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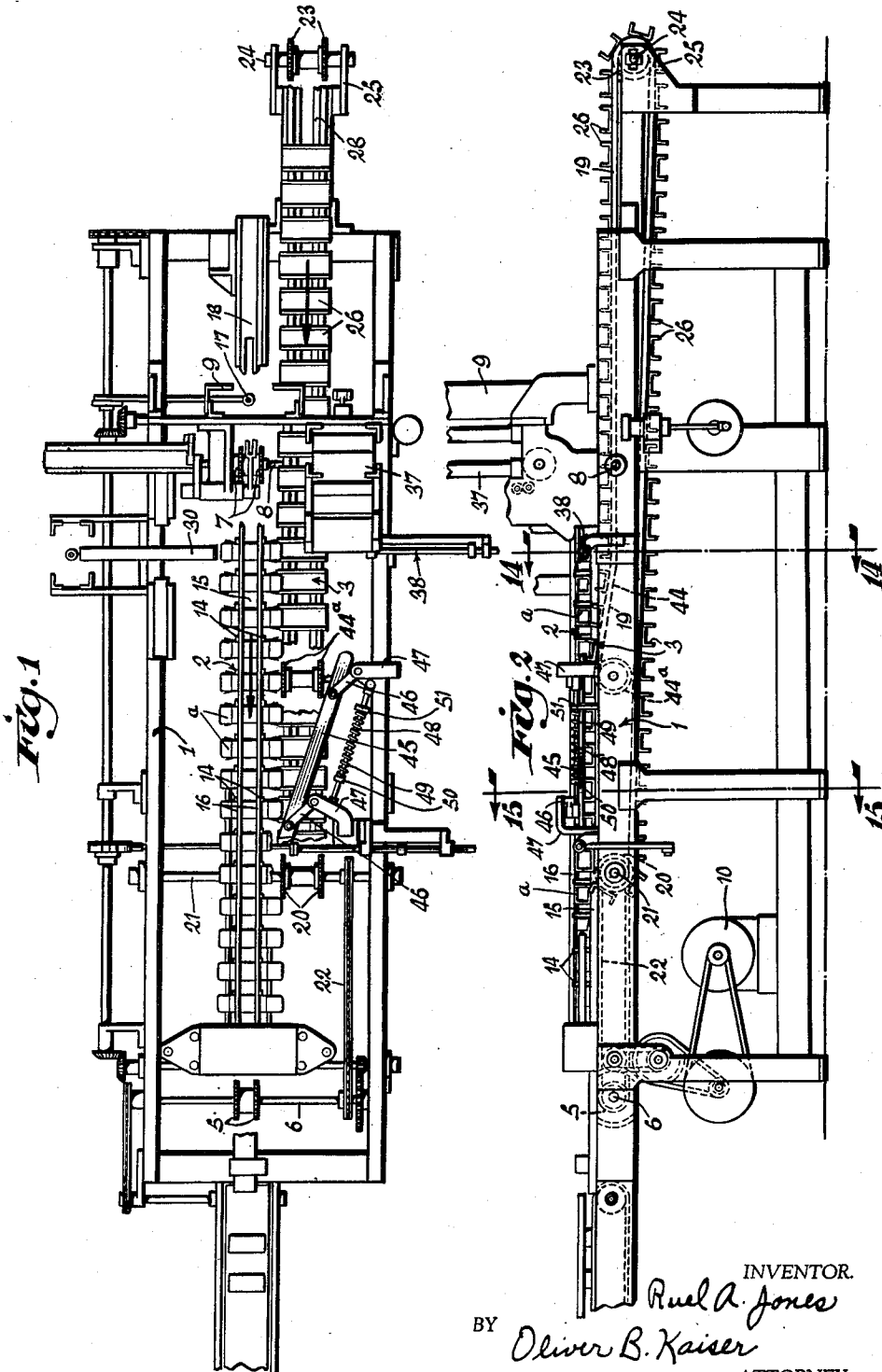
R. A. JONES

2,263,501

CARTON LOADING MACHINE

Filed Sept. 19, 1939

7 Sheets-Sheet 1



Nov. 18, 1941.

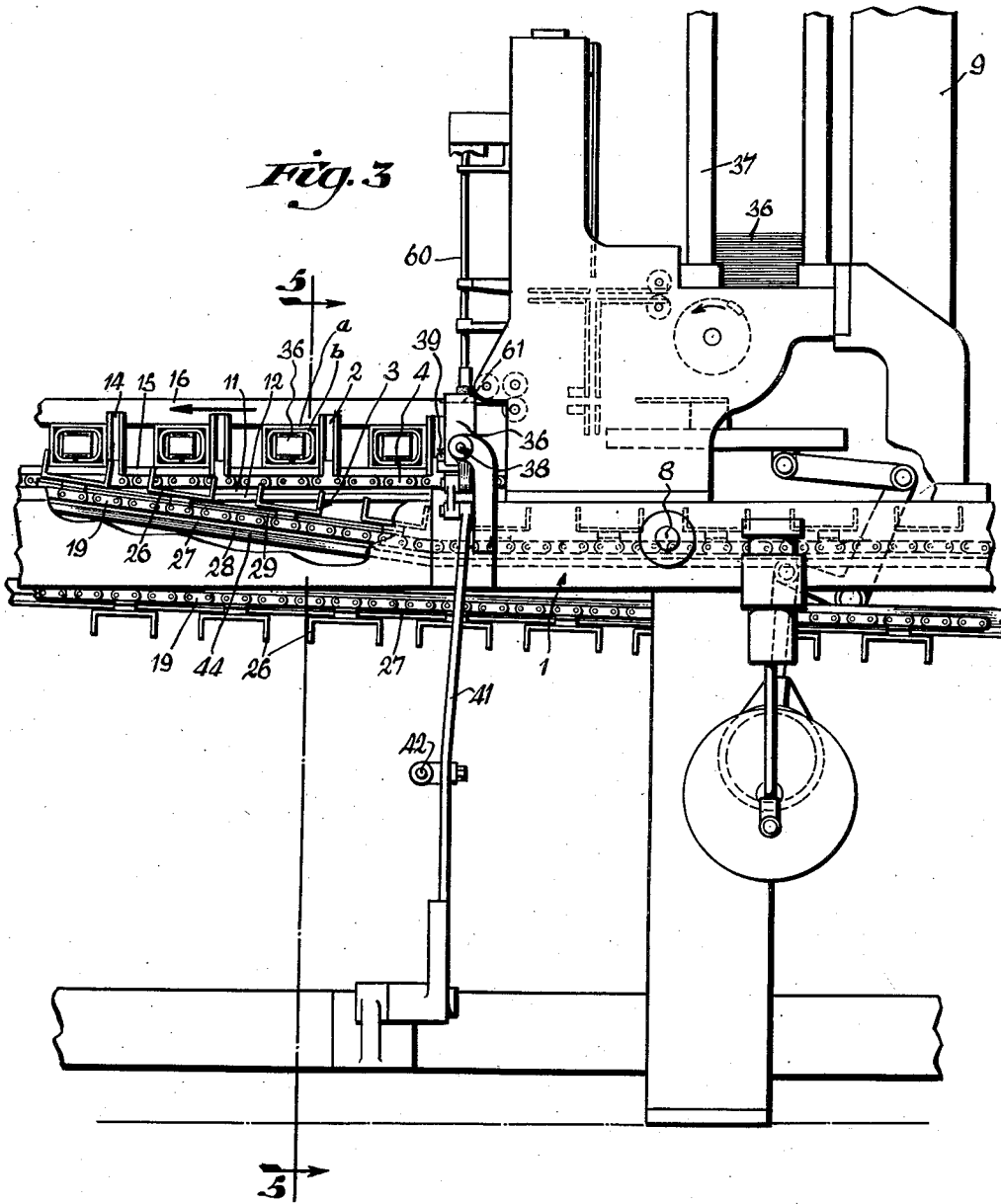
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CARTON LOADING MACHINE

Filed Sept. 19, 1939

7 Sheets-Sheet 2



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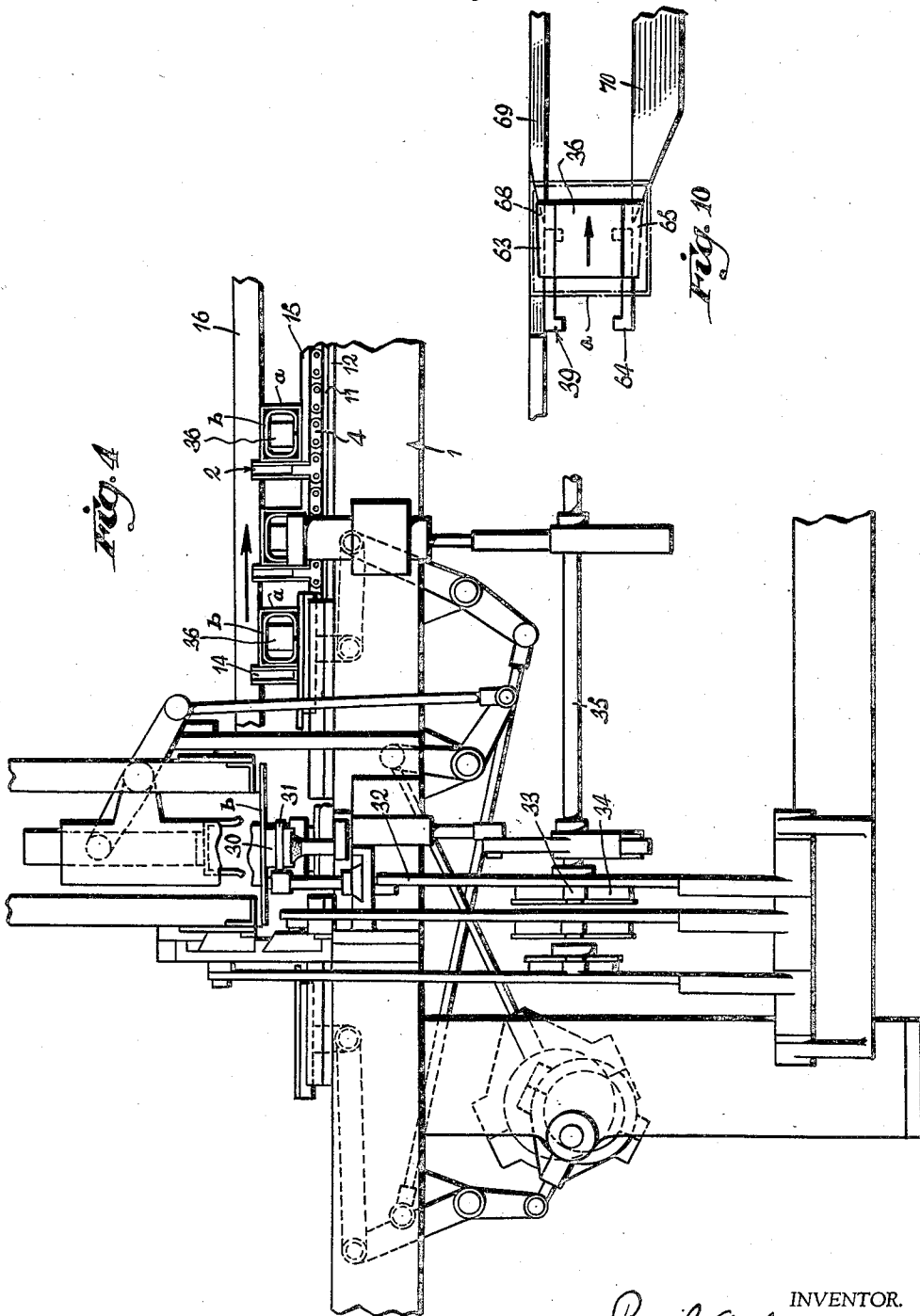
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2,263,501

CARTON LOADING MACHINE

Filed Sept. 19, 1939

7 Sheets-Sheet 3



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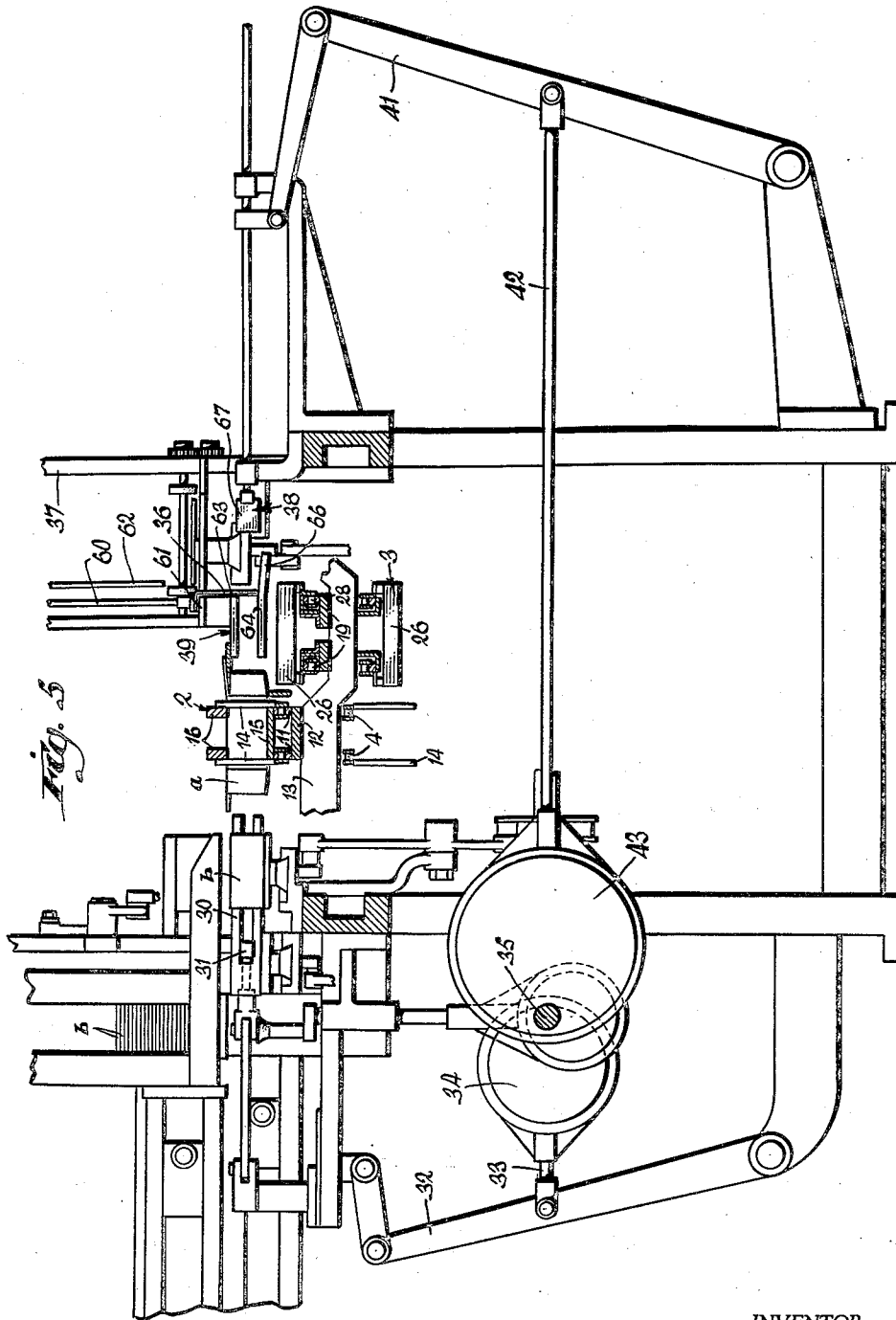
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2,263,501

CARTON LOADING MACHINE

Filed Sept. 19, 1939

7 Sheets-Sheet 4



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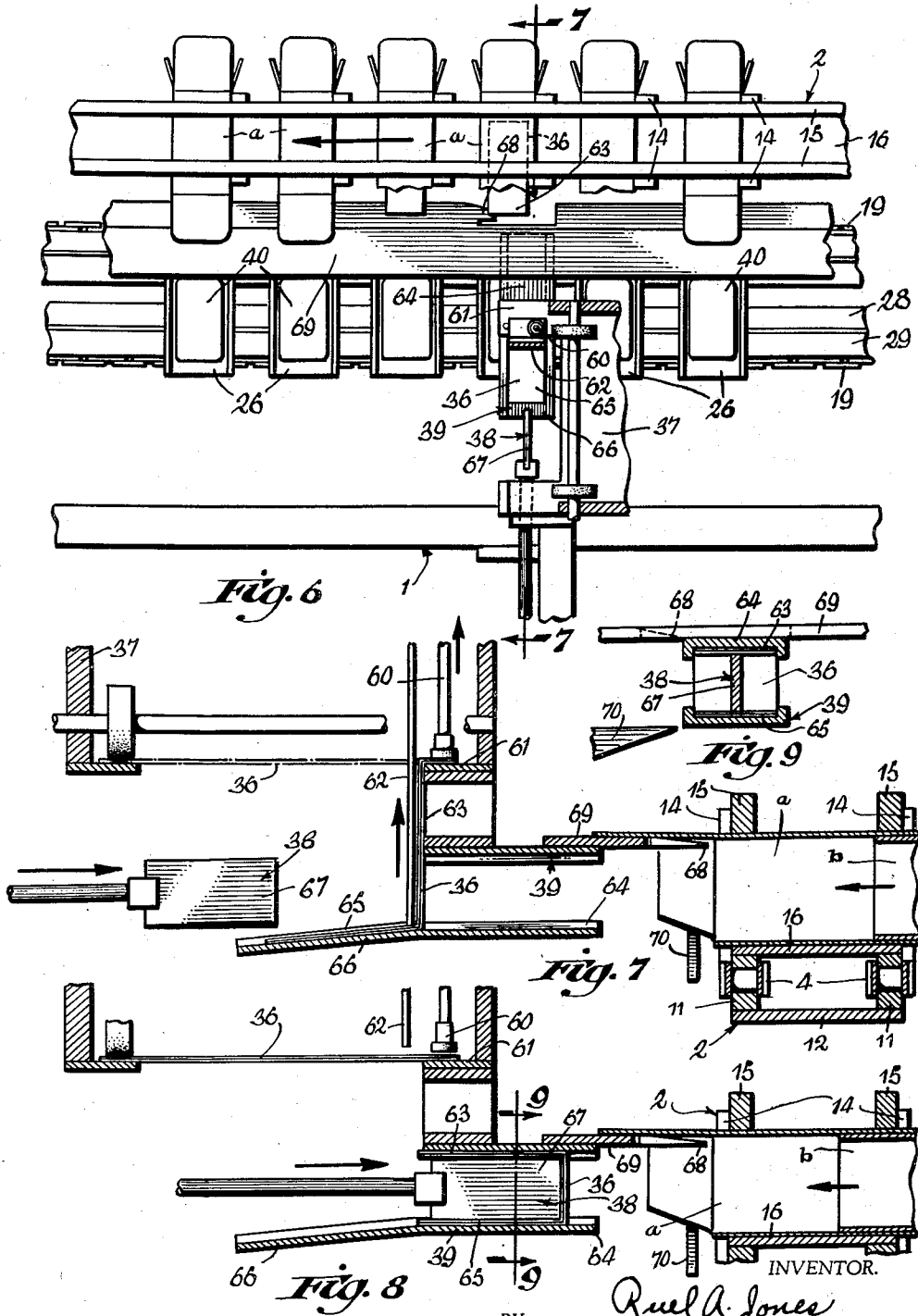
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2,263,501

CARTON LOADING MACHINE

Filed Sept. 19, 1939

7 Sheets-Sheet 5



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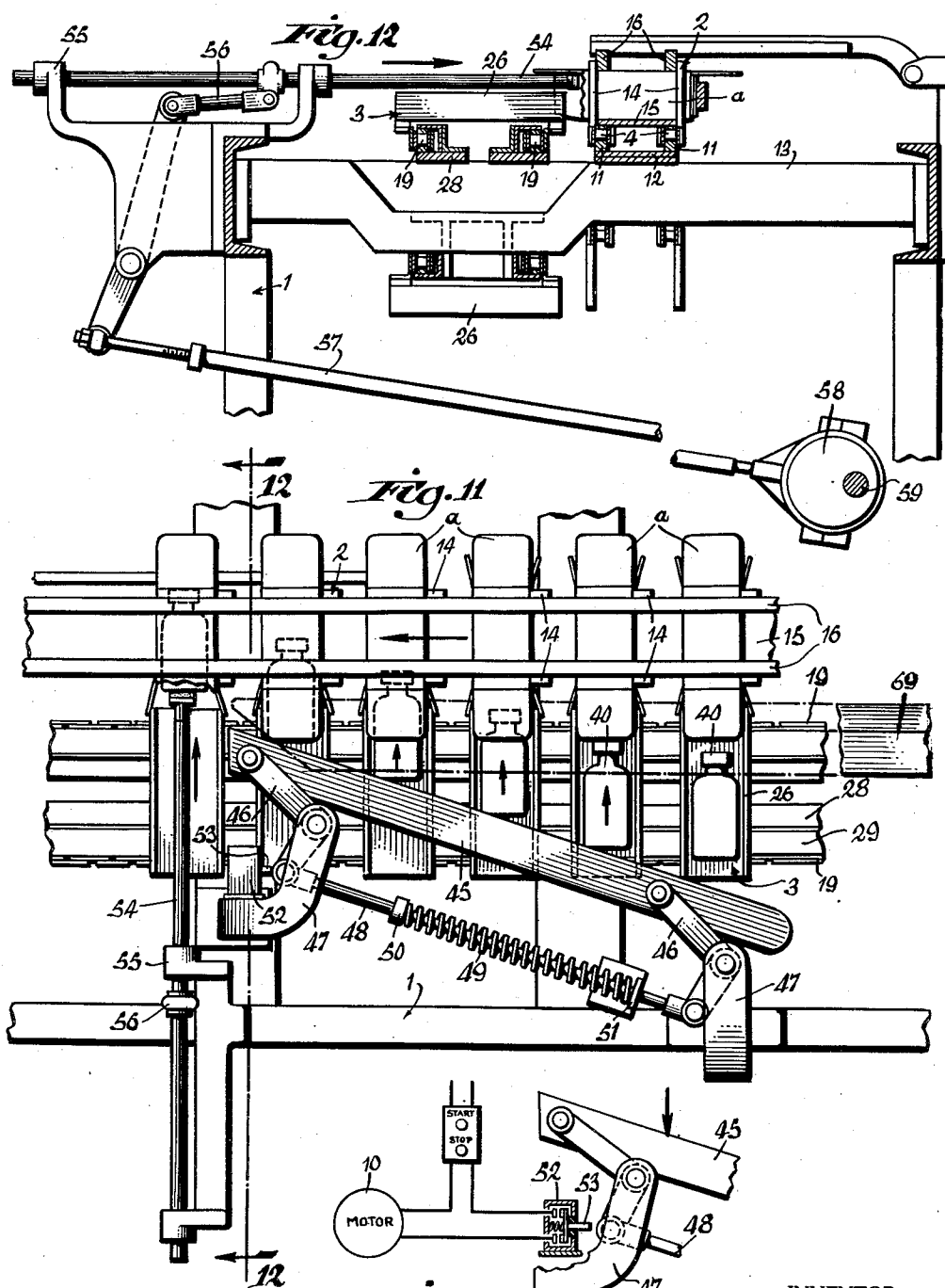
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2,263,501

CARTON LOADING MACHINE

Filed Sept. 19, 1939

7 Sheets-Sheet 6



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CARTON LOADING MACHINE

Filed Sept. 19, 1939

7 Sheets-Sheet 7

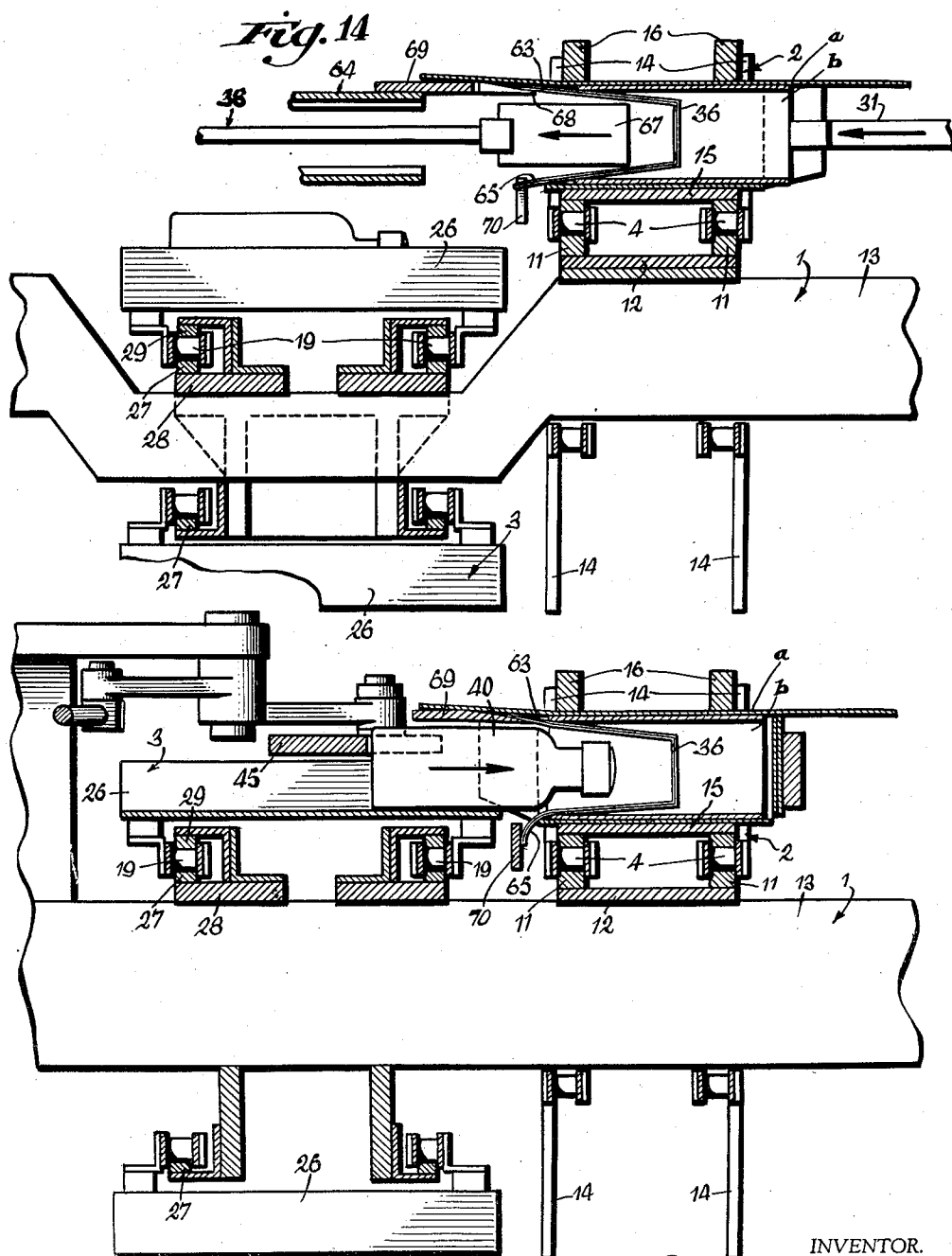


Fig. 15

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UNITED STATES PATENT OFFICE

2,263,501

CARTON LOADING MACHINE

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Application September 19, 1939, Serial No. 295,667

10 Claims. (Cl. 93—3)

This invention relates to improvements in carton filling or loading machines of the character as illustrated and described in a prior patent issued to me Number 1,935,269, dated November 14, 1933, and may be designated as a longitudinal type in which a container packed commodity is inserted within a carton.

The machine at a receiving end ejects successively the lowermost or leading one from a stack supply of flat collapsed cartons deposited in a magazine. The carton preferably is of a conventional type and when erected from its collapsed flat condition represents a rectangular tube, open at its opposite ends, and closed by flaps extending from relative opposite ends of the walls of the carton, which, after the carton has been filled, are folded to overlap one another and an end of one thereof tucked into the carton to hold the flaps in their closed position.

Each carton, after ejection from the magazine in its flat condition, is erected by squaring its walls, leaving the opposite ends of the carton open, and then is transferred into a pocket space or rack of an endless conveyor, whereupon its travel uninterrupted continues for loading, closing its ends and discharge from the conveyor. A second conveyor provided with pockets, for holding the merchandise to be packed into a carton, moves in synchronism alongside the carton conveyor for transferring the merchandise from the pocket of its conveyor into an adjacently moving carton, whereupon after being fully inserted into the carton and during a continuance of the loaded carton travel, the closure flaps are folded to their closed position and the package then discharged from the conveyor.

In instances when the commodity is packed in a glass container, to reduce breakage, a corrugated paper liner is inserted into the carton and applied about the container. The machine of the present invention provides, after the carton has been erected, to initially insert a liner therein taken from a stack, in a flat condition, folded and slipped into the container at one end thereof; and similarly a folded pamphlet or printed matter, when desired, is slipped into the carton either before, after, or simultaneously with the insertion of the liner, except that it may enter from an opposite end of the carton.

The merchandise conveyor, to provide the facility necessary to handle and load the filled containers, each individually within a pocket of the conveyor, and to bring the same into immediate proximity with the carton conveyor, has a section of the forward run thereof disposed at a

lower elevation. This provides for clearing an open end of the carton for preliminarily inserting matter auxiliary to the merchandise to be packaged therein. The immediate proximity of the open conveyors for the carton loading sections thereof avoids the use of a short third or auxiliary conveyor as heretofore employed, located between the carton and merchandise conveyors, as a pocket connecting skid, to accommodate for the gap between the main conveyors and clearance allowance for passing the magazine. The merchandise conveyor, in moving from one elevation to another, travels in an incline, moving the pockets of the conveyor which carry the merchandise in a vertical direction, to be engaged between outstretched flaps of the carton, and to embrace any matter projecting from the open end of the body of the carton. This also permits the installation of liner and pamphlet inserters at relative opposite sides of the carton conveyor for entering a pamphlet and liner at about the same time, materially shortening the length of the conveyors.

It is therefore an object of the invention to provide a carton filling or loading machine with a pair of conveyors, one for conveying cartons and the other for the merchandise to be packaged in the cartons, arranged in immediate proximity side by side and in synchronism for relative registry of the pockets of the conveyors for insertion of the merchandise into a carton by relative movement thereof, directly transferring the one from one conveyor onto the other, and permit of the insertion of matter into the open end of the carton in advance of entering the merchandise, thereby simplifying the machine construction and its operation, effecting a material reduction in the number of parts and cost and minimizing the degree of transfer, permitting operation at a higher rate of speed.

The reduction in the degree of transfer movement permits the employment of a stationary guide set at a slight angle for engaging the advancing merchandise and effecting a transfer from its conveyor into the carton on the adjoining conveyor, thereby further simplifying the construction of the machine.

Another object of the invention is to provide a carton loading machine with adjacent conveyors, one for conveying cartons in a consecutive order and the other merchandise for transfer into the carton while they are in motion; and to divert a receiving end of the merchandise conveyor from the carton conveyor for accessibility to a relative open end of a carton for initial insertion of folded

printed matter and a liner, respectively entered from opposite open ends of a carton at about the same time, and particularly for the partial entry of folded printed matter at the same side with the merchandise, so as to be fully inserted by the merchandise, and extend thereabout.

Another object of the invention is to provide a bar stationed acutely across a conveyor to transversely move and transfer conveyed merchandise from the conveyor into a carton on a second adjoining conveyor, the bar yieldingly retractable when the transfer movement of the merchandise is obstructed or retarded for operating power stopping control means.

Another object of the invention is to provide improved means for folding and inserting a printed sheet, constituting a folder, into a carton, in transit for loading a container or merchandise therein, with the folder looped about or straddling an end of the container.

Various other features and advantages of the invention will be more fully set forth in a description of the accompanying drawings, in which:

Figure 1 is a top plan view of the carton loading machine of the present improvement, with portions or parts comprised in the complete machine and not of concern to the present invention omitted to avoid obscurity.

Figure 2 is a side elevation thereof.

Figure 3 is an enlarged side elevation of a section of the machine at which the cartons in an open position upon a conveyor receive either a liner, a printed folder, or both.

Figure 4 is an enlarged side elevation of a section of the machine at an opposite side from that shown in Figure 3.

Figure 5 is a section on line 5—5, Figure 3.

Figure 6 is an enlarged top plan view of a section of the machine at which the printed folders or circulars are successively ejected from a magazine, folded, and partially inserted into the respective cartons as they are conveyed past the inserting mechanism.

Figure 7 is an enlarged sectional view taken on line 7—7, Figure 6.

Figure 8 is a sectional view similar to Figure 7, showing the printed folder folded and being pushed into the carton by the plunger.

Figure 9 is a sectional view taken on line 9—9, Figure 8.

Figure 10 is a diagrammatic view of the folder supporting or guide rails at the point of insertion of the folder into a carton.

Figure 11 is an enlarged top plan view of a section of the machine at which articles of merchandise moved by a conveyor are respectively pushed into a carton in alignment therewith, and conveyed in unison by a second conveyor. The view shows the means for transferring the article of merchandise from one conveyor into a carton upon a second conveyor.

Figure 12 is a section on line 12—12, Figure 11.

Figure 13 is a diagrammatic view of an electric motor control circuit including an electric circuit controlling switch actuated by a switch bar employed for moving the articles of merchandise into relative cartons, the bar movable for motor and conveyor stopping control in the event of any obstruction interfering with the transfer and entry of an article of merchandise into a relative carton, as a measure of safety in the operation of the machine.

Figure 14 is an enlarged section on line 14—14, Figure 2.

Figure 15 is an enlarged section on line 15—15, Figure 2.

The machine is illustrated as operating upon a carton of conventional form, consisting of a rectangular tubular body with closure flaps for its opposite open ends. The closure flaps normally extend outwardly, each in a plane with the wall of a body to which it joins. Thus, when the body is erected or squared from a flat or knocked-down condition, its opposite ends are open, ready for the entry of merchandise.

The cartons are supplied to the machine in a knocked-down or flat condition in a manner in which they are packaged for shipping and storage and receptive for deposit in a magazine in a stack, one upon another, to be ejected individually, successively, as each reaches the lowermost position in the stack.

Each carton, after ejection from the magazine, is opened or squared, and confiningly positioned upon an advancing or forward run of an endless conveyor to receive while in transit the merchandise and matter to be packaged or enclosed therein. The mechanism for successively ejecting the carton from the magazine, for opening or squaring and depositing or loading the same, one after another, within a confining space or pocket of an endless conveyor, may correspond substantially to that disclosed in Patent No. 1,935,269, dated November 14, 1933, or otherwise as conventionally employed in machines of this type.

Referring to the drawings, 1 indicates the frame of the machine which may be of any preferred design or structure for maintaining and supporting the various parts. An endless conveyor 2 for conveying the cartons in a relatively spaced consecutive order extends horizontally longitudinally of the frame 1 and approximately central thereof. A second endless conveyor 3, for conveying the articles of merchandise, is located adjacently horizontal along one side of the carton conveyor, with its receiving end extending beyond the receiving end of the carton conveyor for freedom and accessibility in loading the articles of merchandise thereon, for example, as bottles.

The carton conveyor comprises a pair of endless sprocket chains 4, 4, suitably spaced apart, each respectively engaged over a sprocket wheel 5 fixed upon a common driving shaft 6 at the delivery end of the machine, and each about an idler sprocket wheel 7 upon a common shaft 8 located slightly forward and below the carton magazine 9.

The driving shaft 6 is suitably journaled in the bearings mounted in the side of the machine frame and in transmission connection with a power driving source, in the present instance shown as an electric motor 10. The upper or forward traveling runs of the chains 4, 4, each respectively rides upon a rail 11, both fixed upon a supporting plate 12 mounted upon the cross means 13 of the machine frame. The chains each at intervals are provided with lateral or perpendicular teeth 14, the spacing therebetween providing pockets, each for the reception of a carton A in an open condition for confining and conveying the same.

The teeth of the chains are arranged in aligned sets, and extend from the outer side of their respective chain, so that each set as a unit straddles a stationary base plate 15 extending longitudinally of the chain for slidably supporting the cartons, and a pair of top rails 16, 16,

as shown in Figures 14 and 15, following the principles similar to that employed and shown in the machine of said prior patent in which the features and advantages are more fully set forth. The cartons therefore are slidably conveyed and confined between superposed tracks, slightly impinging the cartons to hold the same in their fully opened or squared condition.

The mechanism for successively ejecting the cartons from the magazine 9 and for consecutive delivery into a carton space of the carton conveyor, and in an open and squared condition ready to receive the merchandise or matter to be packaged therein, is not fully shown in detail in the drawings herewith, as the detail forms no part of the present invention, and therefore may conform substantially as shown in said prior patent or otherwise.

The lowermost carton in the magazine for ejection is preferably depressed by a vertically reciprocable suction plunger 17, whereupon it is pushed forward by a longitudinally reciprocable slide 18 and deposited into a pocket space of the carton conveyor 2, and opened or squared within the pocket space, or it may be, as sometimes practiced, opened before delivery to the carton conveyor.

The entry of the carton upon the conveyor is at a point and period while the teeth of the chains are moving in an arc about the sprocket wheels, for the chains in the approach of the forward run of the chain, thus in the clear of the horizontally moving carton; a set of teeth advancing from the rear of the carton for engagement therewith.

The merchandise conveyor 3 comprises a pair of definitely spaced endless sprocket chains 19, 19 each engaged about a driving sprocket wheel 20 fixed upon a drive shaft 21 extending crosswise of the machine frame and journaled in bearings mounted thereon. The drive shaft 21, as shown in Figure 1, is in driven connection with the cross shaft 6 by means of sprocket wheels respectively fixed upon the shafts 6 and 21, and connected by a sprocket chain 22. The sprocket chains 19, 19, at the conveyor receiving end, each respectively is engaged over an idler sprocket wheel 23 on a shaft 24 journaled within a stand-ard 25 as an extension of the machine frame 1.

The chains 19, 19, are connected by adjointly disposed channel plates 26, each providing a pocket for holding merchandise to be packaged in a carton. The channels or pockets are open at their opposite ends, and each pocket for a period of its travel moves synchronously and in endwise alignment with the carton space or carton for shifting or conducting the merchandise from a pocket into a carton, and during the continuous travel of the conveyors. The endless chains of the merchandise conveyor between the driving and idler sprocket wheels, and for both the forward and reverse runs thereof, ride each respectively upon a rail 27 suitably mounted upon the machine frame.

The rails for the forward run of chains are fixed to and sustained upon a bed plate 28, stationed upon cross beams of the machine frame while the rails for the reverse run of the chains are suspendingly supported from the cross beams of the machine frame. As the upper or forward run of the chains 19, 19, for sections of its travel are at relative different elevations, joining in an inclined plane, the upper side of the chain is guarded by a top rail 29.

When packaging a bottle or glass container,

it is sometimes desirable to have the bottle protected by a liner, usually of corrugated paper material. In some instances the liner is preliminarily folded about the bottle and therewith unitarily inserted into the carton. This method is objectionable as the liner has a tendency to spring away from close contact with the bottle and become obstructive to entry into the carton, resulting in frequent jamming and stoppage of the machine.

In the present machine the liner is individually inserted into the carton in advance of the merchandise. Likewise, it is also desirable in some instances to insert printed matter with the merchandise preferably folded and looped about the head end of the merchandise container. It also has been a practice, as illustrated in said prior patent, to advancingly loop the folded printed matter over the head end of the container and therewith pushed into the carton.

In order to simplify the construction of the machine to reduce its cost and to increase its efficiency, provision is made for individually inserting a liner into an end of the carton opposite from the entry end of the merchandise, and in advance of inserting the merchandise. Correspondingly, a printed folded circular or matter is individually inserted into the carton at the same end as the merchandise, but in advance thereof. For cartons having a considerable depth, a printed folded matter need only be partially inserted and allowed to be carried by and with the merchandise for its full entry. This also avoids making any provision for movement of the pushing mechanism or plunger correspondingly with the cartons or interruption in the travel.

The mechanism for inserting the liner and folded printed matter can both be located at one and the same side of the carton conveyor, but this will increase the length of the machine which it is desirous to conserve and relatively increase the cost of construction. In disposing the liner and printed folded inserting mechanism or devices at relative opposite sides of the carton conveyor, it provides for compactness, reduction in conveyor length, and inactive period of travel when the liner and printed folder, one or both, are not used in packaging.

The mechanism or devices for handling the liners, as to detail of construction being separate and apart from the present invention, and as these devices would require modification for various types of products employed, an extended description as to detail will be omitted.

For the present purposes, therefore, it is deemed sufficient to note that a liner *b* in a flat sheet form is extracted as a lowermost sheet from a stack within a magazine, moved and folded about a mandrel 30 into the form of a tube or sleeve, and then pushed into a traveling carton with which it aligns and registers by a plunger 31. The plunger has its head end, as shown in Figure 5, interposed between spaced opposing limbs of the mandrel for a central contact with the outer end of the folded liner. The plunger is reciprocated by power at an appropriately timed interval, and also is arranged along with the mandrel to slidably reciprocate parallel with the conveyor for moving the mandrel synchronously with the open ended traveling carton during the period of liner insertion into the carton.

The plunger 31 is actuated by link and lever mechanism 32, pitman 33, and eccentric 34, rotated by a shaft 35.

The printed matter, as shown in Figure 3 and hereinafter designated as a folder 36, represents a sheet, each taken from the bottom of a stack within a magazine 37, whence it is folded several times by reciprocating plungers and in a folded condition is vertically suspended from one end as shown in Figure 5 to be engaged by a transversely reciprocated plunger 38 for the final fold and insertion into a carton.

The folder, after engaged by the plunger 38, is passed through a stationary guide 39 to finally fold and insure its proper carriage by the plunger without slippage and unobstructing entry into a carton. The folder is inserted to straddle one end of a container 40 pushed therebetween in its entry into the carton.

The action and arrangement of the plunger 38 permits the folder 36 to be inserted into the carton without provision for moving the plunger coordinately with the travel of the carton. The plunger 38 is actuated by link and lever mechanism 41, pitman 42, and eccentric 43 on shaft 35. The specific detail of the circular folding and loading mechanism will be more fully herein described.

It is advantageous to have the carton and merchandise conveyors travel side by side in a proximity as close as possible, particularly for the loading section or period in the conveyor travel to facilitate entry of the merchandise into the carton and reduce to a minimum the amount of transfer movement of the merchandise from its conveyor into the carton.

To permit the insertion of matter into the carton in advance of the merchandise, either by entry in the carton from relative opposite ends thereof, or by entry at the same end as the merchandise, the forward section of the merchandise conveyor is arranged to travel at a lower elevation than the carton conveyor. The forward section of travel of the merchandise conveyor, as shown in Figures 2, 3, 5, and 14, is below the carton magazine and circular inserting apparatus, and the sections traveling at different elevations are joined by a section traveling at an incline. The guide rails 29 hold the conveyor chains 19, 19, respectively to their rails in traveling from one elevation to another to prevent developing any slack in the chains, which would disturb the registration and alignment of the pockets with the cartons in the loading section of travel, and for the loading section of travel, hold the base of the pockets to a required plane with respect to a base side of the carton to appropriately direct the merchandise into the carton.

The pockets 26 of the merchandise conveyor in moving up the incline 44 to the carton registering plane move vertically toward the carton with which they are in registry, and being open at their top side are free to receive and embrace the ends of the circular when projected beyond the open end of the body of the carton, and likewise be engaged between the outstretched closure flaps extending from the side walls of the carton and beyond the inner line of the pockets of the merchandise conveyors, which action permits very close assembly of the two conveyors. For large depth size of cartons, the circular need not be fully inserted by the plunger 38, but merely to a sufficient depth to sustain the same while entering the merchandise, whence it is moved with the merchandise. This avoids the necessity of any extended action of the circular inserted plunger 38 or operation at excessive rate, or altering the rate of carton travel to which its

time allowance is proportioned. The merchandise conveyor may be provided with an intermediate set of idler gears 44a at the upper end of the incline 44, as shown in Figure 2, to cooperate therewith.

The merchandise is pushed or transferred from the pockets of the merchandise conveyor into a carton by a normally stationary switch bar 45 disposed horizontally immediately above the pockets and at an angle to the direction of conveyor travel. The bar 45 is of a length to extend over a plurality of pockets to contact with the merchandise therein for simultaneously transferring a plurality of pieces of merchandise into a respective carton as shown in Figure 11.

The angle of the switch bar is of a degree to avoid abrupt movement of the merchandise when contacting the bar. The bar through the continuous advance of the merchandise shifts the merchandise laterally for insertion into an aligned and registering carton.

The switch bar 45 is pivotally mounted upon a pair of corresponding levers 46, 46, each respectively pivotally mounted upon a bracket 47, fixed to the machine frame, and the rear arms of the levers 46, 46, are pivotally connected by an equalizer link 48. The link 48 carries a spring 49, one end thereof being against a collar 50 fixed to the link, and the opposite end of the spring bears against a stationary abutment or bracket 51 fixed to the machine frame. The spring 49 through its link and lever connection with the switch bar yieldingly urges the switch bar forwardly and will retreat in the event any piece of merchandise engaged therewith is obstructed or retarded in its entry into the carton, resulting in a release of an electric circuit controlling switch 52.

The electric switch 52, when the switch bar 45 is retracted, is opened and cuts off the electric current to the motor 10, stopping operation until the obstruction is removed, whereupon, the motor is again started automatically. The control button or push pin 53 of the lever switch 52, as illustrated in diagram Figure 13, engages with an adjoining end of the connecting rod or link 48, whereupon the pressure of spring 49 in sustaining the switch bar 45 in its forward or normally stationary position serves to close and hold the electric switch in an operative position.

The switch bar 45 provides a very simple and effective means for progressively inserting a plurality of pieces of merchandise simultaneously and partially into a respective carton continuously advancing synchronously with the carton and the motion thereof stopped as soon as any one of the several pieces of merchandise is obstructed or retarded in its transfer movement into a carton.

A plunger 54, reciprocating transversely to the direction of conveyor travel, provides for finally and fully inserting the merchandise into the carton after its partial insertion by the switch bar 45. This avoids adjusting the switch bar too closely to the open ends of the cartons to avoid interference to the travel thereof.

The plunger 54 is located adjointly to the forward end of the switch bar, and individually operates on each piece of merchandise in its consecutive order of approach in front of the plunger. The plunger 54, as shown in Figure 12, is slidably supported in upwardly extended arms of a bracket 55 fixed to the machine frame, and is reciprocated by link and lever mechanism 56,

pitman 57, eccentric 58, fixed on the drive shaft 59.

After the merchandise has been loaded or inserted into the carton, the cartons continue in their advance for closing the closure flaps thereof and discharge the package. The mechanism for operating upon the closure flaps, not forming a part of the present invention, is herein omitted.

The mechanism for folding and inserting a folder is shown in detail, Figures 6 to 10 inclusive, and Figure 14. The folder, usually representing a single sheet, is withdrawn from the bottom of a pack stacked within a magazine. As the sheet may be of a size to require several foldings before it is sufficiently compact for insertion into the carton, the preliminary foldings may be made by any conventional means, usually consisting of a feed roller or rollers in a single revolution, engaging the endmost sheet of the stack and ejecting the same therefrom in a horizontal plane. Upon its discharge from the magazine, it is engaged by feed rollers to appropriately position the same for engagement by a folder blade reciprocable transversely to the plane of the folder for effecting a fold.

After the required number of folds have been made to sufficiently compact it for delivery and loading into a carton, the folder at one end is gripped by a plunger 60 against a stationary ledge 61 (see Figure 7) extending from the frame of the folding device. It is then actuated upon by a vertical reciprocable folder blade 62 for the portion extending beyond the forward edge of the ledge to fold the same at an angle thereto and extend a leaf section 63 thereof vertically across the forward open end of a horizontal folder die 64 and a second leaf section 65 upon a shelf extension 66 of the folder die 64, inclined slightly downward.

The aperture of the folder die 64 is in alignment with the cartons, and as a carton moves in approximate registration therewith, a folder is pushed through the die and into the carton by the plunger 38. The plunger 38 at its forward end is provided with a vertically positioned blade 67 which traverses through the die and engages a mid-portion of the folder to fold the same into U-form as the folder is being pushed through the die and into a carton. The plunger end in the form of a comparatively thin vertically positioned blade allows ample freedom for relative movement instituted by the travel of the carton in its continuous advance by the carton conveyor, to avoid interference or obstruction while inserting the folder or retracting the plunger. The insertion of the folder into the carton is very rapid and accurately timed and being of smaller width dimension than the hollow of the carton, its insertion is efficiently accomplished without moving the plunger coordinately with the carton. The folder in a partial entry into the carton will bind sufficiently with the carton to be conveyed thereby.

The end of the leaves 63, 65, of the folder, projecting beyond the open end of the carton, (see Figures 14 and 15), are urged or flared outwardly, as advanced by the carton, so as not to be obstructive while inserting the merchandise. The end of the leaf 63 is deflected upwardly upon engaging with a tapered guide section 68, formed in appropriately notching a stationary guide rail 69 extending longitudinally of the carton conveyor. The guide rail 69 is primarily employed for sustaining the tucking flaps of the cartons in an upwardly inclined position to

hold the same open during the carton loading period.

Correspondingly, the projecting end of the lower leaf 65 of the folder engages a stationary rail 70 fixed along the carton conveyor and provided with a tapered forward end to depress the projecting end of the leaf 65 downwardly. The free ends of the leaves of the folder, therefore, for a loading period are guided and flared outwardly until drawn completely into the carton by and with a container of merchandise as it is being pushed into the carton. The square end fold of the folder allows it to more aptly straddle the container and be compactly disposed between the head end thereof, and the adjoining enclosure of the carton, resulting in a better packaging of the products.

Having described my invention, I claim:

1. In a carton loading machine, a pair of adjoining horizontally disposed endless conveyors, each having a portion thereof for a carton loading region arranged in immediate proximity for a direct transfer of merchandise carried by one conveyor into cartons carried by the other conveyor, the merchandise to be inserted in a carton moving in unison and in endwise alignment with a carton to effect a transfer by relative movement thereof transversely to the direction of conveyor travel, said merchandise conveyor in advance of the carton loading region being diverted from the carton conveyor clearing the open end of the cartons for the insertion of matter therein in advance of the insertion of the merchandise.

2. In a carton loading machine, a pair of adjoining horizontally disposed endless conveyors, each having a portion thereof for a carton loading region arranged in immediate proximity for a direct transfer of merchandise carried by one conveyor into cartons carried by the other conveyor, the merchandise to be inserted in a carton moving in unison and in endwise alignment with a carton to effect a transfer by relative movement thereof transversely to the direction of conveyor travel, said merchandise conveyor in advance of the carton loading region being diverted from the carton conveyor for the entry of separate matter respectively into the opposite open ends of the carton at about the same time and in advance of the insertion of the merchandise.

3. In a carton loading machine, a pair of endless conveyors adjointly arranged, one for conveying cartons in a consecutive order, the cartons open at one end for merchandise insertion, the second conveyor for merchandise, the merchandise for each carton moving in registry therewith for insertion into the carton upon relative movement of the merchandise and cartons, the merchandise conveyor for a section of its travel moving in an offset relation to the carton conveyor for clearing the open end of the cartons and permitting the insertion of matter into each carton preliminary to the insertion of the merchandise.

4. In a carton loading machine, a pair of endless conveyors adjointly arranged, one for conveying cartons in a consecutive order, the cartons open at one end for merchandise insertion, the second conveyor for merchandise, the merchandise for each carton moving in registry therewith for insertion into the carton upon relative movement of the merchandise and cartons, the merchandise conveyor for a section of its travel moving in an offset relation to the carton conveyor for clearing the open end of the

cartons and permitting the insertion of matter into each carton preliminary to the insertion of the merchandise, and means for inserting matter into the carton auxiliary to the merchandise and in advance of the merchandise.

5. In a carton loading machine, a pair of endless conveyors adjoiningly arranged, one for conveying cartons in a consecutive order, the cartons open at their opposite ends, the second conveyor for merchandise, the merchandise for each carton moving in registry therewith for insertion into the carton upon relative movement of the merchandise and cartons, the merchandise conveyor for a section of its travel moving in an offset relation to the carton conveyor for clearing the open end of the cartons and permitting the insertion of matter into each carton preliminary to the insertion of the merchandise, and means respectively for the insertion of matter in the opposite open ends of the carton auxiliary to the merchandise, and in advance of the merchandise.

6. In a carton loading machine, a pair of endless conveyors adjoiningly arranged, one for conveying cartons in a consecutive order, each carton having a corresponding end thereof open for the insertion of merchandise therein, the second conveyor having compartments, each for carrying merchandise and moving in registry with a relative carton conveyed by said carton conveyor for effecting a transfer of the merchandise into the cartons during continuous travel of the conveyor, the second conveyor for sections of its travel disposed at relatively different elevations joining in an incline plane for elevating the merchandise compartments in their approach to endwise registry with the open end of the cartons to receive therein any overhang of or from the cartons.

7. In a carton loading machine, a pair of endless conveyors adjoiningly arranged, one for conveying cartons in a consecutive order, each carton having a corresponding end thereof open for the insertion of merchandise therein, the second conveyor having compartments, each for carrying merchandise and moving in registry with a relative carton conveyed by said carton conveyor for effecting a transfer of the merchandise into the cartons during continuous travel of the conveyors, means for partially inserting folded printed matter into each carton in advance of the merchandise, the second conveyor for sections of its travel disposed at relatively different elevations joining in an incline plane for elevating the merchandise compartments in their approach to endwise registry with the open end of the cartons to receive therein any overhang projecting from the open end of the cartons.

8. In a carton loading machine, a pair of end-

less conveyors adjoiningly arranged, one for conveying cartons in a consecutive order, each carton having a corresponding end thereof open for the insertion of merchandise therein, the second conveyor having compartments, each for carrying merchandise and moving in registry with a relative carton conveyed by said carton conveyor for effecting a transfer of the merchandise into the cartons during continuous travel of the conveyors, and a deflector bar disposed at an angle to and over a section of the merchandise conveyor for deflecting the merchandise from its conveyor into the cartons.

9. In a carton loading machine, a pair of endless conveyors adjoiningly arranged, one for conveying cartons in a consecutive order, each carton having a corresponding end thereof open for the insertion of merchandise therein, the second conveyor having compartments, each for carrying merchandise and moving in registry with a relative carton conveyed by said carton conveyor for effecting a transfer of the merchandise from its conveyor into the cartons during continuous travel of the conveyors, and a deflector bar angularly disposed in the path of the conveyed merchandise for contacting therewith for laterally deflecting the merchandise from its conveyor into the cartons, said bar yieldingly retractable when the merchandise encounters resistance in its movement into the carton, the retracting movement of the deflector bar utilized for operating a controller for effecting a transmission control of the conveyors.

10. In a carton loading machine, a pair of endless conveyors disposed horizontally side by side, one for conveying cartons, and the other pieces of merchandise in a consecutive order, the cartons and pieces of merchandise for a portion of the conveyor travel moving in relative endwise registration for transfer of the merchandise from its conveyor into respective cartons on the other conveyor, the cartons being opened at an end facing the merchandise, a deflector for laterally deflecting the advancing pieces of merchandise from its conveyor, each into a relative carton and composed of a pair of levers, a rod pivotally connecting one end of said levers, and a deflector bar pivotally mounted upon an opposite end of each of said levers, supporting the bar above the merchandise conveyor and longitudinally at an angle thereto for laterally deflecting a plurality of successive pieces of advancing merchandise from the conveyor, each into an advancing relative carton, and tension means for holding said deflector to a normal position and adapting the deflector to be retracted when a piece of merchandise encounters any resistance against its entering into a carton.

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