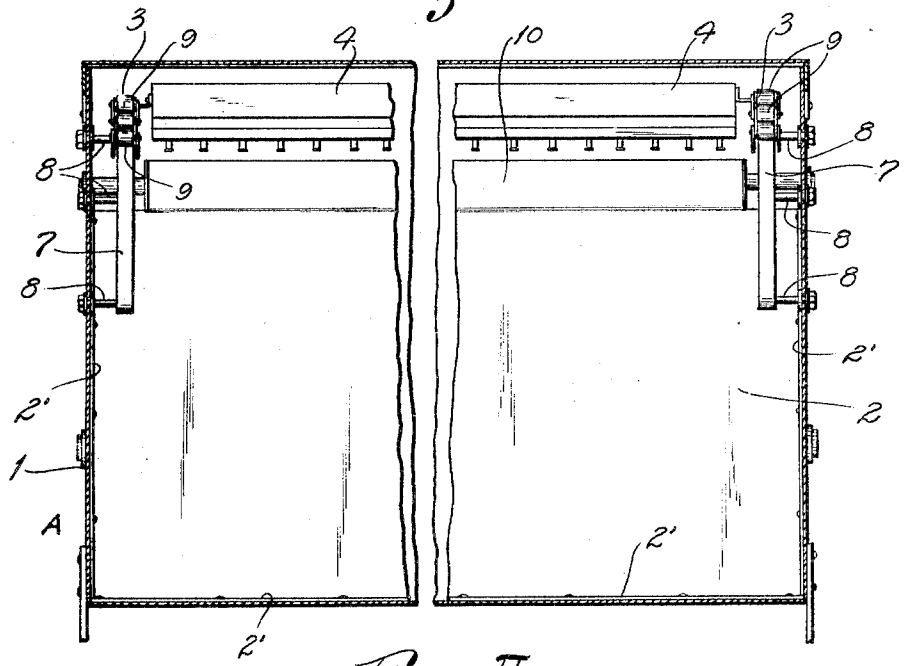


Fig. II.

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SOAKING APPARATUS.

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This invention relates generally to bottle-soaking apparatus, and more specifically to a bottle soaker having a plurality of compartments containing liquid through which the bottles pass during the soaking operation. The predominant object of the invention is to produce a soaker of the class described which is provided with means whereby the liquid which collects in the bottles while said bottles are passing through any one of the compartments of the soaker will drain therefrom into said compartment before said bottles pass to another compartment.

Another object of the invention is to produce a soaker so constructed that the liquid in the compartments is maintained at a higher level than heretofore.

With the foregoing and other objects in view, the invention comprises the novel construction, combination and arrangement of parts hereinafter more specifically described and illustrated in the accompanying drawings, wherein is shown the preferred embodiment of the invention. However, it is to be understood that the invention comprehends changes, variations and modifications which come within the scope of the claims hereunto appended.

Fig. I is a fragmentary vertical section of a soaker made in accordance with my invention.

Fig. II is a cross section taken on line II—II of Fig. I.

In the drawing A designates my improved soaker which comprises a housing or tank 1 divided into compartments B, C and D by partitions 2. The partitions 2 extend transversely of the housing or tank 1, as shown in Fig. II, and said partitions are each provided with flanges 2′ at the bottom and side edges thereof whereby said partitions may be secured to the bottom and side walls of the housing or tank 1. As will be noted by referring to Fig. I, the top edges of the partitions 2 are spaced apart in a downward direction from the top wall of the housing or tank 1. The compartments B, C and D produced by the partitions 2 are entirely separate from each other so that liquid which is contained in any one of said compartments may not find its way into any of the other compartments.

Arranged within the housing 1 is a bottle carrier which is adapted to travel in a tortuous course through said housing. Each of the compartments B, C and D contains liquid as suggested in Fig. I, and the bottles supported by the bottle carrier pass through successive bodies of liquid.

The bottle carrier comprises a pair of endless flexible traveling supports, preferably sprocket chains 3 located at opposite sides of the apparatus, as shown in Fig. II, and a series of bottle holders 4 having their ends secured in any suitable manner to the oppositely disposed sprocket chains 3. The bottle holders may be of any suitable construction and may be provided with any suitable means for preventing bottles from being dislodged from said bottle holders during the passage of said bottles through the housing 1, but as the bottle holders form no part of the present invention no attempt has been made to completely illustrate them, nor will they be described in detail.

5 and 6 designate a plurality of guide wheels over which the sprocket chains 3 operate. The guide wheels 5 are located adjacent to the upper ends of the partitions 2 and are offset from said partitions in a direction longitudinal with respect to the soaker, as shown in Fig. I, while the guide wheels 6 are located within the compartments B, C and D at the lower ends thereof. The sprocket chains 3 pass over the guide wheels 5 and 6, and because of the arrangement of said guide wheels the bottle carriers and the bottles supported thereby pass downwardly into each of the compartments, thence upwardly in said compartments over the partition separating the compartment through which the bottles have just passed from the next succeeding compartment, and then downwardly into said next compartment. This tortuous course is traveled by the bottles until said bottles have passed successively through the bodies of liquid in each of the compartments comprising the housing of the apparatus.

The arrangement of offsetting the guide wheels 5 with respect to the partitions 2 is an important feature of my invention for the reason that it renders it possible to maintain a higher liquid level in each of the compartments than was possible heretofore. Prior to this invention the guide wheels at the upper ends of the partitions were in

approximate vertical alinement with said partitions, hence it was necessary to cut out portions to receive the guide wheels. The result of these cut-out portions in the partitions was to reduce the height of the liquid within the compartments, for it is plain that the level of the liquid had to be maintained below the cut-out portions in the partitions to prevent the liquid from one compartment overflowing into the adjacent compartment. By referring to Fig. I it will be noted that the liquid levels in the various compartments are some distance above the bottom of the guide wheels 5 whereby a longer period of soaking is provided for the bottles as they pass through each compartment.

Arranged at the upper ends of the partitions 2 and at the opposite sides of the soaker is a plurality of arcuate guiding members 7, there being a pair of oppositely disposed guiding members 7 associated with each individual partition 2, as shown in Fig. II. The guiding members are secured by means of bolts 8 or other suitable securing devices to the side walls of the housing 1, and said guiding members are so shaped that the sprocket chains 3 will be guided over the upper ends of the partitions 2 to the adjacent guide wheels 5. As shown in the drawing the sprocket chains 3 contact with the guide members 7 to guide said sprocket chains around the upper ends of the partitions 2, and to avoid excessive friction between said chains and said guiding members the chains are preferably provided with rollers 9 (Fig. II).

Associated with each individual partition 2 is a drain board 10, said drain boards preferably, though not necessarily, comprising each an integral part of the associated partition and being inclined with respect to the horizontal, as shown in Fig. I, whereby any liquid which is deposited on said drain boards will be directed into the compartments. The drain boards 10 are each provided with upwardly extended flanges 11 at the opposite ends thereof to prevent the liquid flowing over the ends of said drain boards.

To describe the operation of my improved soaker it will be assumed that bottles are passing through the compartment B. When these bottles reach a point adjacent to the lower ends of the arcuate guide members 7 at the upper end of the partition dividing the compartments B and C the neck portions of said bottles will be pointed downwardly. As soon as the bottles have passed out of the liquid within the compartment liquid which has collected in said bottles during their passage through the compartment B will commence to drain therefrom. The openings in the neck portions of the bottles are, of course, much smaller than the interiors of said bottles, hence the draining action would be a rather slow one and as a result the bottles would be carried beyond the partition 2 before they would be completely drained. It is apparent, therefore, in the absence of the drain boards 10 that the liquid from the compartment B would be drained from the bottles into the compartment C and that the liquid from the compartment C would be transmitted in this manner into the compartment D. This transmission of liquid from one compartment to another is quite undesirable due to the fact that the soaking liquid in the different compartments of my improved soaker are of varying strengths and must be kept so for successful results.

In the operation of my improved soaker, however, the liquid from the compartment B does not drain from the bottles into the compartment C, nor does the liquid from the compartment C drain from the bottles into the compartment D, for the reason that said liquid drains from the bottles onto the inclined drain boards 10 and said liquid is directed by said drain boards into the compartment from which it came.

Soakers of the type described herein ordinarily are provided with a great number of bottle holders 4, but for the sake of simplicity of illustration I have shown only a few of said bottle holders in Fig. I of the drawing.

Each guide bar 7 has a long curved face over which a conveyor chain travels and the curve extends from a point considerably lower than the top of a partition 2 to a point above the partition, so the bottles are tilted for drainage during a relatively long period. Each guide bar 7 lies at one side of a partition 2 and it is associated with a guide wheel 5 at the opposite side, the object of this feature being to locate the upper edge of the partition at an elevation higher than the lower edges of the guide members, thereby providing for the relatively high water level without causing an overflow from one compartment to another. This enables the desired liquid levels to be maintained in a relatively shallow tank, and since the tanks are usually very large the saving effected by reducing the height of the tank is an important consideration.

I claim:

1. A bottle soaker comprising a housing, partitions whereby said housing is divided into a plurality of compartments adapted to receive liquid, inclined drain boards extending upwardly from said partitions, an endless traveling conveyor, supporting elements for said endless conveyor, bottle carriers supported by said endless conveyor, and means arranged adjacent to said partitions whereby said endless conveyor is deflected to permit all of the liquid within the bottles

carried by said endless conveyor to drain therefrom into one compartment before said bottles pass to another compartment.

2. A bottle soaker comprising a housing, partitions whereby said housing is divided into a plurality of compartments adapted to receive liquid, an endless traveling bottle conveyor, supporting elements for said endless traveling bottle conveyor, inclined drain boards extending upwardly from the partitions, said supporting elements being arranged adjacent to the upper ends of said partitions and being offset from said partitions so as to lie between the ends of said drain boards and the side walls of said housing.

3. In an apparatus of the character described, a housing provided with a partition whereby it is divided into compartments, a traveling bottle conveyor movable over said partition to pass from one compartment to another, and guide members arranged at opposite sides of said partition to guide said conveyor over the upper edge of the partition, the lower portions of said guide members being lower than the upper edge of said partition and the upper portions being higher than the partition.

4. In an apparatus of the character described, a housing provided with a partition whereby it is divided into compartments, a traveling bottle conveyor movable over said partition to pass from one compartment to another, and guide members arranged at opposite sides of said partition to guide said conveyor over the upper edge of the partition, one of said guide members being an elongated bar having a curved guiding face extending from a point lower than the top of said partition to a point above the partition.

5. In an apparatus of the character described, a housing provided with a partition whereby it is divided into compartments, a traveling bottle conveyor movable over said partition to pass from one compartment to another, and guide members arranged at opposite sides of said partition to guide said conveyor over the upper edge of the partition, one of said guide members being an elongated bar having a curved guiding face extending from a point lower than the top of said partition to a point above the partition, and the other guide member being a wheel having an upper portion higher than the top of the partition and a lower portion lower than the top of the partition.

In testimony that I claim the foregoing I hereunto affix my signature.

JAMES L. HEROLD.