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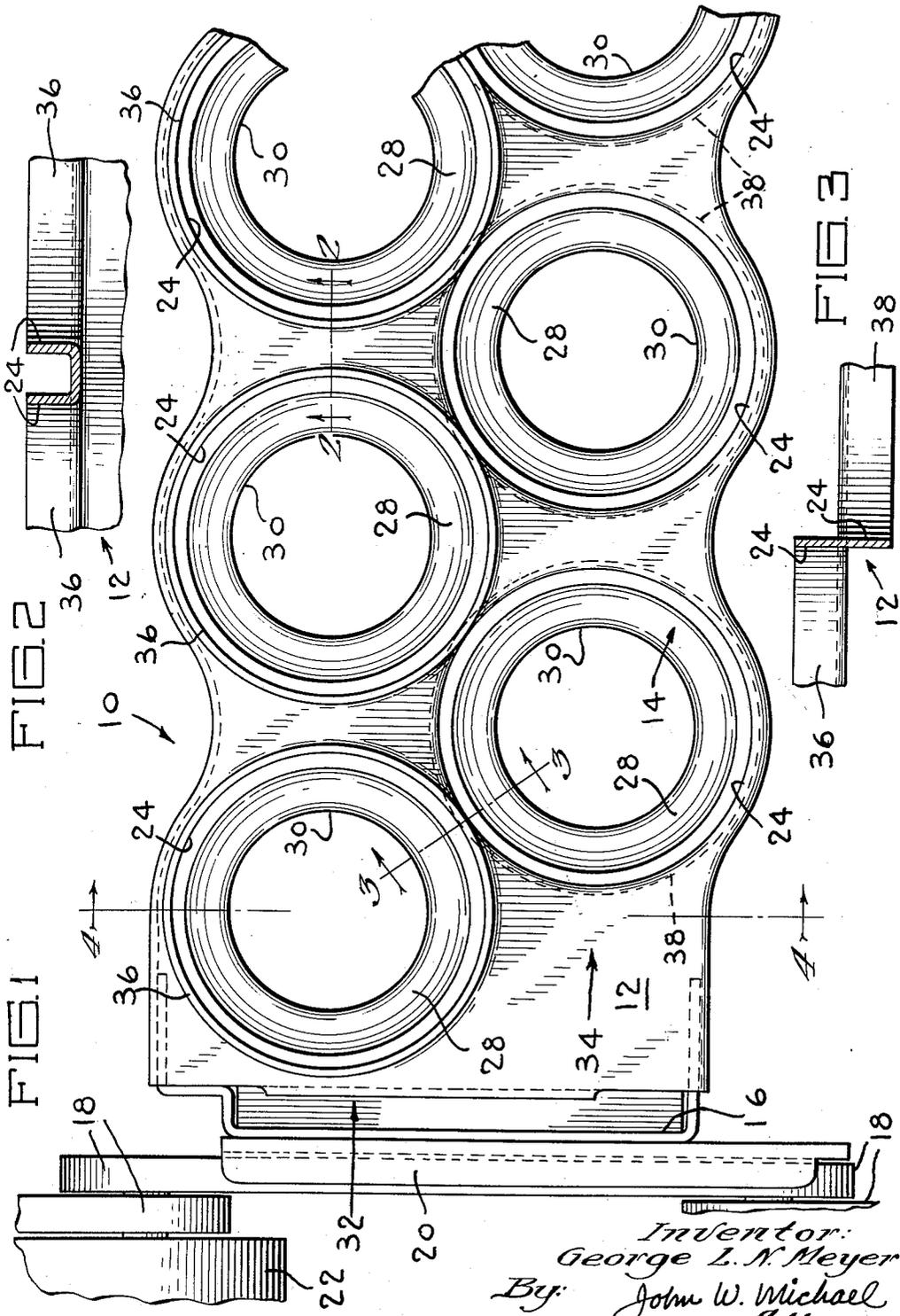
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BOTTLE CARRIER CONSTRUCTION FOR BOTTLE WASHER

Filed June 16, 1961

2 Sheets-Sheet 1



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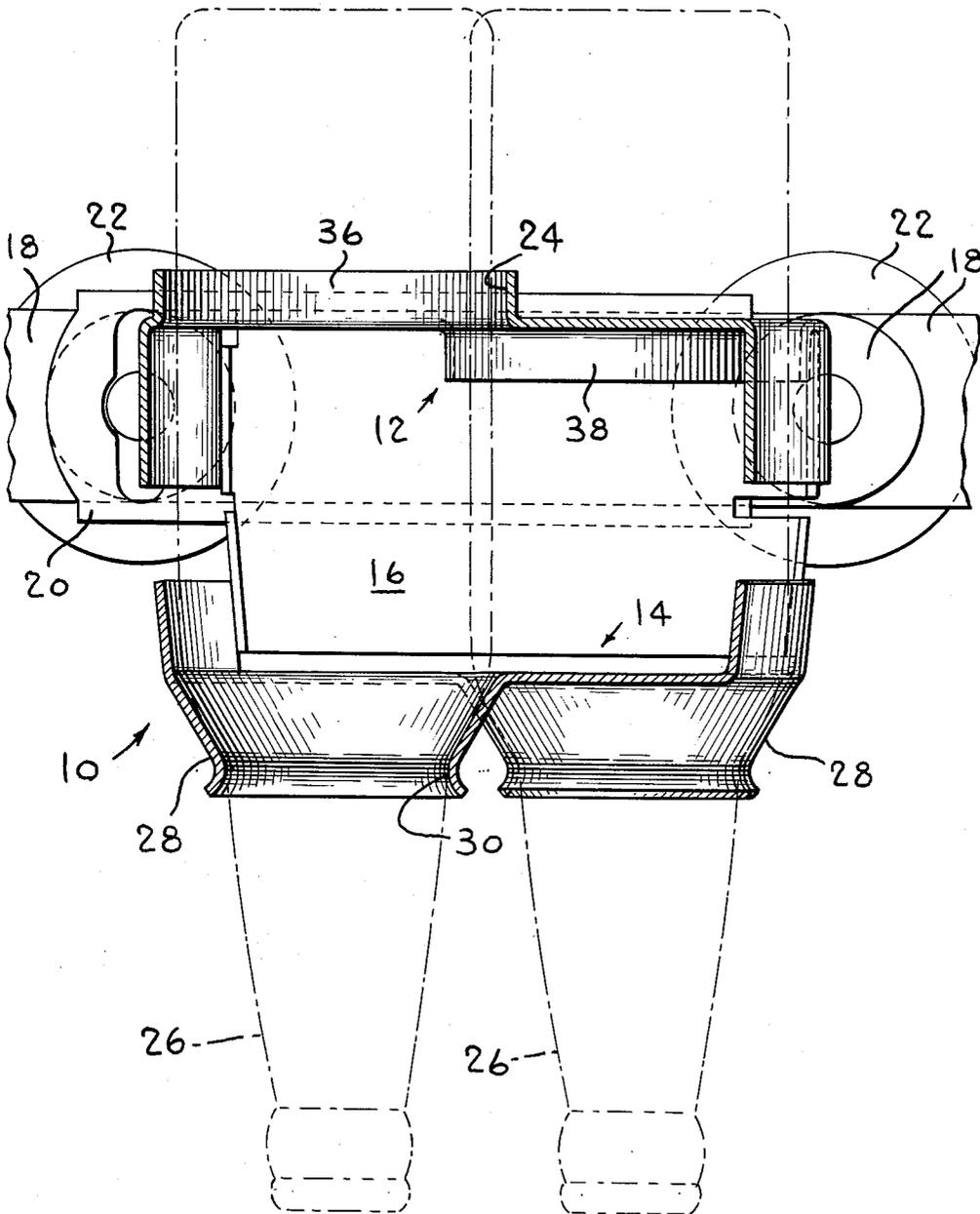
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2 Sheets-Sheet 2

FIG. 4



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BOTTLE CARRIER CONSTRUCTION FOR BOTTLE WASHER

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1 Claim. (Cl. 198—131)

This invention relates to an improved bottle carrier construction for a bottle washing machine.

The principal object of this invention is to provide a bottle carrier assembly having a substantially greater capacity than prior designs. Such prior designs utilized spaced parallel bottle carriers mounted on a carrier chain each having single rows of aligned bottle carrying apertures. The capacity of such a carrier assembly is limited by how close the individual carriers can be spaced from each other. The minimum spacing is determined largely by the interference between bottles and/or carriers at the point where the carrier assembly passes over the upper and lower wheels of a bottle washing machine and will depend largely on the bottle size.

The improved bottle carrier construction of this invention contemplates the use of "double-row" carriers each of which includes a top and bottom sheet rigidly secured together by suitable tie strips to form a unitary carrier for mounting on a pair of carrier chains of conventional design which serve to translate the carriers through a bottle washing machine. The top and bottom sheets of each "double-row" carrier are provided with two rows of bottle carrying apertures with the apertures of one row offset with respect to the apertures of the other row. As will be explained in detail hereinafter, the offset apertures of the top sheet are nested with respect to each other to thereby provide a minimum spacing between the two rows.

It will be appreciated that with this double row construction it is possible to substantially increase the capacity of each carrier and thereby increase the overall capacity of the bottle washer without increasing the size of the equipment to any appreciable extent.

To demonstrate the substantial increase in carrier capacity provided by this invention, the following specific comparison will be helpful. Assume that with conventional single-row carriers it is necessary to space the carriers at 4 inch intervals (4" pitch) along the chains to handle bottles of a given size. Now to handle bottles of the same size with the improved double-row carrier of this invention it is necessary that only a 5½ inch pitch be provided. Thus, it is seen that by merely increasing the pitch from 4" to 5½" it is possible to handle twice as many bottles giving an overall increase in this specific case of about 45%.

While the improved construction of this invention may be used with bottle washers of various designs, the double-row carriers covered by this application are particularly adapted for use with the bottle washer loading and unloading apparatus disclosed in copending applications Serial Nos. 111,008 and 111,010, filed May 18, 1961.

Other objects and advantages will be pointed out in, or be apparent from the specification and claims, as will obvious modifications of the one embodiment shown in the drawings, in which:

FIG. 1 is a fragmentary top plan view of a single bottle carrier embodying the present invention;

FIG. 2 is a sectional view taken along line 2—2 of FIG. 1;

FIG. 3 is a sectional view taken along line 3—3 of FIG. 1; and

FIG. 4 is a sectional view taken along line 4—4 of FIG. 1.

As explained previously, the unique feature of the bottle carrier of this invention is the combination of two parallel and offset rows of bottle carrying apertures in a single bottle carrier. Such carriers are mounted on a pair of bottle carrying chains of conventional design driven by any suitable means to translate a plurality of bottles through a bottle washing machine.

A bottle carrier embodying the present invention is shown in the drawings and is identified by reference numeral 10. Carrier 10 comprises spaced top and bottom sheets 12 and 14, respectively, securely fastened together by tie strips 16 welded or otherwise secured between opposite ends of the top and bottom sheets.

Top and bottom carrier sheets 12 and 14 are preferably made from metal stampings which, when fastened together by tie strips 16, form a unitary bottle carrier 10. A plurality of carriers 10 are mounted between a pair of carrier chains 18 (only one shown) by suitable brackets 20 (only one shown). Chains 18 are provided with a plurality of rollers 22 which ride in a suitable track (not shown) mounted in the bottle washing machine to thereby translate the bottle carriers 10 through the machine by any suitable drive means (not shown).

Top sheet 12 is provided with a plurality of apertures 24 designed to support and steady the bases of bottles 26 (shown in dotted lines in FIG. 4). Bottom sheet 14 is stamped and drawn to provide a plurality of downwardly tapered bushing portions or cups 28 having apertures 30 designed to receive and support the necks of bottles 26 which are loaded into the carrier through apertures 24 in the top sheet 12 with the neck of each bottle nested in a cup portion 28 of bottom sheet 14 as shown clearly in FIG. 4. The top and bottom sheets 12 and 14 are spaced so as to provide support for bottles when in the inverted position shown in FIG. 4 and also to support bottles when the carriers pass over a supporting wheel and move in a vertical direction.

As explained previously, in prior single-row carrier assemblies each carrier was adapted to receive and support a single row of bottles for translation through a bottle washing machine.

The carrier construction of the present invention is unique in that it is adapted to carry two rows of bottles per carrier and in this regard it has particular applicability for use with the novel bottle washer loading and unloading apparatus described in copending application Serial No. 111,008 and Serial No. 111,010, respectively.

In the carrier construction of this invention, the top and bottom sheets 12 and 14 are provided with two parallel rows 32 and 34 of apertures 24 and 30 with the apertures of one parallel row offset with the apertures of the other row and with the top sheet apertures 24 of the two rows nested with respect to each other so that the peripheries of apertures 24 in the two rows are located closely adjacent each other as shown in FIG. 1.

This double-row construction with the offset apertures nested with respect to each other is a unique feature of the carrier construction of this invention and facilitates the translation of an increased number of bottles through a bottle washer without appreciably increasing the size of the overall carrier assembly and without increasing the speed at which the carrier chains are driven.

As a further refinement of the present invention to permit minimum spacing between the offset rows while maintaining structural rigidity, the top sheet 12 is extruded to form up and down flanges 36 and 38, respectively, for alternate rows 32 and 34, respectively.

This up and down flange construction is clearly shown in FIG. 3 wherein it is seen that the distance between the apertures of the first row 32 and the adjacent apertures of the second row 34 is equal only to the thickness

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of the material used in making the top sheet. This construction, therefore, provides not only the required structural strength for the carrier top sheet but supplies such strength with a minimum of spacing between adjacent apertures of the two rows. Thus, by using the up and down flange construction it is possible to provide the maximum capacity for the carrier while still maintaining the required structural strength.

Although but one embodiment of the present invention has been illustrated and described, it will be apparent to those skilled in the art that various changes and modifications may be made therein without departing from the spirit of the invention or from the scope of the appended claim.

I claim:

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A bottle carrier for a bottle washing machine comprising, a top sheet member, a bottom sheet member spaced from said top sheet member, a plurality of tie strip members rigidly secured to said top and bottom sheet members to fixedly secure said top and bottom sheet members to each other, said top and bottom sheet

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members each having two parallel rows of bottle carrying apertures adapted to receive and support two parallel rows of bottles therein, said two rows of apertures in said top sheet member being spaced from each other with the apertures of one row being offset and nested with respect to the apertures of the other row, said two rows of apertures in said top sheet member being provided with flanged portions extending at right angles to said top sheet, said flanged portions at the apertures of one of said two parallel rows extending in a direction opposite to that of the flange portions at the apertures of the other of said two parallel rows.

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