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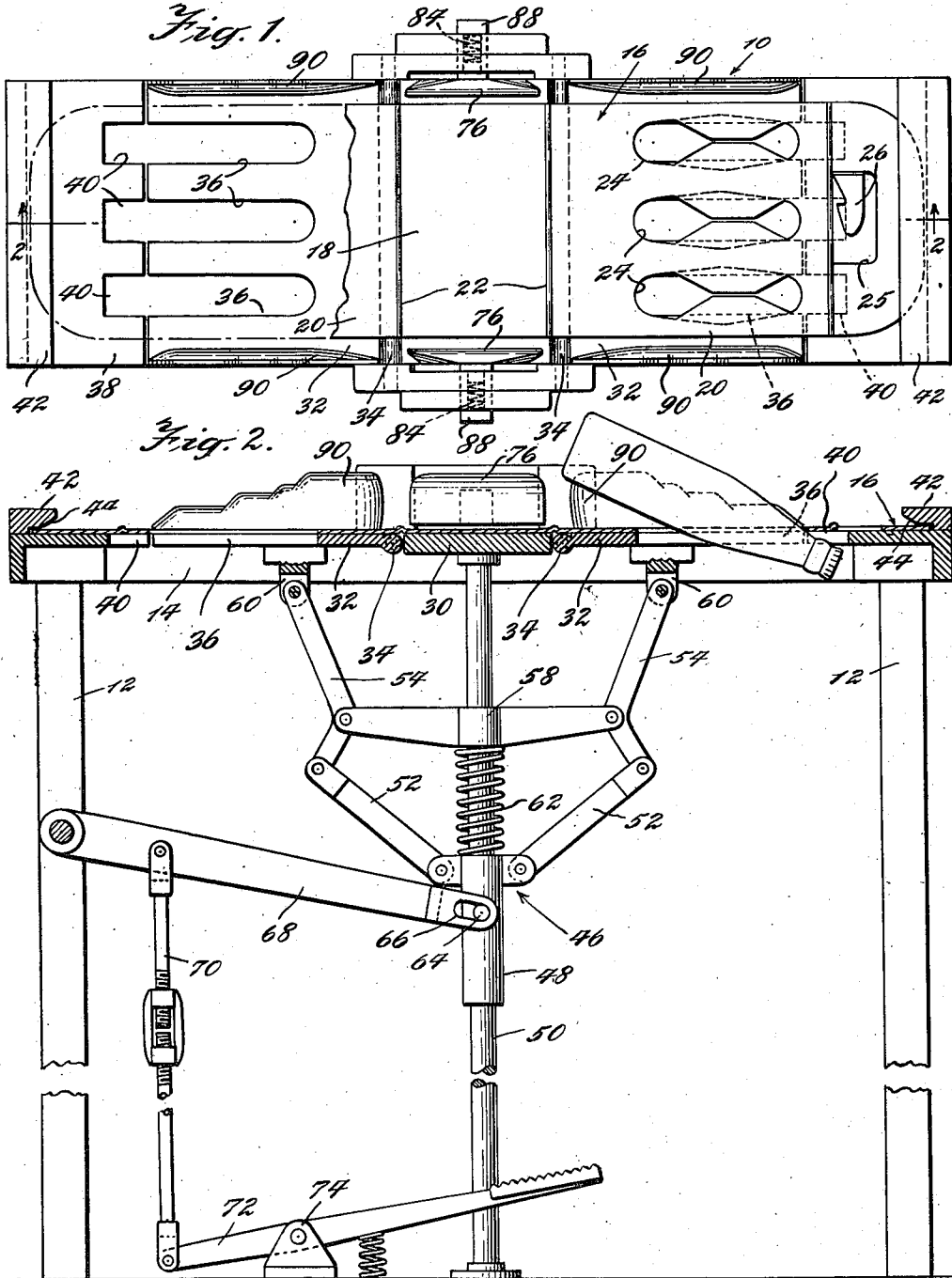
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APPARATUS FOR LOADING AND FOLDING BOTTLE CARRIER CARTONS

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## APPARATUS FOR LOADING AND FOLDING BOTTLE CARRIER CARTONS

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6 Claims. (Cl. 93—3)

This invention relates to apparatus for loading and folding bottle carrier cartons of the type used for the retail distribution of bottled beverages in quantity.

It has become customary in the bottled beverage industry to deliver the bottles to the retail distributors packed in portable cartons, of three or six bottles each, which may be conveniently carried by the customers.

The cartons generally used for that purpose comprise a unitary strip or blank of cardboard or the like, scored to be readily folded into a container having a bottle-supporting base, slotted bottle engaging walls and terminals that may be juxtaposed and interlocked to form a handle.

The packing of carrier cartons has, heretofore, been slow and costly because entirely manual. This was particularly a problem where the packing was carried on at the bottling plant, as part of the continuous bottling process, and, therefore, had to be performed at a uniform high rate of speed with the other, and generally automatic, steps of the process, and has frequently discouraged the use of cartons at the bottling plant.

This invention, therefore, has the object of providing packing apparatus which will permit easy, rapid and safe loading of the carton, and will mechanically and rapidly fold it after loading.

It is also an object of this invention to provide packing apparatus of the character described which will adjust the bottles compactly and safely on the carton.

Generally stated, this invention comprises apparatus which will permit convenient and rapid insertion of bottles into the carton slots before the carton is folded and is provided with mechanical means for uprighting the carton walls and the bottles, simultaneously adjusting the bottles flatly and compactly on the carton.

Comprehensively stated, this invention consists of a table or platform for supporting the unfolded carton having a carton base supporting member, carton wall uprighting members that are normally horizontally arranged and are slotted in register with the carton slots to permit loading of the carton by projecting portions of the bottle through the registering slots, to remain projecting therethrough during the uprighting of the carton walls, members movable over the free edges of the carton base, during the uprighting of the carton walls, to compact the bottles on the carton, and mechanical means for moving the carton base supporting member and carton wall uprighting members relative one another and for

simultaneously moving the bottle compacting members.

One preferred embodiment of the present invention is shown in the accompanying drawings. It is to be understood that this embodiment is shown by way of illustration only, to aid in the comprehension and practice of the invention, and is not intended in any way to limit the scope thereof to the details therein shown.

In these drawings:

Fig. 1 is a plan view of the apparatus with a carton blank in place thereon, partly broken away, to disclose details of the table construction;

Fig. 2 is a vertical longitudinal sectional view thereof, taken on line 2—2 of Fig. 1, and showing the loaded carton before folding;

Fig. 3 is a similar view with the carton folded;

Fig. 4 is a transverse vertical cross-sectional view taken along line 4—4 of Fig. 3;

Fig. 5 is a horizontal sectional view taken along line 5—5 of Fig. 3.

Referring more specifically to the illustrated embodiment, it comprises an oblong work table 10 supported on standards 12, which may be joined by cross pieces 14. The table 10 is of a size sufficiently long and wide to accommodate thereon the carton blank 16, being, preferably, slightly wider and longer than the carton blank.

The carton blank 16 is shown, by way of illustration only, as having a base portion 18 and side wall portions 20 extending from its ends and marked off therefrom by scored lines 22 to facilitate their uprighting relative the base portion. One or both side wall portions, depending on the capacity of the carton, for two rows of bottles, are provided with bottle engaging slots 24 through which the bottle ends project when the carton is loaded to be thereby retained on the carton.

The terminals of the carton are provided with grip openings 25, which register when juxtaposed to form a handle, and with interlocking means, such as the latch 26, and adapted to be manually inserted in a suitable keeper, as will be readily understood.

The carton blank supporting table 10 has a central portion 30, which may be fixed in position, arranged to support the carton base 18 and normally horizontal carton wall engaging wings 32 pivotally arranged on each side of the central portion, as by hinges 34, provided on each end of the central portion 18. The table wings 32 are provided with open-ended slots 36, registering with slots 24 of the carton 16 and preferably gen-

erally co-extensive in length and width with the carton slots 24, so that the apparatus may accommodate any type of bottles that the carton may be used to carry.

The table may also have end pieces 38 fixed adjacent the outer edges of the table wings 32 to support the ends of the carton blank. These end pieces 38 may be provided with open-ended slots 40 complementary of the slots 36. In this way, the end pieces will not interfere with the bottle necks projecting through the slots 24 when the table wings 32 are erected.

In order to hold the carton blank in position upon the table, the end pieces 38 may be provided at their outer ends with overhanging flanges 42 under which the ends of the carton may be inserted. To facilitate insertion of the carton ends and their removal from beneath flanges 42, when the wings are erected, the flanges may be provided with bevelled lower inner edges 44.

It will be apparent that when the carton is arranged upon the table with its ends caught under flanges 42, its base portion 18 will rest directly above the center portion 30 of the table, and its side wall portions 20 will rest upon the table wings 32 and the end pieces 38. The carton slots 24 will register with the table wing slots 36. When the carton is in position, the requisite number of bottles may be arranged thereon by inserting the bottle necks through slots 24 and 36, the ends of the bottle necks being caught under the upper edges of the slots 24 to be thereby held in position during the uprighting of the carton walls.

It will also be apparent that when the table wings 32 are erected about their hinges, the side walls of the cartons will be erected with them, and the bottles laid thereon will be uprighted without withdrawing their necks from the carton slots. When thus loaded and folded, the carton is ready for the interlocking of its walls and for removal from the apparatus.

To erect the table wings 32 to fold the carton, any means may be utilized. Preferably, mechanical means such as the foot-operated mechanism illustrated may be employed. This mechanism comprises a toggle 46 slidably arranged by its sleeve 48 on an upright post 50 supporting the central portion of the table. The toggle links 52 are each connected to a bell crank lever 54 pivoted at its elbow on arms 51, extending from a hub 58, which is slidably mounted on the post 50, above the sleeve 48. The free upper ends of the bell-crank levers 54 are hinged on forked brackets 70 on the undersides of the table wings 32.

It will be clear that when the sleeve 48 is raised, the upper ends of the bell-crank levers 54 will be turned inwardly to turn the table wings 32 about their respective hinges into erected position. A spring 62 is arranged about the post 50 intermediate the sleeve 48 and the hub 58, to move the hub with the sleeve, to permit the levers 54 to operate.

To operate the toggle 46, the sleeve 48 is provided with pins 64, which reciprocate in slots 66, arranged in the forked end of a lever 68, the other end of which is pivoted on one of the standards 12. A thrust rod 70, which may be adjustable in length, is pivoted on lever 68 intermediate its ends, the lower end of the thrust rod being connected to one end of a pedal lever 72, fulcrumed on the fixed bracket 74. Foot pressure on the free end of the lever 72 will thrust lever 68 upwardly to operate the toggle to erect the table wings about their hinges.

In order to prevent buckling of the carton base

during folding and to insure that the bottles will be uprighted with their bases flat on the carton base, so that they will securely stand thereon and will not fall out through the open ends of the carton, means are provided, operable preferably simultaneously with the uprighting of the table wings, which move inwardly through the open carton ends and arrange the bottles compactly, and, therefore, with their bases flatly on the carton base. The bottle-adjusting means, may, preferably, be operable directly by the moving table wings, and may be resiliently mounted to spontaneously return to normal position when the wings are returned to their horizontal position.

One embodiment of such bottle-adjusting means is illustrated and comprises a plunger 76 arranged at each outer edge of the central table portion 30 by rearwardly extending fingers 78 guided in slots 80 formed in side walls 82, secured to the table along the edges of the central table portion.

In order to maintain the plungers 76 normally against the side walls 82, a spring 84 is inserted intermediate the fingers 78, outwardly of the walls 82, the spring being compressed against the guiding slot partition 86 by means of a cap 88, which is secured to the free ends of the fingers 78 in any desirable way, as by screws or the like, in a manner readily understood and not thought necessary to show in detail.

To move the plungers 76 inwardly over the carton base, the outer side edges of the plunger head are bevelled, and the edges of the table wings 30 are provided with upstanding guards 90, having bevelled inner edges, which, when the wings are erected, fit against the outer face of the plunger and gradually move the plunger inwardly over the carton base, as the wings are gradually erected.

It will be apparent that the guards 90 serve not only to move the plunger inwardly, but to prevent the bottles laid upon the table preliminary to folding of the carton from rolling off therefrom, and that the plungers 76, as they are moved inwardly over the carton base, will serve to supplement the weight of the bottles in preventing the buckling of the carton base as the carton is folded.

It is claimed:

1. Apparatus for loading and folding bottle carrier cartons having a table for supporting a carton blank and members along opposed edges of the table movable toward one another to ride over edges of a carton arranged on the table as the carton is folded to compact the bottles loaded on the carton.

2. Apparatus for loading and folding bottle carrier cartons, including means for flexing the carton walls to arrange the bottles on the carton base and means arranged alongside the free edges of the carton base and operable simultaneously with the carton folding means to move over the carton base and urge the bottles into compact arrangement thereon.

3. Apparatus for loading and folding bottle carrier cartons comprising means for flexing the carton walls to arrange the bottles on the carton base and movable members resiliently mounted adjacent the free edges of the carton base operable simultaneously with the carton folding means to move over the carton base to urge the bottles into compact arrangement thereon.

4. Apparatus for loading and folding bottle carrier cartons comprising a table for supporting the carton bottom, means for bending the carton walls relatively to the bottom and means for ar-

ranging the bottles on a carton base including members mounted on the table adjacent to the opposite edges of the carton base and adapted to overlie the edges of the carton bottom and to secure the carton bottom to the table and to cooperate with the bending means during the bending operation.

5. Apparatus for loading and folding bottle carrier cartons comprising a table for supporting the carton bottom, means for bending the carton walls relatively to the bottom and means for arranging the bottles on a carton base including members flexibly mounted on the table adjacent to the opposite edges of the carton base and adapted to overlie the edges of the carton bottom and to se-

cure the carton bottom to the table and to cooperate with the bending means during the bending operation.

6. Apparatus for loading and folding bottle carrier cartons comprising a table for supporting the carton bottom, means for bending the carton walls relatively to the bottom and means for arranging the bottles on a carton base including parallel movable members mounted on the table adjacent to the opposite edges of the carton base and adapted to be moved to a position to overlie the edges of the carton bottom and to secure the carton bottom to the table and to cooperate with the bending means during the bending operation.

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