

Sept. 15, 1942.

S. T. CARTER

2,296,201

MECHANISM FOR HANDLING BOTTLES AND OTHER ARTICLES

Filed March 13, 1941

4 Sheets-Sheet 1

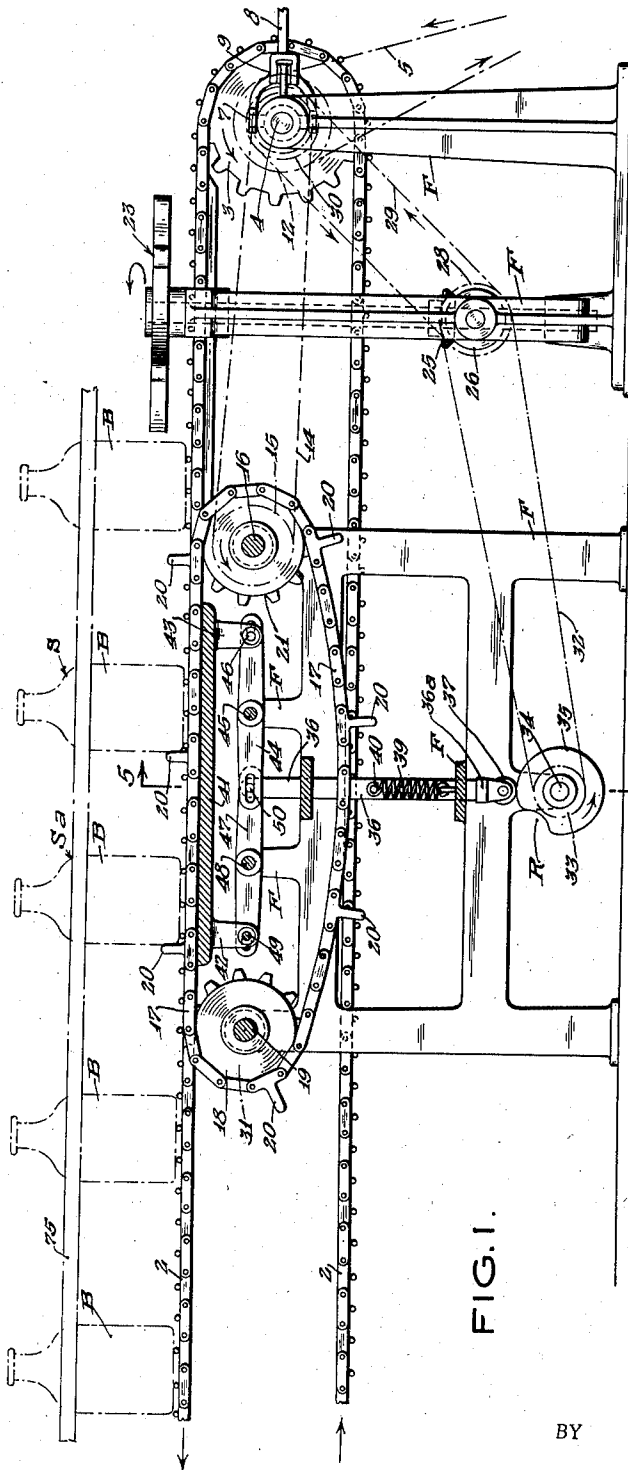


FIG. 1.

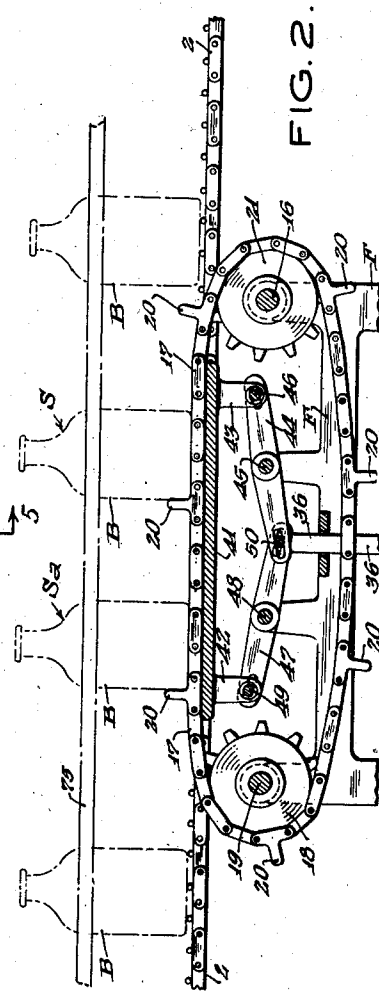


FIG. 2.

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4 Sheets-Sheet 2

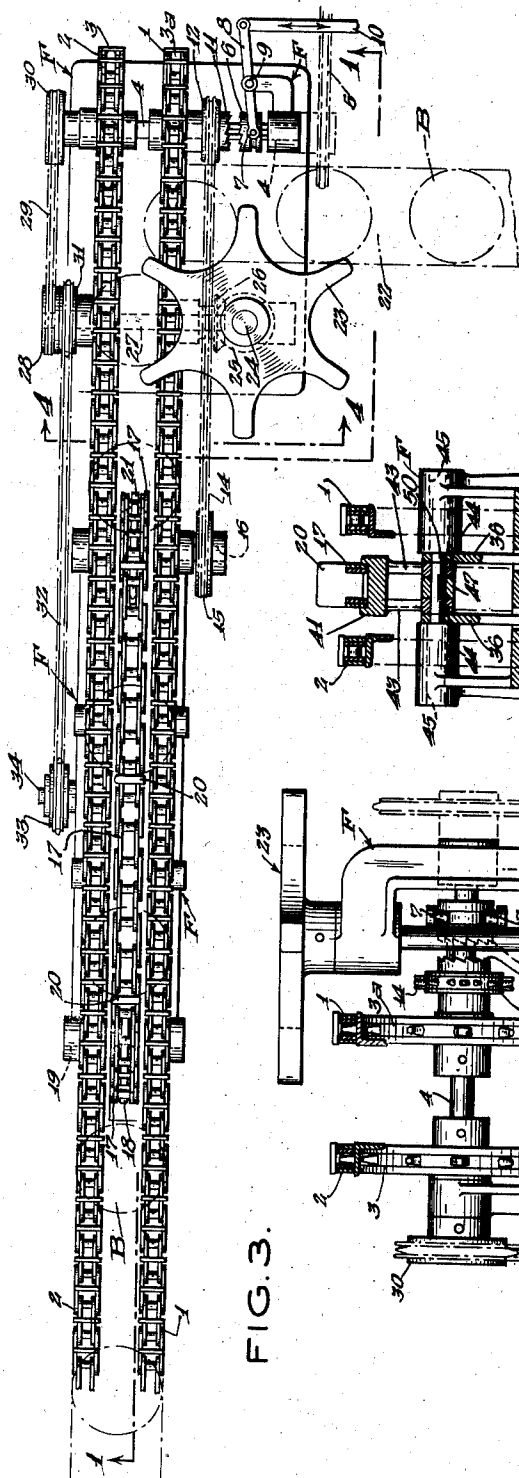


FIG. 3.

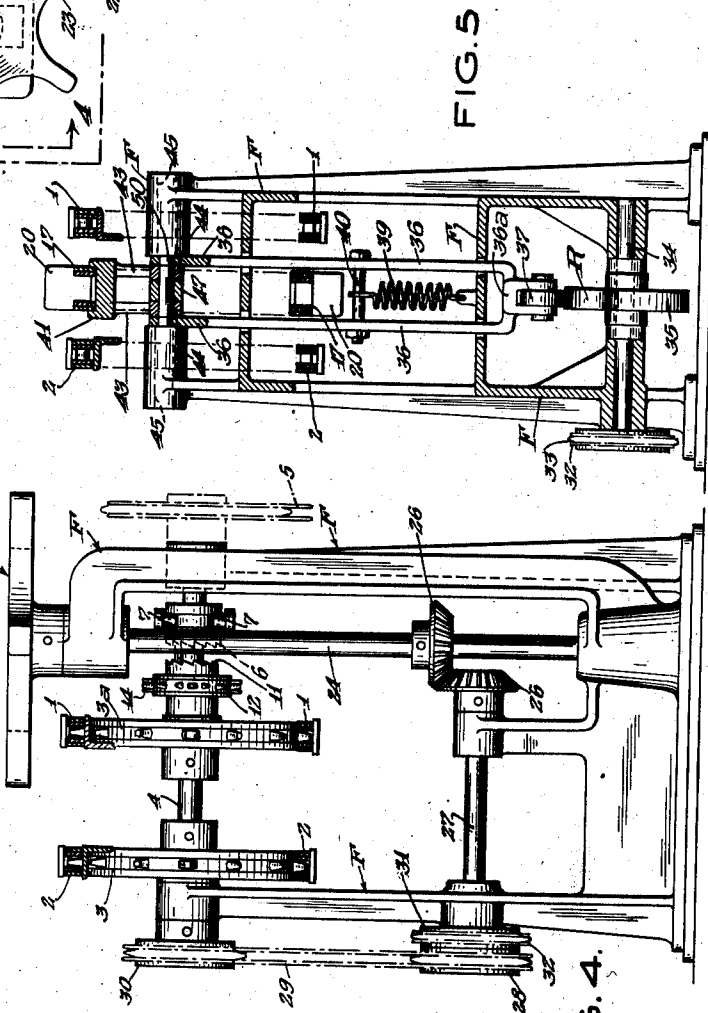


FIG. 4.

FIG. 5

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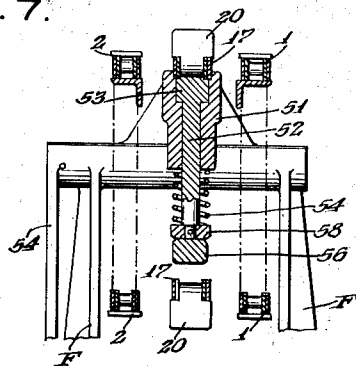
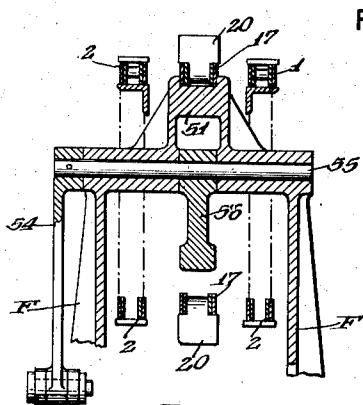
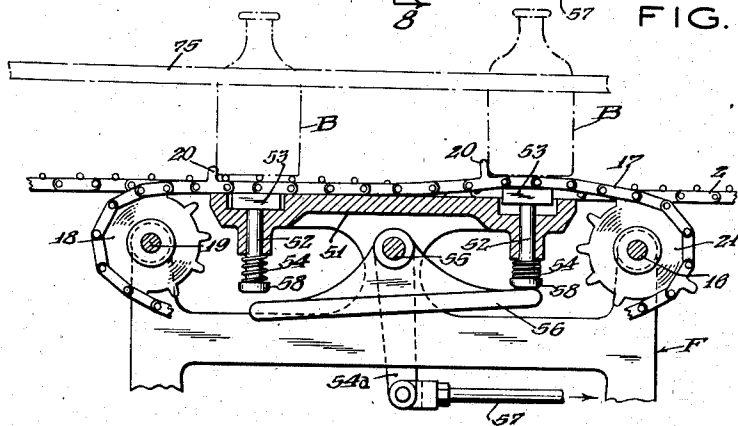
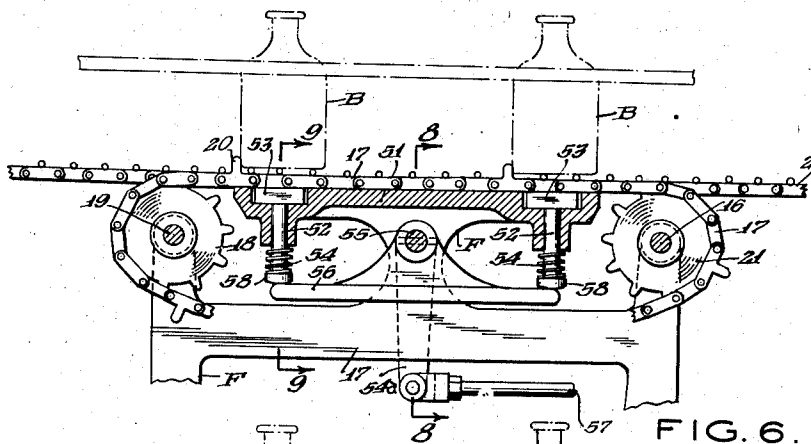
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4 Sheets-Sheet 3



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4 Sheets-Sheet 4

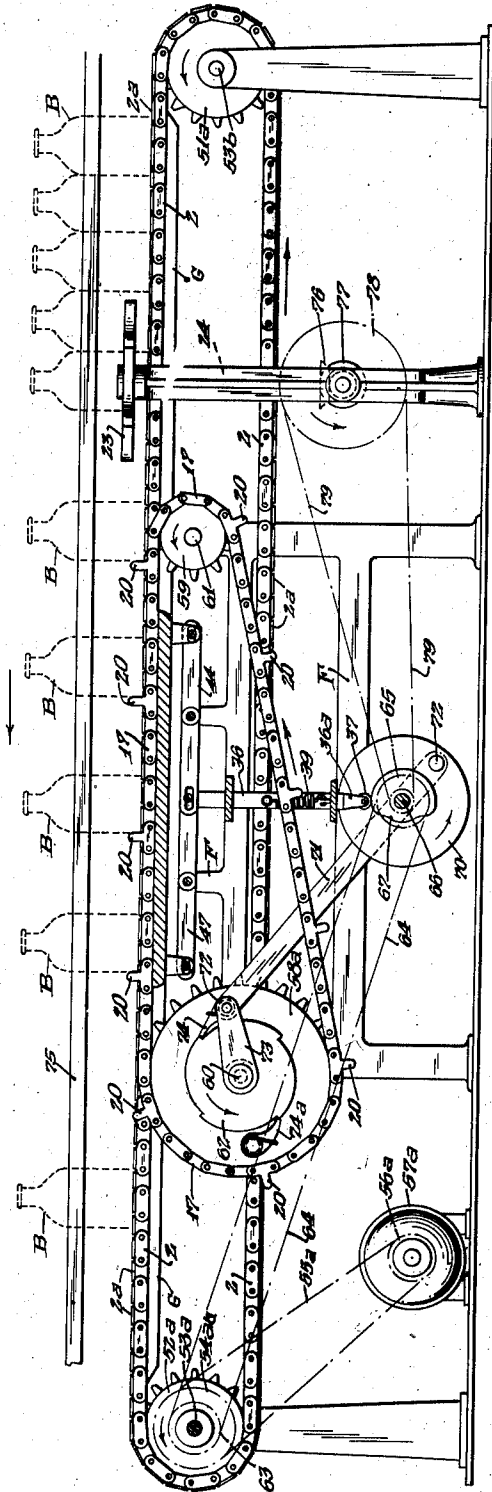


FIG. 10.

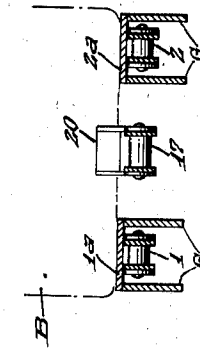


FIG. 12.

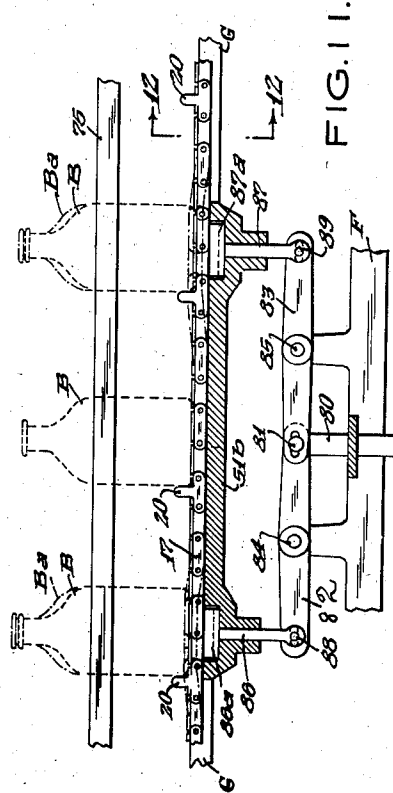


FIG. 11.

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2,296,201

MECHANISM FOR HANDLING BOTTLES AND OTHER ARTICLES

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Application March 13, 1941, Serial No. 383,094

5 Claims. (Cl. 216—57)

My invention relates to a new and improved mechanism for feeding and handling bottles and other articles, in a labeling machine or in any other type of machine.

One of the objects of the invention is to provide simple and efficient mechanism for temporarily stopping the longitudinal feed of bottles or other containers, through a labeling machine or through any other type of machine, and for raising the bottles or the like, while said longitudinal feed is discontinued.

Another object of my invention is to eliminate the complicated and expensive mechanisms which have heretofore been used for this purpose.

Another object of the invention is to provide mechanism for handling bottles which contain whiskey or other alcoholic liquors, in order to apply the strip stamps to the mouths of the bottles. When the bottle is raised as aforesaid, its mouth is presented to the mechanism which applies the strip stamp.

Another object of the invention is to provide a simple mechanism which can be readily installed in existing machines which are used for labeling bottles or for applying the strip stamps to the bottles.

Other objects of the invention will be stated in the annexed description and drawings which illustrate preferred embodiments thereof.

Fig. 1 is a side elevation, partially in section, of the improved machine. This is taken on the line 1—1 of Fig. 3. This shows the bottles at their normal level.

Fig. 2 is a detail sectional view, partially in elevation, showing the supplemental chain in the position in which certain of the bottles are raised above the positions of the bottles which are shown in Fig. 1.

Fig. 3 is a top plan view of the improved device.

Figs. 4 and 5 are respectively sectional views on the lines 4—4 of Fig. 3 and 5—5 of Fig. 1.

Fig. 6 is a detail view illustrating a second embodiment of the invention.

Fig. 7 is the same as Fig. 6, save that in Fig. 7 one of the bottles is shown as being raised above the level of the bottles in Fig. 6.

Figs. 8 and 9 are respectively sectional views on the lines 8—8 and 9—9 of Fig. 6.

Fig. 10 is a side elevation of a third embodiment of the invention.

Fig. 11 is a detail view showing a fourth embodiment of the invention.

Fig. 12 is a sectional view on the line 12—12 of Fig. 11.

When bottles are fed through a machine which applies labels or strip stamps to the bottles, it is necessary, in certain stages of the operation, to raise the bottle and to hold the same temporarily stationary. The main object of the invention is to provide simple and efficient mechanism for this purpose.

Fig. 3 shows the main endless conveyors 1 and 2, which are parallel to each other. These conveyors 1 and 2 are endless belts or chains or the like. Fig. 3 shows the top runs of these endless conveyors 1 and 2, which are operated continuously and in unison at equal speeds, by any suitable mechanism. In this particular embodiment, each endless conveyor consists of pivotally connected links.

The bottles rest upon the top runs of the conveyors 1 and 2, without any positive engagement of said bottles with said conveyors. Hence, if the bottles are held against longitudinal movement, the conveyors 1 and 2 can slip freely relative to the bottles.

Fig. 1 shows one of the sprockets 3, around which one end of the endless conveyor 2 is led. This sprocket 3 is fixed to a turnable shaft 4 which is provided with a pulley or sprocket, which is driven by a belt or chain 5. The companion sprocket of the conveyor 1 is fixed to the same shaft 4, so that the conveyors 1 and 2 are driven in unison, and at equal speeds. Fig. 3 shows the companion sprocket 3a of the endless conveyor 1. The shaft 4 is provided with a clutch member 6 which is slidably keyed to said shaft 4. This clutch member 6 is of standard construction and it is provided with a circumferential groove. The rollers 7 of a lever 8, which is pivoted at 9 to the frame F of the machine, are located in said circumferential groove. The lever 8 is provided with an operating rod 10, so that the clutch member 6 can be moved longitudinally towards and away from the companion clutch member 11. The clutch member 11 is mounted on the shaft 4, and the shaft 4 can turn freely relative to the clutch member 11. The clutch member 11 is therefore turned, only when it meshes with the clutch member 6. The clutch member 11 is an extension of a sprocket 12, whose hub is mounted turnably upon the shaft 4. The sprocket 12 is connected by a chain 14, to a companion sprocket 15, which is fixed to a shaft 16. The pitch diameter of the sprocket 12, so that the angular speed of rotation of the shaft 16 is less than the angular speed of rotation of the shaft 4. A sprocket 21, whose pitch

diameter is slightly greater than the pitch diameter of the sprocket 15, is fixed to the shaft 16. The pitch diameter of the sprocket 21 is less than the pitch diameter of the sprockets 3 and 3a. The supplemental endless conveyor 17 is supported at its ends by the sprockets 21 and 18. These sprockets 21 and 18 are of equal pitch diameter. The sprocket 18 is fixed to the turnable shaft 19. The supplemental endless conveyor 17 is provided with equally spaced projections 20.

In its normal position, the top run of the conveyor 17 is located centrally between the top runs of the conveyors 1 and 2, and the top surface of the top run of said conveyor 17 as below the common level of the top surfaces of the top runs of the conveyors 1 and 2, save that the projections 20 project vertically above said common level. By means of the drive previously described, the linear speed of movement of the supplemental conveyor 17 is less than the linear speed of movement of the conveyors 1 and 2. Hence, the spaced bottles are moved by the conveyors 1 and 2, until each bottle abuts a respective stop projection 20. The conveyors 1 and 2 then continue to move continuously and longitudinally, at a greater speed than conveyor 17. The conveyors 1 and 2 then slip continuously relative to each bottle, which continues to abut the respective projection 20.

The bottles are fed laterally, either by hand or by any conventional mechanism, along the horizontal chute or guide 22. The usual recessed indexing wheel 23 is provided, for indexing the bottles B, one by one, into the initial position illustrated by the right-hand bottle B of Fig. 1. In said position, the vertical axis of each bottle intersects the median line between the top runs of the conveyors 1 and 2. The indexing wheel 23 is fixed to a vertical shaft 24, whose bevel gear 25 meshes with a bevel gear 26 of a horizontal shaft 27. This horizontal shaft 27 is provided with a pulley or sprocket 28 which is connected by a chain or belt 29, to a pulley or sprocket 30 which is fixed to the shaft 4.

The cam shaft 34 has a sprocket 33, which is driven by chain 32, which is actuated by sprocket 31 of shaft 27. Cam 35 is fixed to said cam shaft 34. Vertical rods 36 are either integral with, or suitably connected to, a yoke 36a, which is provided with a turnable roll 37. The lower end of a tension spring 39 is fixed to the frame F of the machine. The upper end of the tension spring 39 is connected to a cross bar 40, which is suitably bolted or otherwise fixed to the vertical rods 36. The roll 37 is thus held yieldingly in contact with the periphery of the cam 35. A part of the upper run of the supplemental conveyor 17 is supported upon a vertically movable rod or plate 41. At the respective ends thereof, the underside of this supporting rod or plate 41 is provided with respective pairs of laterally spaced lugs 42 and 43.

A two-armed lever 44 is pivotally connected by pins 45 to the frame F of the machine. Each arm of lever 44 is provided, at each end thereof, with a longitudinal slot, whose ends are closed. Each lug 43 is provided with a pivot pin 46, which extends through the respective longitudinal slot of the respective arm of lever 44. A lever 47 is pivotally connected by a pin or pins 48 to the frame F. A part of said lever 47 is located intermediate the arms of lever 44. The lugs 42 are provided with pivot pins 49, which extend through the respective slots of the arms of lever 47. The adjacent ends of levers 44 and 47 are connected by a pivot pin 50, which extends lat-

erally through the longitudinally overlapping respective slots of said levers 44 and 47. This pin 50 is fixed rigidly to or it is turnably connected to, the upper ends of the rods 36, so that pin 50 is moved up and down in unison with rods 36. The end-slots of levers 44 and 47 permit the easy turning of said levers to the position shown in Fig. 2.

Referring to Fig. 1, the cam is turned continuously in the counter-clockwise direction. This cam has a continuous cylindrical periphery, save for its recess R. When the roll 37 enters the recess R of the cam 35, the rods 36 will be lowered, thus turning the levers 44 and 47 to the respective positions shown in Fig. 2, thus raising the plate 41, and raising the upper run of the supplemental conveyor 17, so that the bottoms of the respective bottles B are temporarily raised above and out of contact with the top runs of the continuously operating endless conveyors 1 and 2.

When the movement of the conveyor 17 is stopped by separating clutch member 6 from clutch member 11, the cam shaft 34 is still turned continuously by chain 32. The longitudinal movement of the conveyor 17 is stopped when the roll 37 is about to enter recess R, or shortly before roll 37 enters recess R. Hence the respective part of the upper run of the conveyor 17 is raised, as shown in Fig. 2, so that the bottles at stations S and Sa are presented to the action of the conventional mechanism (not shown) for applying labels, strip stamps, etc., or for performing any other operation. After a predetermined interval, which is regulated by the angle subtended by recess R, the bottles are lowered to the normal level shown in Fig. 1. The clutch members 6 and 11 are again meshed, thus actuating conveyor 17 and permitting the main conveyors 1 and 2 to feed the bottles longitudinally through a distance which is equal to the distance between stations S and Sa. The clutch members 6 and 11 are again separated. Hence, in the first embodiment, each bottle is fed longitudinally in a series of intermittent longitudinal movements, each longitudinal movement being equal to a predetermined distance, namely, the distance between the stations. This distance is equal to the distance between adjacent members 20. If there are more than two stations, said stations are equally spaced. Between successive longitudinal movements, each bottle which is vertically aligned with a station, is raised and held in the raised position for a predetermined operating period, which is sufficient for the operation of the mechanism which applies the label or strip stamp or which performs any other desired operation. At the end of said operating period, the bottle is again lowered to its normal level, and the bottle is then given its next longitudinal movement. Any conventional braking mechanism or control mechanism can be used for preventing the conveyor 17 from overrunning its predetermined longitudinal movement, when clutch members 6 and 11 are separated. The rod 10 can be operated by hand or by any conventional automatic control.

There may be one station, or more than two stations. After the bottle has been operated upon the last station, it is moved off the top run of the conveyor 17, so that the bottle then rests wholly upon the top runs of the main conveyors 1 and 2.

The dogs or projections 20 position the bottles in accurate vertical alinement with the respective

station or stations. Since the conveyors 1 and 2 have a greater linear speed than the conveyor 17, the front of each bottle abuts a respective dog 20, before the respective bottle is moved under the first station. As soon as a bottle abuts the respective dog 20, the conveyors 1 and 2 slip continuously relative to the bottom wall of the bottle. The bars 75 prevent any lateral or tipping movement of the bottles B.

In the modification illustrated in Figs. 6-9, the top run of the supplemental conveyor 17 is supported for longitudinal movement upon and relative to a stationary plate 51. This plate 51 is provided with vertically movable plungers 52, which have heads 53. Compression springs 54 normally maintain heads 53 in the position illustrated in Fig. 6. A lever 54a is fixed to a rock shaft 55, which is turnably supported in the frame of the machine. A rocker arm 56 has a head which is also rigidly fixed to the rock shaft 55, so that the rocker arm 56 and the lever 54a turn in unison with each other and with the rock shaft 55. The lever 54a is pivotally connected to an operating arm 57. Each plunger 52 is provided with a bottom head 58. When the lever 54a is turned from the vertical position shown in Fig. 6, to the position shown in Fig. 7, the respective plunger 52 is raised, thus compressing the respective spring 54 and elevating the respective part of the top run of the supplemental conveyor 17, and thus elevating the respective bottle.

The lever 54a is then turned in the opposite direction, so as to raise the other plunger 52. The shaft 55 is thus rocked while the longitudinal movement of the conveyor 17 is stopped.

Fig. 10 shows the endless conveyor 2 mounted upon the sprockets 51a and 52a. The conveyor 1 is mounted upon a similar pair of sprockets, as in the first embodiment, and said conveyors 1 and 2 are operated continuously and at constant speed, as in the preceding embodiments. The shaft 53a of the sprocket 52a is provided with a sprocket 54aa, which is connected by a chain 55a to the sprocket 56a of the drive shaft of an actuating motor 57a. The intermediate conveyor 17 is mounted upon a sprocket 58a and upon a smaller sprocket 59. These sprockets 58a and 59 are respectively mounted upon the shafts 60 and 61. The shaft 60 is provided with a ratchet wheel 62. The shaft 53a is provided with a sprocket 63, which is connected by a chain 64 to a sprocket 65, fixed to the cam-shaft 66. The cam-shaft 66 is thus driven continuously and at constant speed. The cam 67 is fixed to said shaft 66. Cam 67 raises the rods 36 against the force of the tension spring 39, as in the first embodiment. A crank disc 70 is also fixed to the cam-shaft 66. A link 71 is pivotally connected at 72 to the disc 70. The link 71 is also pivotally connected at 72 to an arm 73 which is mounted loosely upon the shaft 60. A pawl 74 is pivoted on the pivot member 72. The rotation of the crank-disc 70 therefore reciprocates the link 71 and thus oscillates the arm 73, so that the shaft 60 is intermittently turned through successive angles of 90°. Supplemental pawl 74a prevents any reverse movement of shaft 60. This pawl 74a is pivoted to the frame of the machine. The shaft 24 of the feed wheel 23 is connected by bevel gear 75 to a corresponding bevel gear 77 on a horizontal shaft which is provided with a sprocket 78. This sprocket 78 is driven by a chain 79 from an associated sprocket on the cam-shaft 66. It is to be noted that whenever I refer

to chains and sprockets, I can use other positive drive means, which prevent relative slip between the parts.

The shaft 60 and the sprocket 58a are thus turned in unison through an angle of 90°, while the shaft 66 and the crank-disc 70 turn through an angle of 180°. Therefore, while the cam-shaft 66 is turned through an angle of 180°, the intermediate conveyor 17 is actuated so that its lugs 20 are moved longitudinally through a distance which is equal to the distance between successive stations of the labeling machine. During the next rotation of the cam-shaft 66 through an angle of 180°, the bottles B remain stationary. While the bottles B are thus longitudinally stationary, during said reverse movement of the link 71, the tension spring 39 downwardly actuates the rods, thus actuating the members 44 and 47 to the position illustrated in Fig. 2, thus raising the bottles B above the conveyors 1 and 2, while the bottles are vertically aligned with the respective stations, and each elevated bottle is held in its upper position during the required operating period. The members 44 and 47 are thus actuated to the position shown in Fig. 2, and said members 44 and 47 are then returned to the position shown in Fig. 1, while the intermediate conveyor 17 and its stop pins 20 are longitudinally stationary.

The shafts 53a and 66 are connected through the chain 64, by equal sprockets, so that shafts 53a and 66 and 53b have equal angular speeds of rotation. While the intermediate conveyor 17 is thus longitudinally stationary, the main conveyors 1 and 2 travel a distance which is equal to or greater than twice the distance between adjacent projections 20. The lugs 20 therefore cannot advance in front of their respective bottles, and the main conveyors 1 and 2 keep the bottles abutting the respective lugs 20 at all times. It would be possible temporarily to space the lugs 20 from their respective bottles, and to operate the main conveyors at sufficient speed to restore the bottles periodically into abutment with the respective lugs 20, but this sudden stopping of the longitudinal movement of the bottles B might cause them to tip over. Hence, it is preferable to maintain each bottle which is located on the conveyor 17, continuously in contact with a stop 20 after the initial contact has been secured, although the invention is not limited to this.

The shaft 24 turns 60° while the shaft 66 turns a complete revolution, because the wheel 23 has six pockets and it therefore must place one bottle on the chain conveyors 1 and 2, for each complete revolution of the shaft 66.

Therefore, shortly after the wheel 23 places each bottle upon the conveyors 1 and 2, with the vertical axis of the bottle intersecting the median line between the laterally spaced conveyors 1 and 2, each pin 20 on the conveyor 17 stops the longitudinal movement of the respective bottle which would otherwise be caused by conveyors 1 and 2, thus causing the bottle to stop intermittently while it is located in the zone which is above and between the shafts 61 and 60.

Fig. 11 shows a rod 80 which is moved intermittently up and down by a cam. This rod is connected by means of the pivot pin 81 to the adjacent slotted ends of the levers 82 and 83, which are respectively pivoted to frame F at 84 and 85. The rods 86 and 87 are respectively pivoted at 88 and 89 to the levers 82 and 83. The rods 86 and 87 have respective heads 86a and

87a which are raised when the rod 80 is lowered, thus raising the respective aligned bottles B off the main continuously-operating conveyors 1 and 2. The raised positions of the bottle is indicated by Ba, in Fig. 11. A part of the upper run of conveyor 17 is slidably supported on the stationary plate 51b.

Fig. 12 shows the construction of the chain conveyors 1 and 2 in more detail. The conveyors 1 and 2 are provided with plates 1a and 2a. In the top runs of conveyors 1 and 2, said plates slide upon the stationary guide and supporting members G. These members G are fixed to the frame F. The plates 1a and 2a are provided in each link of the respective chains 1 and 2.

In the embodiment of Fig. 1, a pair of directly adjacent bottles are simultaneously raised and lowered. The right-hand bottle which is shown in Fig. 1 is spaced from its respective stop-projection 20, but said bottle will be moved by the conveyors 1 and 2 to abut said stop-projection before said stop-projection is located above the member 41.

In Fig. 11, the horizontal distance between adjacent stops 20, equals one-half of the horizontal distance between heads 86a and 87a. In each embodiment, the length of each longitudinal movement of conveyor 17, may be equal to the distance between adjacent projections 20. Hence, in the embodiment of Fig. 11, each bottle is initially moved to a position above 87a. It is then moved to an idle intermediate position, in which the bottle is not raised. It is then moved to the next active position, above head 86a.

In the embodiment of Fig. 10, three adjacent bottles are simultaneously raised and lowered, so that the machine of this embodiment may have three stations.

In the embodiment of Fig. 7, each longitudinal movement of the supplemental conveyor 17 is equal to the distance between heads 53. The arm 55a is first rocked counterclockwise from its neutral position which is shown in Fig. 6, and then clockwise from said neutral position, during each interval in which the conveyor 17 is held against longitudinal movement. If desired, the distance between the adjacent projections 20 of Fig. 6 could be one-half or any aliquot part of the distance between heads 53, and the length of movement of conveyor 17 can be similarly regulated.

If the machine is labeling the bottles at the rate of 60 bottles per minute, the intermediate conveyor 17 is given 60 intermittent strokes per minute. If the distance between adjacent projections 20 is six inches, so that the length of each intermittent movement of conveyor 17 is six inches, the main conveyors 1 and 2 will be operated continuously at a speed of not less than 60 feet per minute. Since the period of each longitudinal movement of conveyor 17 is equal to the period of rest between successive longitudinal movements, in the embodiment of Fig. 10, the period of each longitudinal movement will be 0.5 second. While the intermediate conveyor 17 is longitudinally stationary, the bottles which are elevated, are raised through a height of about $\frac{1}{2}$ inch to $\frac{1}{4}$ inch, from the position B to the position Ba. While said conveyor 17 is longitudinally stationary, the bottle is held in the upper position Ba during the operating period of the mechanism at the respective station, and the bottle is then lowered to its original level. Hence the bottle is held against longitudinal movement, or against any substantial longitudinal movement, while the bottle is raised, also while the

bottle is held in its elevated position, and also while the bottle is lowered to its normal level.

The conveyors 1 and 2 can be regarded as primary feeding means, and the intermediate conveyor 17, with its lugs 20, operates as a stop unit for controlling the feed of the bottles. The control stop unit is separate from the feeding means, thus providing the necessary accuracy and sensitivity of operation.

The invention applies to the feeding of containers of all kinds, including cans and the like.

Any suitable conventional control pawl or brake can be used in the embodiment of Fig. 10, in order to prevent the auxiliary conveyor 17 from overrunning the predetermined length of each longitudinal movement thereof. It is very old and well-known to apply a brake or locking device to a machine, simultaneously with the shutting off of power thereto, in order to prevent overrunning, and to use various movements, such as the Geneva or Maltese cross, the Lumière or harmonic cam, etc., in order to move a band or chain conveyor intermittently through an accurately predetermined distance, without overrunning. Hence, these well-known devices, which I can use, require no illustration.

For convenience, the auxiliary member 17 may be designated as being stationary when it is not being longitudinally moved, even though part of the top run of the member 17 may be raised or lowered during the cessation of the longitudinal movement.

The top walls of the top runs of the conveyors 1, 2 and 17 may be located in substantially the same horizontal plane. However, the top wall of the top run of the conveyor 17 may be below the horizontal plane in which the top walls of the top runs of conveyors 1 and 2 are located, as long as the stops 20 extend to or above said horizontal plane. It is not necessary to support the central part of the bottle on the conveyor 17, since the conveyors 1 and 2 provide sufficient support.

The invention is not limited to chain conveyors, or to moving the conveyors through a longitudinal path, since these factors depend upon the type of machine to which the invention is applied. Various machines for handling containers and other articles have turntables on which the articles are supported and moved through an arcuate path.

The frictional feeding force of the conveyors 1 and 2 may be designated as a yielding feeding force, since the bottles and containers or other articles can be held against action and said feeding force, by the stops.

I have shown preferred embodiments of my invention, but it is clear that numerous changes and omissions can be made without departing from its spirit.

I claim:

1. Mechanism for handling containers, comprising conveyor-means adapted to support each container and to feed each container in a predetermined longitudinal path, said conveyor-means being longitudinally movable in said path slidably relative to the containers, a conveyor-device, actuating means adapted to actuate said conveyor-device intermittently in said path, said conveyor-device being located underneath another part of each container in said longitudinal path, each container being at a predetermined level when it is supported on said conveyor-means, said conveyor-device having spaced stops, mechanism adapted to actuate said con-

veyor-means at greater total linear speed in said path than the conveyor-device so that each container is pushed against a respective stop by the conveyor-means, said conveyor-device being vertically movable up-and-down relative to said longitudinal path, supplemental mechanism adapted to intermittently raise and lower a part of said conveyor-device which is located in said longitudinal path so as to move the respective container out of contact with the conveyor-means and to hold the respective container in its elevated position while the second conveyor-device is longitudinally stationary and then to lower the respective container back into contact with the conveyor-means.

2. Mechanism for hauling containers comprising laterally spaced endless conveyors having top runs whose top walls are located in substantially the same horizontal plane, an intermediate conveyor located between said spaced conveyors, said intermediate conveyor being flexible and having a substantially horizontal top run which is located between the top runs of the spaced conveyors, said top runs of all said conveyors being substantially parallel to each other, first mechanism longitudinally operating the intermediate conveyor intermittently, second mechanism operating the spaced conveyors continuously and at greater total linear speed than the intermediate conveyor, said intermediate conveyor having longitudinally spaced and outwardly projecting stop members which project above the top runs of the laterally spaced conveyors in the top run of the intermediate conveyor, additional mechanism adapted intermittently to raise the top run of the intermediate conveyor and to lower said top run of the intermediate conveyor back to said level, said mechanism operating to raise and then to lower said top run of the intermediate conveyor above the top runs of the spaced conveyors and back to the lower level of said top run of said intermediate conveyor while the longitudinal movement of the intermediate conveyor is stopped, said spaced conveyors slipping relative to the container when said containers abut said stop pins.

3. A machine having a plurality of longitudinally spaced operating stations, endless conveyor-means having a top run and a bottom run, said top run being located below said operating stations, mechanism adapted to operate said endless conveyor-means continuously and at a constant predetermined speed, said top run being shaped to support containers and being adapted to slip relative to the containers when the containers are held against movement in unison with said top run, said top run being longitudi-

nally aligned with said operating stations so that said top run urges the containers which are located thereon continuously from station to station, an auxiliary endless stop member also having a top run and a bottom run, said top run of the auxiliary member being vertically aligned with the containers which are located on the top run of the conveyor-means, said auxiliary endless stop member having a series of outwardly projecting stops which project above the top run of the conveyor-means in the top run of the auxiliary endless stop member, said stops being equally longitudinally spaced from each other, the distance between a pair of consecutive stops being equal to the distance between consecutive stations, mechanism adapted to operate said auxiliary endless member longitudinally and intermittently so that each station is vertically aligned with a respective stop at the end of each said longitudinal movement, means adapted to raise and to lower the containers at said stations, between successive intermittent movements.

4. Mechanism for feeding containers intermittently in a predetermined longitudinal path, comprising friction means adapted to feed the containers longitudinally in said path, said friction means slipping relative to said containers when the containers are held against longitudinal movement in said path, a stop device having spaced stop members which are movable in said path, mechanism adapted to actuate said stop device intermittently and at a total lower speed than said friction means, supply means operating to supply containers in spaced relation to said friction means, so that respective bottles are urged against respective stop members in said path by said friction means.

5. Mechanism for feeding containers intermittently in a predetermined longitudinal path, comprising friction means adapted to feed the containers longitudinally in said path, said friction means slipping relative to said containers when the containers are held against longitudinal movement in said path, a stop device having spaced stop members which are movable in said path, mechanism adapted to actuate said stop device intermittently and at a total lower speed than said friction means, supply means operating to supply containers in spaced relation to said friction means, so that respective bottles are urged against respective stop members in said path by said friction means, and means adapted to raise and to lower the containers relative to said friction means during the periods of rest of said stop device.

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