No. 771,408 PATENTED OCT. 4, 1904.

J. C. BAUER.

BOTTLE WASHING APPARATUS.

NO MODEL. APPLICATION FILED OCT. 5, 1903.

4 SHEETS—SHEET 1.

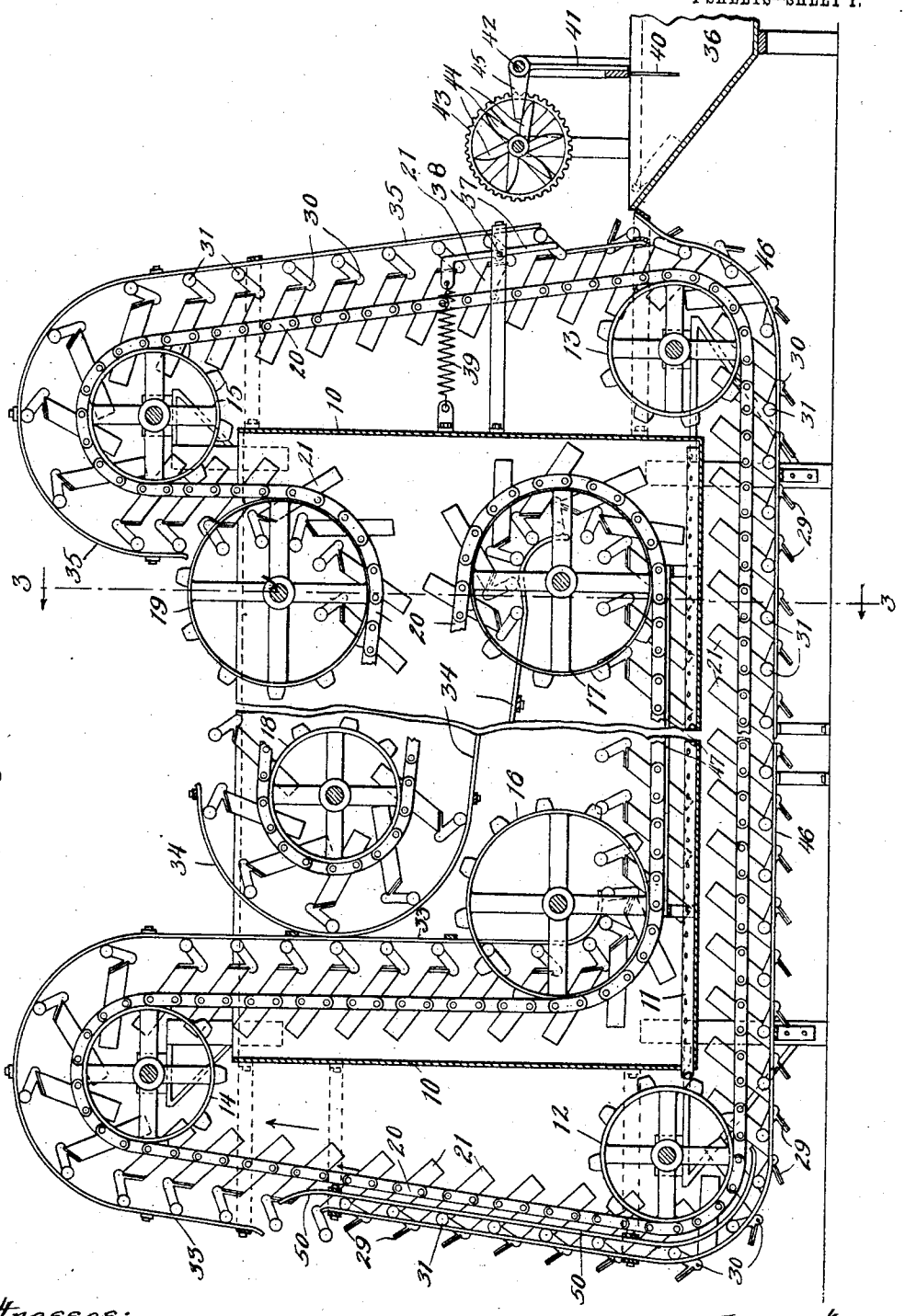


Fig. 1

Witnesses:
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A. W. Munday

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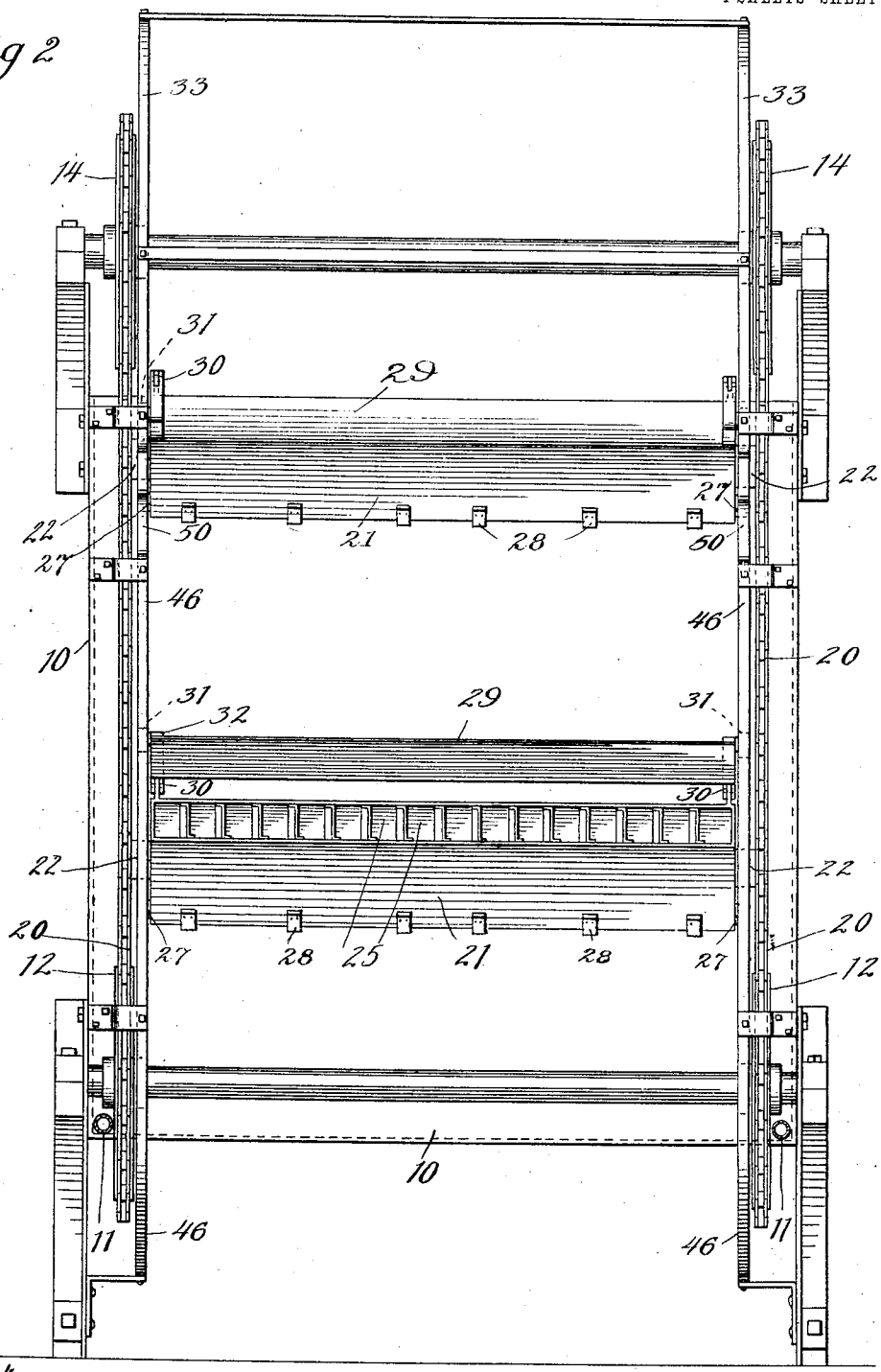
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NO MODEL. 4 SHEETS—SHEET 2.

Fig 2



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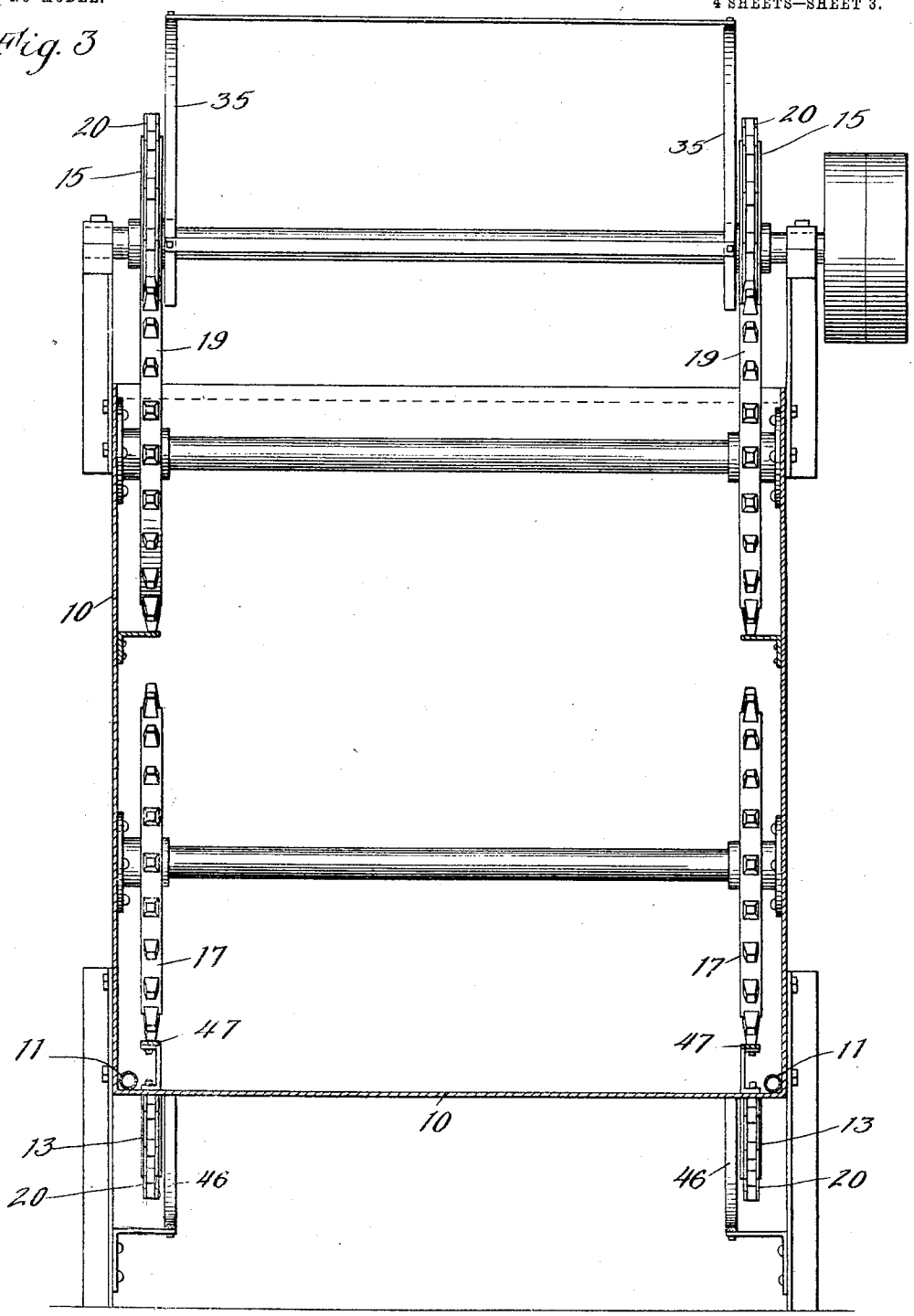
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NO MODEL. 4 SHEETS—SHEET 3.

Fig. 3



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NO MODEL. 4 SHEETS—SHEET 4.

Fig. 4

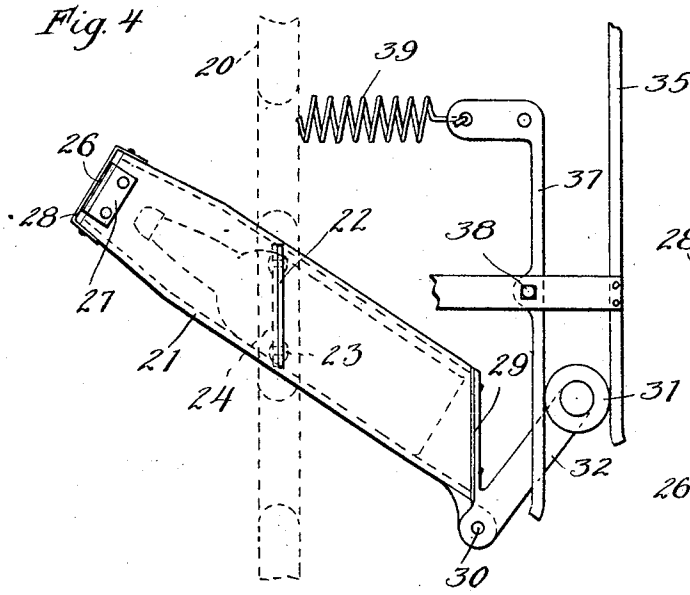


Fig. 5

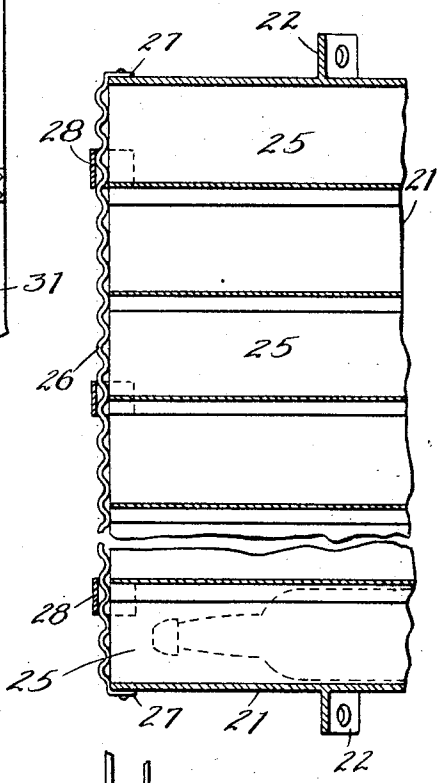
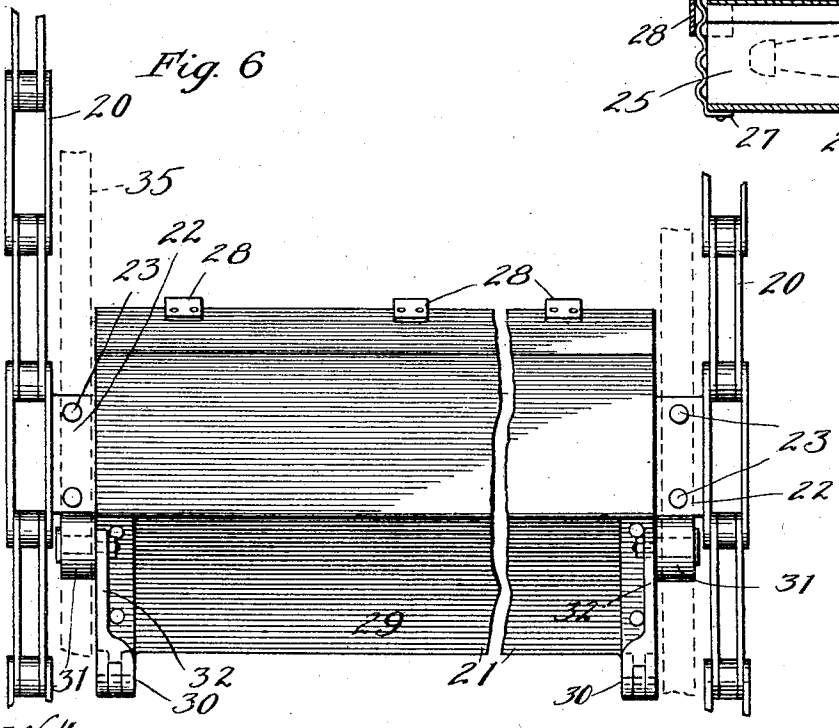


Fig. 6



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No. 771,408. Patented October 4, 1904.

UNITED STATES PATENT OFFICE.

JOHN C. BAUER, OF CHICAGO, ILLINOIS.

BOTTLE-WASHING APPARATUS.

SPECIFICATION forming part of Letters Patent No. 771,408, dated October 4, 1904.

Application filed October 5, 1903. Serial No. 175,805. (No model.)

To all whom it may concern:

Be it known that I, JOHN C. BAUER, a citizen of the United States, residing in Chicago, in the county of Cook and State of Illinois have invented a new and useful Improvement in Bottle-Washing Apparatus, of which the following is a specification.

This invention is designed for use in bottle-washing, and relates to a means whereby the bottles are subjected to the soaking part of the operation.

The purpose of the invention is to enable the subjection of a large number of bottles to the action of the water in the soaking-tank and to maintain them in the soaking solution the required length of time and all without endangering the bottles in any way.

The main feature of the invention lies in the construction of the bottle-holders and the means for discharging them. The bottle-holders are mounted upon an endless carrier which is given a serpentine movement through the tank, whereby the bottles are kept under the water for a considerable time.

The nature of the invention as well as the details thereof are fully described below and are also shown in the accompanying drawings, in which—

Figure 1 is a sectional view of the apparatus, showing the bottle-carrying mechanism in elevation. Fig. 2 is an end elevation, but two bottle-holders, one open and the other closed, being shown, the rest being omitted for the sake of clearness. Fig. 3 is a section on the line 3 3 of Fig. 1, and Fig. 4 is an enlarged end elevation of one of the bottle-holders, and Fig. 5 is a horizontal section thereof. Fig. 6 is an enlarged elevation of one of the holders. The line 1 1 on Fig. 2 and the line 5 5 on Fig. 4 indicate the planes of Figs. 1 and 5, respectively.

In said drawings, 10 represents a tank containing hot water or other cleansing fluid, supported in any suitable way, and provided with perforated steam-pipes 11 in its bottom, through which the steam necessary to heat the cleansing fluid is admitted. In proximity to the ends of the tanks are sprocket-wheels 12, 13, 14, and 15, wheels 12 and 13 being located at the lower corners of the tank and wheels 14 and 15 at the upper corners. Within the tank are two sprocket-wheels 16 and 17 near the bottom of the tank and above them a fourth pair of sprocket-wheels 18 and 19. An endless chain 20 passes around all these wheels, moving in the direction indicated by the arrow. The wheels and chain are duplicated, and between the two chains are arranged a series of bottle-holders 21, the holders being provided with ears 22 at their ends, adapted to be riveted by rivets 23 to corresponding ears 24, formed on alternate links of the sprocket-chains. By this method of attachment the holders are rendered rigid with respect to the chains and do not change their relative position.

The holders consist of rectangular boxes divided by partitions into cells or pockets 25, each adapted to receive a bottle and to protect it from any danger while in transit. One side of the box—to wit, the side to which the ends of the bottles are presented—I form of corrugated sheet metal 26, as plainly shown at Fig. 5. The strip of metal which forms this side of the box is preferably narrower than the box, so that the water may flow freely into the box at the open spaces above and below the corrugated strip 26. This strip may be bent over and secured to the box at the ends, as shown at 27, and may be further held by the overlapping straps 28, of which such number are used as may be needed. My purpose in corrugating this strip is in order to avoid excluding the water from the bottle, as well as to avoid confining the water in the bottle, the corrugated strip allowing the water to move in and out of the bottle even when the mouth of the bottle is in contact with the strip.

The side of the holders opposite the corrugated strip is formed by a hinged door 29, hinged to the box at 30 and carrying at the ends of arms 32 a pair of rollers 31, by which the door is held closed during such portion of the travel as it is desirable to keep the bottles in the holders, the doors 29 and the

arms 32 being preferably disposed at an angle to each other, as illustrated.

During the major portion of the travel of the holders into, through, and from the tank the rollers 31 are in contact with stationary guards adapted to keep the doors closed, so that the bottles cannot escape. The first of these guards is shown at 33, and it extends down into the tank, retaining control of the doors until the holders have reached their lowest position in the tank. While moving horizontally through the bottom of the tank no guard need be present; but as soon as they begin to rise from the bottom a second guard 34 begins to control the doors and maintains such control until the holders have passed over the top of wheels 18. A third guard 35 is arranged to take control of the doors as they move out of the tank and to retain them in their closed position until they reach the point of discharge in proximity to the rinsing-tank 36. At the time the holders reach the position of discharge they will have been reversed from the position at the receiving end of the apparatus and so that when the doors are opened the bottles will slide out of their pockets by gravity into the rinsing-tank. At this point instead of depending upon the gravity of the rollers and their supporting-arms to open the doors I provide devices specially for that purpose. They consist of levers 37, pivoted upon stationary pivots 38, located at the center of the levers. The lower ends of these levers project downward and lie just within the path of the rollers by which the guards control the doors. At their upper ends the levers are attached to springs 39, which tend to draw such upper ends inward and to force the lower ends outward. With this construction it will be seen that as soon as the rollers of any holder have passed below the guard 35 the levers will exert their force outward on the rollers, and thus open the doors even if the doors do not open freely by gravity. As soon as the door is started by the spring it falls over to its wide-open position (shown at Fig. 1) and allows the bottles to slide out into the rinsing-tank.

The sprockets 12 and 13 are located low enough so that the sprocket-chains and series of holders carried by them may pass below the tank, as plainly shown. It will be understood that the bottles are drained as they move upward from wheel 19 to wheel 15. Power may be applied for the operation of the chains to the shaft of either of the outside wheels, preferably the shaft of the wheels 15. At 40 is a swinging pusher mounted on the lower end of arms 41, attached to rock-shaft 42, receiving periodical actuations from a wheel 43, having arms 44, which contact with and lift arms 45 on the shaft 42. This causes the rocking of shaft 42, and by it the pusher is adapted to move into position behind a freshly-discharged series of bottles and when it gravitates back to its normal position to force them down into the rinsing-tank and away from the receiving end of the tank, so that they are not struck by subsequently-discharged bottles. The wheel 43 may be actuated in any suitable way. By means of this pusher I avoid much of the breakage of bottles which might otherwise occur. A guard 46 takes control of the doors and maintains them in the open position as soon as they have passed the rinsing-tank and until they are filled and reach the guard 33. A guard 47 is also, preferably, employed inside the tank to support the sprocket-chains while they are moving horizontally from wheel 16 to wheel 17.

My apparatus is capable of operating upon a large number of bottles at one time, and by reason of the serpentine path through which they are carried in the tank I am enabled to subject them to the action of the cleansing fluid for a long period of time, so that they are very effectually cleansed. While the bottles are permitted some slight movement in the holders, this movement is not such as to endanger their integrity.

At the receiving side of the apparatus are guards 50, located inside of the path of the door-rollers and having their upper ends bent outward, as seen at Fig. 1, so that they serve to deflect the rising door-rollers outward sufficiently to insure the closing of the doors and so that the rollers will be in proper position to enter under guard 33.

I claim—

1. The combination with a soaking-tank of an endless conveyer having holders provided with individual pockets for the bottles adapted to wholly inclose the bottles, and also provided with doors forming a portion of said pockets and adapted to be opened and closed for the insertion and discharge of the bottles, and stationary guards controlling said doors by contact with rollers carried by the doors.

2. The combination with the tank, of an endless conveyer provided with holders having individual pockets in which the bottles are wholly covered and also having doors closing the open end of the pockets, means for holding the doors closed while in the tank, and a spring-actuated device for opening them when they reach the point of discharge.

3. The combination with the tank, of an endless conveyer provided with holders having individual pockets in which the bottles are wholly covered and also having doors closing the open end of the pockets, guards holding the doors closed while in the tank and until they reach the point of discharge, and means for opening the doors at the point of discharge.

4. The combination with the tank of an

endless conveyer moving through the tank and having bottle-holders provided with individual pockets for the bottles, one end of such pockets being formed by strips of corrugated metal, adapted to permit the bottle to be pressed against them without preventing the water from entering or flowing out of the bottle.

5. The bottle-soaking machine having a pocketed bottle-holder provided with a strip of corrugated metal opposite the open ends of the bottles.

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Witnesses:
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