L. A. HAWTHORNE.

BOTTLE CRATING MECHANISM.

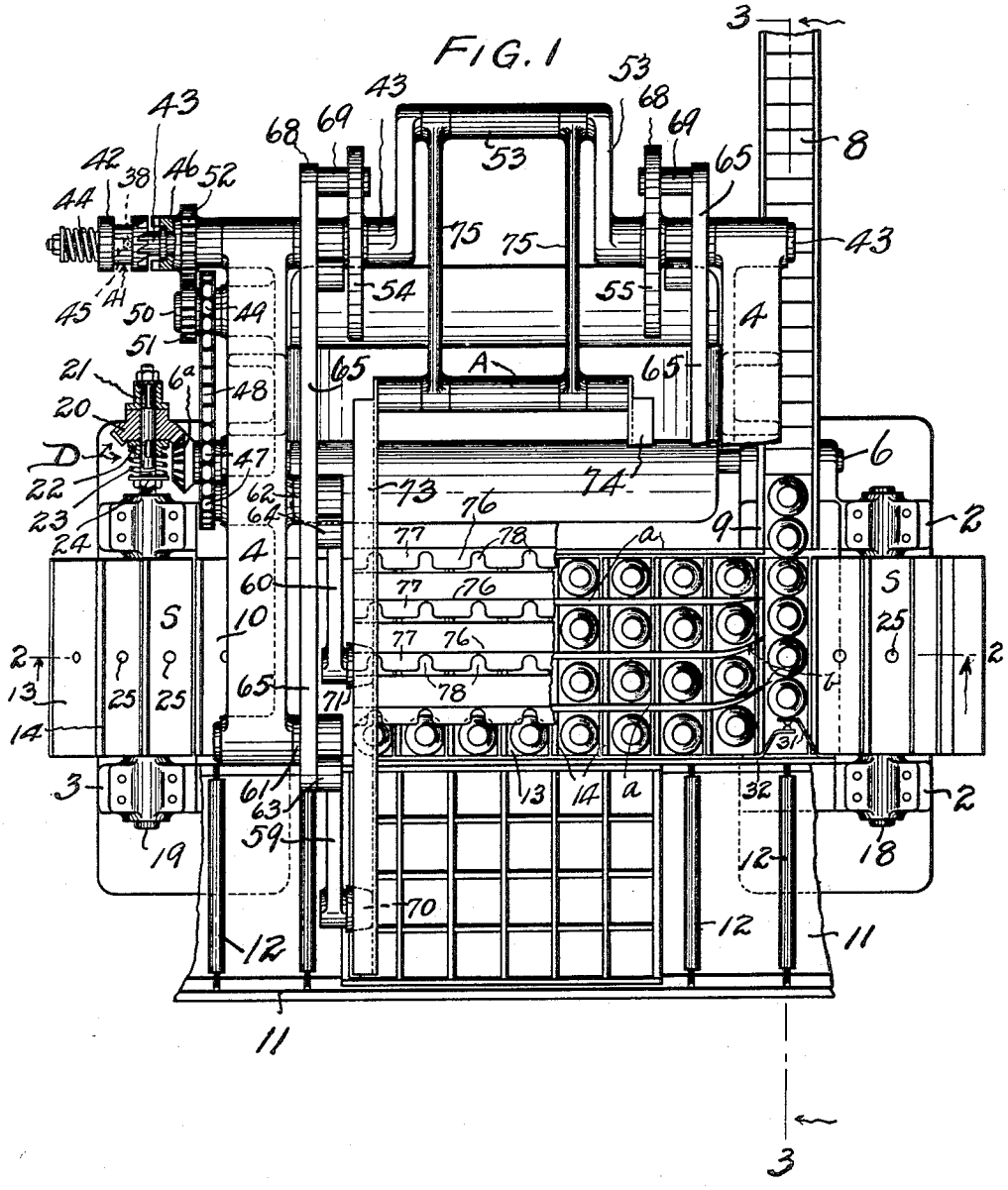
APPLICATION FILED APR. 11, 1917.

1,243,407.

Patented Oct. 16, 1917.

3 SHEETS—SHEET 1.

FIG. 1



WITNESS

E. D. Groff

INVENTOR

LOUIS A. HAWTHORNE.

BY

ATTORNEY

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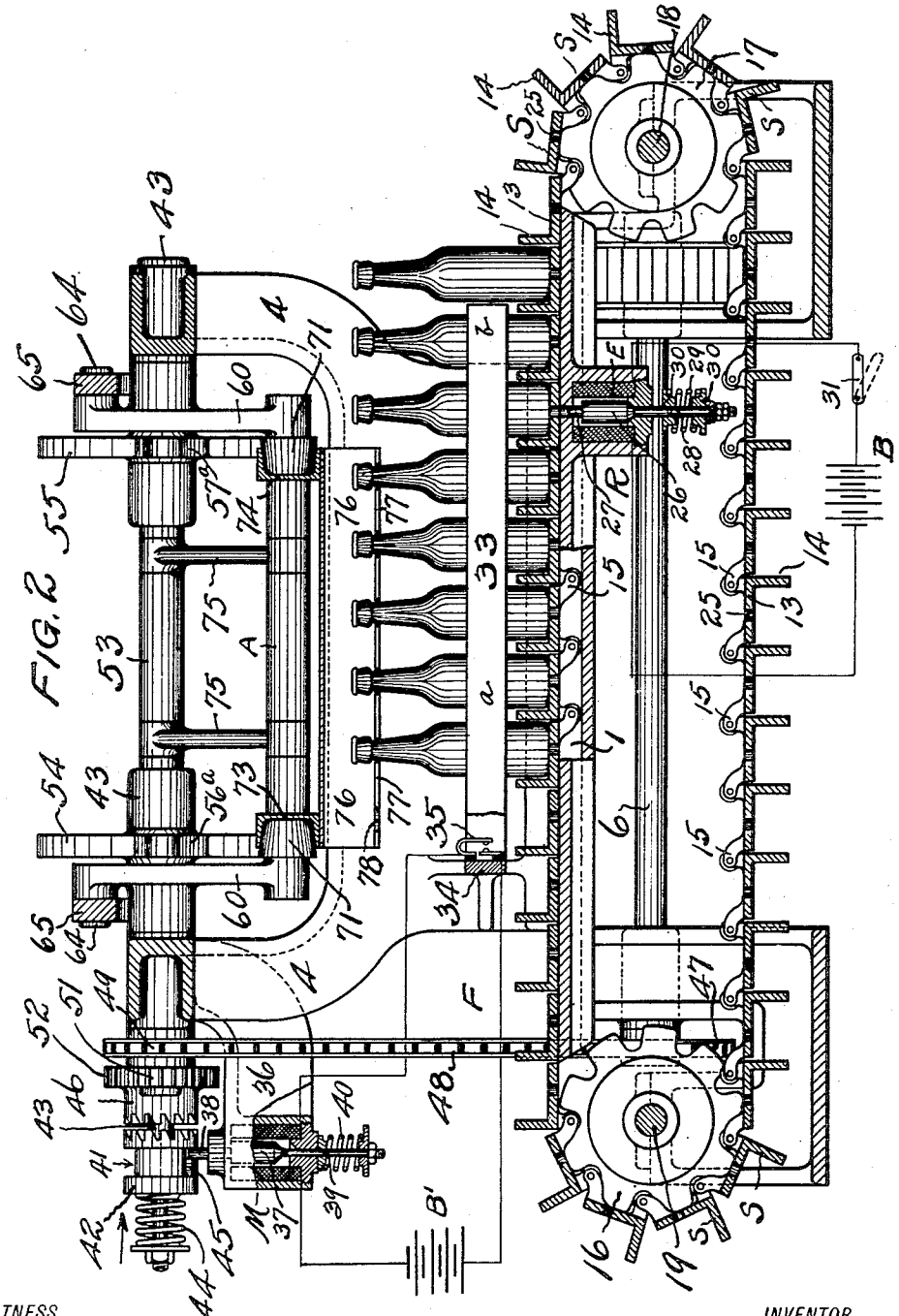
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3 SHEETS—SHEET 2.

FIG. 2



WITNESS

E. D. Groff.

INVENTOR

LOUIS A. HAWTHORNE

BY

ATTORNEY

L. A. HAWTHORNE.

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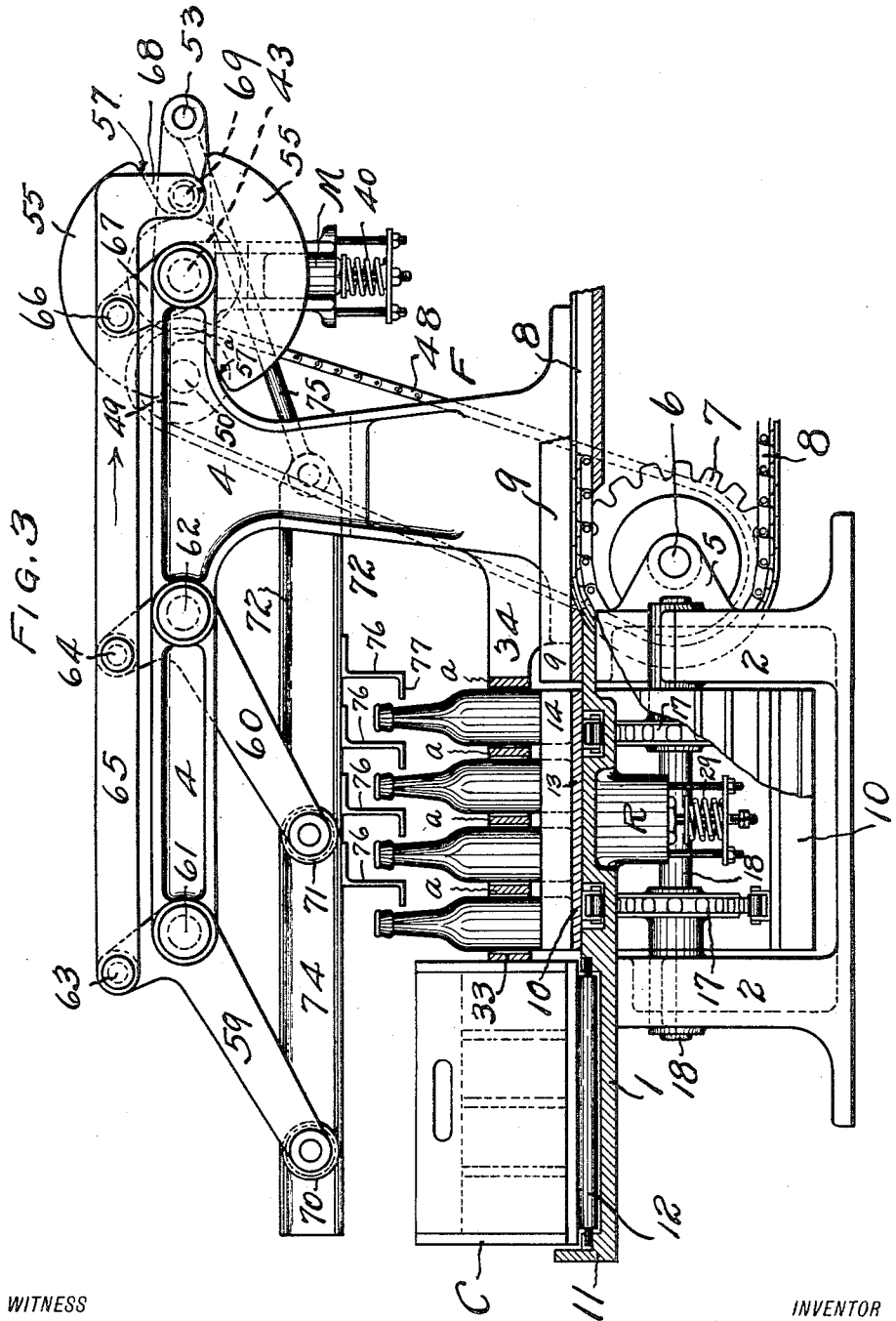
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3 SHEETS—SHEET 3.

FIG. 3



WITNESS

E. D. Groff

INVENTOR

LOUIS A. HAWTHORNE

BY

D. D. Mitchell

ATTORNEY

UNITED STATES PATENT OFFICE.

LOUIS A. HAWTHORNE, OF NEWARK, NEW JERSEY, ASSIGNOR TO STEEL UTILITIES INCORPORATED, A CORPORATION OF NEW YORK.

BOTTLE-CRATING MECHANISM.

1,243,407. Specification of Letters Patent. Patented Oct. 16, 1917.

Application filed April 11, 1917. Serial No. 161,285.

To all whom it may concern:

Be it known that I, LOUIS A. HAWTHORNE, a citizen of the United States, residing at Newark, in the county of Essex and State of New Jersey, have invented certain new and useful Improvements in Bottle-Crating Mechanism, of which the following is a specification.

This invention relates to a novel improvement in apparatus for automatically assembling and depositing a plurality of containers such as bottles or the like, into crates or boxes for shipment.

One of the objects of the invention is to provide an apparatus which may be readily utilized in connection with machinery for filling and capping or labeling bottles, so that the filled bottles may be expeditiously fed directly from the delivery point of such machinery into the present apparatus, thereby eliminating any unnecessary handling and consequently reducing the liability of breakage to a minimum. That is to say, it is proposed to provide a device which receives the bottles from the machinery referred to, and which assembles them in the desired order and relation, then lifts a predetermined number of bottles from the device on which they are assembled and deposits the same into a waiting shipping crate, and then disengages the bottles to return to its normal position to make ready for the assembling of the next succeeding group of bottles.

Another object of the invention is to provide a substantial and reliable apparatus which is positive and accurate in its operation, and whose several parts are so arranged and timed as to accurately provide for the series of movements necessary to automatically handle the bottles in an efficient manner.

With the above and other objects in view which will more readily appear as the nature of the invention is better understood, the same consists in the novel construction, combination and arrangement of parts hereinafter more fully described, illustrated and claimed.

A preferred and practical embodiment of the invention is illustrated in the accompanying drawings, in which—

Figure 1 is a top plan view of the invention.

Fig. 2 is a vertical sectional view on the line 2—2 of Fig. 1.

Fig. 3 is a sectional view on the line 3—3 of Fig. 1.

Similar reference characters designate corresponding parts throughout the several figures of the drawings.

As previously indicated, it is proposed to provide a machine which may be readily utilized in connection with the bottle filling and capping apparatus, usually employed in bottling operations, whereby the filled and capped bottles delivered therefrom may be handled with facility and without breakage, for the purpose of assembling them in suitable shipping boxes or crates. Accordingly, to this end, the present invention contemplates a machine comprising a frame, designated generally as F, and including a bed portion 1, suitable paired supports or standards 2—2 and 3—3, and the upper substantially T-shaped frame portions or supports designated generally as 4. Corresponding members of the supporting standards 2—2 and 3—3, are provided with the offset shaft bearing brackets 5, in which is journaled a drive shaft 6, disposed transversely of the frame-work F, and carrying at one end thereof a sprocket wheel 7 for engaging with the chain portion of an endless feed conveyer 8, while the opposite end of the shaft is provided with a beveled driving gear 6^a, for operating the moving platform on which the bottles are assembled, at predetermined intervals, as will hereinafter more fully appear. The feed conveyer 8 which is driven through the shaft 6 and sprocket 7, conveys bottles from the capping or labeling machine into the guideway 9 on the bed of the frame 1, and into position to be fed to the endless moving assembling platform, designated generally as 10.

This assembling platform 10 is arranged at right-angles to the feed conveyer 8 and moves transversely across the entire width of the machine, as will be observed from Figs. 1 and 2. As will also be observed from these latter figures, the assembling platform 10 is interposed between the feed conveyer 8, and a suitable crate support, designated generally as 11, and having a plurality of suitable rollers 12 for slidably receiving the shipping crates or boxes, designated generally as C.

Referring now more particularly to the assembling platform 10, it will be observed, more especially from Fig. 2, that the same essentially comprises a plurality of angular bottle supporting sections S, which include a bottom wall or floor 13, and an upstanding partition wall 14. These sections are pivotally connected as indicated at 15 to provide for the movement of the platform around the paired sets of driving sprockets 16 and 17, which have their platform engaging peripheries so formed that the knuckles or joints 15 between the bottle supporting sections fit therein to provide the necessary traction engagement between the sprockets and platform. As will be observed from Fig. 1, the sprockets 16 are the driving sprockets, while the sprockets 17 are merely idlers, being mounted upon the shaft 18 journaled in the supporting standards 2—2 of the frame. The driving sprockets 17 are mounted on the counter shaft 19 journaled in the supporting standards 3—3, and this shaft 19 is provided with a friction clutch device, designated generally as D, for permitting the assembling platform to be intermittently driven by the main drive shaft 6. This friction clutch device D consists of a beveled gear 20 loosely mounted on the shaft 19, and clamped between the abutment collar 21 which is keyed to the shaft 19, as will be clearly apparent from Fig. 1, and the spring pressed friction collar 22, also keyed to the shaft 19, and forced into engagement with the friction face of the gear 20 by means of a relatively stout coil spring 23 adjustably mounted on the shaft 19 by means of the nut and washer arrangement 24. Therefore, it will be apparent that the assembling platform 10 is advanced by the main drive shaft 6 through the friction clutch device D, when the assembling platform is not under restraint.

To provide for detaining or holding the assembling platform 10, a sufficient period to permit each bottle supporting section thereof to be filled with its full quota of bottles a novel restraining device R is provided. As will be apparent from Fig. 2, the bottle supporting sections S of the assembling platform provide a plurality of bottle receiving guideways, or in other words, the upstanding partition walls 14 thereof coöperate to provide a plurality of bottle receiving channels which are adapted to be held in register with the bottle guide 9 between the feed conveyer 8 and the platform. To provide for holding these several guideways, each in register with the bottle guide-way 9, for a predetermined period, the bottom wall or floor 13 thereof is provided with a single centrally located keeper opening 25, to coöperate with the restraining device R, above referred to.

This restraining device R is located beneath the bed 1 of the frame-work, and in alinement with the bottle feeding guide 9, whereby it will be in position to engage the bottle section S that is intended to receive bottles from the feed conveyer through the said guideway. As will be seen from Fig. 2, this device essentially comprises an electro-magnet E having therein a solenoid 26, which is provided at one end with a latch detent 27, while its opposite end is extended as indicated at 28 to provide for receiving a presser spring 29, clamped between suitable abutments 30, and which has a tendency to push the solenoid upwardly when the magnet is not energized to thereby hold the latch detent 27 in the keeper opening 25 of the bottle supporting section positioned immediately above it on the table 1. Since the operation of the device is entirely automatic, the movement of the assembling platform 10 is controlled entirely by the bottles themselves. Accordingly, when a sufficient number of bottles have been fed from the conveyer 8 through the guideway 9 onto the bottle supporting member S in register therewith, the foremost bottle of the group on the support is intended to actuate the means for releasing the restraining device.

In the present instance, since this restraining device is electrically operated, a circuit closer 31 is provided. This circuit closer includes suitable metallic switch arms carried by an upstanding flange 32 of the bed 1, and located directly in the path of the bottles being fed from the feeding conveyer 8 onto the bottle supporting section S which is in register therewith, and at a sufficient distance above the assembling platform to provide the necessary clearance for the upper edges of the partition walls 14 of the said sections. The switch members of this circuit closer 31 are of course, electrically connected with a suitable source of electricity designated generally as B, and also with the electro-magnet E, whereby when a sufficient number of bottles have been fed onto the bottle support, the foremost bottle of the group, closes the circuit to energize the electro-magnet E, to thereby withdraw the detent 27 from the keeper opening 25 to permit the assembling platform to move forward through the connections heretofore described with the driving shaft 6.

Positioned above the assembling platform 10 is a bottle collecting frame, designated generally as 33 and consisting of a plurality of guide arms *a* carried by a single supporting bracket arm 34 of the frame F. These arms *a* of the collecting frame 33 are provided with the deflecting noses *b* which are designed to engage and separate the bottles carried by the bottle support which has just been filled from the feed conveyer, as the platform advances from the bottle receiving position in the direction of the bracket which

supports the frame, whereby said bottles are spaced apart, as clearly shown in Fig. 1. Thus, the bottle collecting frame 33 coöperates with the transverse partition walls 14 of the assembling platform to space the bottles in the same manner as they are to be spaced and arranged in the waiting shipping crate.

After the bottles are collected on the assembling platform 10, by the frame 33, a predetermined number thereof are lifted and deposited into the waiting shipping crate C, by a lifting and depositing mechanism carried by the T-shaped supports 4 of the frame, and to provide for bringing this lifting and depositing mechanism into play, the bracket arm 34, which supports the several arms *a* of the bottle collecting frame 33, is provided with suitable bottle actuated means to operate the same. That is to say, when the bottle collecting frame is filled to capacity by a predetermined number of transverse rows of bottles, the first row of the latter will actuate a device for bringing the lifting and depositing mechanism into operation to engage the bottles, lift the same out of the collecting frame 33, deposit them in a waiting shipping crate, and then disengage the mechanism from the bottles and bring it back to normal position.

In the present instance, it is proposed to make this device or means for bringing the lifting and depositing mechanism into play, electrical, and therefore, as will be observed from Fig. 2, the member 34 is provided with a circuit closer 35, which consists of suitable metallic circuit closing parts electrically connected with a battery or other source of electrical energy B′ and an electro-magnetic clutch controlling device, designated generally as M, and mounted upon the offset bracket arm 36, of one of the standards 4 of the frame. This electro-magnetic clutch controlling device M is of substantially the same construction as the restraining device R, and therefore, comprises a solenoid 37 having a latch detent 38 at one end, while the opposite end is extended as at 39 to receive a relatively stout coil spring 40, which is suitably mounted thereon, and has a tendency to keep the latch detent 38 in its lifted position, that is, into the annular groove 41 of a clutch member 42, which is slidable on a crank shaft 43, and under the tension of the coil spring 44 to push the same in the direction indicated by the arrow in Fig. 2.

This clutch member 42 is provided in the annular groove 41 with a shifter cam 45, the zenith of which normally engages with the latch detent 38 to hold the clutch member 42 out of engagement with the driving clutch member 46 loosely mounted on the crank shaft 43. That is to say, when the apparatus is at rest, the clutch members 42 and 46 are disengaged, because of the engagement of the latch detent 38 with the zenith of the cam 45 in the annular groove of the clutch member 42. The spring 44 having a tendency to move the clutch member 42 in the direction of the clutch member 46 is, therefore, only held out of engagement therewith when the zenith of its cam engages the detent 38. Accordingly, it will be apparent that when the latch detent 38 is withdrawn by the energization of the electro-magnet acting on the solenoid 37, the spring 44 will push the clutch members 42 and 46 into engagement. However, when the electro-magnet is deënergized by the breaking of the circuit from the circuit closer 35, the detent will snap back into the groove, and the clutch members 42 and 46 will remain engaged for the balance of the cycle of the crank shaft, but just before the end of the cycle of rotation of the crank shaft, and of course, the clutch member 42, the latter will be disengaged from the driving clutch 46, because the inclined face of the cam 45 riding against the detent 38, will wedge the clutch member 42 out of engagement with the member 46 and reset the zenith of the cam on the detent.

It will, therefore, be apparent that the crank shaft 43 of the lifting and depositing mechanism is controlled by means of the bottle actuated circuit closer 35, which closes the circuit to an electro-magnetic clutch controlling device M, whereby the crank shaft 43, which is the prime mover of the lifting and depositing mechanism will be connected with the main drive shaft 6, as will presently appear. At this point, it may be noted that the circuit is closed to the electro-magnetic clutch controlling device M when the necessary rows of bottles have been collected in the bottle collecting frame 33. That is to say, the foremost row of bottles will, as previously indicated, press the metallic switch members of the circuit closer 35 together, and close the electric circuit to the electro-magnetic clutch operating device, to connect the crank shaft 43 with the prime operating means, namely, the drive shaft 6.

Referring now to the means for connecting the crank shaft 43 and drive shaft 6, it will be observed that the latter is provided at one side of the beveled gear 6^a with a sprocket 47, which engages with a chain 48 that passes over a sprocket 49 mounted upon a suitable stub shaft 50 carried by one of the frame portions 4, and having rigid therewtih a driving pinion 51, which meshes with a gear 52 carried by the clutch member 46. With this arrangement, it will be clear that since the drive shaft 6 rotates continuously, on account of the bottles being fed continuously by the feed conveyer 8, the sprocket wheel 47 will continuously drive the chain 48, and the

latter will, in turn, continuously rotate the clutch member 46 mounted loose on the crank shaft 43, and there will thus be a constantly available source of power for operating the crank shaft 43, but this power is not utilized, except at predetermined intervals, namely, when the bottle collecting frame 33 is filled with the necessary rows of bottles. Then the foremost row thereof closes an electrical circuit through the circuit closer 35 to the electro-magnetic clutch device M, and connects the clutch member 42 with 46.

The crank shaft 43, is arranged transversely of the upper portion of the frame and is mounted in bearings in the rear ends of the opposite T-shaped standards or supports 4. This shaft is provided with the offset crank portion 53, and at each side of this crank portion rigidly carries the raising and lowering cams 54 and 55, which are of substantially circular form, and respectively provided with the opposite similar cam notches or depressions 56—56ª and 57—57ª.

The lifting mechanism proper comprising the superstructure of the machine is operated by the cams 54 and 55 and essentially comprises a plurality of paired bell cranks or lifting levers 59 and 60, which are respectively pivoted at their angles, as indicated at 61 and 62 to the forwardly extending portions of the T-shaped supports 4. The upper ends of these levers are pivotally connected as indicated at 63 and 64 with the operating rods or bars 65, and the latter are also pivotally connected, as indicated at 66, with the auxiliary supporting arms 67 mounted on the crank shaft 43 and are further provided at their rear ends with the angular actuating ends 68, which carry the laterally offset cam abutments or rollers 69 that engage with the working edges of the cams 54 and 55 and normally rest in the notches 56 and 57.

The lower ends of the paired sets of bell crank levers 59 and 60 carry therewith suitable rollers 70 and 71, respectively, which slidably support a bottle engaging frame designated generally as 72. That is to say, the rollers 70 and 71 are respectively carried by the lower ends of the paired sets of bell cranks 59 and 60 slidably engaged in the reversely disposed channel members 73 and 74 of the bottle engaging frame, whereby the latter may have a sufficient sliding movement to engage the grouped bottles held in the bottle collecting frame 33. The rear ends of the channel frame bars 73 and 74 of the bottle engaging frame are connected by the cross-rod A and the latter is joined by the links 75 with the crank portion 53 of the crank shaft 43, whereby the rotation of the shaft will impart a reciprocating movement to the entire bottle engaging frame suspended on the rollers 70 and 71 carried by the paired sets of lifting levers 59 and 60.

As will be observed from the several figures of the drawings, the said channel members 73 and 74 of the bottle engaging frame carry at their under side a plurality of depending bottle engaging members 76, which are of substantially Z-shaped formation, and suitably spaced to provide ample clearance for permitting the bottles carried by the assembling platform 10 to pass therebetween when the apparatus is in its normal position, as shown in Fig. 3 of the drawings. These bottle engaging members 76 have their horizontal web portions 77 provided with a plurality of bottle neck receiving and engaging notches 78 for engaging beneath the enlarged capping head of the bottle neck, upon the forward movement of the entire bottle engaging frame 72, which movement is caused by the rotation of the crank shaft 43, as previously indicated.

The initial movement of the crank shaft 43 slides the frame 72 forward and pushes the bottle engaging members 76 carried by the frame into engagement with the necks of certain of the bottles assembled in the bottle collecting frame positioned above the assembling platform. And, owing to the character of the cams 54 and 55, the continued movement of the crank shaft 43, will lift the entire bottle carrying frame through the medium of the paired lifting levers 59 and 60 and auxiliary supporting levers 67, whereby all of the bottles picked up by the bottle engaging members of the frame 72 will be lifted out of the frame, and to a sufficient height to clear the edges of the waiting shipping crate C. When the cams 54 and 55 complete about one-half of their movement, the cam rollers 69, carried by the operating bars 65 will drop into the notches 56ª and 57ª which are opposite the notches in which they normally rest, to thereby lower the paired levers 59 and 60, and deposit the bottles into the cells of the waiting shipping crate. Then the continued rotation of the crank shaft 43 will first cause the channel bars 73 and 74 of the frame 72 to move backward slightly, whereby the bottle engaging members 76 will disengage the necks of the bottles. The cam rollers 69 of the bars 65 are then forced out of the notches 56ª and 57ª in which they temporarily rest to permit the bottles to be lowered into the crate, and back onto the peripheries of the cams 54 and 55, whereby the entire bottle engaging frame may be lifted upwardly to permit the bottle engaging members 76 to clear the sides of the box, and then when the rollers 69 drop into the cam notches 56 and 57, the paired bell cranks 59 and 60 will lower the frame 72 and place it in its normal position over the

bottle collecting frame 33, to again receive bottles as before.

From the foregoing description, it will be apparent that bottles are fed from the feed conveyer 8, through the bottle guideway 9 on the bed 1 of the machine, onto the floor of the waiting bottle section S of the assembling platform 10. When a sufficient number of bottles, in the present case four, have collected on the floor of the section, the foremost bottle closes an electrical circuit through the switch 31 to the restraining device R, whereby the latch detent 27 thereof disengages the keeper opening 25 in the bottom of the bottle section which has just been filled to permit the entire endless assembling platform 10 to move, through the gear 6^a and the gear 20 of the friction clutch device D, which connects the main drive shaft 6 with the counter shaft 19 on which the driving sprockets 16 for the assembling platform are mounted.

As the bottles are advanced by the assembling conveyer transversely of the machine, they are separated and spaced by the deflecting ends *b* of the arms *a* of the bottle collecting frame 33, and when the bottle collecting frame contains a sufficient number of rows of bottles, in the present case six, the foremost row of bottles will close an electrical circuit through the switch 35, to thus actuate the electro-magnetic clutch device M, and thereby release the clutch member 42 into engagement with the continuously rotating clutch member 46, whereby the latter will drive the crank shaft 43 through the clutch member 42, since it is keyed to the crank shaft.

Then the lifting and depositing mechanism will come into play, to first cause the bottle engaging frame 72 to engage the predetermined number of bottles, and then the cams 54—55 will operate the paired sets of bell crank levers 59 and 60 to lift the bottles carried by the bottle engaging frame out of the bottle collecting frame, and raise them a sufficient distance to clear the edge of the waiting shipping crate. Then owing to the character of the cams 54 and 55, the bell crank levers 59 and 60 will be lowered to deposit the bottles in the cells of the shipping crate C, and subsequently the continued movement of the crank shaft 43 causes the bottle engaging members 76 of the frame 72 to disengage the bottles, and return to its normal position. This operation is automatically repeated as long as bottles are fed to the machine by the feed conveyer 8.

I claim:

1. A crating apparatus including means for assembling a number of containers in a group having a spaced relation corresponding to that of the compartments of a cellular crate, and means for bodily transferring said group of containers as a unit into the cellular crate.

2. A crating apparatus including means for assembling a number of containers in a group having a relation corresponding to that to be occupied by the same in a crate, and a transferring device having holding means for engaging with all of the containers and adapted to bodily transfer the same as one unit into the crate.

3. A crating apparatus including means for assembling a number of containers into a group having a spaced relation for a cellular crate, and means actuated by the containers for bodily transferring the grouped and spaced containers as a unit into a cellular crate.

4. A crating apparatus including an assembling platform, a bottle collecting device, a crate support, means for lifting the bottles collected in said device and depositing them in a crate on said crate support.

5. A bottle crating apparatus including an assembling platform, a device for collecting bottles in spaced relation, a crate support, and means for lifting the collected bottles and depositing them in a crate on said crate support.

6. A crating apparatus including an assembling platform, a bottle collecting frame, a crate support at one side of the frame, and means for lifting the bottles out of said frame and depositing them in a crate on the crate support.

7. A crating apparatus including an assembling platform, a bottle collecting frame, a crate support at one side of the frame, a device at one end of said frame, adapted to be actuated by bottles collecting therein, and means actuated by the operation of said device for lifting the bottles out of said frame and depositing them in a crate on the crate support.

8. A crating apparatus including an assembling platform, a bottle collecting frame arranged above the platform, a crate support at one side of the frame, means for lifting the bottles out of said frame and depositing the same in a crate on the crate support, and an electro-magnetic device for rendering said means operative, said electro-magnetic device including an electric circuit and a circuit closer, the latter located at one end of the bottle collecting frame.

9. A crating apparatus including an assembling platform, a bottle collecting frame, a crate support at one side of the frame, and means for engaging the bottles collected on the frame and then lifting and depositing the same into said crate.

10. A crating apparatus including a feed conveyer, an intermittently moving assembling platform receiving from said conveyer, a bottle collecting frame supported above the assembling platform, a crate sup-

port at one side of the platform adjacent the frame, and means arranged above the frame for engaging the necks of the bottles collected in the frame and then lifting and depositing them in a crate on the crate support.

11. A crating apparatus including a feed conveyer, an assembling platform, a bottle collecting frame positioned above the platform, a crate support at one side of the assembling platform, adapted to receive a crate, means for lifting, moving and depositing the bottles collected in the frame into a crate on the crate support, and means operated by the bottles collected in the frame to cause the actuation of said means.

12. A collecting apparatus including a feed conveyer, an assembling platform arranged at right-angles to the feed conveyer and intermittently actuated thereby, a bottle collecting frame positioned above the platform, a crate support at one side of the assembling platform adapted to receive a crate, means for lifting and depositing the bottles collected in the frame into a crate on the crate support, and means operated by the bottles collected in the frame to cause the actuation of said means.

13. A crating apparatus including a feed conveyer, an assembling platform arranged at right-angles to the feed conveyer and having a plurality of transverse partitions, a bottle collecting frame having a plurality of parallel guide arms arranged longitudinally above the platform and at right-angles to the transverse partitions thereof, a crate supported at one side of the assembling platform, means for lifting the bottles from the frame and depositing the same in a crate on the crate support, and means operated by the bottles collected in the frame to cause the actuation of said means.

14. A crating apparatus including a feed conveyer, an assembling platform receiving from said conveyer, a magnetically actuated latch for the platform, means whereby the platform is operated by the feed conveyer upon the actuation of the magnetically controlled latch, a bottle collecting frame, and means for engaging a predetermined number of bottles in said frame to lift and deposit the same into a crate.

15. A crating apparatus including a feed conveyer, an intermittently traveling platform arranged at right-angles to the feed conveyer and receiving therefrom, a magnetically actuated latch for the platform, means whereby the platform may be operated by the feed conveyer upon actuation of the magnetically controlled switch, a bottle collecting frame, and means for engaging a predetermined number of bottles in said frame for lifting and depositing the same into the crate.

16. A crating apparatus including a feed conveyer, an intermittently traveling assembling platform receiving from said conveyer and having a plurality of transversely disposed angular bottle supports, the upstanding walls of which coöperate to provide a bottle guideway to receive bottles from the feed conveyer, a magnetically controlled latch for engaging each of the angular bottle supporting members, means whereby the platform may be operated upon the release of the said latch from engagement with one of the bottle supporting members thereof, a bottle collecting frame, and means for engaging bottles in the frame and lifting and depositing the same into a crate.

17. A crating apparatus including a feed conveyer, an intermittently traveling assembling platform including a plurality of transversely disposed angular bottle supporting elements, the upstanding walls of which coöperate to provide a plurality of bottle guides, and each having in their bottom wall a keeper opening, an electro-magnetically controlled latch for entering said keeper opening, a bottle actuated circuit closer located at the side of the platform opposite the feed conveyer and in line therewith, said circuit closer adapted to close an electric circuit to the electro-magnetically controlled latch to withdraw the same from the keeper opening in the bottle supporting member of the platform to permit the latter to move.

18. A crating apparatus including a feed conveyer, an assembling platform, a drive shaft for the feed conveyer, a counter shaft for moving the assembling platform, a friction clutch between the drive shaft and the counter shaft, a bottle actuated latch device for permitting the movement of the platform by the drive shaft through said clutch at predetermined intervals, a bottle collecting frame, a bottle lifting and depositing mechanism including a crank shaft, and a clutch device controlled by bottles in the frame for connecting the said crank shaft with the drive shaft.

19. A crating apparatus including a feed conveyer, an endless assembling platform arranged at right-angles to the feed conveyer, a bottle collecting frame arranged above the platform, a crate support located at one side of the latter, a continuously rotating drive shaft for operating the feed conveyer, a counter shaft for driving the endless assembling platform, a friction clutch between said shafts, an electrically controlled latch for engaging the assembling platform to restrain its movement by the drive shaft at predetermined intervals, means including a shaft for lifting and depositing bottles from the collecting frame into a crate positioned upon the crate support, a clutch member slidably keyed on said latter shaft, and a rotatable clutch member

also on said shaft and operatively connected with the drive shaft.

20. A crating apparatus including a feed conveyer, an assembling platform, a drive shaft for the feed conveyer, a counter shaft having means for moving the assembling platform, a friction clutch between the drive shaft and the counter shaft, a bottle actuated latch device for permitting the movement of the platform by the drive shaft through the said clutch at predetermined intervals, a bottle collecting frame, a bottle lifting and depositing mechanism including a crank shaft, and a clutch device controlled by the bottles in the frame for connecting the said crank shaft with the drive shaft, said bottle lifting and depositing mechanism also including a slidable bottle engaging device, and means for lifting the latter.

21. A crating apparatus including a feed conveyer, an assembling platform, a drive shaft for the feed conveyer, a counter shaft having means for moving the assembling platform, a friction clutch between the drive shaft and the counter shaft, a bottle actuated latch device for permitting the movement of the platform by the drive shaft through the said clutch at predetermined intervals, a bottle lifting and depositing mechanism including a crank shaft having cams thereon, a clutch device controlled by the bottles collecting in the frame to connect said crank shaft to the drive shaft, a slidable bottle engaging device consisting of parallel channel members having a plurality of depending bottle engaging feet and connected with the crank shaft, and means for lifting the slidable bottle engaging device including a plurality of angular lifting levers having one end engaged in said channel members, and bars connected with the other ends thereof, said bars having means for engaging the cams on the crank shaft.

22. A crating apparatus including a frame, a feed conveyer, a drive shaft for the feed conveyer, an endless assembling platform, a counter shaft having means for moving the assembling platform, a bottle collecting frame positioned above the assembling platform, a crate support at one side of the platform adapted to receive a crate, and means for lifting the bottles collected in said frame above the same and depositing them into a crate on the crate support, said means including a crank shaft, a clutch member loose thereon and connected with the drive shaft, a clutch device keyed to the crank shaft, means carried by the bottle collecting frame and operated by the bottles collecting therein to operate the clutch member that is operatively connected with the drive shaft, and a bottle engaging and lifting device carried by the frame and actuated by the crank shaft.

23. A crating apparatus including a frame, a feed conveyer, a drive shaft for the feed conveyer, an endless assembling platform, a counter shaft having means for moving the assembling platform, a bottle collecting frame positioned above the assembling platform, a crate support at one side of the platform adapted to receive a crate, and means for lifting the bottles collected in said frame above the same and depositing them into a crate on the crate support, said means including a crank shaft, a clutch member loose thereon and connected with the drive shaft, a clutch device keyed to the crank shaft, means carried by the bottle collecting frame and operated by the bottles collecting therein to operate the clutch member keyed to the crank shaft to connect the same with the clutch member that is operatively connected with the drive shaft, cams carried by the crank shaft, bell crank lifting levers pivoted at their angle to the frame, rollers carried at one end of said bell crank levers, bars connecting the upper ends of said levers, an abutment rigidly carried by said bars and engaging the cams on the crank shaft, a bottle engaging frame consisting of opposite channel bars for receiving the rollers carried by the bell crank lifting levers, and having a plurality of bottle engaging members depending therefrom, and links connecting said channel members with the crank portions of the crank shaft.

In testimony whereof I hereunto affix my signature in the presence of two witnesses.

LOUIS A. HAWTHORNE.

Witnesses:

WILLARD L. HOAGLAND,

EDWARD V. WURTS.