Jan. 20, 1942. W. G. KALISKA 2,270,820

CARTON CLOSING MECHANISM

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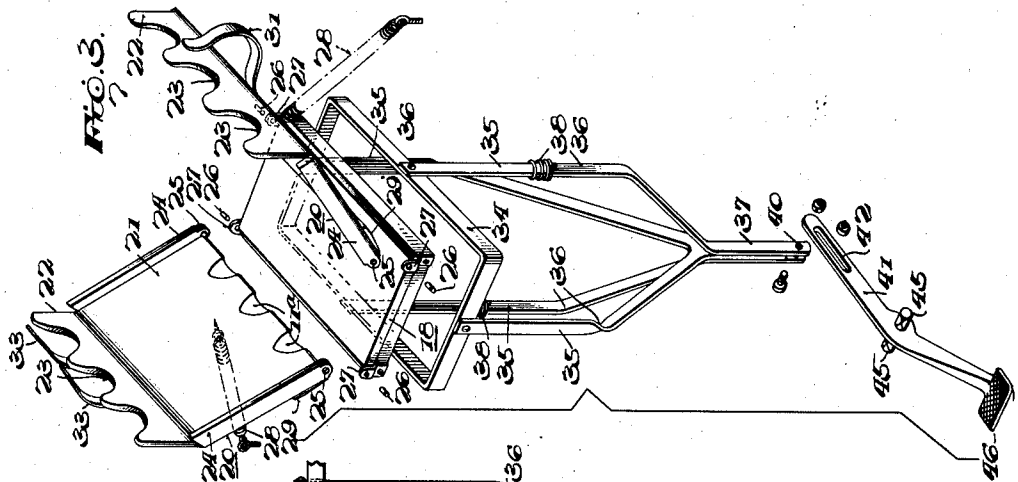

FIG. 3.

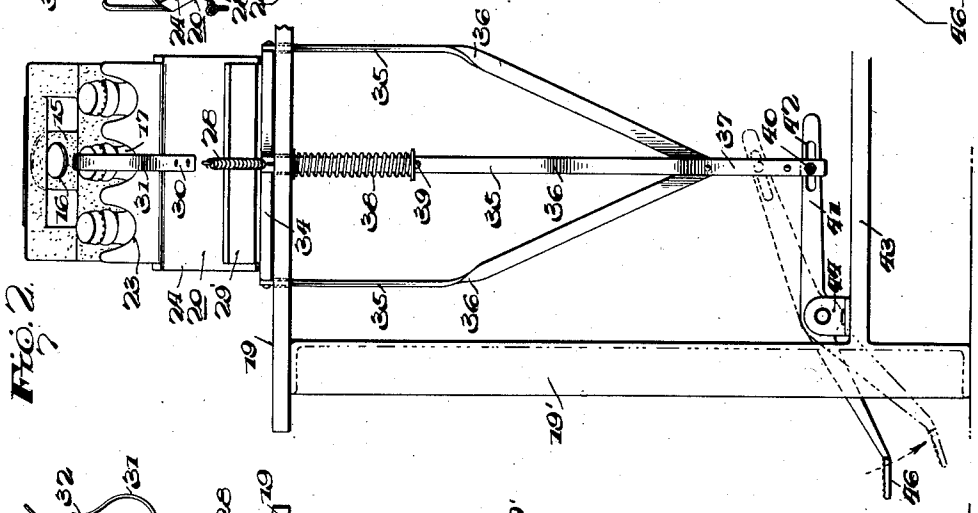

FIG. 2.

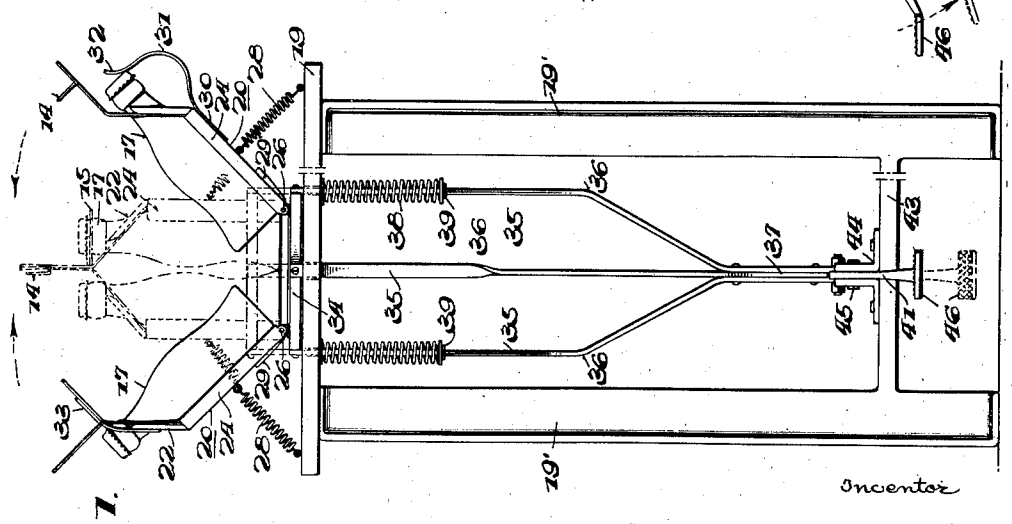

FIG. 1.

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FIG. 4.

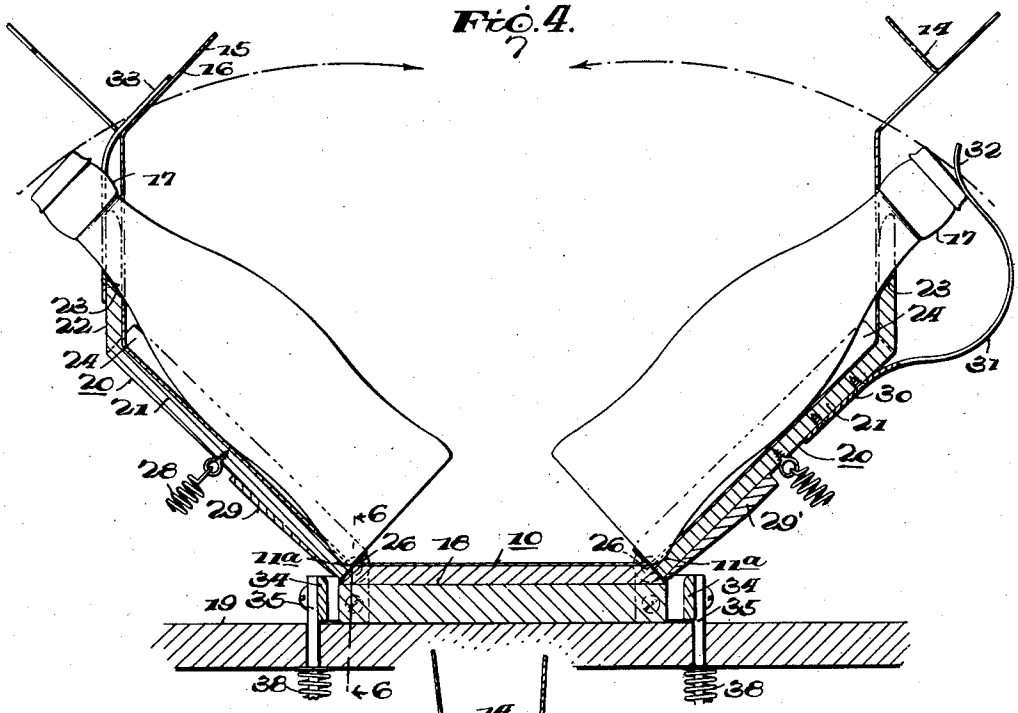

FIG. 5.

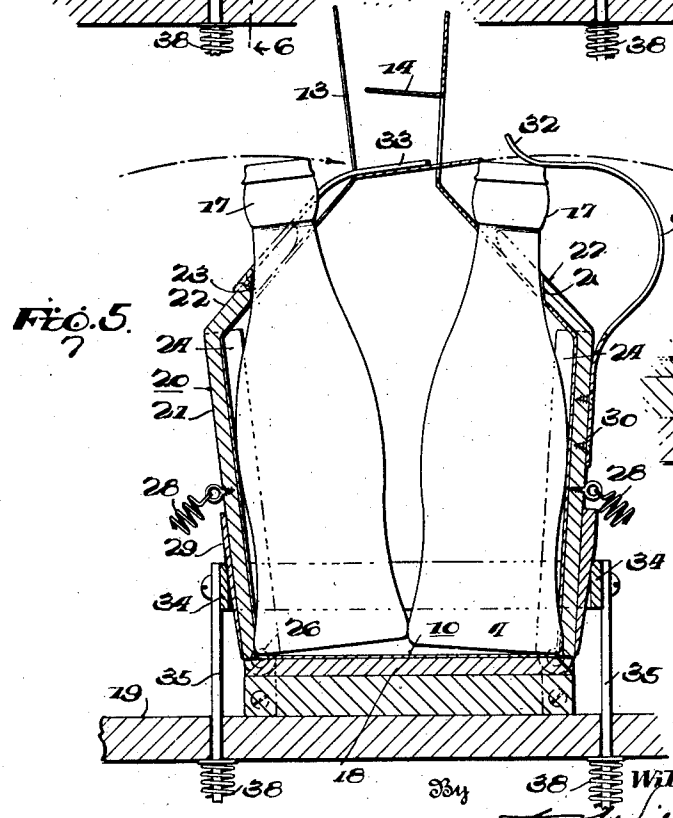

FIG. 6.

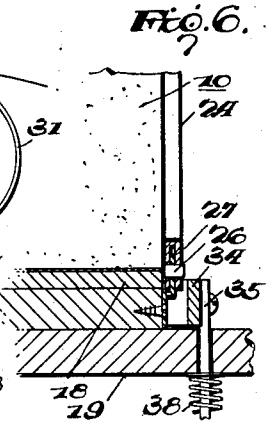

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Fig. 7.

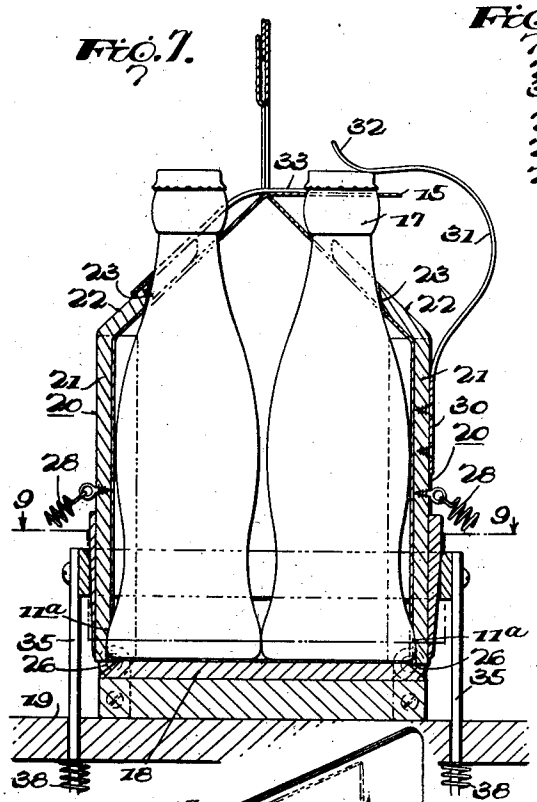


Fig. 8.

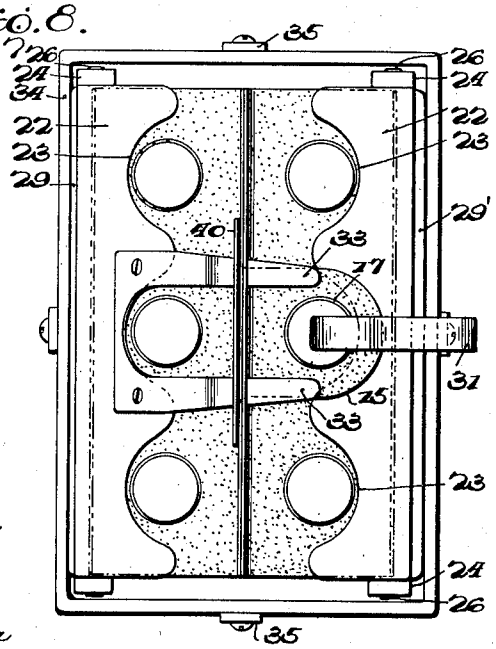


Fig. 9.

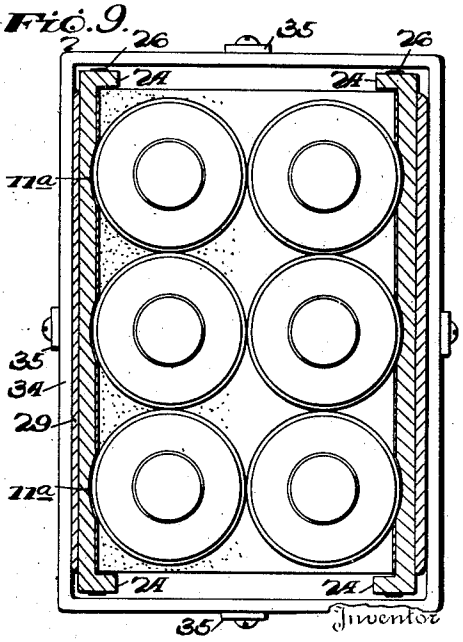
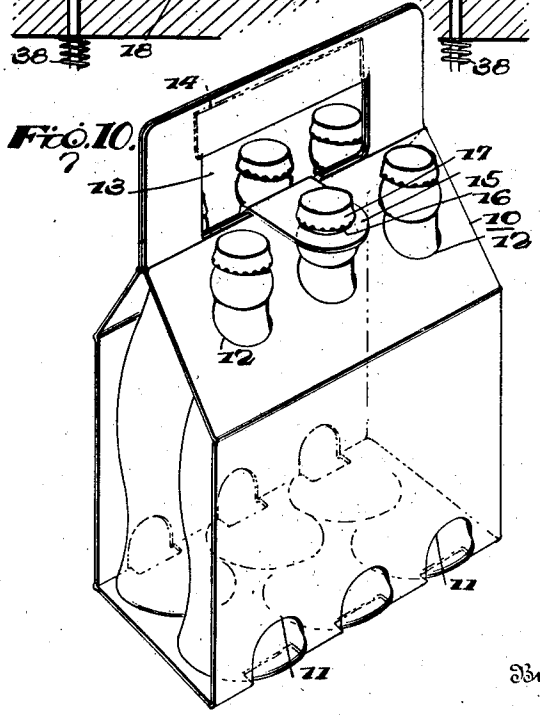


Fig. 10.



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Patented Jan. 20, 1942 2,270,820

UNITED STATES PATENT OFFICE

2,270,820

CARTON CLOSING MECHANISM

William G. Kaliska, Atlanta, Ga., assignor to The Coca-Cola Company, Wilmington, Del., a corporation of Delaware

Application April 2, 1938, Serial No. 199,644

15 Claims. (Cl. 93—6)

This invention relates to the beverage industry, and more particularly to a new and improved closing and locking device intended primarily for use in the placing of bottles in cartons and closing and locking the containers in such manner that they may be transported without the loss of their contents.

Today, cartons of what is generally known as the "open type" are popular, many millions of these being used in the United States each year. Bottles are generally placed in such containers by hand, the carrier then being brought together and fastened, this manual operation entailing the expenditure of a varying amount of time, depending upon the skill of the packer and the difficulty which he may experience in fastening the carton once it is filled; the aggregate of which time is considerable in large bottling plants and like places where such operations are carried on extensively.

An object of the present invention is to provide a closing and locking device which is automatic in its operation.

Another object is to provide in such a device positive means for locking a carton without the uncertainty attendant upon such operation when performed by the hands of a worker.

Another object is to provide a cradling element for cartons of the open type which serves to support such in a position most conducive to ready and efficient packing.

A still further object is to provide cheapness of construction and efficiency in result in a carton closing machine.

Another object is to provide a time saving device for the bottling industry.

These and other objects made apparent throughout the further progress of this specification are accomplished by means of my closing and locking device, a full and complete understanding of which is facilitated by reference to the drawings herein, in which:

Fig. 1 is a front elevational view of the instant device showing a carton therein, packed with bottles and ready to be closed, the dotted lines indicating the position of said elements when finally assembled.

Fig. 2 is a side view of the structure illustrated in Fig. 1.

Fig. 3 is an exploded view of the jaws, supporting bed, and closing frame of my invention.

Fig. 4 is an enlarged end view of the jaws and bed showing in detail certain features thereof.

Fig. 5 is a view similar to that shown in Fig. 4 illustrating a closing or locking operation in progress.

Fig. 6 is a fragmentary cross-sectional view taken substantially along the line 6—6 of Fig. 4, and showing in detail the manner in which the closing frame clears on the hinge side of the jaw.

Fig. 7 is a view of the structure illustrated in Fig. 5, showing the locking operation completed.

Fig. 8 is a top plan view of the structure shown in Fig. 7, in which the carton has been closed.

Fig. 9 is a horizontal sectional view taken substantially along the line 9—9 of Fig. 7.

Fig. 10 is a view in perspective of an assembled carton removed from the closing machine and ready to be transported.

The instant device is intended primarily for use with containers of the type disclosed and described in detail in my co-pending patent application Serial No. 178,668 for Cartons, although it is not to be limited to such use, and as a matter of fact, with certain modification, may be adapted to other carriers without departing from the spirit and scope of the instant invention.

The carton shown comprises essentially a blank or strip 10 having apertures 11 for receiving the bases of bottles, and aligned openings 12 through which are passed the necks thereof, the upper portion of the blank having a cut out section 13, through which is passed a flap 14 (Fig. 5), said flap then being bent upwardly for the purpose of forming a carrying surface which will be easy on the hand (Fig. 7).

From one side of the upper portion of blank 10 is cut or stamped a locking tab 15, said tab being provided with an aperture 16 near the end thereof, of such circumference as to pass over the cap and upper neck portion of a bottle 17 disposed on the opposite side of the carton from that from which said tab is formed.

A carton of the above description is shown in the drawings in conjunction with my locking device, which device comprises a supporting bed 18 anchored to the top of a table 19, said table having legs 19' supporting the working surface thereof at a suitable working height above the floor, said supporting bed having hinged to opposite sides thereof a pair of jaws 20, which combined structure forms a cradle or mold in which the carton may be placed and filled.

Jaws 20 (Figs. 3 and 4) comprise identical members having sides 21 whose height approximates that of the side wall of a carton when in assembled position; and upper portions 22 which are notched as at 23 to conform to the necks of

bottles protruding from the carrier. To prevent an endwise movement of the carton strip during the assembly operation, edges 24 are provided for said jaws, said edges at their bottoms being perforated as at 25 to receive pintles 26 which are passed therethrough and likewise through ears 27 securely anchored to the bed 18, thereby permitting said jaws to pivot in an arc in relation to said supporting bed, the beveled sides of which in conjunction with corresponding surfaces on the bottom edges of the jaws, preclude the latter from passing beyond a given point in their downward movement. Indentations 11a are formed on the inside of said jaws for the purpose of receiving the bases of bottles placed in the carton; and coil springs 28 may be attached to outside portions of the jaws and to table 19, thereby holding said members in a normally open position.

A pair of wearing plates 29 and 29' is secured to the lower outside portions of jaws 20, plate 29' forming a greater angle with its associated element than does 29, thereby facilitating the locking movement of the device by insuring a slight difference in the starting time for the upward movement of said jaws. That is, the inertia of one member has been overcome by the closing frame and that member is in movement before the opposite jaw is contacted, this spaced starting having beneficial result as above. In addition, this difference in angle serves a useful purpose in synchronizing the action of the elements which effect the actual locking of the carton, as will be evident from the description of such movement set forth later in this specification.

On one of jaws 20 and near the top thereof is securely anchored a flat spring 30, said spring having a curved upper portion 31 and an end 32 pointing slightly upward. Element 30 is preferably disposed midway between the ends of the jaw with which it is associated; and on the opposite jaw is securely anchored a pair of stiff prongs 33 which may be stamped from a single sheet of metal as shown in the drawings (Fig. 8), or comprise separate elements. In either event, said prongs protrude from the tops of the points established by middle notch 23, and then lie in a plane approximately at right angles to that of the side 21 of the jaws.

Attention is now directed to the closing frame of the instant device, said frame comprising essentially a hollow square element 34, formed of metal or other suitable material, and having inside dimensions slightly greater than the outside measurements of supporting bed 18. Element 34 is reinforced by a series of downwardly extending supports 35, suitably anchored thereto at the top, and being bent inwardly as at 36 to unite and form a single column at 37. A pair of coil springs 38 (Fig. 1) encircle supports 35 in such manner that the tops of said springs bear against the under side of table 19 adjacent the points where said supports pass therethrough, and the bottoms of said springs are secured to the supports as at 39, so that there exists a normal tendency for closing frame 34 to return to a position approximating that shown in Fig. 1, in which said member rests on the top of table 19.

The bottom of column 37 is forked, as by terminating the front and rear supports somewhat sooner than are the two side ones, said forked member then being drilled as at 40 and passed over the end of a pedal 41, which end is provided with an elongated slot 42; a bolt, washer, and nut then uniting said pedal with 37 in such manner as to form a slip-joint at this point.

Pedal 41 is pivoted to a cross member 43 of table 19 as by being placed between oppositely disposed angle members 44, securely anchored to said support, protrusions 45 on opposite sides of said pedal seating in rounded apertures provided in said angle members for this purpose.

The operation of my device is as follows:

A carton strip 10 is placed between the jaws 20, and six bottles inserted therein in such manner that the bases thereof register with openings 11 and indentations 11a, the necks of said bottles then being passed through apertures 12 and lying in notches 23. Pressure is now exerted on the end 46 of pedal 41, with the result that said member elevates column 37 and closing frame 34 against the tension of springs 28 and 38, said closing frame rising to a point where it seats with wear plates 29' and 29; and as the pressure on pedal 41 increases, said closing frame travels upwardly, and, exerting a wedge-like action on jaws 20, brings them to a vertical position. While this is being accomplished, prongs 33 have served to retain locking tab 15 in a position substantially at right angles to the bases of the bottles in the carton, said prongs now serving to guide said locking tab over the top of bottle 17, which is the middle bottle cradled in the jaw opposite that upon which are mounted prongs 33. Flat springs 30 has served to steady said bottle and hold it in the desired position during this movement, and as prongs 33 guide locking tab 15 over the top thereof, unites with said prongs in guiding the opening 16 of the tab over the bottle cap and down onto the upper portion of the container. The position of opening 16 in the locking tab is such that a slight strain must be exerted to force it over the largest diameter of the cap, which fact, plus the normal tendency of the carton to open, assures that the tab will stay under the cap until such time as it is forcibly removed, this in effect guaranteeing a continuing locking of the carrier.

When pressure is released from pedal 41, the closing frame returns to its normal position and the jaws likewise assume the spread or open state illustrated in Figs. 1 and 4 of the drawings, springs 28 and 38 augmenting this action; and the locked carton remains upright and ready to be removed from the closing device, upon which a new blank may be inserted and the process repeated.

From the foregoing, it is apparent that I have disclosed a new and useful device for the purposes indicated; that the structure thereof is simple, economical, and efficient; and that same may be readily and easily operated; all of which result in the saving of considerable labor and in eliminating a substantial degree of fatigue on the part of workers in bottling plants and the like.

It will further be apparent that certain modifications, changes, reconstructions, and alterations may be made in the preferred embodiment of my invention as disclosed herein, without departing from the scope of the appended claims which are to be broadly construed.

I claim:

1. In a device of the character described, a supporting framework, a supporting bed placed thereon, a pair of jaws pivoted to opposite sides of said bed, said jaws being adapted to receive a carton and bottles placed therein, a closing

frame surrounding said bed in spaced relationship thereto and normally out of contact with the jaws, means for elevating said closing frame thereby engaging said jaws and swinging same inwardly about their pivots to a closed position, and means for locking a carton held by said jaws, simultaneously with said closing movement.

2. In a device of the character described, a supporting framework, a supporting bed placed thereon, a pair of jaws pivoted to opposite sides of said bed, said jaws being adapted to receive a carton and bottles placed therein, a closing frame surrounding said bed in spaced relationship thereto and normally out of contact with the jaws, a series of reinforcing elements anchored to said frame and extending downwardly therefrom, a pedal pivoted to the supporting framework and to the bottoms of said reinforcing elements in such a manner as to raise the closing frame when said pedal is depressed, thereby engaging said jaws and swinging same inwardly about their pivots to a closed position, and means for locking a carton held by said jaws, simultaneously with said closing movement.

3. In a device of the character described, a supporting framework, a supporting bed placed thereon, a pair of jaws pivoted to opposite sides of said bed, said jaws being adapted to receive a carton and bottles placed therein, a closing frame surrounding said bed in spaced relationship thereto, a series of reinforcing elements anchored to said frame and extending downwardly therefrom, spring means associated with said reinforced elements and tending to hold said closing frame out of engagement with said jaws, a pedal pivoted to the supporting framework and to the bottoms of said reinforcing elements in such a manner as to raise the closing frame when said pedal is depressed, thereby engaging said jaws and swinging same inwardly about their pivots to a closed position, means for locking a carton held by said jaws, simultaneously with said closing movement, and spring means serving to hold said jaws in a normally open position.

4. In a device of the character described, a supporting bed, a pair of jaws pivotally mounted to opposite sides of said bed, the jaws being adapted to receive a carton and bottles placed therein, means for moving said jaws upwardly, and means for closing and locking a carton held by said jaws and bed, simultaneously with said upward movement.

5. In a device of the character described, a supporting framework, a supporting bed placed thereon, a pair of jaws pivoted to opposite sides of said bed, a pair of stiff prongs secured to the upper portion of one of said jaws and protruding therefrom, a curved steel spring extending from the other jaw, a closing frame surrounding said bed in spaced relationship thereto and normally out of contact with the jaws, means for elevating said closing frame thereby engaging said jaws and swinging same inwardly about their pivots to a closed position and locking a filled carton supported thereby.

6. In a device of the character described, a supporting framework, a supporting bed placed thereon, a pair of jaws pivoted to opposite sides of said bed, a pair of stiff prongs secured to the upper portion of one of said jaws and protruding therefrom, a curved steel spring extending from the other jaw, a closing frame surrounding said bed in spaced relationship thereto and normally out of contact with the jaws, means for elevating said closing frame thereby engaging said jaws and swinging same inwardly about their pivots to a closed position and locking a carton filled with bottles and supported by the jaws, said prongs and curved spring serving in conjunction with said upward movement to guide a tab on the carton over the top of a bottle disposed on the side of the carton opposite the tab, and to secure said locking tab in place on the upper portion of such bottle.

7. In a device of the character described, a supporting framework, a supporting bed placed thereon, a pair of jaws pivoted to opposite sides of said bed, a series of notches in the upper portions of said jaws for engaging necks of bottles, a pair of stiff prongs secured to the upper portion of one of said jaws and protruding therefrom, a curved steel spring extending from the other jaw, a closing frame surrounding said bed in spaced relationship thereto and normally out of contact with the jaws, means for elevating said closing frame thereby engaging said jaws and swinging same inwardly about their pivots to a closed position and locking a filled carton supported thereby.

8. In a device of the character described, a supporting framework, a supporting bed placed thereon, a pair of jaws pivoted to opposite sides of said bed, a series of notches in the upper portions of said jaws for engaging necks of bottles, indentations formed in the inside lower portions of said jaws for receiving the bases of bottles, a pair of stiff prongs secured to the upper portion of one of said jaws and protruding therefrom, a curved steel spring extending from the other jaw, a closing frame surrounding said bed in spaced relationship thereto and normally out of contact with the jaws, means for elevating said closing frame thereby engaging said jaws and swinging same inwardly about their pivots to a closed position and locking a filled carton supported thereby.

9. In a device of the character described, a supporting framework, a supporting bed placed thereon, a pair of jaws pivoted to opposite sides of said bed, a series of notches in the upper portions of said jaws for engaging necks of bottles, indentations formed in the inside lower portions of said jaws for receiving the bases of bottles, strips disposed at opposite ends of said jaws for preventing the sidewise movement of a carton and bottles cradled by said jaws, a pair of stiff prongs secured to the upper portion of one of said jaws and protruding therefrom, a curved steel spring extending from the other jaw, a closing frame surrounding said bed in spaced relationship thereto and normally out of contact with the jaws, means for elevating said closing frame thereby engaging said jaws and swinging same inwardly about their pivots to a closed position and locking said carton.

10. In a device of the character described, means for cradling and supporting a carton filled with bottles, means for closing said first means and simultaneously locking said carton.

11. In a device of the character described, a supporting framework, a supporting bed placed thereon, a pair of jaws pivoted to opposite sides of said bed, a series of notches in the upper portions of said jaws for engaging necks of bottles, indentations formed in the inside lower portions of said jaws for receiving the bases of bottles, wear plates secured to the outside of said jaws, means for limiting the downward movement of the jaws, a pair of stiff prongs secured to the upper portion of one of said jaws and protruding

therefrom, a curved steel spring extending from the other jaw, a closing frame surrounding said bed in spaced relationship thereto and normally out of contact with the jaws, means for elevating said closing frame thereby engaging said jaws and swinging same inwardly about their pivots to a closed position and locking a filled carton supported thereby.

12. In a device of the character described, a supporting framework, a supporting bed placed thereon, a pair of jaws pivoted to opposite sides of said bed, a series of notches in the upper portions of said jaws for engaging necks of bottles, indentations formed in the inside lower portions of said jaws for receiving the bases of bottles, wear plates secured to the outside of said jaws, one of said wear plates forming a slightly greater angle with the side of its associated jaw than does the other, means for limiting the downward movement of the jaws, a pair of stiff prongs secured to the upper portion of one of said jaws and protruding therefrom, a curved steel spring extending from the other jaw, a closing frame surrounding said bed in spaced relationship thereto and normally out of contact with the jaws, means for elevating said closing frame thereby engaging said jaws and swinging same inwardly about their pivots to a closed position and locking a filled carton supported thereby.

13. Apparatus for loading and folding bottle carrier cartons having bottle engaging slots, comprising means for flexing the carton walls relative the carton base, including a slotted member engaging the carton wall and having its slots in register with the carton slots to permit insertion of a bottle portion through the carton openings to project to the exterior of the carton through the folding operation.

14. Apparatus for loading and folding bottle carrier cartons having bottle engaging openings comprising, means for flexing the carton walls relative the carton base including a wall engaging member having open-ended slots in register with the carton slots adapted to permit insertion of a bottle portion through the carton slots to project to the exterior of the carton during the folding operation.

15. Apparatus for loading and folding bottle carrier cartons having bottle engaging openings comprising a carton base engaging member, carton wall engaging members hinged to the ends of the said carton base engaging member, said base engaging member and wall engaging members arranged to be movable relative one another to fold the carton walls relative the carton base and openings in a wall engaging member adapted to permit insertion of a bottle portion through the carton opening to project to the exterior of the carton during the folding operation.

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