H. L. JOHNSON.

CARTON SEALING MACHINE.

APPLICATION FILED SEPT. 29, 1913.

1,132,586.

Patented Mar. 23, 1915.

5 SHEETS—SHEET 1.

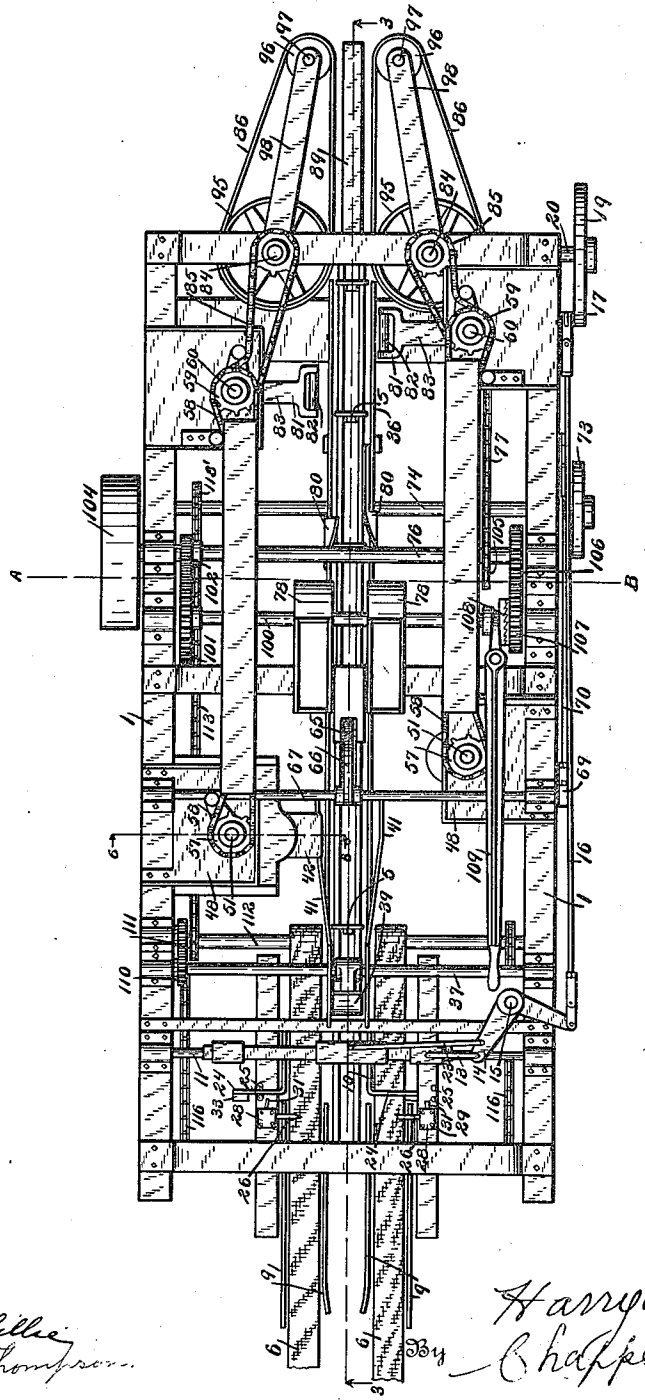

Fig. 1.

Witnesses
Pearl E. Lillie
Grace B. Thompson.

Inventor
Harry L. Johnson
By Chappell Earl
Attorneys

H. L. JOHNSON.

CARTON SEALING MACHINE.

APPLICATION FILED SEPT. 29, 1913.

1,132,586.

Patented Mar. 23, 1915.

5 SHEETS—SHEET 2.

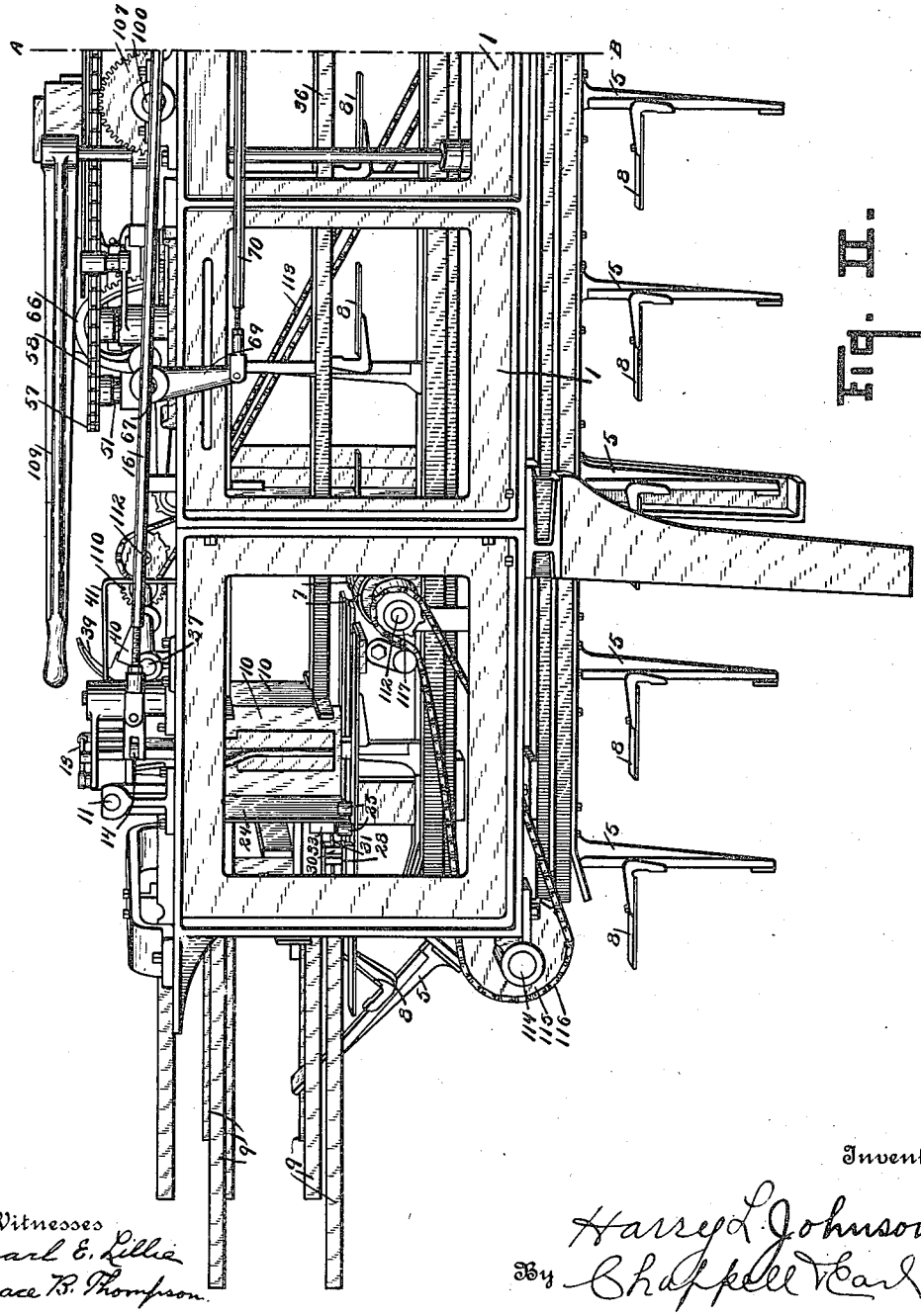

Fig. 2.

Witnesses
Pearl E. Lillie
Grace B. Thompson

Inventor
Harry L. Johnson
By Chappell & Earl
Attorneys

H. L. JOHNSON.

CARTON SEALING MACHINE.

APPLICATION FILED SEPT. 29, 1913.

1,132,586.

Patented Mar. 23, 1915.

5 SHEETS—SHEET 3.

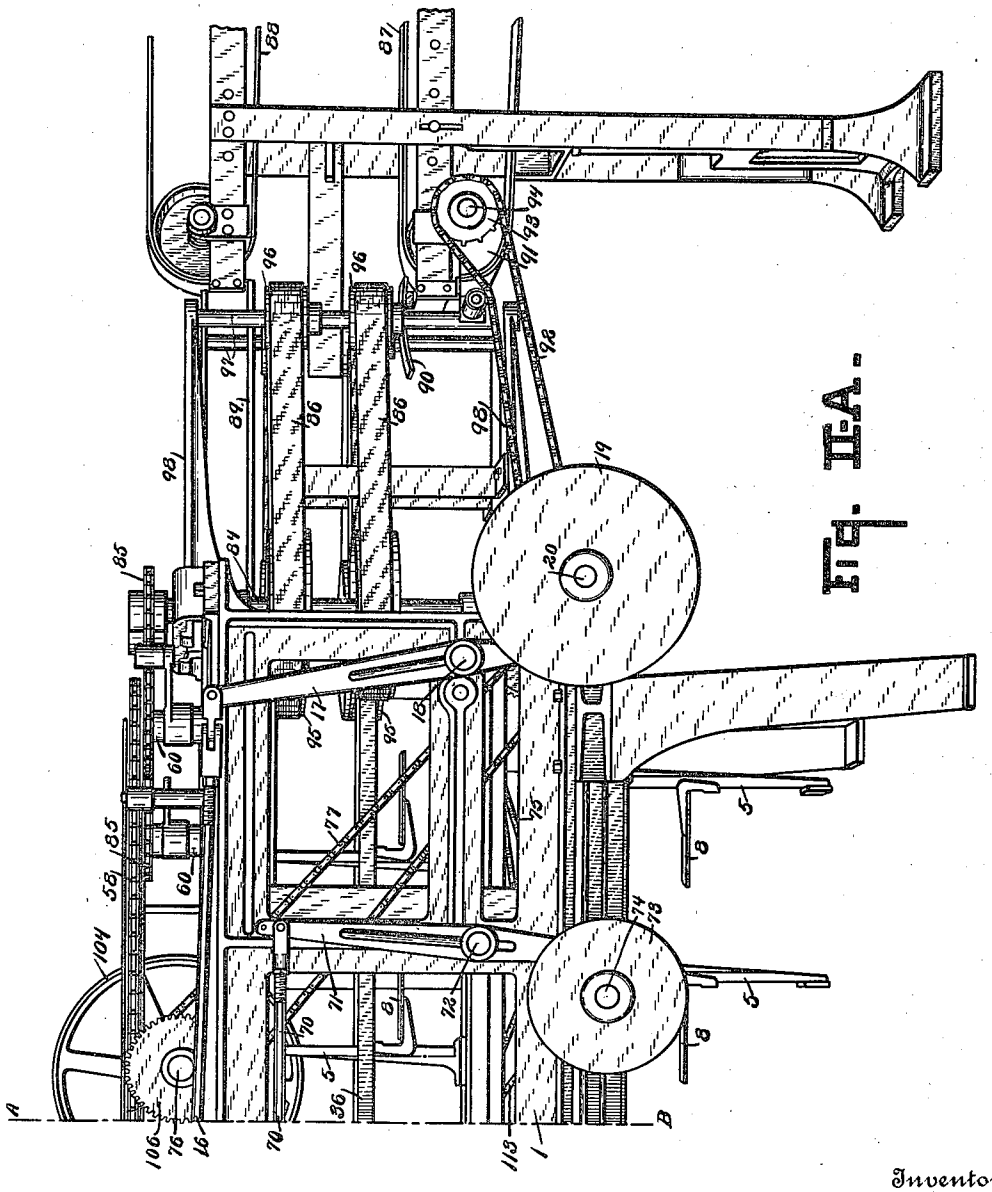

Fig. 1.A.

Witnesses
Pearl E. Lillie
Grace B. Thompson

Inventor
Harry L. Johnson
By Chappell & Earl
Attorneys

H. L. JOHNSON.

CARTON SEALING MACHINE.

APPLICATION FILED SEPT. 29, 1913.

1,132,586.

Patented Mar. 23, 1915.

5 SHEETS—SHEET 4.

Fig. IV.

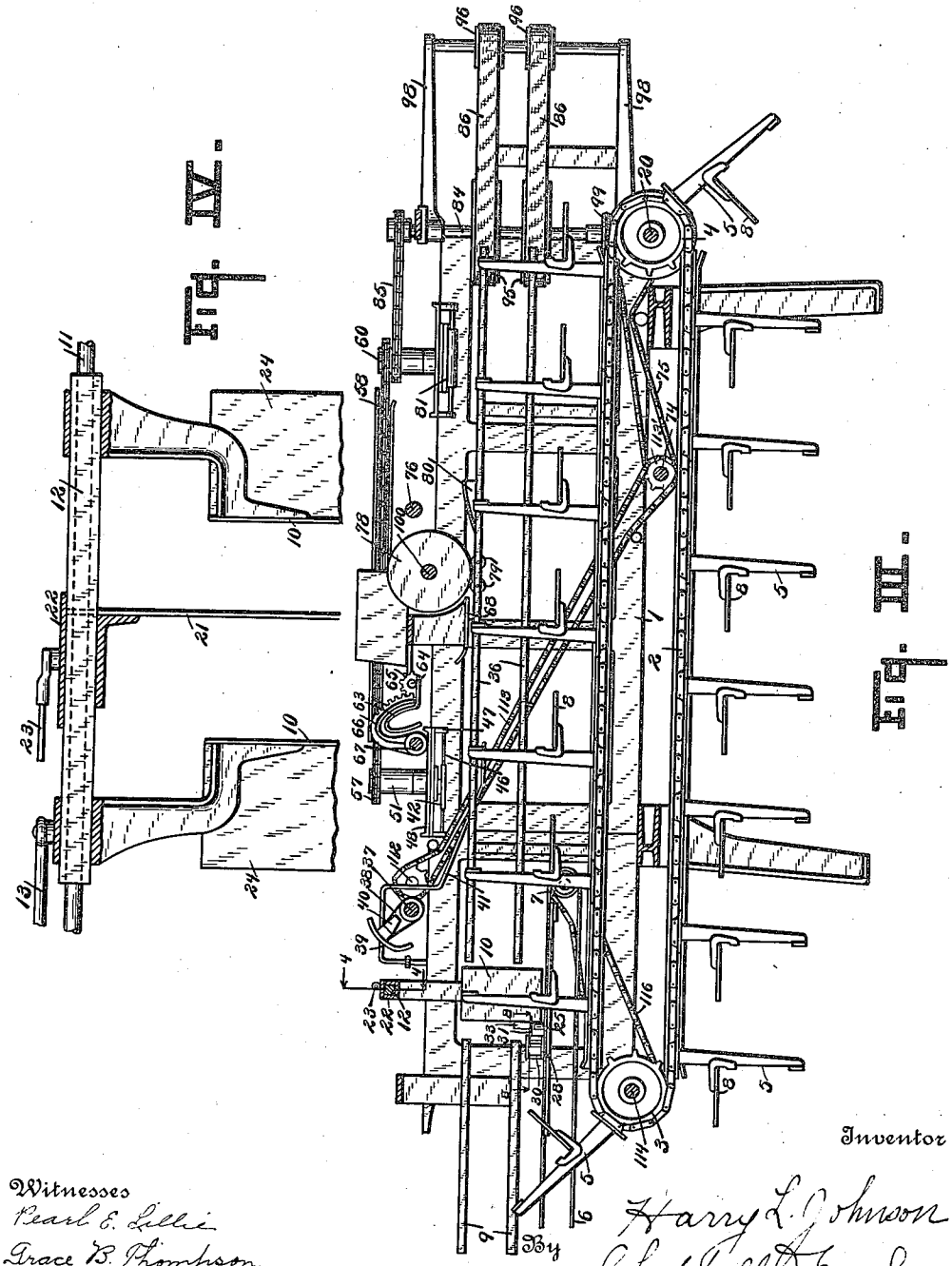

Fig. III.

Witnesses

Pearl E. Lillie

Grace B. Thompson.

Inventor

Harry L. Johnson

By Chappell & Earl

Attorneys

H. L. JOHNSON.

CARTON SEALING MACHINE.

APPLICATION FILED SEPT. 29, 1913.

1,132,586.

Patented Mar. 23, 1915.

5 SHEETS—SHEET 5.

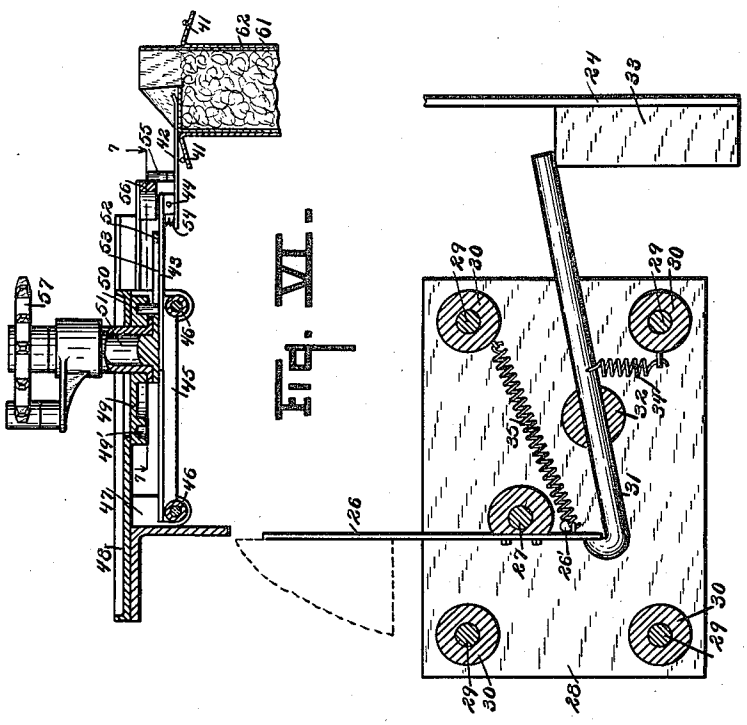

Fig. VI.

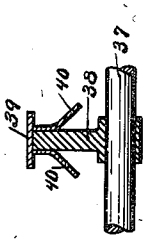

Fig. IX.

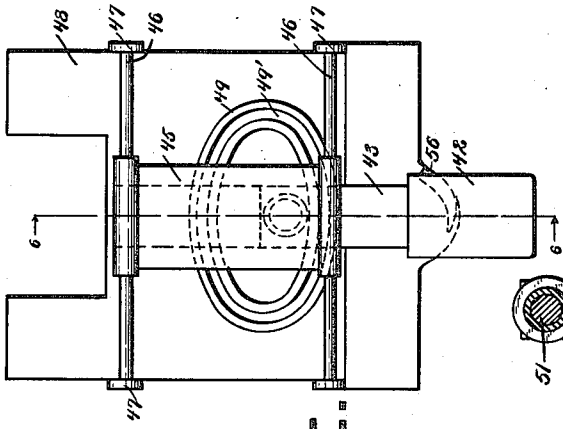

Fig. VIII.

Fig. V.

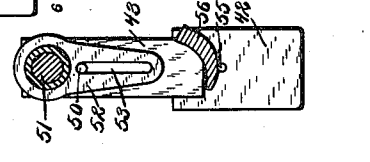

Fig. VII.

Witnesses

Pearl E. Lillie

Grace B. Thompson

Inventor

Harry L. Johnson

By Chappell & Earl

Attorneys

UNITED STATES PATENT OFFICE.

HARRY L. JOHNSON, OF BATTLE CREEK, MICHIGAN, ASSIGNOR TO JOHNSON AUTOMATIC SEALER CO., LTD., OF BATTLE CREEK, MICHIGAN.

CARTON-SEALING MACHINE.

1,132,586. Specification of Letters Patent. Patented Mar. 23, 1915.

Application filed September 29, 1913. Serial No. 792,433.

To all whom it may concern:

Be it known that I, HARRY L. JOHNSON, a citizen of the United States, residing at Battle Creek, Michigan, have invented certain new and useful Improvements in Carton-Sealing Machines, of which the following is a specification.

This invention relates to improvements in carton sealing machines.

In carton sealing machines such as have been commonly used for sealing cartons containing paper bags or inner containers for the material such as granular or flaked prepared foods, it has been customary to fold, or partially fold, the tops of the bags by hand prior to the cartons passing or being delivered into the sealing machine. This, in addition to the labor required, is objectionable on account of the handling of the bags and the hands of the operator coming into contact more or less with the food or material in the containers.

The main objects of my present invention are: First, to provide an improved sealing machine in which the bags or inner containers are automatically folded. Second, to provide an improved sealing machine in which the bags or inner containers are automatically folded, which is very compact and capable of very rapid manipulation. Third, to provide an improved sealing machine possessing these advantages, which is comparatively simple and economical in structure and not likely to get out of repair when in use.

Further objects, and objects relating to structural details, will definitely appear from the detailed description to follow.

I accomplish the objects of my invention by the devices and means described in the following specification.

The invention is clearly defined and pointed out in the claims.

A structure which is a preferred embodiment of my invention is clearly illustrated in the accompanying drawing forming a part of this specification, in which:

Figure I is a plan view of a structure embodying the features of my invention, the forward ends of the feed belts being broken away, the delivery conveyer being omitted. Fig. II is a side perspective of the parts of the machine shown in Fig. I, at the left of the line A—B. Fig. II^A is a side perspective of parts of the machine shown in Fig. I, at the right of the line A—B, the front end of the delivery conveyer being shown in operative position. Fig. III is a vertical longitudinal section on a line corresponding to line 3—3 of Fig. I. Fig. IV is an enlarged view of the shifter mechanism, partially in section, on a line corresponding to line 4—4 of Fig. III. Fig. V is an inverted view of one of the bag folder mechanisms. Fig. VI is a detail vertical section on a line corresponding to line 6—6 of Figs. I and V, the folder member being shown in its extended position and in operative relation to a package or carton. Fig. VII is a detail horizontal section on a line corresponding to line 7—7 of Fig. VI. Fig. VIII is an enlarged detail horizontal section on a line corresponding to line 8—8 of Fig. III, showing details of the carton stop. Fig. IX is a detail view of the material compressor.

In the drawing similar reference characters refer to similar parts throughout the several views, and the sectional views are taken looking in the direction of the little arrows at the ends of the section lines.

Referring to the drawing, the frame 1 comprises side members connected by suitable cross pieces to form a rigid frame to support the mechanism and the driving connections therefor. As the details of the frame form no part of my present invention, I do not describe the same herein.

The sealing conveyer chain 2 is supported on suitable sprockets 3 and 4 at the front and rear of the machine. The conveyer is provided with flights 5 for carrying the cartons. As the structural details form no part of this invention I do not describe it with further details.

The packages or cartons are delivered to the sealing conveyer from the feed belts 6, the inner ends of which are supported by pulleys 7 so that the upper reaches of the feed belts are in the plane of the bases 8 of the flights 5 when they are in their carrying position, the belts overlapping the sealing conveyer at each side. Each of the feed belts are provided with guide bars 9 at their rear ends so that the cartons are properly delivered to the shifters 10 which are mounted to reciprocate across the feed belts to de-

liver the packages therefrom onto the sealing conveyer, first from one belt and then the other.

The shifter plates or members 10 are mounted on the rod 11 supported above the conveyer and feed belts, as shown. The shifter members 10 are connected to the sleeve-like slide 12 which is connected by the link 13 to the bell crank lever 14. The bell crank lever 14 is pivotally mounted at 15. The bell crank is actuated by the link 16 which is connected to the lever 17 pivoted at 18 toward the rear of the machine and driven from the cam wheel 19 on the shaft 20 of the rear conveyer sprocket 4, thus securing the proper timing in the actuation of the shifter with the conveyer. The central shifter plate 21 is carried by the slide 22 slidably mounted on the sleeve 12. The member 21 is connected by the link 23 to the bell crank 14, the connection for the link to the lever on the inner side of the connection for the link 13 thereto. With the links 23 and 13 thus connected, the shifter plate or member 21, which coacts with both of the shifter members 10, opens up at the end of the out-stroke to receive the cartons as they are delivered onto the conveyer and closes up on the cartons to effectively transfer them and to take out any bulge in their side walls and to effectively deliver them between the side bars 36 of the sealing conveyer.

To prevent the cartons from piling or stacking into the shifter, the shifter members are provided with guards 24 which move across the feed belts as the shifter members move to their delivery position, one guard being in its open position when the other is in its closed position. See Fig. I. These guard members move between the guide pins 25, as shown in the drawing.

The delivery of the cartons is further controlled by the stops 26 which are mounted on pivots 27 in the stop supports 28. The stop supports 28 consist of a pair of plates connected by bolts 29 having spacing sleeves 30 thereon. The stops are held in their engaging position by the catches 31 which are carried by the pivot members 32 and project to be engaged by the trip blocks 33 on the shifter guard members 24 as they move on their inner or delivery stroke. The catch is returned to its engaging position when released by the trip blocks by means of the coiled springs 34 and the stops are returned to their operative position against the pins 26′ by means of the coiled springs 35. See Fig. VIII.

At each side of the conveyer are side bars 36 which hold the cartons against twisting movement. The cartons may be placed on the feed belts by hand or delivered automatically thereto from the filling machine. They are ordinarily delivered with the top flaps of the carton in a more or less upright position and the mouths of the bags or inner container open. By this mechanism described, the cartons are effectively delivered to the sealing conveyer by which they are carried through the machine.

As the filled packages are carried along on the sealing conveyer, the material is compressed, should it be above the level of the top of the carton, by a compressor means comprising a shaft 37 having an arm 38 thereon provided with a curved shoe 39 which strikes into the bag and passes out of the same as the package is carried along by the conveyer. The compressor arm is provided with diverging spreaders 40 which spread the mouth of the bag so that it is left in proper condition for the bag folding mechanism.

As the cartons pass from the compressor device, their side flaps are engaged by the spreaders 41 which are supported to extend downwardly and rearwardly, as shown in Figs. I and III. These flat spreaders 41 are preferably formed of rods, as shown, for convenience in manufacture. The side folders for the bag or other container are disposed at the sides of the conveyer, one slightly in advance of the other, so that they operate successively.

The folder members 42 are pivotally mounted on the reciprocating members 43 by means of the pivots 44. The slide members 43 are carried by the carriages 45 mounted on rod-like ways 46. The carriages reciprocate parallel with the conveyer way, while the folder members reciprocate transversely of the conveyer ways. See Figs. V and VI.

The ways 46 are carried by brackets 47 projecting inwardly from the side members of the frame. The carriages are moved on their ways and the folder members reciprocated by means of cams 49 on the under sides of the brackets 48, the cams having cam grooves 49′ therein. See Fig. VI. The slide members 43 are provided with upwardly projecting pins 50 which engage these grooves.

The vertical shafts 51 are provided with arms 52 having slots 53 therein engaging the pins so that, as the shafts are revolved, the pins are carried around in the cam grooves,—thus reciprocating the folder members on the carriages, and also reciprocating the carriages on their ways. This secures an inward and forward work-stroke for the folder members so that they move along with the cartons as they are carried by the conveyer.

The folder members 42 are also rocked in their horizontal pivots 44 at the extreme end of their outer stroke or movement to press the folded portion of the bag downwardly. The folder members are held normally elevated by means of the coiled springs 54. As the carriages are reciprocated on their

work-stroke, the pins 55 on the folder members engage cams 56 on the brackets 48, rocking the folder members on their pivots. As soon as the pins pass from the cams, the springs 54 raise the folder members.

The shafts 51 are provided with sprockets 57 which are connected by the sprocket chains 58 to the sprockets 59 on the shafts 60 of the flap presser devices. In Fig. VI, a carton 61 with the inner container 62 therein, is shown, the parts being shown at the end of the work-stroke of the first folder.

The second flap folder is a duplicate of that described and performs its work immediately after the first folder has performed its work, folding the opposite side of the bag or inner container inward upon the previously folded part, leaving the front and rear portions in a more or less upright position. The rear and front flap portions of the inner container are folded inwardly with the front and rear flaps of the carton.

The mechanism is arranged so that this takes place promptly after the folding of the side flaps of the inner container. The rear flap folder 63 is mounted on the rock-shaft 64 and provided with a segment 65 driven through the curved rack 66 on the rock shaft 67, the object being to actuate the flap folder with a quick stroke so that the rear flaps are folded forwardly as the cartons are carried along and just previous to the engagement of the front flaps with the flap folder 68 so that the rear flap is folded under the front flap. The front flap folder 68 is in the form of a stationary shoe which merely presses the flaps down as the cartons are carried along by the conveyer.

The rock shaft 67 is provided with an arm 69 (see Fig. II) connected by the link 70 to the lever 71 which is pivoted at 72 and actuated by the cam 73 on the shaft 74. See Fig. II^A. The shaft 74 is driven from the shaft 20 by means of the sprocket chain 75.

The glue rollers 78 are disposed immediately at the rear of the rear flap folder 68 and apply the glue or suitable adhesive to the side flaps of the carton, the side flaps passing between the glue rollers 78 and the supporting rollers 79. After the cartons pass the glue rollers, their side flaps are folded or turned inwardly by the flap turners or folders 80. These flap turners are arranged so that one acts slightly in advance of the other. These flap turners are shaped somewhat like a mold board, their forward ends engaging under the flaps so that as the cartons are carried along the flaps are turned inwardly.

At the rear of the flap folders 80 are flap pressers 81 arranged to act alternately, the pressers acting to press one of the glued carton flaps down upon the inner flaps,—that is, the front and rear flaps and the other presser fold the opposite side flap down upon the inner flaps and upon the previously sealed or pressed side flap. These presser members are provided with engaging rollers 82 carried by the reciprocating members 83, the parts being arranged and actuated substantially as shown and described, and the actuating mechanism described for the inner container folders 42.

The shafts 60 of the flap pressers which correspond to the shafts 51 of the inner container folders, are connected to the shaft 84 by means of the sprocket chain 85.

The cartons are delivered from the conveyer by means of the discharge belts 86 arranged at each side of the conveyer at its rear end to receive the cartons between them as the conveyer passes over its rear sprocket, carrying them into the delivery conveyer 87 by which they are carried to the packing stand, or delivered as may be desired. Above this delivery conveyer 87 is a top retaining belt 88 which presses the flaps together until the glue is set. As the cartons leave the rear flap presser, the flaps pass under the flap retaining bar 89 which holds them down while carried by the dicharge belts 86 and until thev are engaged by the retaining belt 88 above the delivery belt. The cartons are guided to the delivery conveyer 87 by a guide 90 arranged in front of the pulley 91 for the front end of the delivery belt 87. The delivery belt is driven from the shaft 20 by means of the sprocket chain 92 and the sprocket 93 on the shaft 94 of the pulley. The delivery belts 86 are supported on pulleys 95 on the vertical shafts 84 and the pulleys 96 on the shafts 97 carried by the rearwardly projecting arms 98 on the frame. The shafts 84 are driven from the shaft 20 through the beveled gear connections 99. The belts 86 are arranged in opposed pairs. The speed of these belts is greater than that of the sealing conveyer, so that, as the cartons are engaged by the delivery belts, they are carried off the flights.

The shaft 100 of the glue rollers is connected by the gears 101 and 102 to the driving shaft 76, and is provided with a suitable pulley 104 on the left hand side of the machine. See Fig. I.

The shaft 20 is connected by the sprocket 77 to a sprocket 105 connected to the gear 106 revolubly mounted on the driving shaft 76. The gear 106 is driven from a gear 107 detachably connected by the clutch 108 to the glue roller shaft 100. The clutch is controlled by the lever 109. See Figs. I and II^A.

The shaft 37 for the material presser is connected by the gears 110 and 111 to a shaft 112 toward the front end of the machine which is in turn, connected by the chain 113 to the sprocket 113′ on the shaft 80.

The feed belts 6 are driven from the shaft 114 for the front conveyer sprocket 3 which is provided with sprockets 115 connected

by the sprocket chains 116 to sprockets 117 connected with the feed belt pulleys 7.

The parts are thus all connected to properly time their operation. The steps or cycle of operation of the machine is as follows:— The filled cartons with the inner paper bags or containers therein are delivered in two streams by the feed belts 6 from which they are shifted alternately onto the sealing conveyer flights 5 by means of the shifter mechanism described. As the cartons are carried along by the sealing conveyer, the material is compressed to the level of the top of the carton by means of the compressor shoe 39, the mouth of the bag being held open by the spreaders 40. The compressor shoe, as stated, moves into and out of the cartons as they travel along. As the compressor shoe is moving out of the containers, the side flaps are engaged by the flap side spreaders 41 and moved downwardly so as to be out of the way of the side folders of the inner containers which act alternately as described, to fold the sides of the inner containers inwardly one upon the other. The rear flap is then engaged by the rear flap folder 63 which is actuated in proper time to fold the rear flap under the front flap as it is folded down by the front flap folder 68 which is directly in front of the glue rollers 78 by which the glue is applied to the side flaps as the cartons are carried under them. At the rear of the glue rollers are the flap turners 80 which act successively on the side flaps to turn them inwardly into position to be engaged by the flap pressers 81. These flap turners do not press the flaps upon each other, which allows a little time for the glue to set slightly or become tacky before they are pressed down by the pressers 81. The side flaps are successively engaged by the flap pressers 81 and sealed or pressed together. As the cartons pass from the rear or last flap presser 81, they pass under the retaining bar 89 by which they are held in their closed positions as they are being delivered by the discharge mechanism onto the delivery belt which is provided with the flap retaining belt 88 so that the glue has sufficient time to set before the sealed cartons are finally delivered.

It will be understood that I have used the terms front and rear and side flaps as referring to the relative position of the flaps while the cartons are passing through the machine.

I have illustrated and described my improvements in the embodiment which I have found satisfactory and practical in use. I have not attempted to illustrate or describe any modifications as I believe the disclosure made will enable those skilled in the art to embody my improvements as conditions may require. My improved sealing machine is comparatively simple and compact in structure and very efficient and of large capacity.

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

1. In a combined inner container closing and carton sealing machine, the combination of a conveyer having flights thereon, inner container folding devices disposed at the sides of the conveyer, to act successively, each folding device comprising a carriage mounted to reciprocate parallel with the conveyer, a folder member, a reciprocating support on which said folder member is pivotally mounted, said support being mounted on said carriage to reciprocate transversely of said conveyer, a cam member having a cam groove therein, a pin on said folder member support engaging said cam groove, a shaft having a longitudinally slotted arm thereon engaging said pin whereby the carriage and said folder member are reciprocated, a spring for holding said folder member in its elevated position, means for actuating said folder member on its pivot comprising a cam, a pin on said folder member adapted to engage said cam as the said carriage and folder member support are actuated on their work-stroke, downwardly and rearwardly projecting diverging side flap spreaders arranged one at each side of the conveyer to spread the side flaps as the cartons are carried along by the conveyer and to retain the same during the operating of said inner container folding devices, a rear flap closer disposed at the rear of the inner container folder devices adapted to fold the rear carton and the rear inner container flaps forwardly together, a front flap closer adapted to fold the front carton and the front inner container flaps upon the rear flaps as the cartons are carried along, means for applying glue to the side flaps, means for successively turning the side flaps inwardly, and means for successively pressing the inturned side flaps upon the inner flaps.

2. In a combined inner container closing and carton sealing machine, the combination of a conveyer having flights thereon, inner container folding devices disposed at the sides of the conveyer, to act successively, each folding device comprising a carriage mounted to reciprocate parallel with the conveyer, a folder member, a reciprocating support therefor mounted on said carriage to reciprocate transversely of said conveyer, a cam member having a cam groove therein, a pin on said folder member support engaging said cam groove, a shaft having a longitudinally slotted arm thereon engaging said pin whereby the carriage and said folder member are reciprocated, downwardly and rearwardly projecting diverging side flap spreaders arranged one at each side of the conveyer to spread the side flaps

as the cartons are carried along by the conveyer and to retain the same during the operating of said inner container folding devices, a rear flap closer disposed at the rear of the inner container folder devices adapted to fold the rear carton and the rear inner container flaps forwardly together, a front flap closer adapted to fold the front carton and the front inner container flaps upon the rear flaps as the cartons are carried along, means for applying glue to the side flaps, means for successively turning the side flaps inwardly, and means for successively pressing the inturned side flaps upon the inner flaps.

3. In a carton sealing machine the combination with a conveyer of folding devices disposed at the sides of the conveyer, to act successively, each folding device comprising a carriage mounted to reciprocate parallel with the conveyer, a folder member, a reciprocating support on which said folder member is pivotally mounted, said support being mounted on said carriage to reciprocate transversely of said conveyer, a cam member having a cam groove therein, a pin on said folder member support engaging said cam groove, a shaft, having a longitudinally slotted arm thereon engaging said pin whereby the carriage and said folder member are reciprocated, a spring for holding said folder member in its elevated position, means for actuating said folder member on its pivot comprising a cam, a pin on said folder member adapted to engage said cam as the said carriage and folder member support are actuated on their work-stroke, and side flap spreaders arranged to spread the side flaps as the cartons are carried along by the conveyer and to retain the same during the operating of said inner container folding devices.

4. In a carton sealing machine the combination with a conveyer of folding devices disposed at the sides of the conveyer, to act successively, each folding device comprising a carriage mounted to reciprocate parallel with the conveyer, a folder member, a reciprocating support for said folder member mounted on said carriage to reciprocate transversely of said conveyer, a cam member having a cam groove therein, a pin on said folder member support engaging said cam groove, a shaft having a longitudinally slotted arm thereon engaging said pin whereby the carriage and said folder member are reciprocated, and side flap spreaders arranged to spread the side flaps as the cartons are carried along by the conveyer and to retain the same during the operating of said inner container folding devices.

5. In a carton sealing machine, the combination with a conveyer, of a folding device comprising a carriage mounted to reciprocate parallel with the conveyer, a folder member, a reciprocating support on which said folder member is pivotally mounted, said support being mounted on said carriage to reciprocate transversely of said conveyer, a cam member having a cam groove therein, a pin on said folder member support engaging said cam groove, a shaft having a longitudinally slotted arm thereon engaging said pin whereby the carriage and said folder member are reciprocated, a spring for holding said folder member in its elevated position, means for actuating said folder member on its pivot comprising a cam and a pin on said folder member adapted to engage said cam as the said carriage and folder member support are actuated on their work-stroke.

6. In a combined inner container closing and carton sealing machine the combination of a conveyer, a compressor adapted to compress the material within the containers when the same is above a predetermined level, and adapted also to spread or open the mouths of the containers, inner container folding devices disposed at the sides of the conveyer to act successively, each folding device comprising a carriage mounted to reciprocate parallel with the conveyer, a folder member, a reciprocating support on which said folder member is pivotally mounted, said support being mounted on said carriage to reciprocate transversely of said conveyer, means for simultaneously actuating said carriage and said folder member support whereby an inward and rearward movement thereof is secured, a spring for holding said folder member in its elevated position, means for actuating said folder member on its pivot comprising a cam and a pin on said folder member adapted to engage said cam as the said carriage and folder member support are actuated on their work-stroke, side flap spreaders arranged to spread the side flaps as the cartons are carried along by the conveyer and to retain the same during the operating of said inner container folding devices, a rear flap closer disposed at the rear of the inner container folder device adapted to fold the rear carton and the rear inner container flaps forwardly together, a front flap closer adapted to fold the front carton and the front inner container flaps upon the rear flaps as the cartons are carried along, and means for folding and sealing the side flaps.

7. In a combined inner container closing and carton sealing machine the combination of a conveyer, inner container folding devices disposed at the sides of the conveyer to act successively, each folding device comprising a carriage mounted to reciprocate parallel with the conveyer, a folder member, a reciprocating support on which said folder member is pivotally mounted, said support being mounted on said carriage to

reciprocate transversely of said conveyer, means for simultaneously actuating said carriage and said folder member support whereby an inward and rearward movement thereof is secured, a spring for holding said folder member in its elevated position, means for actuating said folder member on its pivot comprising a cam and a pin on said folder member adapted to engage said cam as the said carriage and folder member support are actuated on their work-stroke, side flap spreaders arranged to spread the side flaps as the cartons are carried along by the conveyer and to retain the same during the operating of said inner container folding devices, a rear flap closer disposed at the rear of the inner container folder device adapted to fold the rear carton and the rear inner container flaps forwardly together, a front flap closer adapted to fold the front carton and the front inner container flaps upon the rear flaps as the cartons are carried along, and means for folding and sealing the side flaps.

8. In a carton sealing machine the combination of a conveyer, folding devices disposed at the sides of the conveyer to act successively, each folding device comprising a carriage mounted to reciprocate parallel with the conveyer, a folder member, a reciprocating support on which said folder member is pivotally mounted, said support being mounted on said carriage to reciprocate transversely of said conveyer, means for simultaneously actuating said carriage and said folder member support whereby an inward and rearward movement thereof is secured, a spring for holding said folder member in its elevated position, means for actuating said folder member on its pivot comprising a cam and a pin on said folder member adapted to engage said cam as the said carriage and folder member support are actuated on their work-stroke.

9. In a combined inner container closing and carton sealing machine the combination of a conveyer, a compressor adapted to compress the material within the containers when the same is above a predetermined level, and adapted also to spread or open the mouths of the containers, inner container folding devices disposed at the sides of the conveyer to act successively, each folding device comprising a carriage mounted to reciprocate parallel with the conveyer, a folder member, a reciprocating support on which said folder member is mounted, said support being mounted on said carriage to reciprocate transversely of said conveyer, means for simultaneously actuating said carriage and said folder member support whereby an inward and rearward movement thereof is secured, side flap spreaders arranged to spread the side flaps as the cartons are carried along by the conveyer and to retain the same during the operating of said inner container folding devices, a rear flap closer disposed at the rear of the inner container folder device adapted to fold the rear carton and the rear inner container flaps forwardly together, a front flap closer adapted to fold the front carton and the front inner container flaps upon the rear flaps as the cartons are carried along, and means for folding and sealing the side flaps.

10. In a combined inner container closing and carton sealing machine the combination of a conveyer, inner container folding devices disposed at the sides of the conveyer to act successively, each folding device comprising a carriage mounted to reciprocate parallel with the conveyer, a folder member, a reciprocating support on which said folder member is mounted, said support being mounted on said carriage to reciprocate transversely of said conveyer, means for simultaneously actuating said carriage and said folder member support whereby an inward and rearward movement thereof is secured, side flap spreaders arranged to spread the side flaps as the cartons are carried along by the conveyer and to retain the same during the operating of said inner container folding devices, a rear flap closer disposed at the rear of the inner container folder device adapted to fold the rear carton and the rear inner container flaps forwardly together, a front flap closer adapted to fold the front carton and the front inner container flaps upon the rear flaps as the cartons are carried along, and means for folding and sealing the side flaps.

11. In a combined inner container closing and carton sealing machine the combination of a conveyer, a compressor adapted to compress the material within the containers when the same is above a predetermined level, and adapted also to spread or open the mouths of the containers, inner container folding devices disposed at the sides of the conveyer to act successively, each folding device comprising a carriage mounted to reciprocate with the conveyer, a folder member, a reciprocating support on which said folder member is mounted, said support being mounted on said carriage to reciprocate transversely of said conveyer, means for simultaneously actuating said carriage and said folder member support whereby an inward and rearward movement thereof is secured, a rear flap closer disposed at the rear of the inner container folder device adapted to fold the rear carton and the rear inner container flaps forwardly together, a front flap closer adapted to fold the front carton and the front inner container flaps upon the rear flaps as the cartons are carried along, and means for folding and sealing the side flaps.

12. In a combined inner container closing

and carton sealing machine the combination of a conveyer, inner container folding devices disposed at the sides of the conveyer to act successively, each folding device comprising a carriage mounted to reciprocate parallel with the conveyer, a folder member, a reciprocating support on which said folder member is mounted, said support being mounted on said carriage to reciprocate parallel with the conveyer, a folder member, a reciprocating support on which said folder member is mounted, said support being mounted on said carriage to reciprocate transversely of said conveyer, means for simultaneously actuating said carriage and said folder member support whereby an inward and rearward movement thereof is secured, a rear flap closer disposed at the rear of the inner container folder device adapted to fold the rear carton and the rear inner container flaps forwardly together, a front flap closer adapted to fold the front carton and the front inner container flaps upon the rear flaps as the cartons are carried along, and means for folding and sealing the side flaps.

13. In a combined inner container closing and carton sealing machine the combination of a conveyer, a compressor adapted to compress the material within the containers when the same is above a predetermined level and adapted also to spread or open the mouths of the containers, inner container folder members having an inward and rearward work stroke and a vertical movement during the latter part of the work stroke, side flap spreaders arranged to spread the side flaps of the carton prior to the operation of said inner container folder members, and means for closing the front and rear carton and inner container flaps and means for folding and sealing the side flaps disposed at the rear of said inner container folding means.

14. In a combined inner container closing and carton sealing machine the combination of a conveyer, inner container folder members having an inward and rearward work stroke and a vertical movement during the latter part of the work stroke, side flap spreaders arranged to spread the side flaps of the carton prior to the operation of said inner container folder members, and means for closing the front and rear carton and inner container flaps and means for folding and sealing the side flaps disposed at the rear of said inner container folding means.

15. In a combined inner container closing and carton sealing machine the combination of a conveyer, a compressor adapted to compress the material within the containers when the same is above a predetermined level and adapted also to spread or open the mouths of the containers, inner container folder members adapted to fold the sides of the inner containers, side flap spreaders arranged to spread the side flaps of the carton prior to the operation of said inner container folder members, and means for closing the front and rear carton and inner container flaps and means for folding and sealing the side flaps disposed at the rear of said inner container folding means.

16. In a combined inner container closing and carton sealing machine the combination of a conveyer, inner container folder members adapted to fold the sides of the inner containers, side flap spreaders arranged to spread the side flaps of the carton prior to the operation of said inner container folder members, and means for closing the front and rear carton and inner container flaps and means for folding and sealing the side flaps disposed at the rear of said inner container folding means.

17. In a carton sealing machine, the combination of a conveyer, a pivotally mounted folder member, means for actuating said folder member transversely across and rearwardly relative to said conveyer and in a plane substantially parallel therewith, and means for actuating said folder member on its pivot toward the conveyer at the end of its work stroke.

18. In a carton sealing machine, the combination of a conveyer, a folder member, means for actuating said folder member transversely across and rearwardly relative to said conveyer and in a plane substantially parallel therewith and toward said conveyer at the end of the work stroke.

19. In a carton sealing machine, the combination of a conveyer having flights thereon, and a compressor comprising a shaft mounted transversely above the conveyer, the shaft being provided with an arm having a curved shoe at its outer end and inwardly diverging deflectors at each side, the shaft and conveyer having driving connections so that the compressor shoe strikes into the open inner containers within the cartons as they are carried along by the conveyer.

20. In a carton sealing machine, the combination of a conveyer having flights thereon, and a compressor comprising a shaft mounted transversely above the conveyer, the shaft being provided with an arm having a longitudinally curved shoe at its outer end and deflectors on its sides, the shaft and conveyer having driving connections so that the compressor shoe strikes into the open inner containers within the cartons as they are carried along by the conveyer.

21. In a combined inner container closing and carton sealing machine, the combination of a conveyer, inner container folder members adapted to fold the inner sides of the inner containers and to press the same downward, and means for closing the front and rear carton and the inner container flaps,

and means for folding and sealing the carton side flaps disposed at the rear of said inner container folding means.

22. In a combined container closing and carton sealing machine, the combination of a conveyer, inner container folder members adapted to fold the sides of the inner containers, means for closing the front and rear carton and inner container flaps, and means for folding and sealing the carton side flaps disposed at the rear of said inner container folding means.

In witness whereof, I have hereunto set my hand and seal in the presence of two witnesses.

HARRY L. JOHNSON. [L. S.]

Witnesses:
HAROLD CASE,
ALICE. WHITE.