Oct. 9, 1962 J. H. WALTER 3,057,136

GRID

Filed Aug. 11, 1960 3 Sheets-Sheet 1

FIG. 1

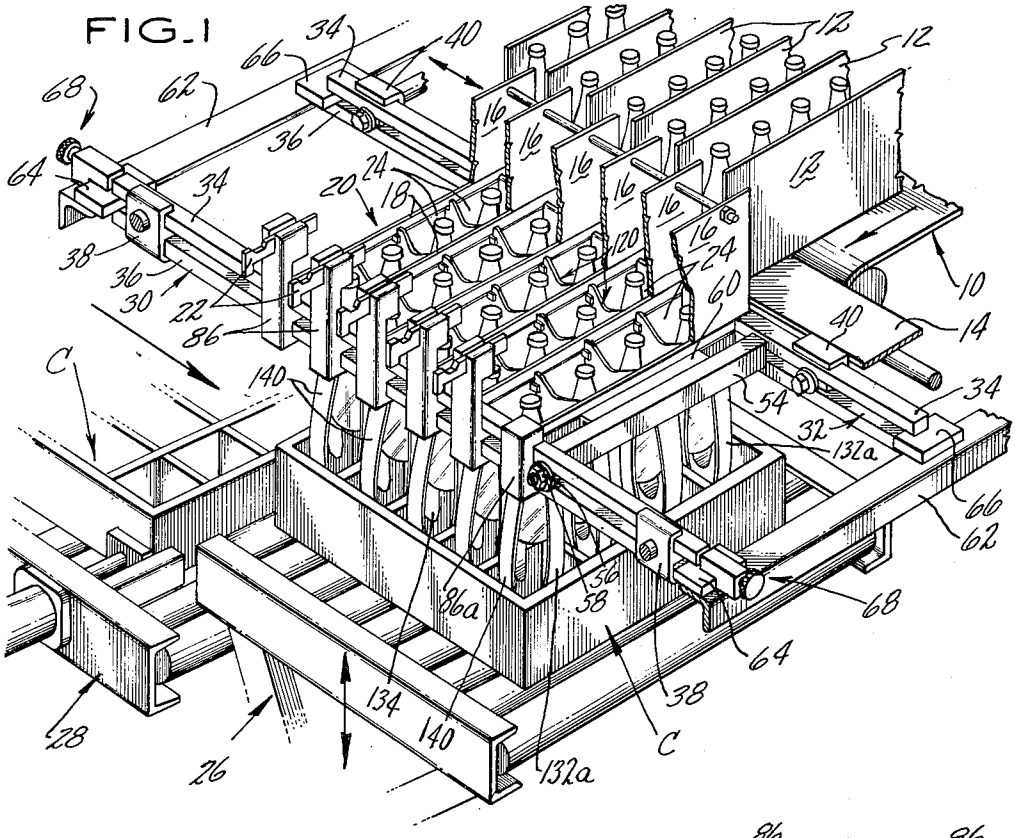
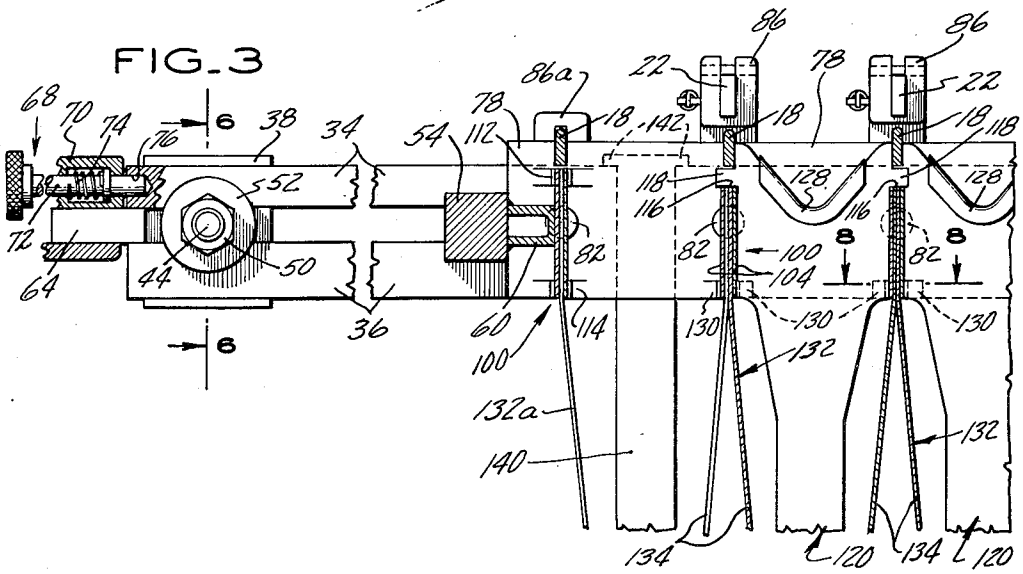


FIG. 3



INVENTOR
JOSEPH H. WALTER

BY Tellam & McCormick
ATTORNEYS

Oct. 9, 1962 J. H. WALTER 3,057,136

GRID

Filed Aug. 11, 1960 3 Sheets-Sheet 2

FIG. 2

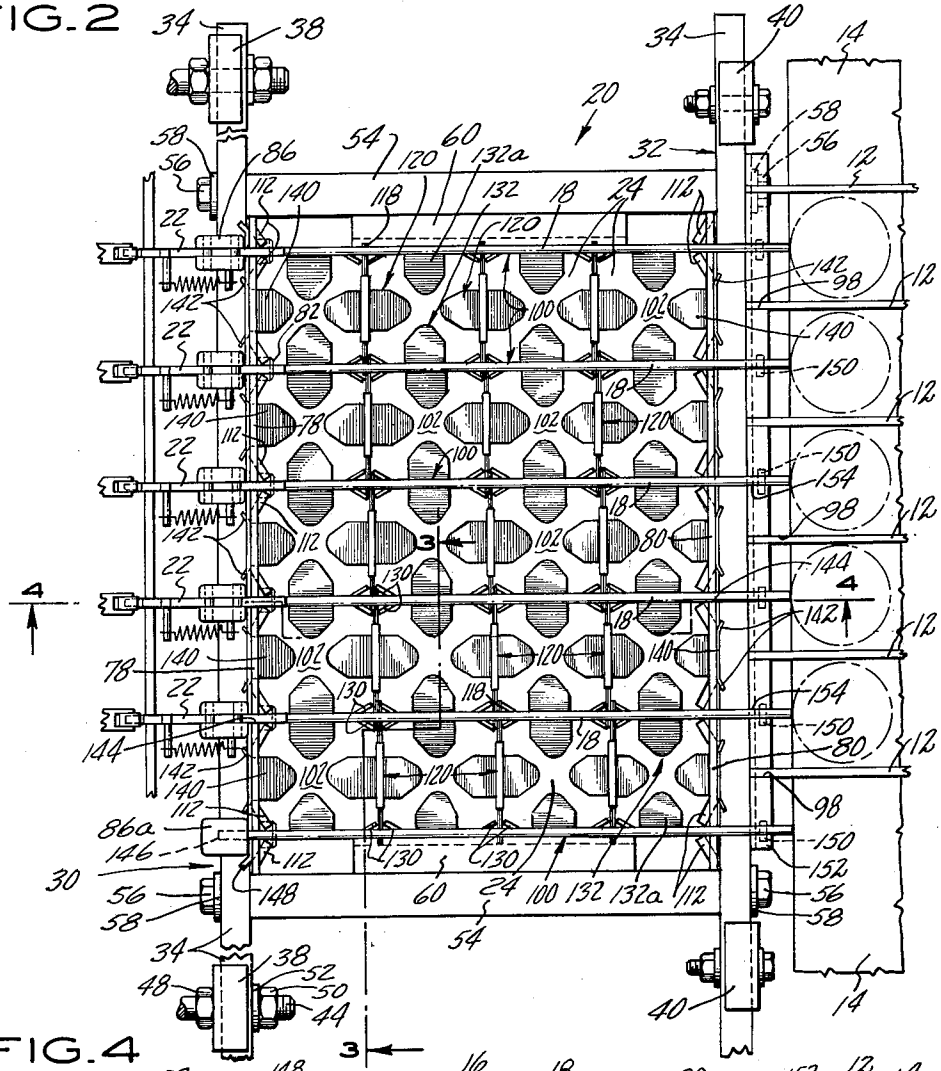
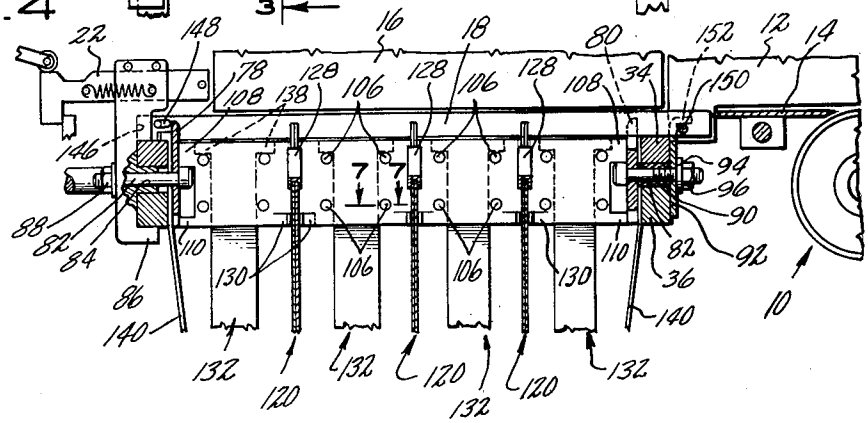


FIG. 4



Oct. 9, 1962 J. H. WALTER 3,057,136

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Filed Aug. 11, 1960 3 Sheets-Sheet 3

FIG. 5

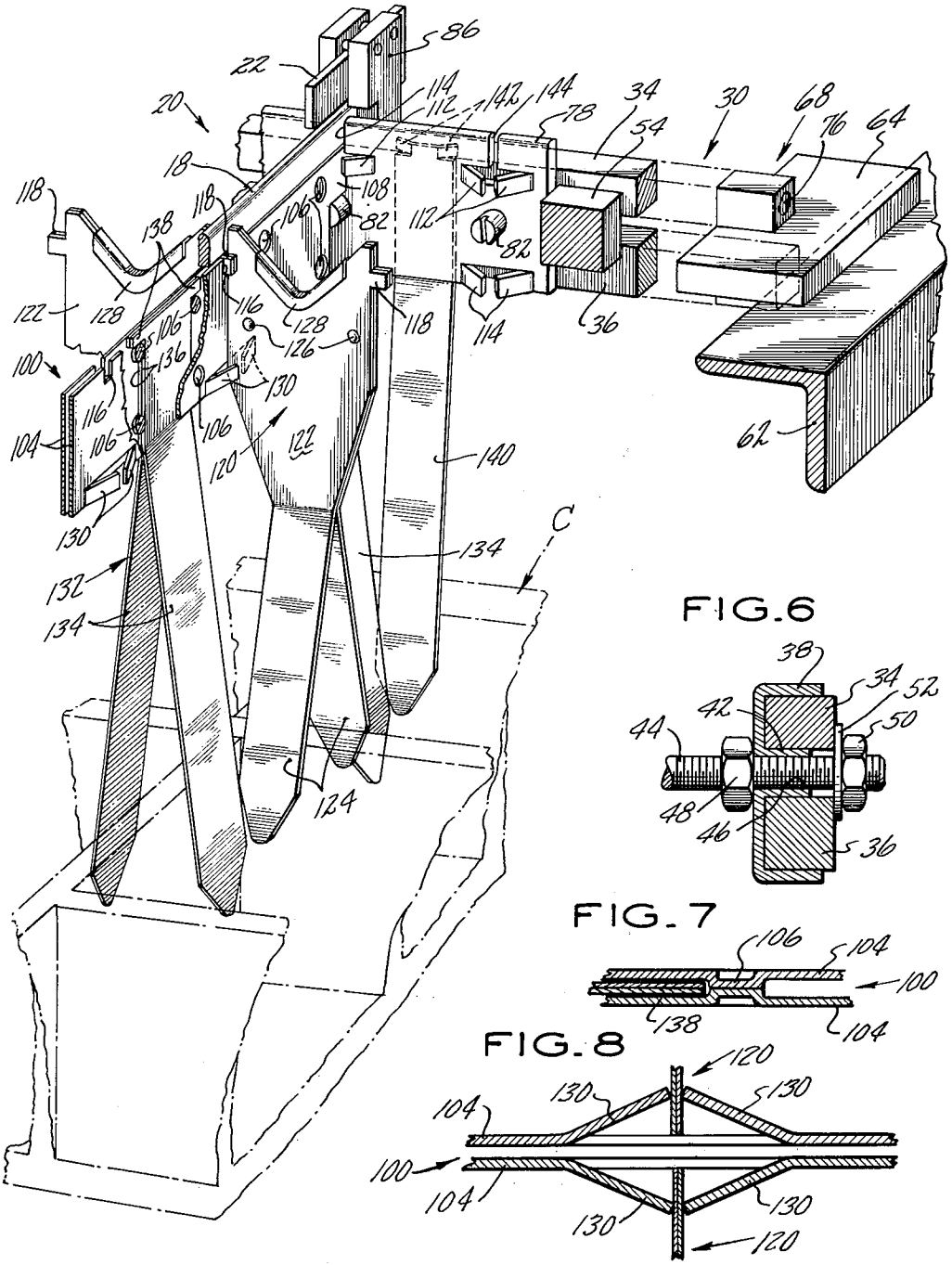


FIG. 6

FIG. 7

FIG. 8

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3,057,136

GRID

Joseph H. Walter, Haddam, Conn., assignor to Emhart Manufacturing Company, Hartford, Conn., a corporation of Delaware

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8 Claims. (Cl. 53—262)

This invention relates to apparatus for automatically packing or loading charges of bottles, cans or like articles into cellular containers which may take the form of wood or cardboard cases having compartments or cells for individually holding the bottles or the like. More particularly, the invention relates to a grid usable in such apparatus for controlling and directing the gravity fall of charges of bottles or the like into the compartments or cells of a cellular container.

One object of the invention is to provide a grid of the type mentioned wherein the principal parts of the grid are particularly adapted for rapid and efficient assembly of the grid and the ready removal of grid parts for repair and replacement.

Another object of the invention is to provide a grid of the type mentioned wherein a large majority of the grid parts are of stamped sheet metal construction to the end that an economic advantage may be obtained in manufacture of the parts.

The drawings show a preferred embodiment of the invention and such embodiment will be described, but it will be understood that various changes may be made from the construction disclosed, and that the drawings and description are not to be construed as defining or limiting the scope of the invention, the claims forming a part of this specification being relied upon for that purpose.

Of the drawings:

FIG. 1 is a perspective view of a portion of a bottle packing apparatus including a grid which embodies the present invention;

FIG. 2 is a plan view omitting some of the associated parts of the bottle packing apparatus in order to better illustrate the grid of the present invention;

FIG. 3 is an enlarged vertical transverse section taken through the grid generally as indicated by the line 3—3 in FIG. 2;

FIG. 4 is a vertical longitudinal section taken generally as indicated by the line 4—4 of FIG. 2;

FIG. 5 is an enlarged perspective view of an interior portion of the grid showing the detailed construction of some of the parts thereof;

FIG. 6 is an enlarged fragmentary section taken generally as indicated at 6—6 in FIG. 3;

FIG. 7 is an enlarged fragmentary section taken generally as indicated at 7—7 in FIG. 4; and

FIG. 8 is an enlarged fragmentary section taken generally as indicated at 8—8 in FIG. 3.

With the exception of the grid of the present invention, the bottle packing apparatus partially shown in FIG. 1 is conventional and need not be described in detail. In general, the said apparatus comprises an in-feed conveyor indicated generally at 10 which extends longitudinally in the apparatus and which transports bottles forwardly into parallel rows between stationary longitudinal guide plates 12, 12. The leading bottles in the rows of bottles between the guide plates 12, 12 are blocked and held in place on a dead plate 14 by engagement with the rear edge surfaces of a series of transversely shiftable longitudinal guide plates 16, 16 (shown with their front end portions broken away). The guide plates 16, 16 are shiftable transversely by means not shown from the position shown, wherein they block the

rows of bottles between the plates 12, 12, to a position wherein they are longitudinally aligned respectively with the guide plates 12, 12. In this latter position of the guide plates 16, 16, the rows of bottles are advanced by line pressure from between the stationary guide plates 12, 12 and they slide forwardly between the guide plates 16, 16 along support or head rails 18, 18 which form a part of a grid 20 constructed in accordance with the present invention. When a predetermined and equal number of bottles (four bottles in the apparatus shown) has been advanced along each support rail 18, the front or leading bottle in each row actuates a switch-operating slide 22. Switches, not shown, operated by the slides 22, 22 control the operation of the aforementioned operating means for the shiftable guide plates 16, 16 and when said switches are operated as described by engagement of the front or leading bottles with the slides 22, 22, the said operating means shifts the plates 16, 16 to the position shown in FIG. 1. Such movement of the plates 16, 16 causes the bottles to slide transversely off the support rails 18, 18 whereupon they fall by gravity through chutes or chute openings 24, 24 defined in the grid 20.

A charge of bottles, such as that shown in FIG. 1 with the bottles thereof in the course of descent through the chutes 24, 24 is received in a cellular container such as a compartmental wood case C. A roller top lift-table 26 in the packing apparatus is adapted to elevate cases in succession to a bottle receiving position beneath the grid 20. Said table is lowered to discharge packed or filled cases and to receive empty cases from an empty case in-feed conveyor indicated generally at 28. Cases are, of course, raised and lowered in properly timed relation with transverse shifting movements of the guide plates 16, 16 by suitable control means. Such control means are or may be conventional and a showing and description thereof is deemed unnecessary for a full understanding of the grid of the present invention.

From the foregoing, it will be apparent that efficient loading or packing of charges of bottles or the like in cellular containers is largely dependent on the effectiveness of the grid utilized in controlling the gravity fall of the bottles into their respective cells or compartments in the containers. In the apparatus described generally above, the bottles in each row of a charge of bottles comprising several rows must be separated longitudinally and centralized longitudinally in their respective compartments or cells in the receiving container. The bottles are separated transversely by reason of the operation of the shiftable guide plates in conjunction with the support or head rails 18, 18, but is necessary that the bottles be centralized transversely with respect to the receiving compartments or cells. Obviously, a high breakage rate may be encountered if the bottles strike the upper edges of the receiving compartment or cell walls during descent as a result of improper or inadequate centralizing action. It is also desirable to regulate the rate of descent of the bottles in order to prevent breakage resulting from severe shock when they engage the base or bottom walls of their receiving cells or compartments.

The grid of the present invention efficiently fulfills all of the above-mentioned requirements and is yet of a desirably simple construction and is particularly well suited to inexpensive sheet metal stamping operations in manufacture. Further, the parts thereof which are subject to wear and which may require repair or replacement at intermittent intervals are particularly adapted for ready removability.

All parts of the grid 20 shown in the drawings are supported in the bottle packing apparatus by spaced transversely extending front and rear support members in-

dicated generally at 30 and 32 respectively. Preferably and as shown, the front and rear support members 30 and 32 are of like construction and each comprises upper and lower generally rectangular bars 34 and 36 connected together in parallel but vertically spaced relationship with each other. Two similar clamps 38, 38 interconnect the upper and lower bars 34 and 36 of the front support member 30 adjacent opposite ends thereof and two additional clamps 40, 40, like the clamps 38, 38, interconnect the upper and lower bars 34 and 36 of the rear support member 32 adjacent opposite ends thereof.

A representative clamp 38 is shown in section in FIG. 6 and it will be observed that it is generally U-shaped with a central spacer projection 42 disposed between and in engagement with the bars 34 and 36. A bolt 44 extends through a bore 46 in said projection 42 and nuts 48 and 50 on opposite sides of the bars 34 and 36 and the clamp 38 cooperates with a washer 52 to fixedly connect the clamp to the bars and to secure the bars in vertically spaced parallel relationship.

In FIGS. 1 and 2, it will be observed that the front and rear support members 30 and 32 are fixedly connected together in longitudinally spaced relationship by spaced longitudinal side support members 54, 54. Said side support members 54, 54 are connected with the front and rear support members 30 and 32 by means of suitable bolts 56, 56 and washers 58, 58 as best shown in FIG. 2. The bolts 56, 56 extend into suitably threaded openings in the ends of the side support members 54 and between the upper and lower bars 34 and 36 of the front and rear support members 30 and 32, and the washers 58, 58 are clamped against the outer surfaces of said bars by the bolt heads. Each of the side support members 54, 54 has a generally U-shaped backing member 60 fixedly secured along its inner surface. The members 60, 60 are substantially shorter than the side support members 54, 54 and serve a purpose to be set forth hereinafter.

The front and rear support members 30 and 32, taken with the side support members 54, 54, may be said to constitute a supporting frame of the grid 20, all parts of the grid being supported thereon in the bottle packing apparatus. Preferably, provision is made for the ready removal of the entire grid from the bottle packing apparatus. As shown, the grid is supported in the apparatus by two transversely spaced longitudinal frame members 62, 62 which project forwardly from the aforementioned in-feed conveyor 10. Resting on each of said frame members are front and rear grid support plates 64 and 66 which project transversely outwardly thereover. Inwardly projecting portions of the front and rear support plates 64, 64 and 66, 66 are fixedly connected with and entered respectively between the end portions of the upper and lower bars 34 and 36 of the front support member and between the end portions of the upper and lower bars 34 and 36 of the rear support member 32. Thus, it will be seen that the grid 20 may be removed from the bottle packing apparatus by moving the same longitudinally forwardly with the front and rear support plates 64, 64 and 66, 66 sliding along the frame members 62, 62.

The grid is releasably held in position in the bottle packing apparatus by means of two latching devices 68, 68 mounted respectively adjacent the front support plates 64, 64. The latching devices 68, 68 are of like construction, and each of said devices comprises a block 70 fixedly secured to a frame member 62 and carrying a spring pressed locking pin 72. The locking pin 72 is biased by a spring 74 into a suitable detent 76 in the adjacent end surface of the upper bar 34 of the front support member 30. Obviously, the grid 20 may be released for removal from the packing apparatus on manual retraction of the locking pins 72, 72 from their respective detents 76, 76.

As best illustrated in FIGS. 2 and 4, the bottle directing and controlling grid 20 includes front and rear transversely extending end plates 78 and 80. As shown, said plates are respectively attached to and supported by the front and rear support members 30 and 32 and they abut the side support members 54, 54 at opposite ends so as to be held against relative transverse movement. Preferably, attachment of the front and rear plates 78 and 80 to the front and rear support members 30 and 32 is accomplished by means of a series of bolts 82, 82 as shown, the front plate 78 being attached to the front support member 30 by six bolts 82, 82 which extend between the upper and lower bars 34 and 36 of said support member and which are equally spaced transversely throughout the length of the member. The heads of the bolts 82, 82 are disposed inwardly or rearwardly of the front end plate 78 and the bodies thereof extend between the upper and lower bars 34 and 36 of the support member 30 and through bores 84, 84 in six blocks 86, 86 disposed outwardly or forwardly of the bars 34 and 36. Nuts 88, 88 threaded on the outer or forward ends of the bolts 82, 82 serve to clamp the blocks 86, 86 and the front end plate 78 in place on opposite sides of the bars 34 and 36.

As best shown in FIG. 1, there are six blocks 86, 86, five of which carry switch-operating slides 22, 22. The sixth block (86*a*) is associated with a bolt 82 adjacent one of the side support members 54. Said block 86*a* does not carry a slide 22 as no row of bottles is advanced toward the block over the grid 20.

The bolts 82, 82 securing the rear end plate 80 to the rear support member 32 are also six in number and they have their heads disposed inwardly or forwardly of the said rear end plate. Said bolts are equally spaced transversely and are aligned longitudinally with the corresponding six bolts 82, 82 securing the front plate 78 to the front support member 30. The bodies of these six bolts extend rearwardly through bushings 90, 90, disposed between the upper and lower bars 34 and 36 of the rear support member 32, and through suitable apertures in a transverse guide support plate 92, said plate 92 being disposed rearwardly or outwardly of the rear support member 32. Washers 94, 94 and nuts 96, 96 serve to clamp the rear end plate 80 and the guide support plate 92 to opposite sides of the upper and lower bars 34 and 36 of the rear support member 32. The guide support plate 92, as best shown in FIG. 2 is provided with six equally transversely spaced notches 98, 98 for respectively receiving and transversely securing lower front edge portions of the aforementioned stationary guide plates 12, 12.

Extending between the front and rear end plates 78 and 80 of the grid 20 are a series of six longitudinally and substantially horizontally extending ribs indicated generally at 100, 100. The ribs 100, 100 are equally spaced transversely and define a series of five vertically open longitudinal spaces or channels 102, 102 adapted for the downward passage of rows of bottles. The ribs 100, 100 are detachably connected with and supported by the front and rear end plates 78 and 80 as will be described presently.

In their presently preferred form, each of the ribs 100 comprises a pair of similar elongated plates 104, 104 disposed in closely spaced parallel relationship. As best shown in FIG. 5, the plates 104, 104 of each rib 100 are connected together by a longitudinally spaced series of connectors or connecting means each comprising four rectangularly spaced spot weld areas 106, 106. At each end of each of the ribs 100 there is provided a generally U-shaped cutout which defines integral upper and lower end tabs 108 and 110, best shown in FIG. 4. The ribs 100, 100 are arranged between the front and rear end plates 78 and 80 so that each upper end tab 108 rests on the head of a bolt 82, the ribs 100, 100 thus being supported vertically.

Means is also provided for transversely securing each

end portion of each longitudinal rib **100** and said means preferably comprises at least one pair of holding tabs associated with each end portion of each rib. As best shown in FIG. 5, an upper pair of holding tabs **112, 112** is operatively associated with each upper end tab **108** and a lower pair of holding tabs **114, 114** is operatively associated with each lower end tab **110**. Preferably all of the holding tabs **112, 112** and **114, 114** are formed integrally as shown and are bent longitudinally inwardly from the front and rear end plates **78** and **80**. The tabs of each pair of tabs engage the adjacent end tab on a rib **100** on opposite sides whereby to secure said end tab and thereby secure the rib against transverse displacement. The outermost ribs **100, 100** are engaged by and additionally supported transversely by the aforementioned backing members **60, 60** as best shown in FIG. 2.

As best shown in FIGS. 2 and 5, each of the longitudinal ribs **100, 100** is provided along its upper edge portion with a longitudinal series of upwardly open transverse notches **116, 116**. The notches **116, 116** are equally spaced longitudinally from each other in each rib, and the notches in each rib are approximately aligned transversely with the corresponding notches in adjacent ribs **100, 100**. Said notches serve to slidably receive and hold oppositely projecting ears **118, 118** formed on transversely arranged fingers indicated generally at **120, 120** and which will be described presently. The ears **118, 118** and the fingers are of course held against downward movement by the base walls of the notches, but said ears are free to move upwardly.

The fingers **120, 120** are of similar construction and each may be described as bladelike and of double pronged construction, an upper portion or body **122** thereof being formed integrally with depending prongs **124, 124** thereof. More specifically, and in the preferred form shown, the fingers **120, 120** each comprise a pair of spring steel blades connected together in facing relationship at an upper portion as by rivets **126, 126**. The lower portions of the spring steel blades, or the finger prongs **124, 124**, diverge downwardly with respect to each other, and the upper portions of said blades, or the body **122** of each finger, are provided with a generally V-shaped insert **128**. Substantially below the ears **118, 118** thereon, the body **122** of each of the fingers **120, 120** is engaged on opposite sides by a pair of transversely bent holding tabs **130, 130**. The tabs **130, 130** are formed integrally on the plates **104, 104** of each rib **100** and they serve to secure the fingers **120, 120** against longitudinal displacement.

Referring particularly to FIG. 2, it will be observed that the several transversely arranged fingers **120, 120** cooperate with the longitudinal ribs **100, 100** to partially form the aforementioned vertical chutes or chute openings **24, 24**. The chutes **24, 24** in the longitudinally extending series of four chutes in each longitudinal channel or space **102** are adapted for the downward passage of individual bottles in a row of bottles descending through said channel or space. The V-shaped inserts **128, 128** constitute means for separating the bottles in such a row and for centralizing the same longitudinally and to some extent transversely in their respective chutes. Note also that the lower portions of the individual blades of each finger **120**, or the prongs **124, 124** thereof, extend longitudinally toward the center lines of longitudinally adjacent chutes. Said prongs serve to control the gravity fall of bottles through the chutes and guide the bottles into their respective cells or compartments in the receiving container.

The chutes or chute openings **24, 24** are also partially defined by longitudinally arranged depending bladelike fingers indicated generally at **132, 132**. As best shown in FIG. 5, each of the fingers **132, 132** comprises a pair of spring steel blades having lower portions or prongs **134, 134** which diverge downwardly and flat upper portions **136, 136** disposed in face-to-face relationship. Said upper portions **136, 136** may be connected together as by riveting or they may be independent as will be seen. Formed at the upper edge portion of each finger **132** are two longitudinally and oppositely projecting ears **138, 138**.

The fingers **132, 132** are ararnged longitudinally as stated and their upper portions **136, 136** are entered between adjacent plates **104, 104** of the four innermost longitudinal ribs **100, 100**. As best shown in FIG. 5, each connector or group of rectangularly spaced spot weld areas **106, 106** on said ribs may be said to generally define in cooperation with the rib plates a longitudinal vertically open slot. The fingers **132, 132** are slidably entered and are movable upwardly respectively in said slots with their oppositely projecting longitudinal ears **138, 138** resting on the two uppermost spot weld areas **106, 106**. The two lowermost spot weld areas **106, 106** engage or at least approximately engage the body portions **136, 136** of the fingers **132** at opposite sides to secure the fingers against longitudinal movement. Thus, the uppermost spot weld areas **106, 106** of each connector and the ears **138, 138** on the fingers may be said to constitute a stop means securing the fingers against downward movement in their respective slots.

From the foregoing it will be apparent that each of the six centrally located chutes or chute openings **24, 24** has four finger blades or prongs associated therewith. Two prongs **124, 124** of longitudinally adjacent transversely arranged fingers **120, 120** extend longitudinally toward the vertical center line of each of said chutes and two prongs **134, 134** of transversely adjacent longitudinally arranged fingers **132, 132** extend transversely toward the said vertical center lines of said chutes. Thus, bottles passing downwardly through the chutes will be guided toward the centers thereof and deposited centrally in the cells or compartments of a receiving container disposed beneath the grid **20**.

As mentioned, the body portions **136, 136** of the fingers **132, 132** may be interconnected or they may be independent of each other. It will be apparent that such body portions can be held together in face-to-face relationship within the space between the plates **104, 104** of a rib **100** without interconnection of the same.

The two outermost ribs **100, 100** are preferably equipped with single pronged fingers **132*a*** as best shown in FIG. 3, the lack of a need for double pronged fingers being apparent. The single pronged fingers **132*a*, 132*a*** may be identical with the double pronged fingers **132, 132** or, more specifically, with one half or one blade thereof. Said fingers may be held between the plates **104, 104** of said outermost ribs **100, 100** in a manner identical with that described for the four innermost ribs **100, 100** and the fingers **132, 132**.

Referring again to FIG. 2, it will be observed that each of the chutes **24, 24** in the outermost transverse or front and rear rows of chutes **24, 24** has a single pronged finger **140** associated therewith. The fingers **140, 140** are similar to the fingers **132*a*, 132*a*** and they are disposed in spaced rows of five between the front end plate **78** and the front support member **30** and between the rear end plate **80** and the rear support member **32**. As best shown in FIG. 5, each finger **140** is provided with a pair of ears or tabs **142, 142** at an upper end portion thereof. Said ears or tabs are bent longitudinally so as to engage the upper surface of the adjacent support bar **34** and prevent the finger from sliding downwardly between the adjacent end plate and bar.

The aforementioned support rails **18, 18** which vertically hold rows of bottles as they are advanced between the shiftable guide plates **16, 16** take the form of elongated wear resistant heads or head rails for the longitudinal ribs **100, 100**. Accordingly, there are six such rails provided in the embodiment of the invention shown.

Each support or head rail **18**, in addition to its function of supporting a row of bottles during advance of the bottles and prior to shifting of the guide plate **16**, **16**, serves as a holding device. That is, each head rail **18**, associated with a rib **100**, serves to engage the ears **118**, **138** and to hold the fingers **120**, **120** and **132**, **132** associated with said rib against upward movement and in place in their respective notches and slots. In FIG. 5, the ears **118**, **118** on the transverse fingers **120**, **120** associated with the rib **100** shown are engaged and held in their respective notches **116**, **116** by a head rail **18**. Similarly, the fingers **132**, **132** associated with said rib are engaged and held in their respective slots between the spaced plates **104**, **104** of the rib by the said head rail.

Six equally spaced longitudinal slots **144**, **144** in the front end plate **78** and six similar slots **144**, **144** in the rear end plate **80** receive end portions of the head rails **18**, **18** and secure the same against relative transverse movements. As best shown in FIG. 4, the aforementioned blocks **86**, **86** are each provided with a suitable recess **146** for receiving an end portion of a head rail **18**. A transverse locking rod or wire **148** (FIGS. 2 and 4) threaded through transversely aligned openings in the front end portions of the head rails **18**, **18** prevents rearward displacement of the head rails by engagement with an upper portion of the outer or front face of the front end plate **78**. Short transversely projecting holding pins or beads **150**, **150** formed on the rear end portions of the head rails **18**, **18** project beneath a short horizontal flange **152** formed integrally on the aforementioned guide support plate **92**. Said plate has six equally spaced slots **154**, **154** which respectively receive rear end portions of the head rails **18**, **18**.

From the foregoing, it will be apparent that the grid of the present invention is particularly well suited to low cost quantity production by reason of the provision of a large majority of parts which may be readily formed of sheet metal in conventional cutting and bending press operations. All of the aforementioned fingers, the longitudinal ribs **100**, **100**, and the front and rear end plates **78** and **80** are obviously well suited to such manufacturing operations.

The manner in which the various parts of the grid **20** can be readily removed for repair and replacement should be apparent from the foregoing and only a brief description is necessary. The grid is preferably first removed bodily from the bottle packing apparatus by releasing the aforementioned latching devices **68**, **68**. Thereafter, the head rails **18**, **18** may be quickly removed by withdrawing the holding rod or wire **148** and sliding the said rails rearwardly. With the head rails removed, any one or all of the fingers in the grid may be conveniently and quickly removed merely by lifting the same vertically from its respective notch or slot. Replacement of parts after repair or substitution of new parts may also be readily accomplished with substantial savings in time and effort.

The invention claimed is:

1. In a grid for controlling the gravity fall of a row-arranged charge of bottles or the like into a cellular container; the combination of a series of parallel longitudinally and substantially horizontally extending ribs supported in equal transversely spaced relationship and which define a series of similar vertically open longitudinal spaces respectively adapted for the downward passage of rows of bottles, each of said ribs being provided with a longitudinal series of substantially equally spaced transverse notches which open upwardly through the upper edge surface of the rib and with a longitudinal series of substantially equally spaced vertically open longitudinal slots, said notches and slots being arranged alternately in each rib and the notches and slots in each rib being approximately in transverse alignment with the corresponding notches and slots in adjacent ribs, a first group of depending bladelike fingers each provided at an upper portion with a pair of oppositely projecting ears, said fingers being arranged transversely in each of said longitudinal spaces between said ribs with the oppositely projecting ears of each finger slidably entered respectively in corresponding transverse notches of adjacent ribs so that the fingers are held against downward movement but free to move upwardly, a second group of depending bladelike fingers arranged longitudinally and slidably entered respectively in and free to move upwardly and downwardly in said longitudinal slots in said ribs, and stop means securing the fingers of said second group of fingers against downward movement in their respective slots so that said fingers cooperate with the ribs and the fingers of said first group of fingers to form longitudinally extending series of vertical chutes between each pair of adjacent ribs for the downward passage of individual bottles in a row.

2. In a grid for controlling the gravity fall of a row-arranged charge of bottles or the like into a cellular container; the combination of a series of parallel longitudinally and substantially horizontally extending ribs supported in equal transversely spaced relationship and defining a series of similar vertically open longitudinal spaces respectively adapted for the downward passage of rows of bottles, each of said ribs being provided with a longitudinal series of substantially equally spaced transverse notches which open upwardly through the upper edge surface of the rib and with a longitudinal series of substantially equally spaced vertically open longitudinal slots, said notches and slots being arranged alternately in each rib and the notches and slots in each rib being approximately in transverse alignment with the corresponding notches and slots in adjacent ribs, a first group of depending bladelike fingers each provided at an upper portion wtih a pair of oppositely projecting ears, said fingers being arranged transversely in each of said longitudinal spaces between said ribs with the oppositely projecting ears of each finger slidably entered respectively in corresponding transverse notches of adjacent ribs so that the fingers are held against downward movement but free to move upwardly, a second group of depending bladelike fingers arranged longitudinally and slidably entered respectively in and free to move upwardly and downwardly in said longitudinal slots in said ribs, stop means securing the fingers of said second group of fingers against downward movement in their respective slots so that said fingers cooperate with said ribs and the fingers of said first group to form longitudinally extending series of vertical chutes between each pair of adjacent ribs for the downward passage of individual bottles in a row, and a plurality of head rails detachably secured respectively so as to extend along the upper edges of said ribs and serving to engage and secure said fingers of said first and second groups against upward movement.

3. The combination in a grid as set forth in claim 2 wherein each rib is provided with a pair of integral transversely bent holding tabs adjacent each transversely arranged finger associated with the rib, and wherein the tabs of each pair are adapted to engage the adjacent transverse finger on opposite sides thereof and substantially below the ears thereon whereby to secure the finger against longitudinal movement.

4. The combination in a grid as set forth in claim 2 wherein each of the fingers of said first group is double pronged with the prongs of each finger diverging downwardly and extending respectively toward the vertical center line of longitudinally adjacent chutes.

5. The combination in a grid as set forth in claim 4 wherein each of the fingers of said second group is double pronged with the prongs of each finger diverging downwardly and extending respectively toward the vertical center lines of transversely adjacent chutes.

6. In a grid for controlling the gravity fall of a row-arranged charge of bottles or the like into a cellular con-

tainer; the combination of parallel front and rear transversely extending end plates, a series of longitudinal ribs extending between said front and rear plates in parallel and equally spaced relationship with opposite end portions detachably connected with and supported by said plates, said ribs serving with the front and rear plates to define a series of similar vertically open longitudinal spaces respectively adapted for the downward passage of rows of bottles, and each of said ribs comprising a pair of closely spaced parallel plates held together by connectors arranged in equal longitudinally spaced relationship therealong and provided with a longitudinal series of substantially equally spaced upwardly open notches, said notches and said connectors being arranged alternately in each rib and the notches and connectors in each rib being approximately in transverse alignment with the corresponding notches and connectors in adjacent ribs, a first group of double pronged depending bladelike fingers each provided at an upper portion with a pair of oppositely projecting ears, said fingers being arranged transversely in each of said longitudinal spaces between said ribs with the oppositely projecting ears of each finger slidably entered and movable upwardly respectively in corresponding transverse notches of adjacent ribs, a second group of double pronged depending bladelike fingers arranged longitudinally and slidably entered and movable upwardly in the spaces between said connected plates of said ribs, said fingers respectively being engaged by and secured against downward movement by said connectors so as to cooperate with said ribs and the fingers of said first group to form longitudinally extending series of vertical chutes between each pair of adjacent ribs for the downward passage of individual bottles in a row, and a plurality of head rails detachably secured respectively so as to extend along the upper edges of said ribs and serving to engage and secure said fingers of said first and second groups of fingers against upward movement.

7. The combination in a grid as set forth in claim 6 wherein said connectors between the rib plates each take the form of four rectangularly spaced spot weld areas, and wherein the bladelike fingers of said second group each have a pair of oppositely projecting ears at an upper portion thereof, the ears on each finger serving respectively to engage the two uppermost spot weld areas of an associated connector and to thereby secure the finger against downward movement when the finger is entered vertically in the space between the rib plates and between the four spot weld areas of the connector, and the opposite edges of each finger respectively engaging the two lowermost spot weld areas of the connector for longitudinal support when the finger is so located.

8. The combination in a grid as set forth in claim 7 wherein each plate of each rib is provided with a pair of integral transversely bent holding tabs adjacent each transversely arranged finger associated with the plate, the tabs of each pair of tabs being adapted respectively to engage the adjacent transverse finger on opposite sides thereof and substantially below the ears thereon whereby to secure the finger against longitudinal movement.

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