

Aug. 26, 1952

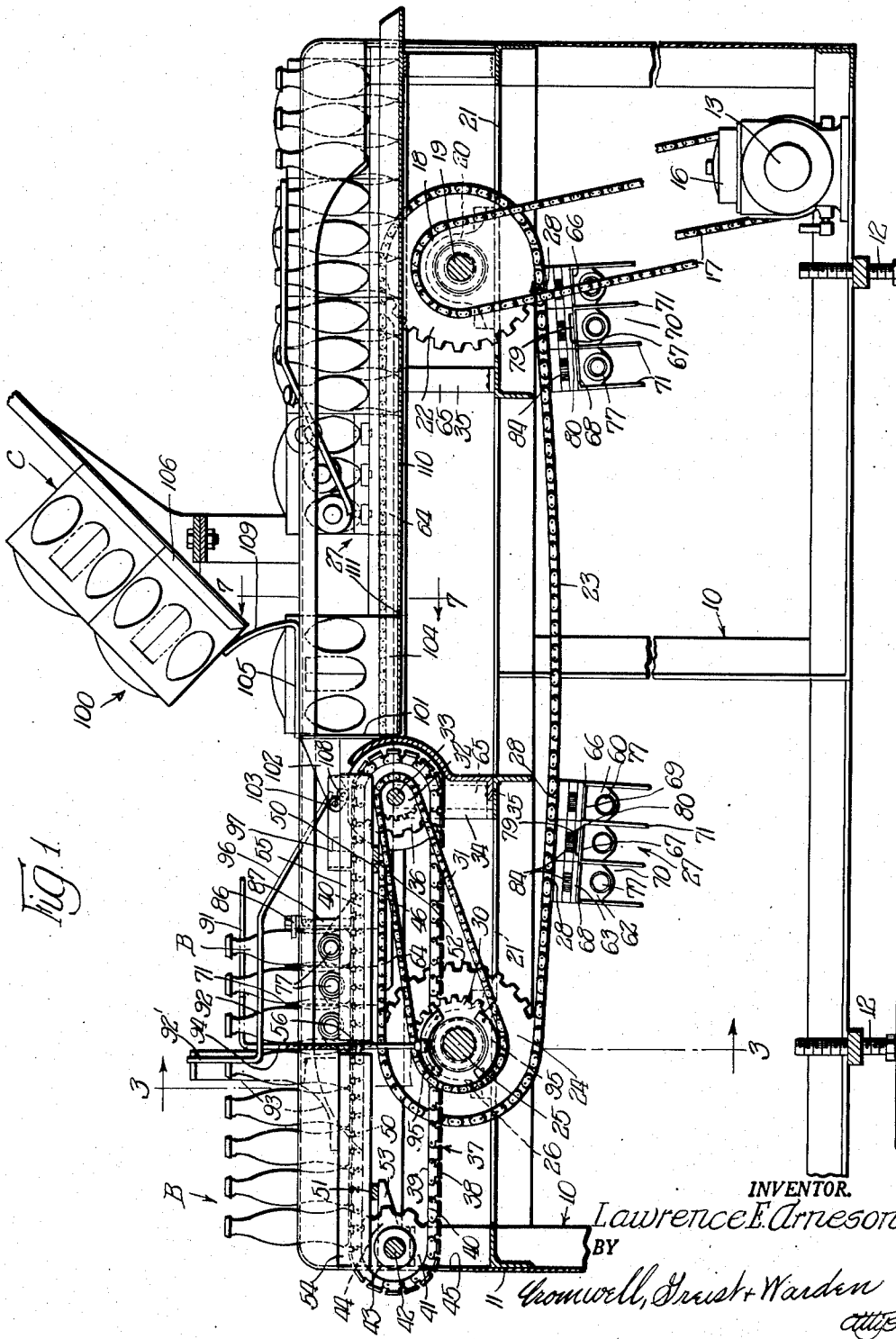
L. E. ARNESON

2,608,330

CARTON LOADING MACHINE

Filed Jan. 15, 1947

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Aug. 26, 1952

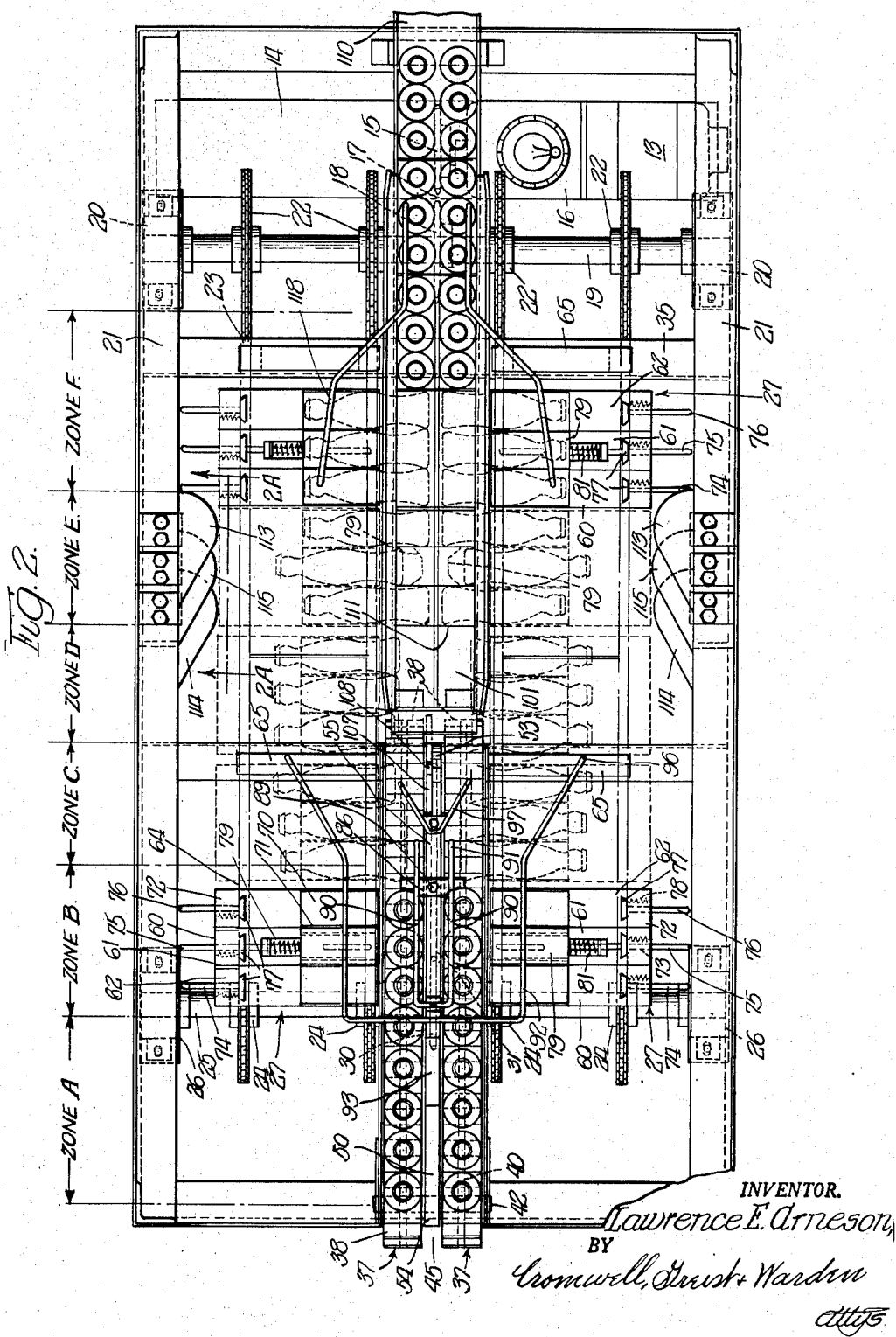
L. E. ARNESON

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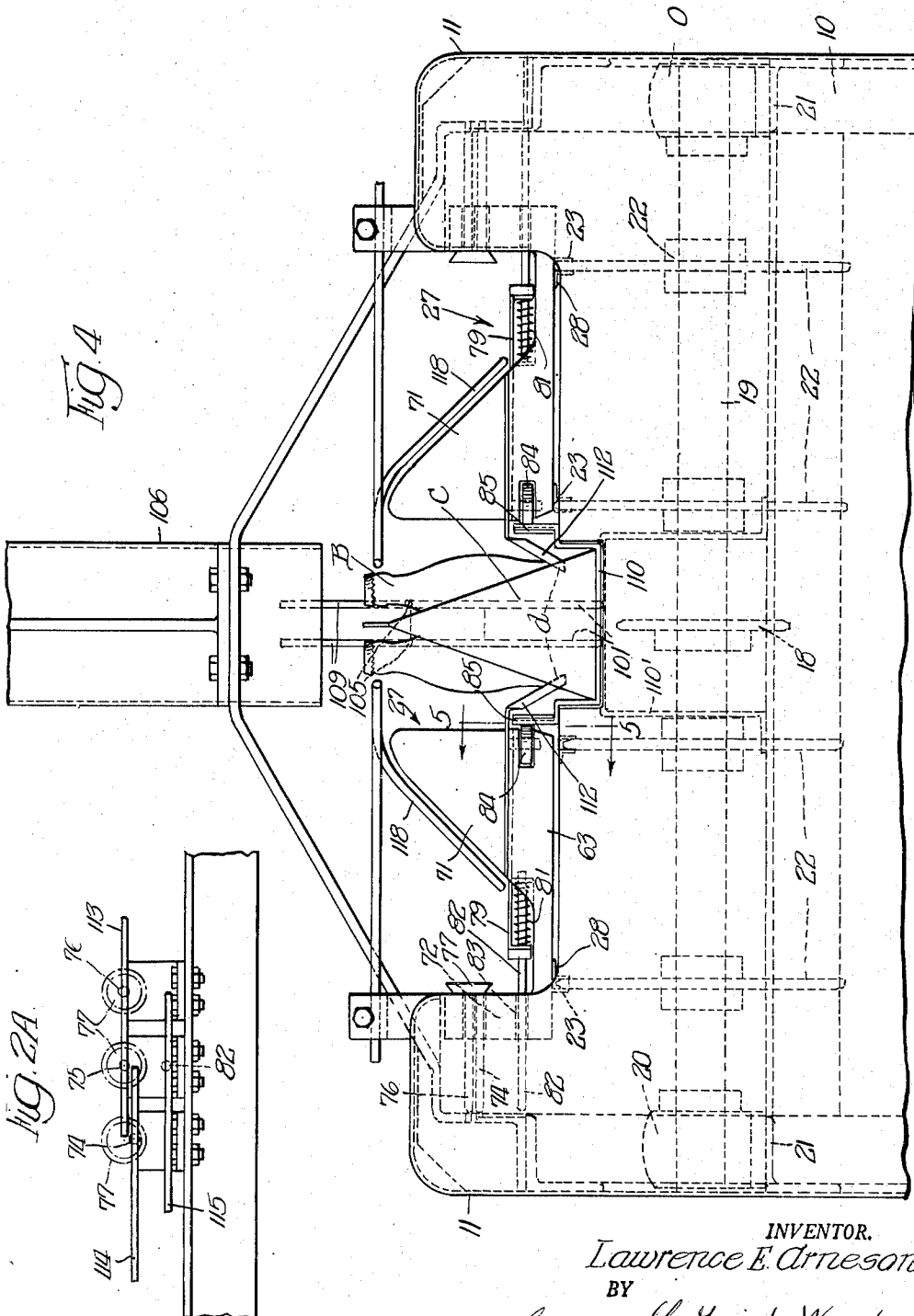
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L. E. ARNESON
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6 Sheets-Sheet 3



INVENTOR.
Lawrence E. Arneson,
BY
Cromwell, Priest & Warden
attys

Aug. 26, 1952

L. E. ARNESON

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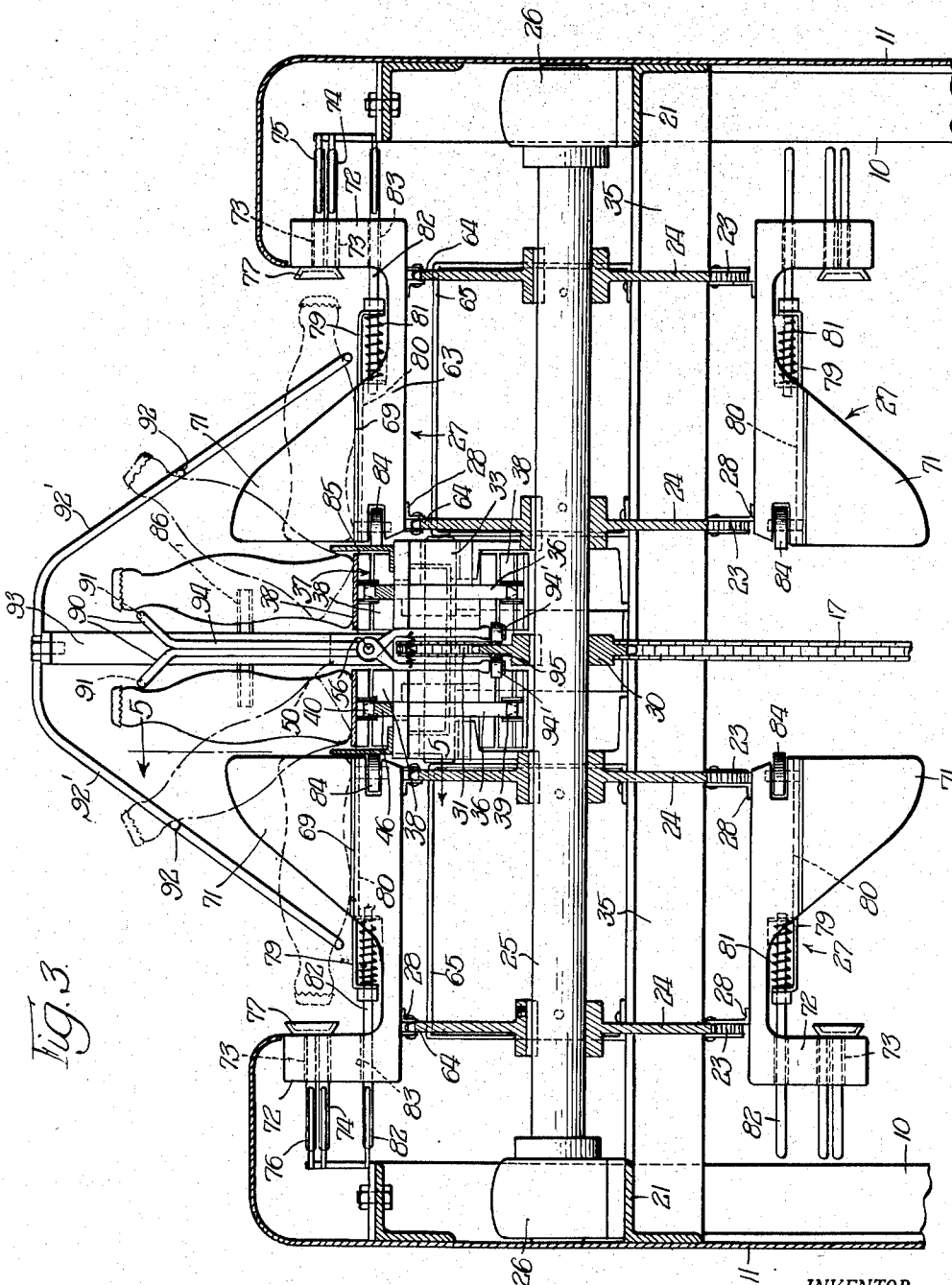


Fig. 3

INVENTOR.
Lawrence E. Arneson.
BY
Cromwell, Trist & Warden.
attys

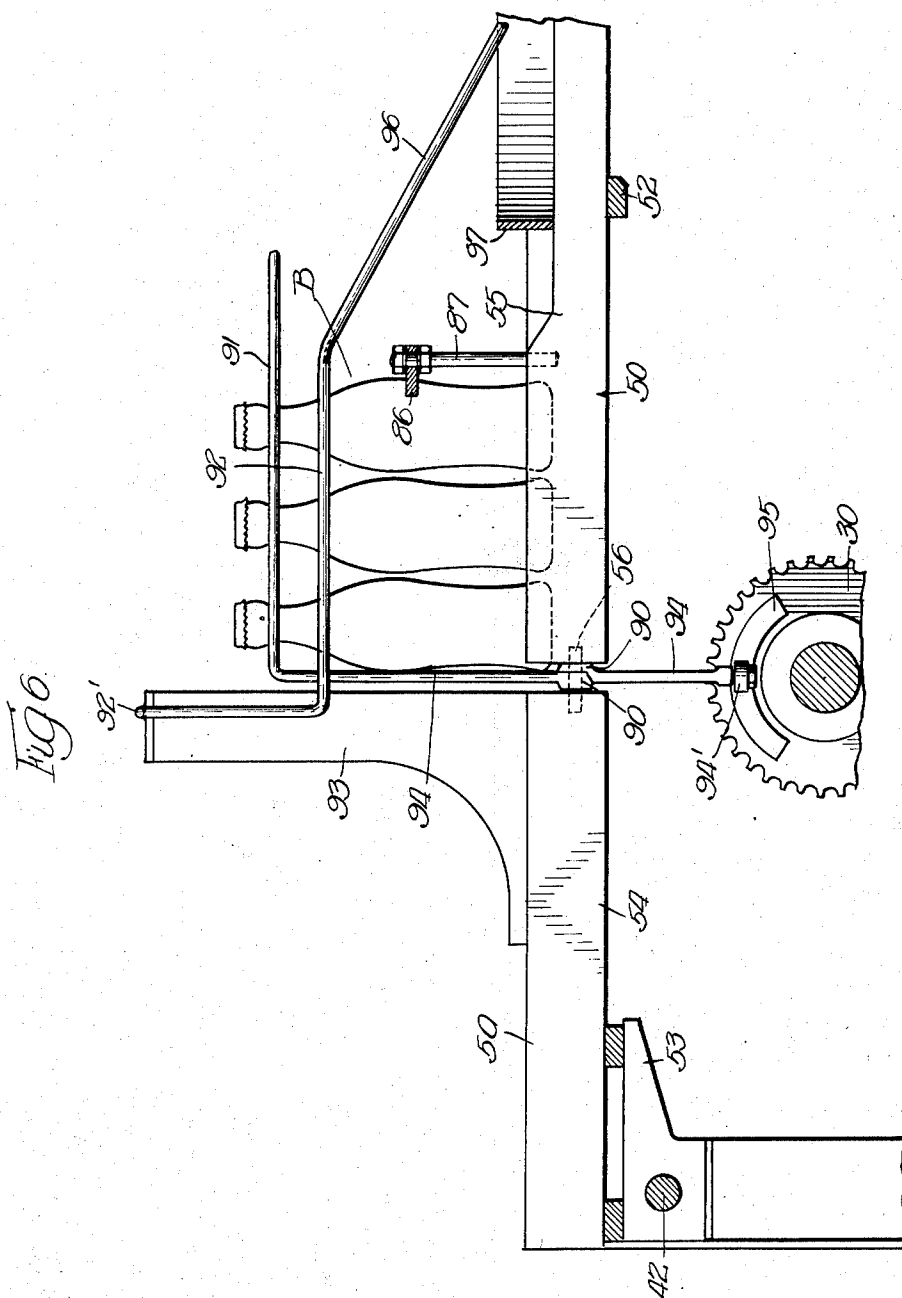
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L. E. ARNESON
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6 Sheets-Sheet 5



INVENTOR.
Lawrence E. Arneson,
BY
Cromwell, Greist & Warden
attys

Aug. 26, 1952

L. E. ARNESON
CARTON LOADING MACHINE

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Fig. 5

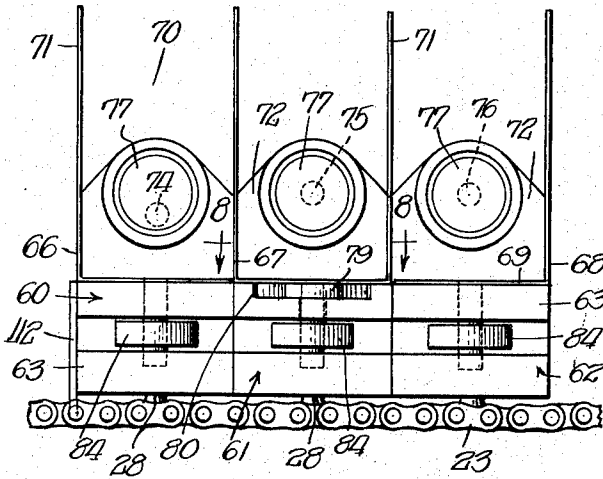


Fig. 8.

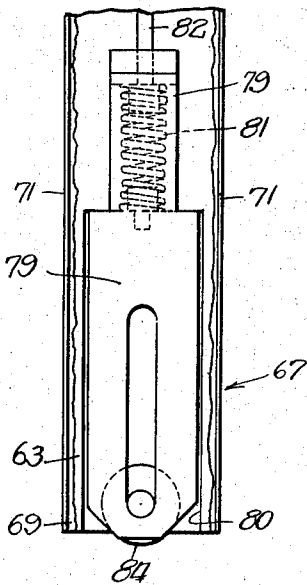
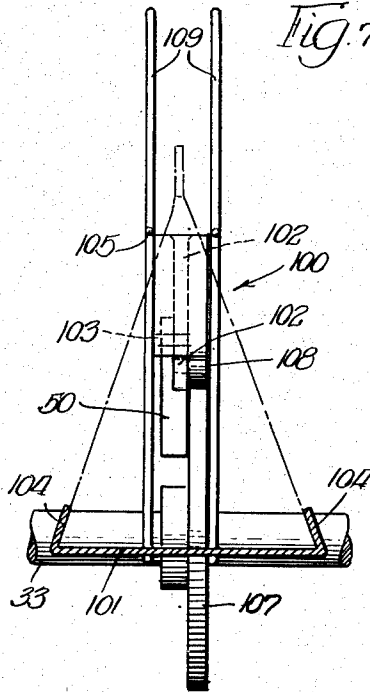


Fig. 7



INVENTOR.

Lawrence E. Arneson,

BY

Cromwell, Treist + Warden

attys

UNITED STATES PATENT OFFICE

2,608,330

CARTON LOADING MACHINE

Lawrence E. Arneson, Morris, Ill., assignor to
Morris Paper Mills, Chicago, Ill., a corporation
of Illinois

Application January 15, 1947, Serial No. 722,145

26 Claims. (Cl. 226-14)

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The present invention pertains particularly to an apparatus and method for loading a number of articles, for example, filled and capped beverage bottles, into a container, carton or like paper board carrier therefor; although it will be apparent from the description to follow that the principle of the invention is also more generally adapted to the charging of elongated articles of any nature into an enclosing cell-type box, crate or carton.

It is an object of the invention to provide a novel method and apparatus for automatically loading articles of the type described into a cellular container or carrier by a continuous, uninterrupted sequence of operations, which method and apparatus eliminate damaging impacts on the articles, as well as the resultant noise and clatter which characterize existing automatic container loading methods.

Another object is to provide a simple and inexpensive, continuously operative machine for charging groups of articles from a traveling series thereof into a container which is fed into the path of advance of the articles and is advanced therewith in a continuous and uninterrupted fashion during certain improved and simplified loading operations.

Yet another object is to provide a method and apparatus for loading elongated articles into a cell-type container therefor, wherein said articles travel longitudinally in parallel rows; are tipped laterally onto their sides while traveling, in such manner that their length is normal to the direction of advance; are then shifted endwise toward one another into the respective cells of the carrier, which is positioned between the rows and advances with the articles; and are finally restored to a vertical position in said cells, all without interrupting the continuous advance of the articles and carrier.

A still further object is to provide a container loading machine of the above type, including means for feeding articles to be loaded, preferably in parallel paths, and a novel device associated with said means to supply containers in predetermined relation to the path or paths of feed of the articles.

More specifically, it is an object to provide an apparatus including a number of continuously traveling partitioned carriages, each adapted to receive a selected number of articles during travel thereof, to transport said articles in the compartments thereof while the articles are automatically deflected to a horizontal article inserting position, to engage and forward an empty, erected, cellular carton or carrier, to initially in-

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sert the ends of the articles into the article-receiving cells of the carrier while forwarding the latter, and to subsequently restore the article to an upstanding position in said cells, without interruption of the continuous movement of the carriages.

The foregoing statements are indicative in a general way of the nature of the invention, but other and more specific objects will be apparent to those skilled in the art upon a full understanding of the construction and operation of the device.

A single embodiment of the invention is presented herein for purpose of exemplification, but it will be appreciated that the invention is susceptible of incorporation in other modified forms coming equally within the scope of the appended claims.

In the drawings,

Fig. 1 is a view in side elevation illustrating the container loading method of the invention, as well as a practical apparatus for performing the same, the articles being illustrated in solid lines in various positions occupied by the same during their continuous handling by the apparatus;

Fig. 2 is a top plan view of the apparatus, further illustrating the steps of the method performed thereby as well as more clearly showing certain details of the apparatus;

Fig. 2A is a fragmentary detail in side elevation viewed from line 2A-2A of Fig. 2;

Fig. 3 is a view in end elevation, viewed approximately on line 3-3 of Fig. 1, still further illustrating the apparatus and method, and in particular the article deflecting operation and means;

Fig. 4 is a view in end elevation, viewed from the right of Fig. 1;

Fig. 5 is a more detailed view of the article translating carriage, viewed from line 5-5 of Figs. 3 and 4;

Fig. 6 is a diagrammatic view of the arrangement of divider fence and article tilting means of the invention;

Fig. 7 is an end elevation, viewed from line 7-7 of Fig. 1, showing further details of a carton transfer device associated with the machine; and
Fig. 8 is a fragmentary view in section on line 8-8 of Fig. 5.

The present invention provides a novel and improved method for loading articles into containers therefor as a continuous and uninterrupted procedure. While the apparatus and method are specifically devised for the loading of beverage bottles into paper board containers

of the type illustrated and described in the patents to Edwin L. Arneson Nos. 2,345,567 and 2,345,568, of April 4, 1944, and while the method and apparatus will be described in terms of the loading of bottles into such or related types of bottle carriers, in the interest of simplicity, it will be evident to those skilled in the art that the invention is equally well adapted to loading of various sorts of elongated articles into a wide variety of cell-type boxes, crates or containers. In any adaptation, the invention eliminates destructive shock and impacts on the articles and resultant breakage, noise and clatter, drawbacks which characterize practically all present day loading procedures. Specifically, with reference to the field of bottle loading, the high speed of operation of the machine provides a high output capacity equalling or surpassing the output rate of conventional bottle filling and capping machines, thereby removing a serious restriction on the output of a carton loading department heretofore imposed by intermittently operative carton loading devices.

The apparatus of the present invention includes an angle iron framework, generally designated 10, preferably enclosed in a sheet metal casing 11 and provided with adjustable feet 12 to support the same in a level position on a floor surface. A conventional electric driving motor 13 is bolted on a lower cross bar or bars 14 of the frame 10, said motor driving a sprocket 15 on the shaft of a conventional speed reducer 16, to which the motor is connected. Sprocket 15 is connected by a driving chain 17 with a sprocket 18 secured to a main transverse drive shaft 19, which latter is rotatable in suitable bearings 20 carried on certain elevated, longitudinally extending side members 21 of the apparatus.

Shaft 19 has a plurality of like conveyor drive sprockets 22 secured thereto in spaced pairs on opposite sides of the longitudinal center-line of the apparatus, as illustrated in Fig. 2, such shaft and sprockets 22 being located adjacent the right-hand or discharge end of the apparatus, as viewed in Figs. 1 and 2. Said sprockets have four identical conveyor chains 23 trained therearound and driven thereby, and the chains drivingly engage the respective, longitudinally spaced sprockets 24 which are located adjacent but spaced inwardly from the opposite of charge-in side of the apparatus. Sprockets 24, like sprockets 22, are arranged in axially spaced pairs on opposite sides of the longitudinal center line of the apparatus, in alignment with the respective sprockets 22, and are secured to the transverse driven shaft 25, which is appropriately mounted in bearings 26 on the frame side members 21.

The chains 23 carry a plurality of sectional loading carriages, generally designated 27, of which there are four pair in the illustrated embodiment. These carriages are secured in equally spaced longitudinal relation to one another on the chains, by individual connector members 28 and are thus continuously translated orbitally by the chains when motor 13 is energized; the individual connections to the chains enabling passage of the several sections of each carriage around the opposed sets of sprockets 22, 24. Further specific structural details of the carriages 27 and their operative relationship to bottles and bottle carriers which are fed into the apparatus as the operation of the latter proceeds, as well as details of the instrumentalities which effect loading of the bottles from the carriages into the car-

riers, will be hereinafter described at greater length.

In addition to the conveyor sprockets 24 the driven shaft 25 has secured thereto a driving sprocket 30 of somewhat smaller size, which has a drive chain 31 trained therearound. Chain 31 serves to actuate a further sprocket 32 fixed on a transverse stub shaft 33, said stub shaft being journaled in bearing brackets 34 which are sustained by angle iron cross member 35 on the frame of the apparatus. The shaft 33 has a pair of laterally spaced conveyor drive sprockets 36 secured thereon, which are located immediately adjacent opposite sides of the longitudinal center line of the apparatus, and the chain-type, travelling plate or platform conveyors 37 pass over and are driven by the respective sprockets. Conveyors 37 each include a series of closely spaced plate like, article supporting elements 38 of rectangular outline, each of which is secured to a link 39 of the articulated sprocket driven chains 40, whereby on the horizontal flight of the conveyors 37 a practically continuous, article supporting surface is afforded. At their opposite end the conveyors 37 pass around the aligned sprockets 41. These rotate with a shaft 42 which is appropriately carried in bearing 43 supported by brackets 44 on an end cross member of the machine frame.

Referring to Fig. 1, it will be noted that conveyors 37 extend outwardly through an aperture 45 in the frame casing 11, so that it is possible to introduce into the present apparatus, as a substitute for the conveyors illustrated, the similar discharge conveyors of other equipment with which this machine is conjointly operated. Such provision contributes a substantial measure of flexibility or adaptability to the machine.

In order to support the conveyors 37 for a flat, horizontal travel through the operating agencies to be described I provide a pair of elongated tracks 46 located beneath the links of chains 40, along which said links slide throughout the upper conveyor flights. These tracks are appropriately supported on the machine frame. In addition the conveyors are laterally separated by a longitudinally extending, parallel fence and supporting bar 50, said bar being bolted on the spaced cross ties 51, 52 which are carried by extensions 53 of the bearing brackets 44, 34 respectively. Bar 50 is composite in character, including the longitudinally aligned portions 54, 55 connected to one another adjacent the midpoint of the bar by a pin 56 which serves as a pivot pin for certain parts hereinafter described.

It is the function of the conveyor 37 to transport bottles or like articles, generally designated B, in parallel rows into the present machine, for instance, upon issuance thereof from a filling and capping apparatus. It will be assumed that the present machine, on its charge-in side, is associated with appropriate means for disposing the bottles in the aforesaid parallel rows, as illustrated in Fig. 2.

The advancing rows of bottles B are received by the conveyors 37 at the initial, charge-in zone thereof, denoted zone A in Fig. 2, on either side of the longitudinally extending fence and supporting bar 50, and are transported in upright position through zone A and into succeeding zone B, until the forward six bottles reach a position between and in lateral alignment with a pair of the carriages 27, which are being advanced by chains 23 in synchronized relation to the conveyors 37.

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The carriages are each constituted by three units or sections, denoted 60, 61 and 62. Each section includes a base 63 which is secured individually to the pairs of chains 23 driving the carriage of which it is a part, and the arrangement is such that the carriage sections pass freely around the peripheries of sprockets 22 and 24 at the end of the chain reaches but still lie in close, side-by-side relation intermediate said sprockets, thereby to define a unitary, though tri-partite, carriage structure. In order to maintain the carriage bases 63 in uniform, side-by-side adjacency the conveyor chains 23 are caused to slide along the elongated parallel tracks 64 (just as in the case of the conveyor chains 40), said tracks being vertically sustained at one end by the inverted U-shaped, strap-like brackets 65 bolted on the angle iron cross member 35, and by similar provisions at the opposite end. (See Fig. 1.)

The upper surface of the bases 63 of the carriage sections 60, 61 and 62 is partitioned off by surface and separator plates 66, 67 and 68 respectively, the plates 66 and 68 being L-shaped in outline and the central plate 67 of U-shaped configuration. Accordingly, each of the bases is provided with a top, article supporting surface 69 and the three sections are separated into compartments 70 approximating the width of a bottle by the upstanding partition fins 71 which, at least when the carriage is traversing its upper horizontal reach, are disposed in parallel, equally spaced relation.

The fins 71 extend laterally only a portion of the width of the carriage and outwardly thereof each of the carriage sections is provided with an upstanding outer shoulder 72 which has a transverse bore 73 at its midpoint for the slidable reception of a plunger pin. The pins associated with carriage sections 60, 61 and 62 are respectively designated 74, 75 and 76, to distinguish the same, and each is provided with an enlarged article engaging plunger head 77 on the inner side of shoulder 72 which is normally retracted resiliently outwardly and held in engagement with said shoulder, as by a coil tension spring 78. Referring to Fig. 2A it will be noted that the plunger pins 75 and 76 are located at the same vertical level, while the third pin 74, corresponding to the trailing section 60 of the carriage is at a slightly lower level. However all of the plunger heads 77 are arranged at the same level, those on sections 61 and 62 being concentric with their pins and the head on pin 74 being offset slightly from coaxial relation.

The central carriage section 61, in addition to the plunger pin 75, also slidably receives a reciprocable blade 79, being provided for this purpose with a horizontal, laterally extending recess 80 immediately beneath its article supporting surface 69. The base of the section 61 is vertically cut away behind its compartment 70 to accommodate a coil compression spring 81 which acts against the downwardly flanged outer extremity of blade 79 to normally urge the latter outwardly; and said extremity is connected to a thrust pin 82 which is slidably received in a transverse bore 83 in the shoulder 72 of carriage section 61. Referring to Fig. 3, it will be noted that bore 83 is at a substantially lower level than the plunger pin bores 73.

It is the function of blade 79 to initially engage a carton or carrier of the type exemplified by the aforesaid Arneson patents, at the middle cell thereof, and to sever and inwardly swing certain

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transverse partition elements of the carton by rupturing the slight paper nibs by which said elements are connected to the side wall of the carton or carrier. In the event a different type carrier or container is being loaded it may be that blade 79 and its associated elements may be eliminated.

The function of the plunger pins 74, 75, 76 and heads 77 is to thrust the bottles B into respective, laterally aligned cells of the carrier C at an appropriate phase in the cycle of operation of the machine, as will be described in detail.

Carriages 27 are completed by a guide and bearing roller 84 journaled on a vertical pivot adjacent the inner side of each of the component carriage sections 60, 61 and 62, the periphery of said rollers inwardly overhanging slots in the respective sections. These rollers have engagement with certain vertically disposed, parallel, longitudinal guide tracks or surfaces 85 during the hereinafter described operation of the above described plunger devices.

When the leading six bottles have been transported by conveyors 37 into lateral alignment with the six respective compartments 70 of the carriages 27 on each side thereof, the forward pair thereof momentarily engage a fixed, cushioned transverse bumper 86 supported by a vertical stem or bolt 87 on the portion 55 of fence bar 50, thereby insuring that the group of bottles is in closely spaced relation in zone B prior to being deflected laterally toward horizontal position by the instrumentalities now to be described.

With the leading six bottles aligned in zone B with the carriage compartments 70, in the manner illustrated in Fig. 2, a pair of oppositely oscillating, L-shaped rod arms 90 now come into operation, the parallel, horizontally extending portions 91 thereof engaging and deflecting the respective sets of three bottles laterally in opposite directions until the bottle necks rest against the fixed parallel guiding rods 92. Said rods are integral with a transverse yoke 92' welded on a central, vertically extending bracket 93 that is secured on fence portion 54, as illustrated in Fig. 6. The upright portions 94 of arms 90 are pivoted on the intermediate, fence-connecting pin 56 at points adjacent but spaced above their lower ends. On the lower side of the pivot said arm portions 94 are provided with anti-friction cam follower rollers 94' which are spring urged toward and make engagement with face cam 95 affixed to the sides of drive sprocket 30, in such manner as to cause the arms 90 to swing oppositely and tilt the bottles outwardly against the guide rods 92 in planes extending vertically of the respective carriage compartments 70.

As stated, the bottles will be tilted against the horizontal guide rods 92 practically simultaneously with the contact of the foremost thereof with bumper 86. Referring to Fig. 3, it will be noted that when they are resting against the guide rods the bodies of the bottles are positioned laterally outwardly of the bumper 86; so that the latter no longer can interfere with their advance, and are also positioned vertically sufficiently within the partition fins 71 of the carriages 27 to be advanced into the succeeding zone C in part by the carriages 27, as well as by the conveyors 37, the butts or bottoms of the bottles resting on said conveyors and the body portions thereof being engageable by the carriage partition fins 71.

Upon being advanced through zone C, the bodies of the bottles slide along the terminal por-

tions 96 of guide rods 92, which are downwardly and laterally outwardly inclined, so that the bottle necks are gradually lowered to dispose the bottles horizontally in carriage compartments 70. In sliding forwardly and downwardly on guide rod extensions 96 the bases of the bottles come into engagement with the fixed angular plow 97 positioned on the fence bar 59 centrally of the path of advance of the rows of bottles, whereby the bottles are shoved outward to a uniform lateral position concurrently with their forward and lowering movement on the carriages. As stated, the guide rod extremities 96 diverge outwardly as well as incline downwardly so that the bottles are positively supported at all times during action thereon by the plow and rods. As a result, the bottles are deposited horizontally and uniformly aligned longitudinally in the compartments 70 of the respective carriages 27 as they pass into and through the next Zone D of the machine, wherein carriers or cartons C are delivered to the same for subsequent reception of the bottles.

A previously set-up paper board carton or carrier of the type shown and described in the above identified patents to Arneson is now delivered to the apparatus in the path of and between the concurrently advancing pair of carriages 27 by means of the carton supply mechanism of the present machine, which I have generally designated by the reference numeral 100.

This may be any suitable instrumentality for insuring the successive supply of erected bottle carriers in proper position between the advancing carriages 27, to be engaged thereby and advanced concurrently therewith. A structure adequate for the intended purpose is shown in Figs. 1, 2, 4 and 7.

The illustrated mechanism 100 includes a pivotal transfer member 101 provided with a rearwardly directed pivot arm 102 by which the member is oscillatably mounted for vertical swinging movement on a pivot 103 supported by bar 59. Member 101 has a pair of laterally spaced flanges 104 of angle iron construction adapted to receive opposite side corners of the base of a carton C slid thereonto and a pair of more closely spaced rods 105 adapted to pass on either side of the apex of the Arneson type carton referred to above, when said member 101 is elevated from the solid line position of Fig. 1, into carton receiving position. In the last named position the flanges 104 align with opposite sides of the inclined carton delivery chute 106 from which setup cartons C are supplied to said member 101 by gravity. In the position illustrated in Fig. 1, the cartons are sustained in chute 106 by integral extensions of rods 105, as will be described. Chute 106 is appropriately supported on the frame of the present machine. Upon receiving a carton or carrier from the chute the transfer member 101 is actuated to lower the same into and between the path of advance of carriages 27.

The transfer member is made up of rod and sheet metal elements welded together at the contact points thereof to provide a cradle-like construction, as illustrated in Figs. 1 and 7.

The means for actuating transfer member 101 (see Fig. 7) consists of a cam 107 secured to the sprocket stub shaft 33 and engageable with a roller cam follower 108 located on the pivot arm 102 of the transfer member 101 immediately adjacent the pivot 103 for said arm. Cam 107 is properly shaped whereby member 101 is periodically oscillated in timed relation to the move-

ment of carriages 27 and bottles B to receive a carton C from chute 106 and then to return downwardly and deposit the same in front of the advancing carriages. An integral upturned finger extension 109 on one or both of the rods 105 wipes against the next succeeding carton in the chute and serves as a stop preventing undesired gravity-discharge thereof when transfer member 101 is being raised and returned and is in lowered position.

The base of the transfer mechanism 101 is aligned horizontally with a longitudinally extending central slideway 110 supported by inverted U-shaped standards 110' on the machine frame, along which slideway cartons delivered by said member are shifted by carriages 27, said slideway being cut away at 111 to receive said member. For this purpose inwardly directed lugs or fingers 112 are provided on the rear of each carriage 27 to engage the rear side of the carton C and translate the same onto and over the slideway 110, said fingers being positioned so that the article receiving apertures of the carton or carrier are in lateral alignment, as the carrier is translated, with the respective cells of the carrier. As illustrated in Fig. 1, the slideway is so located vertically that the lower margin of the side apertures of said bottle carrier or carton C are approximately aligned with, but no higher than, the lower side of the reclining bottles B in the carriage compartments 7.

With the carton engaged and advanced by the spaced pair of carriages 27 and the bottles uniformly disposed in the compartments of the carriages, the latter then pass from zone D into zone E, in which the bottles are shifted laterally inwardly into the cell apertures of the bottle carrier. This operation is effected by the plunger devices 74, 75, 76 and the blade 79, and in order to sustain and stabilize the carriages 27 during operation of said devices and blade the three guide rollers 84 of each carriage laterally engage and travel on the elongated, parallel, fixed tracks 95 referred to above, which are located at either side of slideway 110.

Plunger heads 77 are shaped to receive the outwardly directed bottle ends and shift the same laterally inwardly at an appropriate point in the travel of the carriage in zone E, the plungers being depressed by means of the fixed cams 113 and 114 on the machine frame sides, against which the plunger pins 74, 75, 76 engage. (See Figs. 2 and 2A.) However, inasmuch as the Arneson type carrier referred to normally has the middle openings on each side wall thereof temporarily closed by inwardly swingable transverse partition and cell defining members, which are normally attached to the side wall of the carrier by small connecting nibs or tabs, it is necessary that these medial partition members be separated from the carton side wall and swung inwardly before the center bottle can be inserted by its coacting plunger. This operation is performed by the reciprocable blade 79, the thrust pin 82 of which is actuable by the fixed cam 115 on the machine frame, the timing being such that the blade engages said partitions and severs the same from the carton side wall immediately prior to beginning the lateral shifting of the central bottle on the carriage.

As will be noted in Fig. 2A, the cam 113 is located at the same vertical level as the plunger pins 75, 76 carried respectively by sections 61, 62 of the travelling carriages 27; the plunger pin 74 of the section 60 is at the vertical level of

cam 114; which blade thrust pin 82 is aligned with cam 115. Likewise the cams are located in the longitudinal sense so that cams 113 and 114 will be simultaneously engaged by pins 76, 74 respectively thereby laterally introducing the bottles from the compartments of end carriage sections 62 and 68 into the carrier apertures as the first operation in zone E. Thrust pin 82 next engages and rides on cam 115 to urge blade 79 inwards and break the carton transverse partitions from its side walls; and subsequently the medial plunger pin 75 rides up on cam 113 to shift the bottle from the compartment 70 of center carriage section 61 into the thus opened cell of the carton. Following inward movement, each of the pins 74, 75, 76 and 82 is retracted by its associated spring.

When the three bottles have been fully inserted in the lateral direction into the apertures of the carrier side walls, it is only necessary that they be restored to vertical position in the carton apertures, which operation is performed in zone F by means of the forwardly, upwardly and inwardly inclined restoring arms 118 of rod-like character, which are fixedly secured on the machine frame in any desired fashion. These engage beneath the necks of the forward pair of bottles in the carriages 27 to swing inwardly and elevate the same coincident with its forward movement, and they engage similarly and successively beneath the necks of the two other bottles on each carriage. Thus the bottles are tipped inwardly in vertical planes from opposite sides of the carrier or carton and, after being tilted to bring their respective centers of gravity sufficiently within the carrier side walls, drop vertically into upright position within the respective cells of the carrier. Accordingly, after the carriages have passed zone F, the carton is completely filled and ready for removal from the machine. This is accomplished by the discharging of the filled carrier from slideway 110 onto a suitable discharge table as the carriages 27 reach the end of their forward travel and pass downwardly about the periphery of the driving sprockets 22. The filled carriers may be removed manually, by laterally operating conveyor means or by any other instrumentality which is desired.

From the foregoing it will be appreciated that the present method and apparatus of loading containers eliminate article breakage by handling the articles in a gradual and progressive, yet continuously operative and relatively rapid, procedure, to the end that abrupt shocks which result in much breakage are greatly reduced. The slight outward tilting arc of movement of the bottles as they are actuated by deflecting arms 90 to a position of rest against the guide rods 92 is insufficient under any circumstances to result in fracture or breakage, and this abrupt movement is only necessitated by the need to accomplish a quick initial introduction of the bottles in the carriage cells 70. Thereafter, the operations of lowering, longitudinally aligning, laterally inserting and restoring to vertical position are all performed by progressively operative plow-type mechanisms, save for the plunger elements, which also impart no destructive shock whatsoever to the articles. All of these devices are unfailingly operative in their desired functions. The machine is exceedingly compact and simple in construction and occupies but a fraction of the floor space required by conventional means employed for a similar purpose.

I believe it is novel with me to devise a con-

tinuous method and apparatus whereby groups of vertically arranged elongated articles are first lowered and disposed horizontally in a longitudinally aligned relation, then shifted laterally inwardly in groups, in the direction of their lengths, for initial carton insertion, and are finally restored to desired position in the carton by vertically upward swinging thereof. The carton delivery provisions are also generally novel in nature, particularly in their embodiment with a carton loading machine of the above type. Therefore, I desire that the invention be construed no more narrowly than is reasonably indicated by the appended claims.

I claim:

1. A method of loading containers with elongated articles comprising the steps of longitudinally advancing an upright article, deflecting the article laterally toward a horizontally disposed position while continuing to advance the same in the same general direction, advancing a container adjacent one side of the article, causing relative lateral shift of the deflected article and the container to introduce the article into the latter from a side thereof, and moving said article relative to said container to position the same in upright position in the container.

2. A method of loading cell-type containers with elongated articles, comprising the steps of serially advancing upright articles in longitudinally aligned relation, deflecting a group of said articles laterally toward a horizontally disposed position, disposing a container adjacent said group on one side thereof, shifting the deflected articles of the group toward the container to introduce corresponding ends of the same into certain of the container cells, and vertically tilting the articles of said group relative to said container to position the same in upright position in said cells.

3. A method of loading cell-type containers with elongated articles, comprising the steps of serially advancing upright articles in longitudinally aligned relation, deflecting a group of said articles laterally toward a horizontally disposed position, advancing a container adjacent and parallel with said group on one side thereof, shifting the deflected articles of the group toward the container to introduce corresponding ends of the same into certain of the container cells, and vertically tilting the articles of said group relative to said container to position the same in upright position in said cells.

4. A method of loading cell-type containers with elongated articles, comprising the steps of serially advanced upright articles in longitudinally aligned relation, deflecting a group of said articles laterally toward a horizontally disposed position while continuing to advance the same in the same general direction, advancing a container adjacent and generally parallel to said group on one side thereof, shifting the deflected articles of the group toward the container to introduce the same into certain of the container cells, while advancing the container and group, and restoring the articles of said group to upright position in said cells.

5. A method of loading cell-type containers with elongated articles, comprising the steps of continuously advancing upright articles serially in longitudinally aligned relation, deflecting a group of said articles laterally of the direction of advance toward a horizontally disposed position while continuing to advance the articles in the same general direction, continuously advancing

ing a container concurrently with and generally parallel to said group on one side thereof, shifting the group toward the container to introduce the same into certain of the container cells while continuing to advance the container and group, and restoring said group to upright position in said cells.

6. A method of depositing elongated articles in a cell-type container, comprising concurrently advancing in a longitudinal path a group of the articles disposed in non-upright position and a container disposed on one side thereof, laterally shifting the ends of said non-upright articles toward the container in a horizontal sidewise direction substantially normal to the direction of advance of the articles and container, thereby to bring said articles into register with and partially in certain of the container cells, and elevating the opposite ends of said articles whereby to gravitationally deposit the same in upright position in said cells.

7. A method of depositing elongated articles in a cell-type container, comprising continuously and concurrently advancing in a longitudinal path a group of the articles disposed in non-upright position and a container disposed on one side thereof, laterally shifting the ends of said non-upright articles toward the container in a horizontal sidewise direction substantially normal to the direction of advance of the articles and container, thereby to bring said articles into register with and partially in certain of the container cells, and elevating the opposite ends of said articles whereby to gravitationally deposit the same in upright position in said cells, all without interrupting the longitudinal travel of the articles and container.

8. A method of depositing elongated articles in a cell-type container, comprising concurrently advancing in a longitudinal path a group of the articles disposed in horizontal position and a container disposed on one side thereof, shifting said articles laterally away from the container to align the same longitudinally, returning said articles toward the container in a horizontal sidewise direction substantially normal to the direction of advance of the articles and container, thereby to bring said articles into register with and partially in certain of the container cells, and causing said articles to assume vertical position in said cells.

9. A method of depositing elongated articles in a cell-type container, comprising continuously and concurrently advancing in a longitudinal path a group of the articles disposed in horizontal position and a container disposed on one side thereof, shifting said articles laterally away from the container to align the same longitudinally, returning said articles toward the container in a horizontal sidewise direction substantially normal to the direction of advance of the articles and container, thereby to bring said articles into register with and partially in certain of the container cells, and causing said articles to assume vertical position in said cells, all without interrupting the longitudinal travel of the articles and container.

10. A method of depositing elongated articles in a cell-type container, comprising longitudinally advancing a group of upright articles and deflecting the same toward horizontal position while so advancing, depositing a container on one side of the group, shifting said deflected articles laterally toward the container into register with and partially in certain of the cells thereof, and thereafter moving said articles rel-

ative to said container to restore the same to upright position in said cells.

11. Container filling apparatus comprising a longitudinally translatable carriage, means to translate the carriage, means for feeding a row of upstanding articles parallel to the direction of translation of said carriage, means to deflect said articles from upstanding position toward horizontal position on the carriage for advance therewith, means for advancing a cell-type container on one side of and parallel to the direction of translation of said carriage, means operative in timed relation to the advance of said carriage, and after said articles are in horizontal position thereon, to shift the articles laterally and horizontally from said carriage toward the container as the latter advances and into predetermined relation to certain of the cells thereof.

12. Container filling apparatus comprising a longitudinally translatable carriage having means defining a plurality of article receiving compartments, means to translate the carriage, means for feeding a row of upstanding articles parallel to the direction of translation of said carriage, means to deflect said articles from upstanding position toward horizontal position in said compartments for advance therewith, means for advancing a cell-type container concurrently with and on one side of said carriage, and means operative in timed relation to the advance of said carriage and container to shift the articles laterally from said carriage compartments toward the container into predetermined relation to certain of the cells thereof.

13. Container filling apparatus comprising a carriage having a plurality of article receiving compartments, means to continuously translate said carriage longitudinally, means for feeding a row of upstanding elongated articles parallel to the direction of translation of said carriage, means to deflect said articles from upstanding position and into said compartments for advance with the carriage, means on said carriage to engage and advance a cellular container concurrently with and on one side of said carriage, means to shift the deflected articles toward the container into predetermined relation to the interior thereof, and means for thereafter restoring the articles to upstanding position in said interior.

14. Container filling apparatus comprising a carriage having a plurality of article receiving compartments, means to continuously translate said carriage longitudinally, means for feeding a row of upstanding elongated articles parallel to the direction of translation of said carriage, means to deflect said articles from upstanding position and into said compartments for advance with the carriage, means on said carriage to engage and advance a container concurrently with and on one side of said carriage, means operative in timed relation to the advance of said carriage and container to shift the deflected articles toward the container into predetermined relation to the interior thereof, and means for thereafter restoring the articles to upstanding position in said interior.

15. Container filling apparatus comprising a carriage having a plurality of article receiving compartments, means to continuously translate said carriage longitudinally, means for feeding a row of upstanding elongated articles parallel to the direction of translation of said carriage, means to deflect said articles from upstanding position and into said compartments for advance

with the carriage, means on said carriage to engage and advance a container concurrently with and on one side of said carriage, means operative in timed relation to the advance of said carriage and container to shift the deflected articles toward the container into predetermined relation to the interior thereof, and means for thereafter restoring the articles to upstanding position in said interior, comprising fixed elements engageable with the advancing articles to tilt the same to upright position.

16. A container filling apparatus of the type described, comprising a conveyor adapted to receive and transport a plurality of upright articles in a longitudinal path, means to deflect said articles into laterally extending position on said conveyor, means to advance a container adjacent and parallel to the path of travel of said conveyor, and means to shift the articles laterally from said conveyor into the container and to restore said articles to upright position in the container, said last named means acting during advance of said container and articles.

17. A container filling apparatus of the type described, comprising a continuously operative conveyor adapted to receive and advance a plurality of upright articles in a longitudinal path, means to deflect said advancing articles into laterally extending position on said conveyor, means to advance a container adjacent and parallel to the path of travel of said conveyor, and means including fixed, shaped, article-engaging means to shift the advancing articles laterally from said conveyor into the container and to restore said articles to upright position in the container, said last named means acting during advance of said container and articles.

18. A container filling apparatus of the type described, comprising a conveyor adapted to receive and transport a plurality of upright articles in a longitudinal path, means to deflect said articles into laterally extending position on said conveyor, means to supply and position a container adjacent the path of travel of said conveyor, comprising an overhead supply chute and a vertically oscillable transfer arm operable in timed relation to said conveyor to receive containers from the chute and deposit the same adjacent said path, means to advance a container parallel to said path, and means to shift the articles laterally from said conveyor into the container and to restore said articles to upright position in the containers, said last named means acting during advance of said container and articles.

19. Container filling apparatus comprising a conveyor adapted to receive and transport a plurality of articles, means to laterally tilt and deposit upright articles in horizontally extending position on said conveyor, means to position a container adjacent the path of travel of said articles, means to advance a container parallel to said path, and successively acting means to shift the articles in said horizontally extending position laterally from said conveyor toward and into the container and to restore said articles to upright position in the container, said last named means acting during advance of said container and articles.

20. Container filling apparatus comprising a conveyor adapted to receive and transport a plurality of articles, means to dispose a plurality of upright articles laterally adjacent said first named means, means to laterally tilt and deposit the upright articles in horizontally extending position on said conveyor, means to position a

container adjacent the path of travel of said articles, means to advance a container parallel to said path, and successively acting means to shift the articles in said horizontally extending position laterally from said conveyor toward and into the container and to restore said articles to upright position in the container, said last named means acting during advance of said container and articles.

21. Container filling apparatus of the type described, comprising a continuously operative conveyor having pairs of carriages thereon divided in compartments adapted to receive and transport groups of articles, means to drive said conveyor, means to advance upstanding articles in parallel rows to position laterally adjacent the respective carriage pairs, means engageable with the advancing articles in said respective rows to tip the same laterally in opposite directions and deposit the articles in horizontal position in said respective carriage compartments, a swingable container transfer member positioned adjacent the path of travel of said carriages and driven in timed relation to the latter to transfer containers from a supply thereof to a position between the advancing carriages, said carriages having means engageable with the transferred containers to advance the latter concurrently therewith, means to shift groups of articles laterally from said carriages toward the container advancing therewith, and means acting subsequently to said last named means to restore said articles to upstanding position in the container.

22. A method of loading containers of the type characterized by a plurality of article-receiving cells defined at least in part by side walls on opposite sides thereof, comprising disposing articles to be loaded in linear succession and in parallel rows, positioning a container between said rows with the cells thereof in respective register with said certain articles, shifting said articles of said respective rows laterally toward one another and said side walls to bring the same in vertical alignment with said cells and at least partly within the lateral limit of said respective walls, and causing said shifted articles to drop by gravity into the vertically aligned cells.

23. A method of loading containers of the type characterized by a plurality of article-receiving cells defined at least in part by side walls on opposite sides thereof, comprising advancing articles to be loaded in linear succession and in parallel rows, positioning a container between said rows with the cells thereof in respective register with said certain articles, advancing said container with said articles, shifting said articles of said respective rows laterally toward one another and said side walls during advance of the container and articles to bring the same in vertical alignment with said cells and at least partly within the lateral limit of said respective walls, and causing said shifted articles to drop by gravity into the vertically aligned cells while so advancing.

24. A method of loading bottle carriers of the type characterized by a side wall which is apertured above its lower margin to receive and confine bottles resting in upright position on the carrier bottom, comprising linearly advancing bottles in succession in a non-vertical position, advancing one of said carriers concurrently with and generally parallel to said bottles on one side thereof while maintaining lateral alignment of the carrier wall apertures with certain of said bottles, causing relative lateral shift of said car-

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rier and said certain bottles while advancing to at least partially insert the ends of said certain bottles in said wall apertures, and tilting the opposite ends of said certain bottles toward vertical position to cause gravitational entry of the bottles into the carrier in upright position therein.

25. Apparatus for loading bottle carriers of the type characterized by a side wall which is apertured above its lower margin to receive and confine bottles resting in upright position on the carrier bottom, comprising means for linearly advancing bottles in succession and in a non-vertical disposition of said bottles, means for advancing one of said carriers parallel to and on one side of said bottles, means for causing relative lateral shift of said carrier and certain of said bottles while advancing to at least partially insert the ends of said certain bottles in said wall apertures, and means for tilting the opposite ends of said certain bottles toward vertical position to cause gravitational entry of the bottles into the carrier in upright position therein.

26. Apparatus for loading bottle carriers of the type characterized by a side wall which is apertured above its lower margin to receive and con-

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fine bottles resting in upright position on the carrier bottom, comprising means for advancing bottles in succession in a vertical disposition, means for disposing said advancing bottles in a non-vertical position, means for advancing one of said carriers parallel to and on one side of said articles, means for causing relative lateral shift of said carrier and certain of said bottles while advancing to at least partially insert the ends of said certain bottles in said wall apertures, and means for tilting the opposite ends of said certain bottles toward vertical position to cause gravitational entry of the bottles into the carrier in upright position therein.

LAWRENCE E. ARNESON.

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