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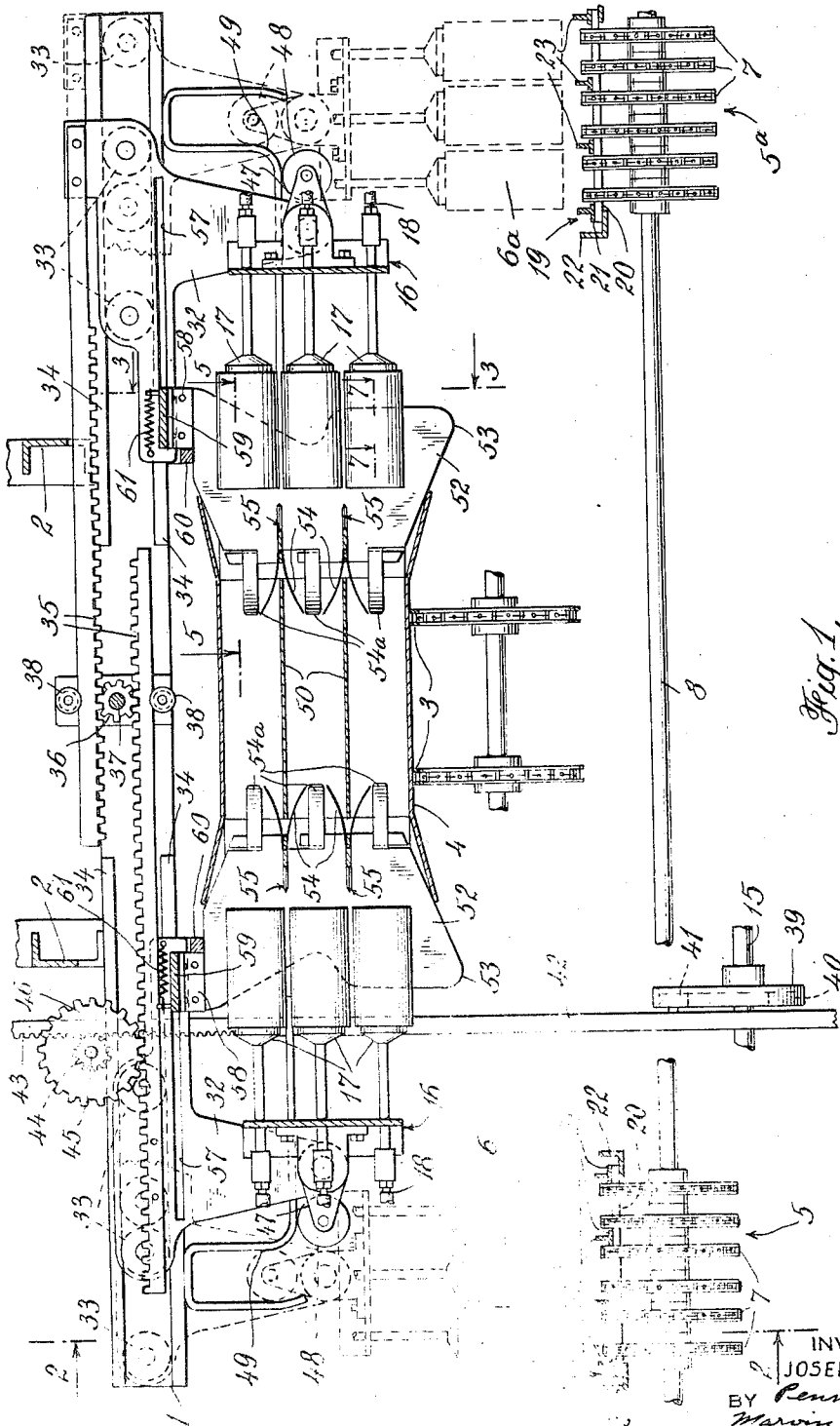
J. J. THAYER

2,179,648

CELL CASE PACKING MACHINE

Filed Oct. 5, 1937

4 Sheets-Sheet 1



INVENTOR
JOSEPHUS J. THAYER
BY *Pennie, Davis,
Marvin and Edmonds*
HIS ATTORNEYS

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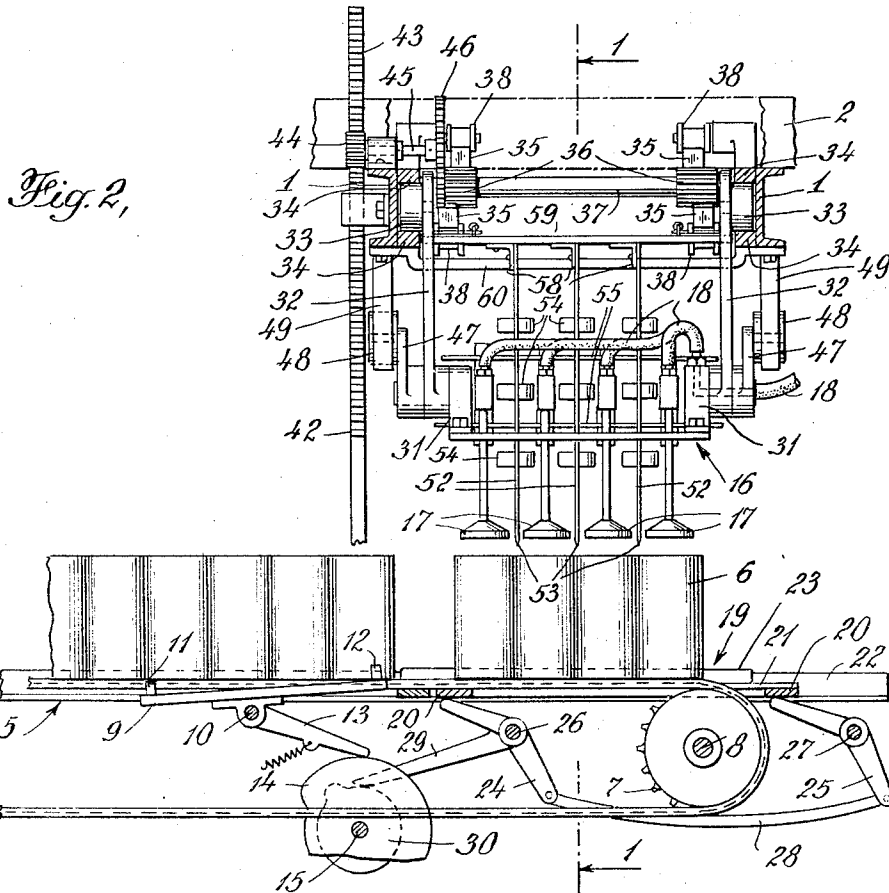
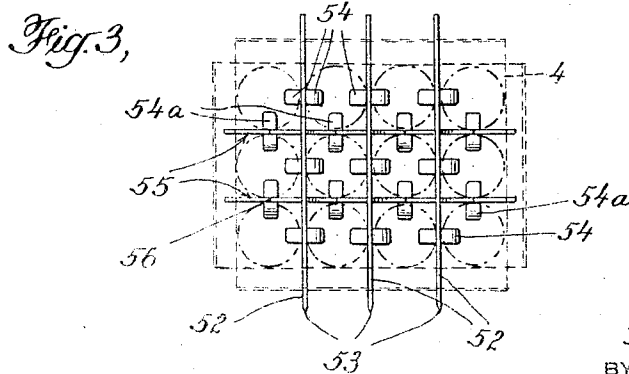
J. J. THAYER

2,179,648

CELL CASE PACKING MACHINE

Filed Oct. 5, 1937

4 Sheets-Sheet 2



INVENTOR
JOSEPHUS J. THAYER
BY *Rennie, Davis,
Marvin & Edwards*
HIS ATTORNEYS

Nov. 14, 1939.

J. J. THAYER

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CELL CASE PACKING MACHINE

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4 Sheets-Sheet 4

Fig. 5,

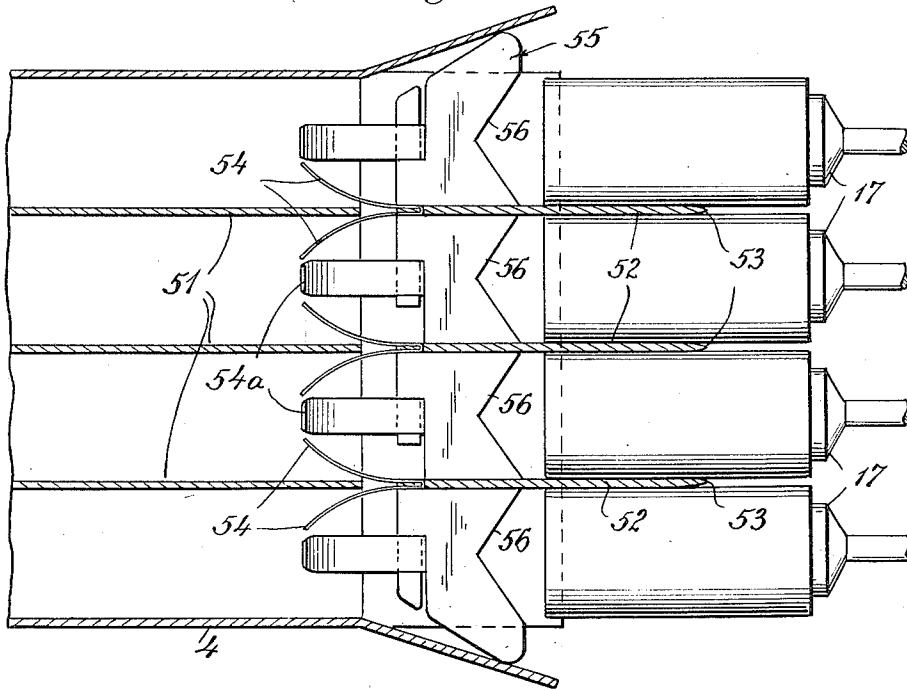


Fig. 6,

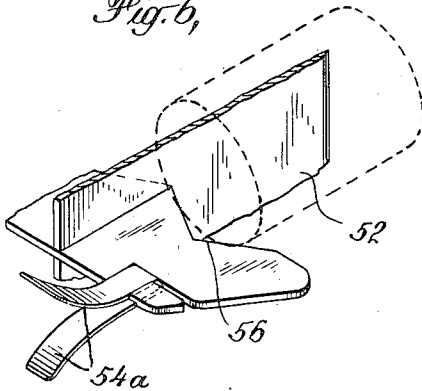
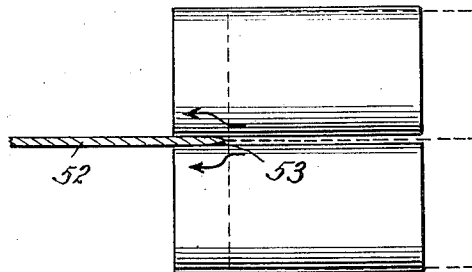


Fig. 7,



INVENTOR
JOSEPHUS J. THAYER

BY
Pennie, Davis, Marvin and Edmonds
HIS ATTORNEYS

UNITED STATES PATENT OFFICE

2,179,648

CELL CASE PACKING MACHINE

Josephus J. Thayer, La Grange Park, Ill.

Application October 5, 1937, Serial No. 167,365

28 Claims. (Cl. 226—14)

The present invention relates to case-loading or packing machines, and particularly to machines for automatically placing in packing cases, such as corrugated board cartons, boxes and the like, charges of containers, and especially round containers such as cans, bottles and the like.

In Letters Patent of the United States No. 2,050,547 granted in my name on August 11, 1936, there is disclosed an automatic machine for loading or packing such containers in cases, wherein the containers are arranged in the cases in a plurality of parallel rows, the containers adjacent one another being in contact. That is to say, the containers of each row are in contact with one another and containers of adjacent rows are in contact with one another. It is sometimes desired to place a protective medium between the individual containers so that they will better withstand shipment. Cases in which the containers are thus packed are called cell cases and are provided with partitioning devices which divide the interior of the case into a plurality of cells or compartments each adapted to receive a single container.

The object of my present invention is to provide an improved apparatus of the sort disclosed in the above-mentioned patent which is adapted to load or pack cell cases as well as plain cases.

The partitioning devices commonly employed for the purpose of forming the cells or compartments comprise two sets of parallel strips of corrugated board, the strips of each set being arranged in parallel spaced relation and held in such relation by means of interengaging notches or slits extending approximately half the width of the strips. These cell-forming devices, as well as the cartons themselves, are usually received "in the flat". Both have to be opened up, and a cell-forming device placed within each carton by the operator of the packing machine. As this has to be done quickly and since the corrugated board strips of which the cell-forming devices are made are flexible and, to a certain degree, resilient, it frequently happens that the walls of the partitions of some of the bottle compartments are not in proper place to receive the bottles. Hence, when the containers are inserted they are apt to jam against the edges of the partitioning devices and be prevented from entering their respective cells.

Accordingly, a particular object of my present invention is to provide for automatically positioning the yielding walls of the cells or compartments so that there will be no jamming of the containers as the charge is placed in the case,

thus permitting the individual containers to enter their respective compartments.

The invention will be understood from a consideration of the accompanying drawings which illustrate by way of example one of the embodiments of the invention which is intended to pack round cans. In these drawings:

Fig. 1 is a longitudinal sectional view of the machine taken on line 1—1 of Fig. 2 transversely of the conveyors for conveying the cans to the charge pick-up mechanism, the latter mechanism being shown in side elevation and in raised position;

Fig. 2 is a transverse vertical section taken on line 2—2 of Fig. 1, showing one of the charge pick-up mechanisms in lowered position;

Fig. 3 is a similar section taken on line 3—3 of Fig. 1 but showing only the can separating devices;

Fig. 4 is a top view of the apparatus shown in Fig. 1;

Fig. 5 is a horizontal section taken on line 5—5 of Fig. 1;

Fig. 6 is a perspective view of a can separator and cell wall positioning device for guiding the cans in their respective horizontal planes; and

Fig. 7 is a horizontal section taken on line 7—7 of Fig. 1 illustrating the action of one of the separating plates for separating the cans in vertical rows.

The machine chosen for illustration is adapted to pack cartons which are to receive two layers each containing three rows of four cans each (referring to the carton when filled and standing on one end so that the cans are in upright position and the layers are one above the other). The machine, however, places the two layers in the carton simultaneously from opposite ends, the carton being supported on its side. Hence the cans enter the carton endwise and each group of cans which is to form a layer consists of four vertical tiers of three cans each arranged one above another with their axes horizontal.

Referring now to the drawings, the principal parts of the machine which are illustrated are carried upon two parallel channel members 1 which are placed with their webs outwardly as shown in Figs. 2 and 4, and which are appropriately secured beneath two cross channel frame members 2. The cartons to be packed are fed, preferably automatically, by means of a pair of conveyor chains 3 into and out of the filling position which is centrally located beneath the channel members 1, as shown in Figs. 1 and 4. A carton 4 is shown in this position.

The cans to be packed are fed to the machine by two parallel conveyors 5 and 5a located on opposite sides of carton conveyor 3 and arranged to deliver the cans beneath the opposite ends of the frame members 1. Each of the conveyors 5 and 5a delivers the cans in three parallel rows corresponding to the number of cans in the vertical tiers placed in the carton. The cans in each row stand on their ends on these conveyors and are in contact with one another as shown in Fig. 2.

The conveyors 5 and 5a are advanced continuously so long as the machine is in operation, and appropriate mechanism is provided for separating from the foremost cans on these conveyors, groups of cans 6 and 6a each containing 12 cans arranged in three rows of four cans each. These two groups of cans are then picked up by the mechanism illustrated in Figs. 1, 2 and 4 and swung from the upright position to the horizontal position, as shown in Fig. 1, and then pushed into the carton 4. These movements take place simultaneously.

The conveyors 5 and 5a are chain conveyors, there being two chains for each line of cans. At the end of the conveyors illustrated in the drawings, these chains pass over a series of sprockets 7 which are fixed to a common shaft 8 by means of which both of the conveyors are driven.

The supply of cans advanced by the conveyors 5 and 5a is divided into groups by means of an escapement mechanism 9 comprising a tilting frame pivoted on a cross shaft 10 and provided at opposite ends with short pins 11 and 12 for engaging the cans. This escapement mechanism is rocked by means of arm 13 which is fixed to shaft 10 and which is actuated by a cam 14 which is arranged on a shaft 15. In the position shown in Fig. 2 the pins 12 of the escapement are holding back the entire supply of cans, the foremost can of which has advanced to the end of the escapement frame. When the escapement frame 9 is rocked to its opposite position the pins 11 will engage the 5th can from the front, thereby holding back the supply of cans on the conveyor 5, and pins 12 will be lowered so as to permit the first four cans in each row on the conveyor to be advanced by the conveyor to the position shown at 6, thereby separating this group of cans from the supply. During each revolution of shaft 15 new groups of cans 6 and 6a will be separated from the supply of cans on the two conveyors.

The automatic mechanism for loading the groups of cans 6 and 6a into the carton 4 comprise two carriages 16 mounted between and supported on the transverse channel members 1. Carriages 16 are positioned directly above the assembled groups of cans 6 and 6a. Each carriage comprises a rectangular frame on which is supported a plurality of vacuum cups 17. These cups are arranged in parallel rows corresponding to the parallel rows in the assembled group of cans 6 and 6a, but each cup is shiftably mounted in carriage 16 in the direction of its row, that is to say, transversely of the apparatus, as illustrated in Fig. 4. The purpose of the shifting will appear presently.

A suitable mechanism is provided whereby each group of cans is raised from its conveyor sufficiently to engage the vacuum cups 17, which latter are controlled from a suitable vacuum source by a valve mechanism (not shown) which is connected to the tube system 18 by means of which the vacuum cups are connected to the vacuum

source. It will be understood that this valve mechanism connects the vacuum cups with the vacuum source at the moment when the groups of cans are to be packed up by the vacuum cups, and disconnects the same after the cans have been deposited in the carton 4.

The mechanism for raising the cans into engagement with the vacuum cups (Figs. 1 and 2) comprises a frame 19 consisting of a pair of cross members 20 at each end which are connected by a series of longitudinal members 21, and which in its normal or lowered position rests upon a pair of angle members 22 arranged at each side of the conveyor. Thin guides 23 are provided on the frame to maintain the alinement of the rows of cans.

The frame 19 is raised by means of the mechanism shown in Fig. 2 which comprises bell cranks 24 and 25 pivoted in the frame of the machine at 26 and 27. These bell cranks are connected together by means of a link 28 so that they operate simultaneously to raise the frame 19 and the cans thereon.

The upwardly extending arms of the bell cranks engage the lower sides of cross bars 20 of frame 19, and bell crank 24 is provided with a cam arm 29 operatively engaging a second cam 30 on shaft 15. With each revolution of this cam, shaft the groups of cans 6 and 6a are raised into a position to engage the vacuum cups 17. The cans will be retained by the vacuum cups and frame 19 is immediately lowered to its former position to receive the next group of cans from the escapement mechanism.

The carriages 16 are provided with separately disposed bars 31 (see Fig. 2) and are pivotally mounted on hangers 32 which are provided with rollers 33 by means of which the hangers are suspended for longitudinal movement on tracks 34 which are fixed to the inner surfaces of channel members 1. Each of the hangers 32 is provided with a pair of racks 35 which are secured thereto at one end. These racks are in engagement with suitable pinions 36 fixed to a cross shaft 37 pivoted in suitable bearings on the frame members 1. Guide rollers 38 are provided for retaining the racks in engagement with the pinions. The arrangement is such that when one carriage is moved the other will move simultaneously therewith in the opposite direction through the operation of inter-engaging racks and pinions.

The movement of the hangers 32 and the carriages 16 supported thereby is controlled by a cam 39 on shaft 15 which is the same shaft upon which cams 14 and 30 for the escapement mechanism and raising frame 19 are secured. Cam 39 is a slot type of cam having a slot 40 within which a cam roller 41 is engaged. This cam roller is secured to a vertical slide member 42 which is provided at its upper end with a rack 43 engaging a pinion 44 secured to a short shaft 45. This shaft is mounted in a suitable bearing on one of channel members 1. A gear 46 is secured at the opposite end of shaft 45 from pinion 44 and is in mesh with one of the carriage racks 35.

With each rotation of cam shaft 15 a group of cans will be separated from the supply by means of the escapement mechanism 9 actuated by cam 14, a group of cans 6 and 6a will be elevated into engagement with the suction cups 17 of each of the carriages 16, this elevating mechanism being actuated by cam 30, and both of carriages 16 will be moved inwardly by means of the rack and pinion operation just described to further

raise the groups of cans 6 and 6a and move them into the opposite ends of the opened carton 4.

It is necessary that the groups of cans be moved through an arcuate path immediately upon starting the longitudinal movement of the carriages 16 in order that they may be brought into parallel alinement with the open ends of the carton before insertion. This is accomplished in the case of each carriage by means of an arm 47 on each carriage pivot and provided with a roller 48 which is at all times in engagement with a surface cam 49 on the frame of the machine. Any inward longitudinal movement of the hangers 32 from the dotted positions shown in Fig. 1 causes the carriages 16 to commence rotation and the completion of this movement rotates them substantially 90° by engagement of the rollers 48 with the cams 49. This movement takes place during the early part of the longitudinal movement of the hangers and aligns the groups 6 and 6a of the cans with the open ends of the carton 4. The continued longitudinal movement inserts the cans in the carton. The carriages are then immediately withdrawn and returned to their original position by means of the cam 39 and the rack and pinion mechanism described previously. Thereafter the carton conveyor 3 is actuated to move the carton 4 out of filling position and to bring a fresh empty carton into filling position.

It will be understood that the carton flaps are opened prior to the advance of the carton to filling position and afterwards closed, and that this operation can be performed by hand or by suitable automatic flap-manipulating mechanism.

The cells, or compartments, of the carton 4 within which the individual cans are received are formed by horizontal partitions which are indicated by numeral 50 in Fig. 1 and vertical partitions indicated by numeral 51 in Fig. 3. These partitioning devices are composed of sheets of material such as corrugated board, of which the carton 4 is made, slitted and interlocked with one another in such manner as to form 12 cells extending through the carton, as shown in Fig. 1.

The cans must be inserted in the carton in such a way as to prevent the ends of the cans from jamming against the edges of the partitions 50 and 51. To accomplish this a set of three vertical plates 52 is arranged to enter between the cans of the groups 6 and 6a as they are swung upwardly from the dotted position shown in Fig. 1 to the full line or horizontal position where they are ready to move into the carton. The lower corners 53 of these plates are tapered, or sharpened, as shown in Figs. 3 and 7, to enable the plates to spread the cans apart more readily. The cans acted upon by these plates are in direct contact with one another, and the action of one of the plates 52 in separating them is shown in Fig. 7. As mentioned previously, vacuum cups 17 are so mounted on carriages 16 as to be shiftable slightly in the direction of their rows, and this shiftable permits the wedging apart of the cans by the plates 52 without tilting the cans on the vacuum cups and destroying the vacuum. Provision is made for mounting the plates for horizontal movement towards and away from the carton at the proper time.

When advanced towards the carton the inner edges of plates 52 advance to a point close to the edges of the vertical partitioning devices 51 within the cartons. In this position, plates 52 serve to guide the cans as they are inserted in the carton by the horizontal movement of carriages 16 in such a way as to direct the cans between the

partitions 51. Inasmuch as the material of which these partitions are made is apt to be somewhat resilient, and hence not always initially in the desired position, flexible resilient fingers 54 made of spring steel, or the like, are provided for engaging the partitions 51 and bringing them into alinement with the plates 52 as the cans move into the carton. Pairs of these fingers 54 are mounted upon the inner edges of plates 52, as shown in Figs. 5, 1 and 3. These fingers are arranged in spaced relation along the edges of the plates so as to provide a finger on each side of each of the partitioning devices 51 for each of the can cells, or compartments.

In order to separate the cans horizontally as well as vertically, horizontal separating plates 55 are arranged in alinement with the separating devices 50 of the carton. Horizontal plates 55 are mounted at the inner edges of vertical plates 52, being let into grooves cut in the latter plates, as shown in Figs. 1 and 6. Each of the horizontal plates 55 is provided with a series of spaced V-shaped notches 56 having their apexes midway between the sides of the respective can cells or compartments.

Plates 55 are sufficiently narrow to avoid being engaged by the cans until the groups of cans have commenced to advance horizontally toward the carton from the full line position shown in Fig. 1. Consequently as the rounded ends of the cans approach and make contact with the V-shaped notches 56, if the cans are in contact, they will be separated from one another, and if the cans are not in contact, which is the normal condition of affairs on account of the cans being previously arranged by the conveyors in slightly separated rows, they will be prevented from contacting with one another. Plates 55 are also provided with flexible fingers 54a to engage and position the horizontal partitioning devices 50 in each of the can compartments.

Plates 52 and 55 together form a sort of grid structure, as illustrated in Fig. 3, which provides individual guiding, or directing, chutes for the respective cans to insure that each can advances into its particular compartment. Each of these directing chutes comprises the surfaces of plates 52 and 55 together with the flexible fingers 54 and 54a, which are moved laterally by the advancing cans and serve both to "square up", i. e. to shift the partitioning devices 50 and 51 into alinement with plates 52 and 55 and to guide the edges of the cans past the corners of the edges of the partitioning devices. The upper and lower edges of plates 52 and the front and rear edges of plates 55 are tapered, or flared, as shown in Figs. 1 and 5, respectively, to serve as guides for spreading the carton flaps.

In order to advance the grids into the mouths of the carton prior to the insertion of the cans, and to withdraw them thereafter in order to permit the packed carton to be removed from filling position and a fresh empty carton to be advanced for the next charge, the grids are supported in such a way as to be slidable in slot 57 in the hangers 32 (Fig. 1). To this end the vertical plates 52 are provided with extensions, or shanks, 58 at their upper ends which are secured by means of the angle members shown in Fig. 2 to a cross bar 59 which is arranged to be slidable in slot 57 but fixed against movement transversely of the carriages 32. The grids, that is, each of the sets of plates 52, 55 and flexible fingers 54, 54a are urged against stop bars 60 which engage the shanks 58 by means of tension springs 61. 75

One end of these springs is attached to cross bars 59 and the other end to the hangers 32 (Fig. 4). Hence as the carriages 16 move horizontally to advance their cans into the carton after being swung to the full line position of Fig. 1, the grids are held against the stop 60 in which position the flexible fingers 54 and 54a are in proper relation to the carton and to the partition members 50 and 51.

As the carriages 16 continue their horizontal movement to insert the cans in the carton, the springs 61 are stretched, the inner ends of slots 57 leave the edges of cross bars 59 and move further inwardly toward the center of the carton 4.

Slots 57 are of sufficient length to permit carriages 16 to move the cans into the carton until the inner ends of the cans are positioned exactly at the middle of the carton. Then the vacuum cups 17 are automatically disconnected from the vacuum source and the carriages recede, leaving the cans in the carton. When the inner ends of the slots 57 again engage the cross bars 59, the cross bars together with their attached grids are carried outwardly from the stops 60. The continued outward movement of hangers 32 is sufficient to move the grids, that is to say, plates 52 and 55 and fingers 54, 54a clear of the carton so that the carton can be moved forward by the carton conveyor.

During the continued outward movement of the hangers 32, the carriages 16 swing downwardly to the dotted position shown in Fig. 1 and pick up the next two groups of cans forming the succeeding charge. The hangers 32 then commence another inward reciprocating movement, swinging the carriages 16 back to horizontal position and causing the grids to be again inserted in the mouths of the succeeding empty carton which has now been advanced to the filling position. This places the shanks 58 of plates 52 again against the stops 60, and the cycle of operation is completed, and a second cycle commences.

While the embodiment illustrated is described as adapted for loading small containers in cases or cartons, and in the present instance 12 containers have been disclosed in each group, it is intended that the invention may be adapted for loading containers of various sizes; also any suitable number may be assembled in each group.

It will also be understood that the entire disclosure is illustrative only and that modifications may be made by those skilled in the art. For example, the grid comprising the plates 55, the outer portion of plates 52, and flexible fingers 54 and 54a may be employed with other forms of charge-assembling and inserting mechanism than the swinging type herein illustrated, such as charge-forming mechanism adapted to handle containers such as glass bottles that are not provided with flat tops which cooperate readily with suction lifting devices. The scope of the invention, therefore, extends to that set forth in the appended claims. It will be understood that the term "can" as used in these claims is intended to include bottles and other round containers or objects and any containers or objects adapted to be inserted in cartons with the aid of the grid structure herein described.

Having thus described my invention, what I claim and desire to secure by Letters Patent is:

1. A can guiding device for cell case packing machines adapted to be arranged in the path of a can as it is moved endwise into a case, comprising a plate having a notch in its forward edge for shifting the can, and a flexible finger pro-

jecting from the opposite edge thereof the free end of which is adapted to engage the wall of the can cell to position the same and guide the can into the cell.

2. In a can centralizing device of the character described, a narrow flat plate having a can-shifting notch in one edge and a pair of flexible resilient fingers secured to and projecting from its opposite edge.

3. In a can centralizing device of the character described, a narrow flat plate having a V-shaped notch in one edge and a pair of flexible resilient fingers secured to and projecting from its opposite edge.

4. A can centralizing device for cell case packing machines comprising a grid having two sets of parallel plates assembled at right angles to one another and forming a plurality of can-directing chutes corresponding to the cells of the case, one set of said plates having can-shifting notches at their entrance edges, and the opposite edges thereof having flexible fingers projecting therefrom and engaging the partitions forming the cells of the case, and means for causing a charge of cans to move through said chutes into the case.

5. A can centralizing device for cell case packing machines comprising a grid having two sets of parallel plates assembled at right angles to one another and forming a plurality of can-directing chutes corresponding to the cells of the case, one set of said plates having can-shifting notches at their entrance edges, and the opposite edges thereof having flexible fingers projecting therefrom and engaging the partitions forming the cells of the case, and means for successively engaging with said respective sets of plates a charge of cans arranged in rows to separate the cans from each other and align them with the cells of the case.

6. A can centralizing device for cell case packing machines comprising a grid having two sets of parallel plates assembled at right angles to one another and forming a plurality of can-directing chutes corresponding to the cells of the case, the outer edges of said chutes having flexible fingers projecting therefrom into engagement with the partitions forming the cells of the case, one set of said plates having V-shaped notches at their inner edges for shifting the cans and centralizing them with respect to the directing chutes, and means for causing a charge of cans to move endwise through said grid into the case.

7. In a cell case packing machine, a plurality of parallel plates, means for forming a charge of cans including means for placing the cans thereof in rows between said plates with the cans of each row in contact with one another, a second set of can-separating plates forming with said first plates can-directing chutes corresponding in dimensions to the dimensions of the cells in the case, means for supporting a cell case with the cells thereof in approximate alinement with said directing chutes, means for moving the cans endwise between said first plates into and through said chutes into the case, each of said second set of separating plates having can-shifting notches in the forward edges thereof to centralize the individual cans with respect to their directing chutes, and flexible fingers projecting from the outer edges of said plates to engage the walls of the cells in the case to simultaneously position the same and direct the cans thereinto.

8. In a cell case packing machine means for forming a charge of cans comprising a plurality of rows, the cans being in upright position and the cans of each row being in contact with one

another, means for separating the cans and directing them into their respective cells comprising a plurality of parallel plates, means for supporting the charge of cans and swinging the same from upright position to horizontal position and during said swinging movement bringing the sides of said cans into engagement with the edges of said plates to effect a separation of the cans, a second set of can-separating plates positioned between said first plates and forming therewith can-directing chutes corresponding in dimensions to the dimensions of the cells in the case, means for supporting the cell case with the cells thereof in alignment with said directing chutes, and means for advancing the cans endwise through said chutes into the case.

9. In a can-centralizing device of the character described, a can-guiding plate having a can-shifting notch in one edge, and a pair of flexible resilient fingers secured to and projecting from its opposite edge.

10. In a machine for packing cases having subdividing partitions forming individual compartments for the cans to be packed, a can-guiding device adapted to be arranged in the path of a pair of cans as they move endwise into a case comprising a plate having can-shifting means at one edge for shifting one or both of said cans to space them apart approximately the thickness of the partition separating the two compartments which are to receive said cans, and a pair of flexible resilient fingers projecting from the opposite edge of said plate for straddling the partition to position the same and guide the advancing ends of the cans past the edge thereof as they enter the said cells.

11. In a machine for packing cases having subdividing partitions forming individual cells for the cans to be packed, a grid having two sets of parallel plates arranged at right angles to one another and forming a plurality of can-directing chutes, one set of said plates having can-shifting means at their front edges for shifting the cans to centralize them with respect to said chutes, and each of the walls of said chutes having flexible fingers projecting therefrom for positioning the said partitions and guiding the cans past the edges thereof as they enter their respective cells, and means for causing a plurality of cans to move simultaneously through said chutes into the case.

12. In a machine for packing cases having subdividing partitions forming individual cells for the cans to be packed, a grid having two sets of parallel plates arranged at right angles to one another and forming a plurality of can-directing chutes, one set of said plates having can-shifting cam means at their front edges at the entrance to each of said chutes for shifting the cans to centralize them with respect thereto, and each of the walls of said chutes having flexible fingers projecting therefrom for engaging the said partitions, said fingers being moved by the cans passing through the chutes to position the said partitions and serving to guide the cans past the edges thereof as they enter their respective cells, and means for causing a plurality of cans to move through said chutes into the case.

13. In a machine for packing cases having subdividing partitions forming individual cells for the cans to be packed, a grid having two sets of parallel plates arranged at right angles to one another and forming a plurality of can-directing chutes, one set of said plates having substantially V-shaped can-shifting notches in their edges at

the entrance to said chutes for centralizing the cans with respect to the chutes, and each of the walls of said chutes having flexible fingers projecting from the discharge ends thereof for engaging the said partitions to position the same and to guide the cans past the edges thereof as they enter their respective cells, and means for causing a plurality of cans to move simultaneously through said chutes into the case.

14. In a machine for packing cases having subdividing partitions forming individual cells for the cans to be packed, a grid having two sets of parallel plates arranged at right angles to one another and forming a plurality of can-directing chutes corresponding in number and dimensions to the cells of the case, one set of said plates having a can-shifting notch at the entrance to each of said chutes for centralizing the cans with respect thereto, the walls of said chutes having flexible fingers projecting from the discharge ends thereof for engaging the said partitions, said fingers being moved by the cans passing through the chutes to position the said partitions and serving to guide the cans past the edges thereof as they enter their respective cells, and means for causing to move simultaneously through the chutes into the case cans forming a charge therefor.

15. A case-packing machine according to claim 14 in which the can-shifting notches are substantially V-shaped.

16. A can guiding device for cell case packing machines adapted to be arranged in the path of a can as it is moved endwise into a case, comprising a plate having a notch in its forward edge for shifting the can, and a yieldable blade-like finger on said plate and projecting from the opposite edge thereof, the free end of which is adapted to engage the wall of the can cell to position the same and guide the can into the cell.

17. In a can centralizing device of the character described, a narrow flat plate having a can-shifting notch in one edge and a pair of yieldable blade-like fingers on said plate and projecting from its opposite edge.

18. In a can centralizing device of the character described, a narrow flat plate having a V-shaped notch in one edge and a pair of yieldable blade-like fingers on said plate and projecting from its opposite edge.

19. A can centralizing device for cell case packing machines comprising a grid having two sets of parallel plates assembled at right angles to one another and forming a plurality of can-directing chutes corresponding to the cells of the case, one set of said plates having can-shifting notches at their entrance edges, and the opposite edges thereof having yieldable blade-like fingers projecting therefrom and engaging the partitions forming the cells of the case, and means for causing a charge of cans to move through said chutes into the case.

20. In a can centralizing device of the character described, a can-guiding plate having a can-shifting notch in one edge, and a pair of yieldable blade-like fingers upon said plate and projecting from its opposite edge.

21. In a machine for packing cases having subdividing partitions forming individual cells for the cans to be packed, a grid having two sets of parallel plates arranged at right angles to one another and forming a plurality of adjacent rows of can-directing chutes corresponding in number and dimensions to the cells of the case, one set of said plates having can-shifting cam

means at the entrance to each of said chutes for centralizing the cans with respect thereto, the walls of said chutes having yieldable blade-like fingers thereon and projecting therefrom for engaging the said partitions, said fingers being moved by the cans passing through the chutes to position the said partitions and serving to guide the cans past the edges thereof as they enter the respective cells, and means for causing to move simultaneously through said chutes into the case cans forming a complete charge therefor.

22. In a machine for packing cases having subdividing partitions forming individual cells for the cans to be packed, a grid having two sets of parallel plates arranged at right angles to one another and forming a plurality of can-directing chutes corresponding in number and dimensions to the cells of the case, one set of said plates having V-shaped can-shifting notches in their edges at the entrance to said chutes for centralizing the cans with respect to the chutes, the walls of said chutes having yieldable blade-like fingers thereon and projecting therefrom for engaging the said partitions, said fingers being moved by the cans passing through the chutes to position the said partitions and serving to guide the cans past the edges thereof as they enter the respective cells, and means for causing to move simultaneously through said chutes into the case cans forming a charge therefor.

23. In a cell case packing machine, a grid having two sets of parallel plates assembled at right angles to one another and forming a plurality of can-directing chutes corresponding to the cells of the case, one set of said plates having can-shifting means at their entrance edges, the opposite edges thereof having yieldable fingers projecting therefrom and engaging the partitions forming the cells of the case, means for assembling a charge of cans comprising a plurality of rows, and means for causing the charge to move through said chutes into the case.

24. In a cell case packing machine, a grid having two sets of parallel plates assembled at right angles to one another and forming a plurality of can-directing chutes corresponding to the cells of the case, one set of said plates having can-shifting notches at their entrance edges, the opposite edges thereof having yieldable fingers projecting therefrom and engaging the partitions forming the cells of the case, means for assembling a charge of cans comprising a plurality of rows, and means for causing the charge to move through said chutes into the case.

25. In a machine for packing cases having subdividing partitions forming individual compartments for the cans to be packed, a can-guiding device adapted to be arranged in the path of a pair of cans as they move endwise into a case

comprising a plate having can-shifting means at one edge for shifting one or both of said cans to space them apart approximately the thickness of the partition separating the two compartments which are to receive said cans, and a pair of yieldable fingers projecting from the opposite edge of said plate for straddling the partition to position the same and guide the advancing ends of the cans past the edge thereof as they enter the said cells.

26. In a machine for packing cases having subdividing partitions forming individual cells for the cans to be packed, a grid having two sets of parallel plates arranged at right angles to one another and forming a plurality of can-directing chutes, one set of said plates having can-shifting means at their front edges for shifting the cans to centralize them with respect to said chutes, and each of the walls of said chutes having yieldable fingers projecting therefrom for positioning the said partitions and guiding the cans past the edges thereof as they enter their respective cells, and means for causing a plurality of cans to move simultaneously through said chutes into the case.

27. In a machine for packing cases having subdividing partitions forming individual cells for the cans to be packed, a grid having two sets of parallel plates arranged at right angles to one another and forming a plurality of can-directing chutes, one set of said plates having can-shifting means at their front edges at the entrance to each of said chutes for shifting the cans, and each of the walls of said chutes having yieldable fingers projecting therefrom for engaging the said partitions, said fingers being moved by the cans passing through the chutes to position the said partitions and serving to guide the cans past the edges thereof as they enter their respective cells, and means for causing a plurality of cans to move through said chutes into the case.

28. In a machine for packing cases having subdividing partitions forming individual cells for the cans to be packed, a grid having two sets of parallel plates arranged at right angles to one another and forming a plurality of can-directing chutes, one set of said plates having substantially V-shaped can-shifting notches in their edges at the entrance to said chutes for centralizing the cans with respect to the chutes, and each of the walls of said chutes having yieldable fingers projecting from the discharge end thereof for engaging said partitions to position the same and to guide the cans past the edges thereof as they enter their respective cells, and means for causing a plurality of cans to move simultaneously through said chutes into the case.

JOSEPHUS J. THAYER.