

Feb. 6, 1951

S. L. LEACH

2,540,743

GRID ASSEMBLY FOR BOTTLE LOADING MACHINES

Filed May 13, 1948

3 Sheets-Sheet 1

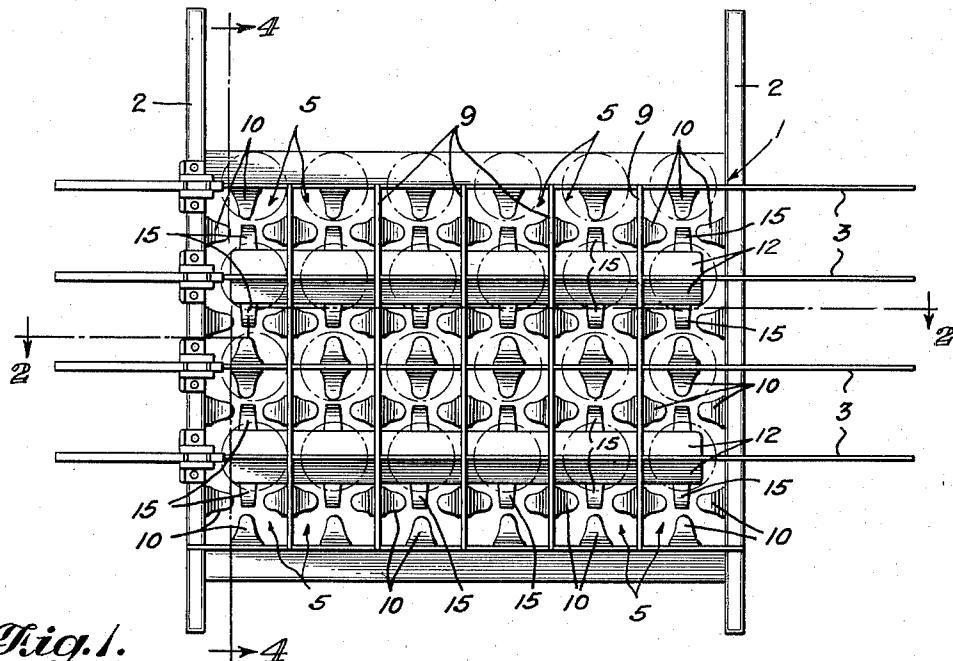


Fig. 1.

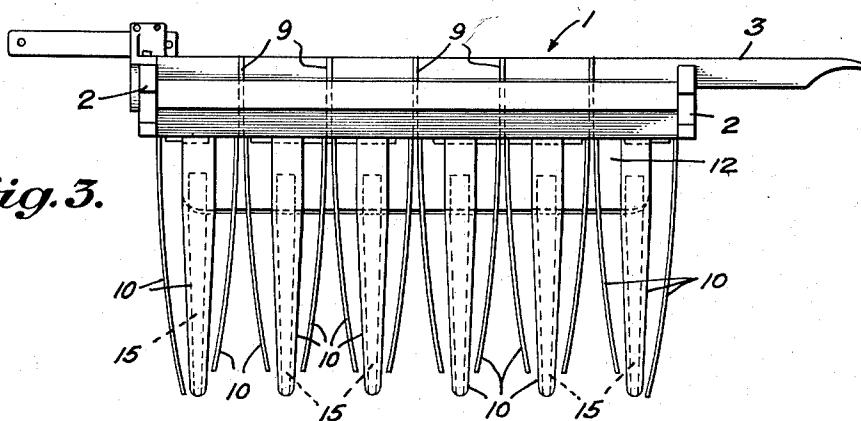


Fig. 3.

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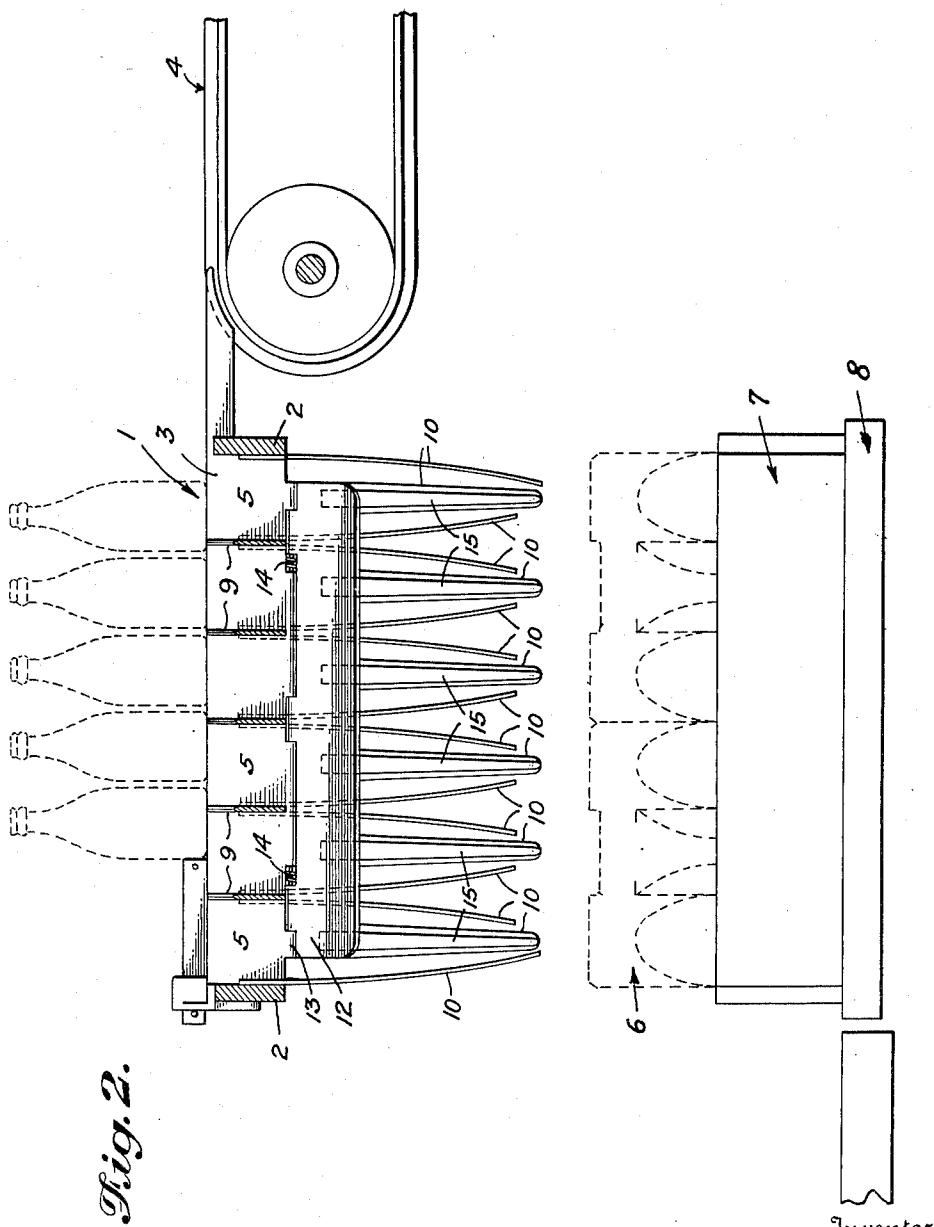


Fig. 2.

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Fig. 4.

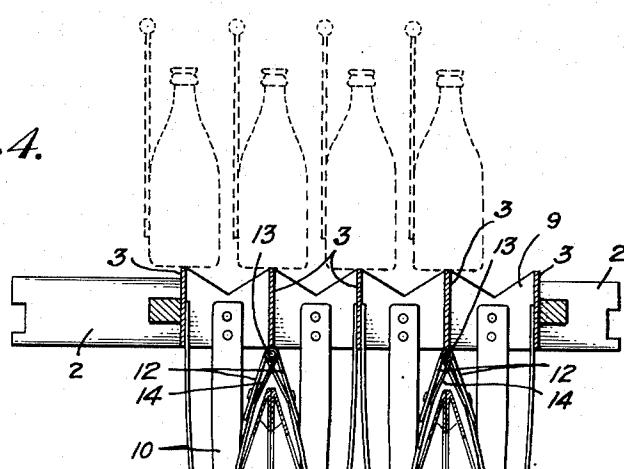


Fig. 6.

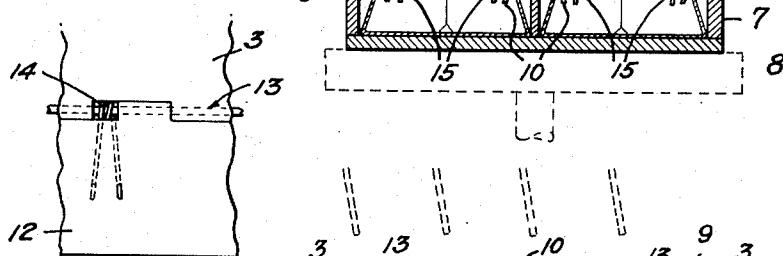
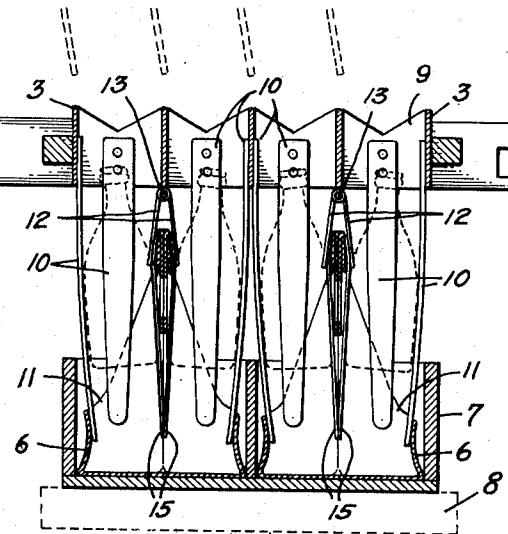


Fig. 5.



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UNITED STATES PATENT OFFICE

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GRID ASSEMBLY FOR BOTTLE LOADING MACHINES

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Application May 13, 1948, Serial No. 26,758

4 Claims. (Cl. 226—18)

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My invention relates to new and useful improvements in loading machinery and more particularly to the type that is utilized in the loading of beverage bottles in cases and the primary object of the invention resides in the provision of a structure for use in connection therewith whereby bottles may be loaded into paper or cardboard cartons and/or cases at the will of the operator.

A further object of the invention resides in the provision of an improved grid, or the like, whereby as many as twenty-four (24) bottles may be readily disposed in compartments of a case or series of cartons without damage to the bottles.

A still further object of the invention resides in constructing the grid with a means for properly aligning paper or cardboard cartons in position and retaining the same in such alignment for reception in the compartments thereof of bottles dropped from a carrier thereabove.

A still further object of the invention resides in the provision of a specific set of hinged sweeper blades on the grid tending to receive and grasp the upper portions of a series of cardboard cartons, so that the latter may be retained in proper position for the reception therein of bottles dropped from a carrier thereabove.

A still further object resides in the provision of means in association with the sweeper blades to permit the latter to also operate effectively in connection with the use of the device in the loading of bottles into cases.

A further object of the invention resides in the provision of a device of the character mentioned which is comparatively simple and durable in construction, inexpensive to manufacture and one which will be very efficient in operation.

With these and numerous other objects in view, my invention consists in the novel features of construction, combination and arrangement of parts as will be hereinafter referred to and more particularly pointed out in the specification and claims.

In the accompanying drawings forming a part of this application

Figure 1 is a plan view of a grid utilized in one type of bottle loading machinery embodying my improvements.

Figure 2 is a vertical transverse section through the device, as seen on the line 2—2 of Fig. 1.

Figure 3 is a side elevation of the device.

Figure 4 is a vertical section therethrough, taken on the line 4—4 of Fig. 1 at right angles to Fig. 2.

Figure 5 is a view similar to Fig. 4 showing bottles being dropped into position in the carrier cartons, and

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Figure 6 is a fragmentary elevation of the sweeper blades, showing particularly the spring connection therebetween.

It is customary in beverage distributing plants to load bottles into wooden cases and various types of loading machines have been devised for filling a case with as many as twenty-four (24) bottles with one operation. In one type machine to which my invention particularly applies, best illustrated in Patent Nos. 2,010,410, 2,102,640, 1,574,224, 1,611,822, 2,179,648 and Re. 21,288, a device known as a grid is utilized for aiding in the loading of a plurality of bottles into compartments in the well known beverage case, the latter being usually made of wood. This grid includes a frame divided into spaces which are adapted to be aligned with the compartments in a case so that when the case is raised to a position just below the grid the compartments will be aligned with bottles on a carrier above the grid. When the bottles are released from the carrier, the same are dropped through the grid into the compartments of the case. The grid is usually provided with a plurality of leaf spring members which tend to guide the bottles into the compartments of the case and also often the blow. It is to this particular type of grid that my invention is specifically applied.

Retail dealers have found it desirable to provide some form of carrier for beverage bottles sold over the counters and various types of cartons have been designed and produced so that six (6) bottles of beverage may be dispensed to a customer and conveniently carried to the home of the consumer. Whereas, the known devices for loading cases carrying twenty-four (24) bottles have been more or less effective, the same devices have been found to be ineffective when attempts have been made to utilize cardboard cartons therewith. This is largely due to the fact that the guide springs ordinarily used on grids will, after slight use, become distorted so that they will not fit directly into the compartments of a cardboard carton and, furthermore, when not in direct alignment with the compartments of such cartons, said springs will tend to distort, if not actually crush, the cartons. Under such conditions, bottles passing through the grid will not be received in the compartments of the carton but will drop to the floor therebelow.

My invention contemplates the provision of a grid of the type now known and used but with means thereon for receiving, grasping and retaining in position the cardboard cartons so that the pockets or compartments thereof will always be properly aligned with the openings in the top

of the grid so that bottles dropped through the latter will be received in the compartments or pockets of the respective cartons. My invention also contemplates such means as will not, after continuous use, become so ineffective as to permit of distortion or crushing of the carrier cartons, so that the latter at all times may be raised into position for reception of the bottles dropped thereinto.

In carrying out my invention, I shall refer to the drawings in which similar reference characters designate corresponding parts throughout the several views and in which the numeral 1 designates generally the grid which is, in effect, a frame composed of end bars 2 which are interlocked with a plurality of, there being four (4) shown in the drawings, cross bars 3. The interlocking is accomplished by slotting the cross bars 3 at predetermined intervals to fit over the end bars 2 and these cross bars 3 which are in effect extensive longitudinally of the loading machine constitute means upon which bottles are moved thereon from a conveyor 4, the latter being of the conventional type in a machine of this character. The bottles are shown in dotted lines in Fig. 2 of the drawings as they are moved from the carrier 4 onto the cross bars 3 and as the bottles are fed from the carrier continuously, the same are adapted to move to the outermost point on the grid at which point the same will be in transverse alignment with a compartment through which the same may be directed to a case therebelow. The machinery for directing the bottles laterally into the compartments is shown in dotted lines in Fig. 4 of the drawings and constitutes no part of this invention and need not be discussed in detail. It will be seen, however, that the grid assembly composed of the end bars 2 and the cross bars 3 form twenty-four (24) compartments which may be designated generally by the numeral 5 and it is through these compartments that the bottles are adapted to pass to a point therebelow and be received in cardboard carrier cartons which I have represented in the drawings by dotted lines and designated by the numeral 6. These carrier cartons are of a size so that four (4) of same may be received in a wooden case or container 7 which is adapted to be supported on an elevating platform 8. This platform is adapted to be moved upwardly toward the grid with which it is in alignment and at the present time, the bottles, as aforesaid, are adapted to pass therethrough and be received in the cartons supported below the grid.

It may be here stated that the grid assembly also includes a plurality of transverse cross bars 9 which are supported and interlocked with the cross bars 3 so as to form the particular compartments 5 heretofore described. The upper edges of the cross bars 9, however, are cut angularly to form a series of substantially V-shaped cut-outs. These cut-out upper edges of the cross bars 9 are now in use on certain known machines and tend to aid in directing the bottles into the compartments 5 when and if the same are not directed automatically in alignment with the compartments.

Riveted or otherwise similarly secured to the ends bars 2 and the cross bars 3 and 9 are the depending and somewhat arcuately formed spring fingers 10. Fingers of this general type have been known and used heretofore in bottle loading machinery, but in my device, I prefer to have these fingers of a width and of a length for con-

veniently applying same to carrier cartons which necessitates a size and shape different from that heretofore known.

In practice, when a case 7 is raised on its platform 8 to a point immediately below the grid assembly, four (4) cartons 6 therein will position themselves with respect to the elements of the grid so that the spring fingers 10 are directed within the openings or pockets 11 of said cartons, as best illustrated in Figs. 4 and 5 of the drawings. Thus, these spring fingers will tend to hold the openings in a position with alignment with the compartments 5 of the grid and also retain the cartons somewhat firmly in position in the case.

An important feature of my invention, however, is the means for grasping and retaining the upper portions of the cartons in position so that the upper peripheral edges of the openings 11 will be directed inwardly giving the openings a position below the compartments 5 to readily receive therethrough the bottles as they are directed through the grid. In carrying out this objective, I provide pairs of sweeper blades 12 which are hinged together as shown at 13 to the lower edges of a pair of cross bars 3. These sweeper blades co-act with spring members 14 encircling the pintle of the hinge 13 so that normally the blades 12 extend outwardly with respect to one another, as best shown in Fig. 4 of the drawings, forming substantially an inverted V. This normal formation and disposition of the blades 12 provides a space into which the upper converging portions of the carton 6 are adapted to be received, as also clearly shown in Fig. 4 of the drawings. However, as the bottles are lowered through the compartments 5 of the grid, the same will not only contact the springs 10 but will forcefully engage the inclined outer faces of the sweeper blades 12 tending to force the latter inwardly against the tension of the springs 14. In this action, the movement of the bottles downwardly will be somewhat retarded and at the same time the blades 12 will grasp the upper converging portions of the carton 6 to retain the same firmly in position and tend to spread the openings 11 thereof so that the dropping bottles may be readily received through said openings as the same enter said cartons 6. After the cartons in a case 7 have been filled with bottles, the platform 8 is lowered automatically removing the case and bottles from all contact with the grid elements and at such time following removal, the sweeper blades under action of the springs 14 will return to their normal position, as shown in Fig. 4 of the drawings. The positioning of the sweeper blades with respect to the bottles and the cartons, as the bottles are lowered into the latter, is best illustrated in Fig. 5 of the drawings.

As stated heretofore, my improvements were primarily designed to be used in the machine filling of carrier cartons which, up to the present time, has not been effectively accomplished. However, I have found that with a slight addition, the same structure may be utilized for the filling of wooden or other cases, where twenty-four (24) bottles are deposited in a case at a time. Through this medium, it would be possible then to alternately or at the will of the operator present for filling wooden cases or cardboard carrier cartons, as may be desired. To this end, I provide a series of additional spring fingers 15 which are riveted or otherwise similarly secured to the sweeper blades 12, as best illustrated

in Figs. 2 and 4 of the drawings. Thus, these spring fingers 15, which are similar to the spring fingers 10, except that the same are narrower in width, will perform no particular useful function when the sweeper blades are effective in loading carrier cartons. However, when the cases with twenty-four (24) compartments therein are utilized for filling, these additional spring fingers 15 will act as an inside guide for the bottles as the same are dropped in the compartments of the case and will positively separate the bottles as they are being dropped. Without these additional fingers, there may be a tendency for the bottles to lock as they are dropped downwardly when only the limited number of spring fingers 10 are provided on this grid. Thus, it will be seen that with this addition, the grid is capable of interchangeable use, that is, for the filling of carrier cartons and/or wooden cases.

From the foregoing description of the construction of my improved grid assembly, the method of applying same to use will be readily understood and it will be seen that I have provided a comparatively simple, inexpensive and efficient means for carrying out the various objects of the invention.

While I have particularly described the elements best adapted to perform the functions set forth, it is apparent that various changes in form, proportion and in the minor details of construction may be resorted to without departing from the spirit or sacrificing any of the principles of the invention.

Having thus described my invention, what I claim is:

1. A grid for a bottle loading machine comprising a frame having side bars and end bars, cross bars extending longitudinally and transversely in the frame and forming open-ended compartments of dimensions adapting them to have bottles passed downwardly through them into bottle-receiving pockets of bottle-carriers disposed under the grid in position for filling, resilient strips extending downwardly from said cross bars and constituting guides for directing bottles downwardly through the compartments and into the bottle-receiving pockets of the carriers, blades extending longitudinally of certain of said cross bars and arranged in pairs pivoted at lower edges of the said cross bars and disposed in side by side relation to each other, and springs between companion blades urging the same away from each other whereby upstanding handles of carriers disposed under the grid may fit between and be gripped by the companion blades as the said companion blades are forced towards each other by bottles moving downwardly through the compartments of the grid and into the pockets.

2. A grid for a bottle loading machine comprising a frame having cross bars therein defining passages through which bottles are adapted to be passed downwardly into bottle-receiving pockets of bottle carriers disposed under the grid in position for filling, guides extending downwardly from said cross bars in position for directing bottles into the said pockets at opposite sides of handles for the bottle carriers, blades under certain of said cross bars extending longitudinally thereof and arranged in pairs disposed

in side by side relation to each other, pins passing through hinge ears carried by the said cross bars and the said blades and pivotally mounting the blades, springs carried by said pins and having downwardly extending arms engaging confronting side faces of the pairs of blades and urging the blades away from each other and thereby providing space between the blades to receive the handles of the carriers, said blades normally extending at an incline from the lower edges of the cross bars in position to be engaged and moved towards each other by bottles moving downwardly through the passages and into the bottle-receiving pockets.

15. 3. A grid for a bottle loading machine comprising a frame, cross bars dividing said frame into passages through which bottles are adapted to be passed downwardly into bottle-receiving pockets of bottle carriers disposed under the grid in position for filling, guides extending downwardly at opposite sides of the passages and of dimensions adapting their lower portions to enter the pockets of the carriers and assume positions adjacent opposite side walls of the sockets, 20 blades under certain of cross bars extending longitudinally thereof and arranged in pairs and pivoted to the said cross bars for swinging movement transversely of the said cross bars towards and away from each other, fingers extending 25 downwardly from said blades at an incline towards opposed ones of said guides, and springs urging the blades of each pair away from each other and yieldably holding the finger carried thereby in position to be engaged and forced towards each other together within the blades by 30 bottles passing downwardly through the passages and into the bottle-receiving pockets.

4. A grid for a bottle loading machine comprising a frame, cross bars dividing said frame into passages through which bottles are adapted to be passed downwardly into bottle-receiving pockets of bottle carriers disposed under the grid in position to be filled, resilient guides extending downwardly from certain of said cross bars, 40 blades under certain of said cross bars extending longitudinally thereof and arranged in pairs extending downwardly from opposite ends thereof and pivoted at their upper edges to lower edges of the said cross bars for transverse swinging movement towards and away from each other, and springs urging the blades of each pair away from each other and normally holding the blades 45 at an incline to the partitions to which they are pivoted mounted.

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