

Dec. 17, 1935.

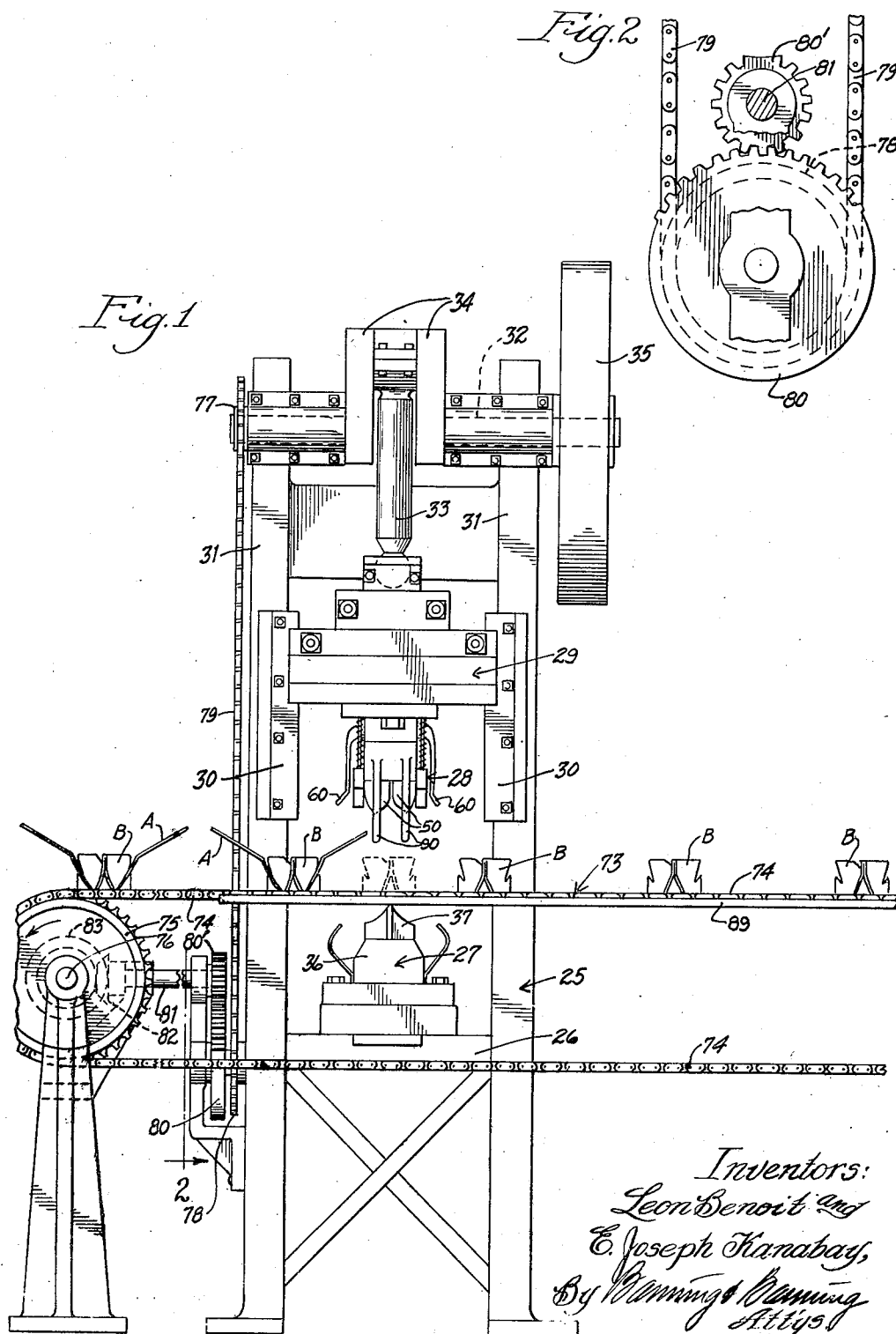
L. BENOIT ET AL

2,024,201

CARTON SETTING-UP MACHINE

Original Filed Nov. 24, 1930

10 Sheets-Sheet 1



Inventors:
Leon Benoit and
E. Joseph Hanabary,
By *Wm. W. Wm.*
Attys.

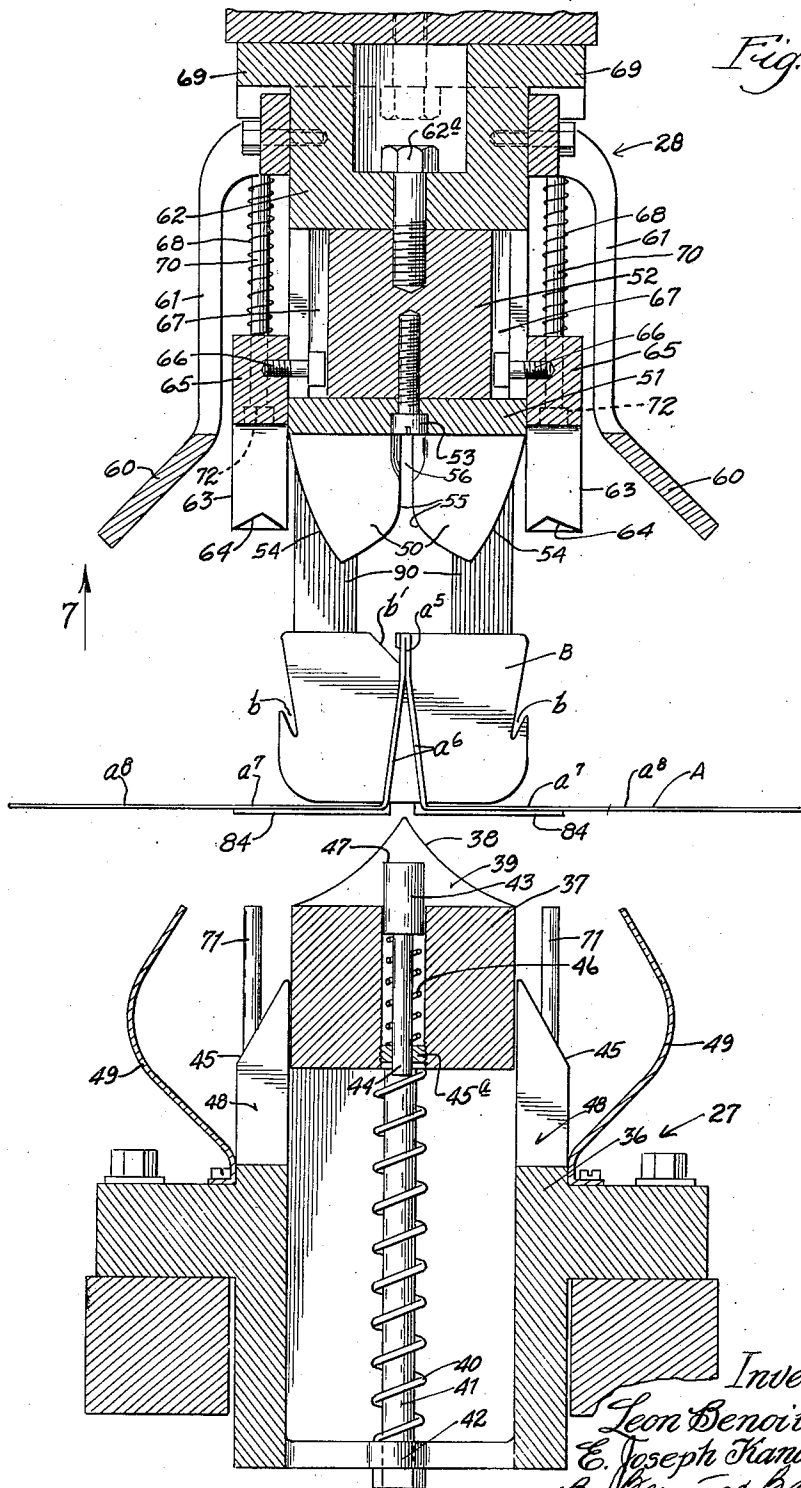
Dec. 17, 1935.

L. BENOIT ET AL

2,024,201

CARTON SETTING-UP MACHINE

Original Filed Nov. 24, 1930 10 Sheets-Sheet 2



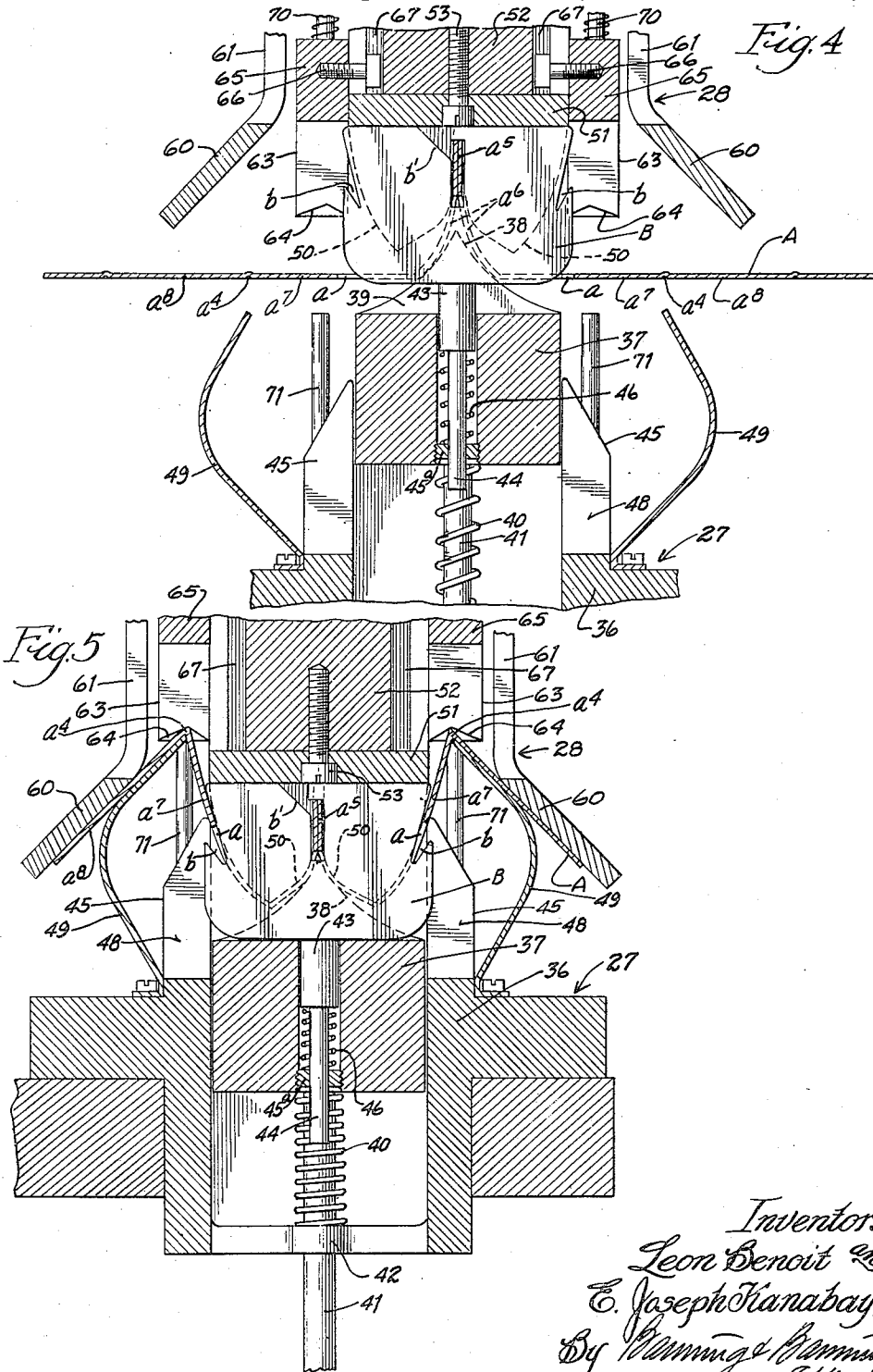
Dec. 17, 1935.

L. BENOIT ET AL

2,024,201

CARTON SETTING-UP MACHINE

Original Filed Nov. 24, 1930 10 Sheets-Sheet 3



Inventors:
Leon Benoit and
E. Joseph Hanabay,
By *Hammings & Hammings*
Attys.

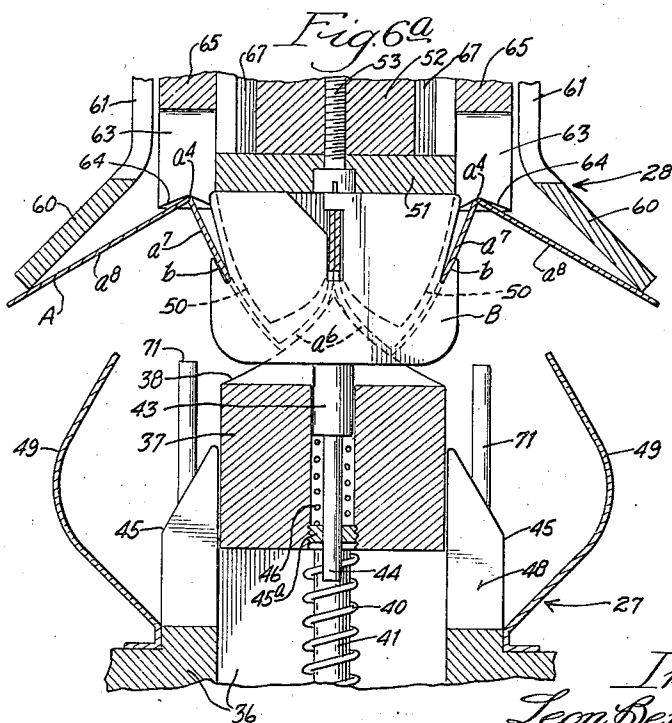
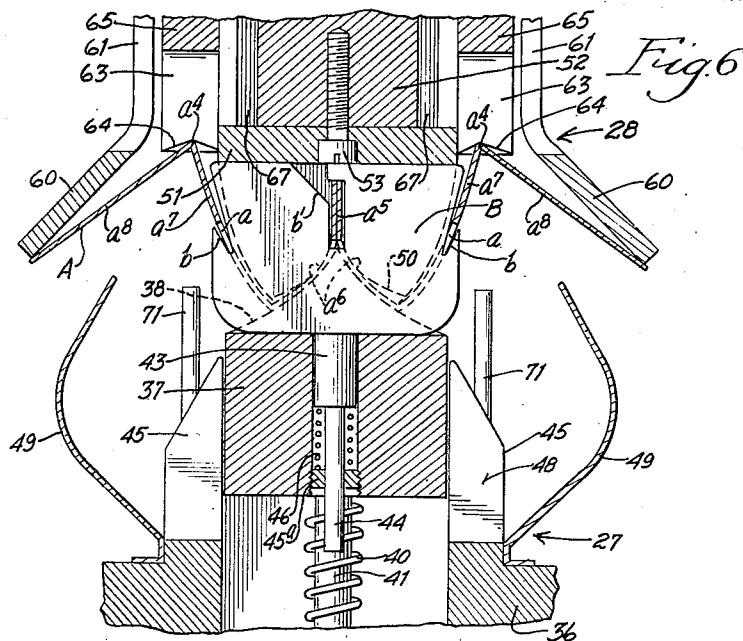
Dec. 17, 1935.

L. BENOIT ET AL

2,024,201

CARTON SETTING-UP MACHINE

Original Filed Nov. 24, 1930 10 Sheets-Sheet 4



Inventors:
Leon Benoit and
E. Joseph Kanaboy,
By *Wm. & Wm.*
Attys.

Dec. 17, 1935.

L. BENOIT ET AL

2,024,201

CARTON SETTING-UP MACHINE

Original Filed Nov. 24, 1930 10 Sheets-Sheet 5

Fig. 7

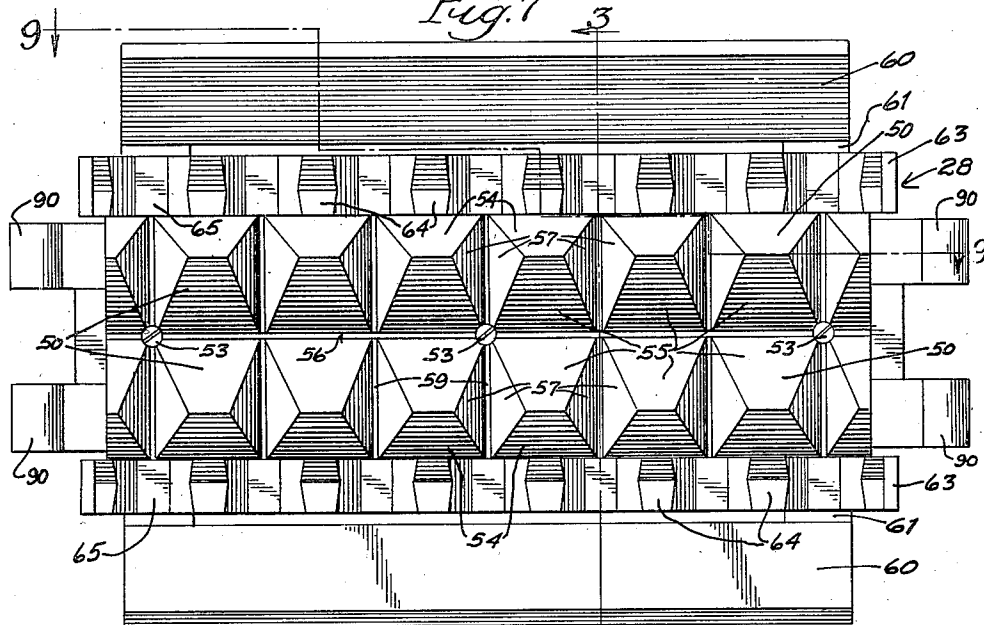
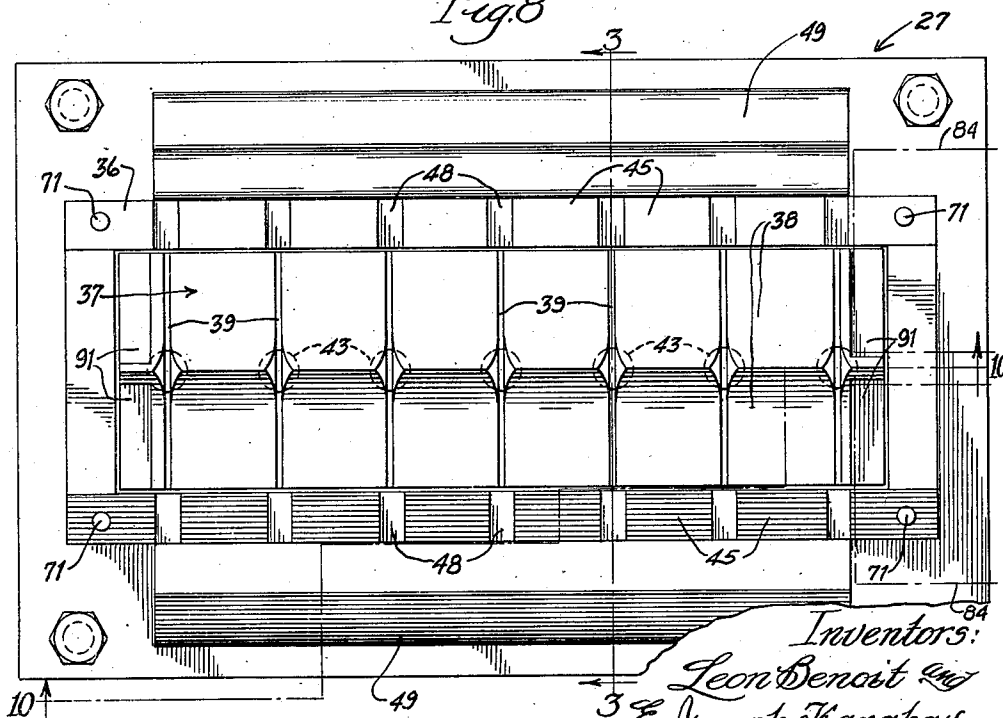


Fig. 8



Inventors:
Leon Benoit and
E. Joseph Kanabay,
By Manning & Manning
Attys

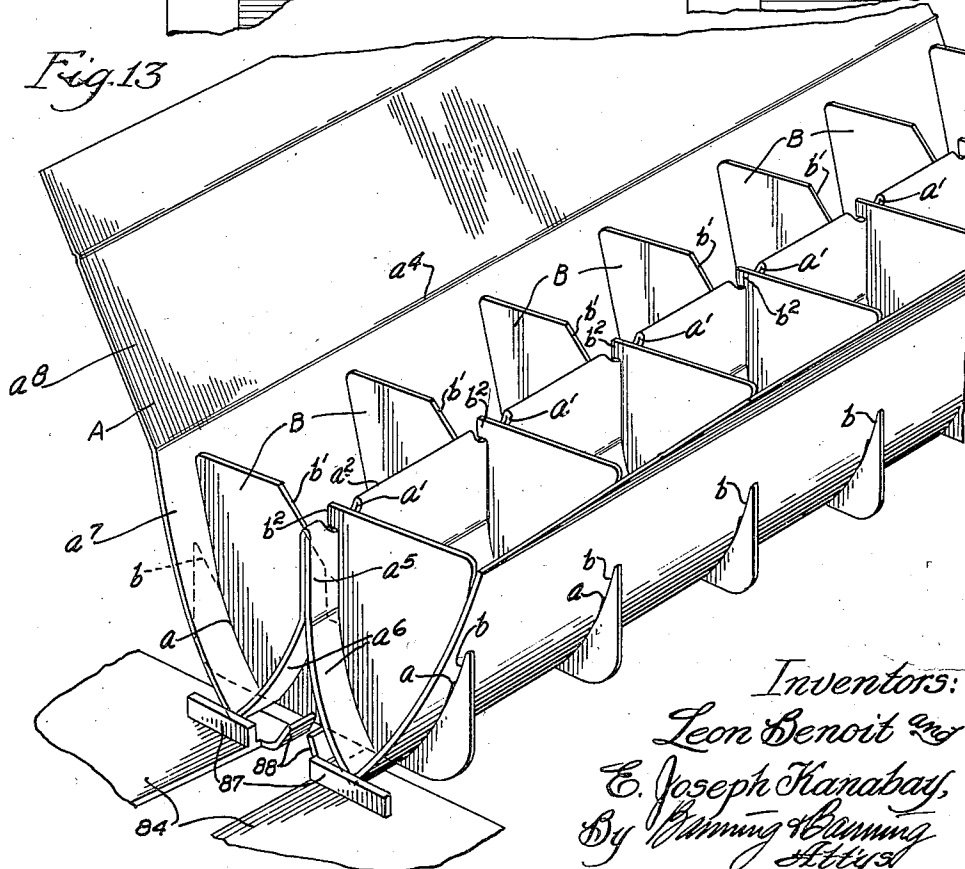
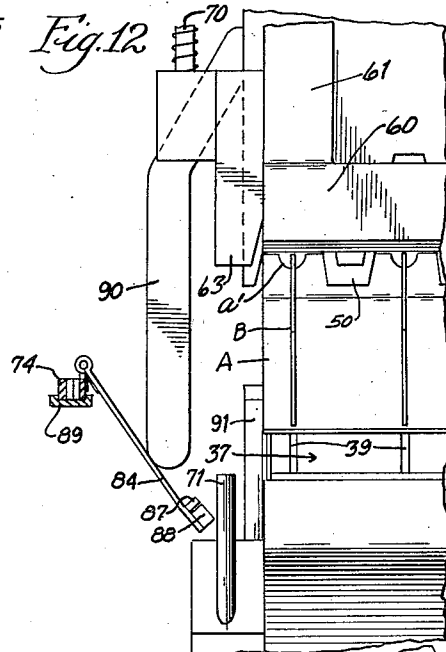
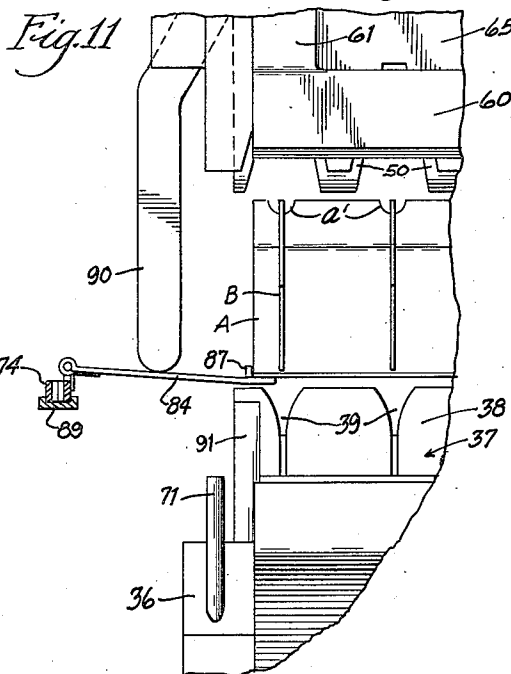
Dec. 17, 1935.

L. BENOIT ET AL

2,024,201

CARTON SETTING-UP MACHINE

Original Filed Nov. 24, 1930 10 Sheets-Sheet 7



Inventors:
 Leon Benoit and
 E. Joseph Hanabay,
 By *Banning & Banning*
 Attys

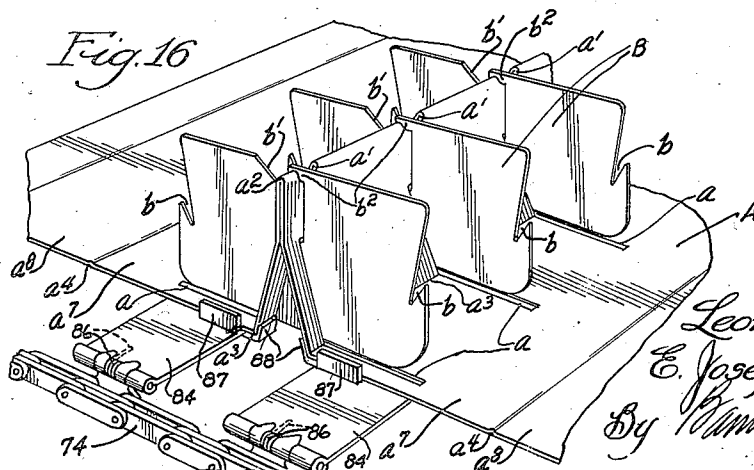
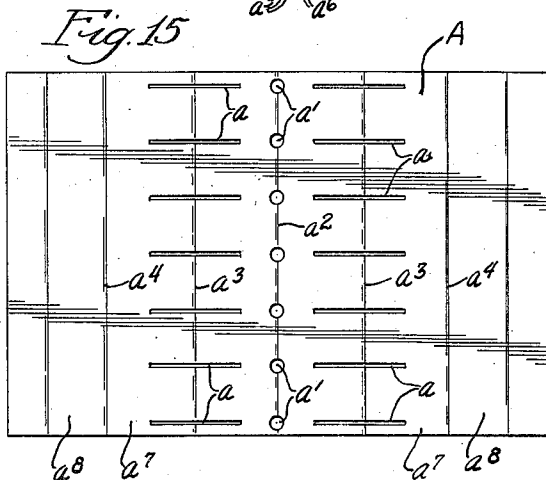
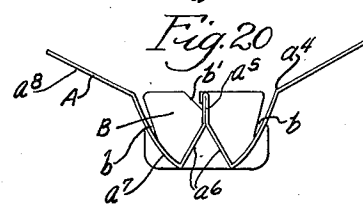
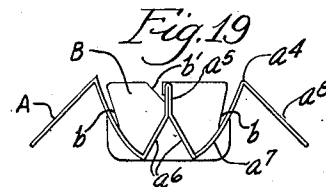
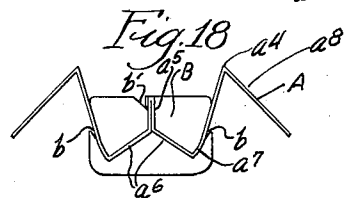
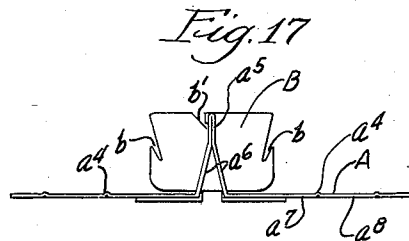
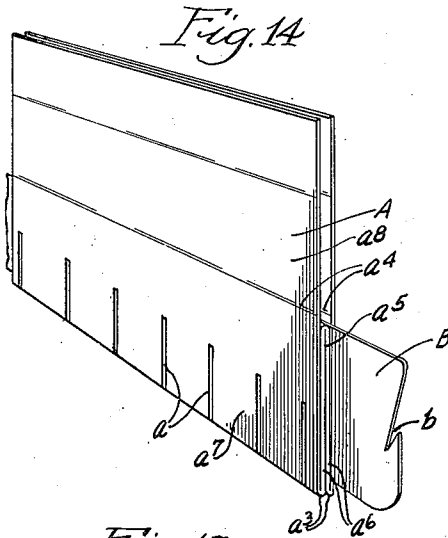
Dec. 17, 1935.

L. BENOIT ET AL

2,024,201

CARTON SETTING-UP MACHINE

Original Filed Nov. 24, 1930 10 Sheets-Sheet 8



Dec. 17, 1935.

L. BENOIT ET AL

2,024,201

CARTON SETTING-UP MACHINE

Original Filed Nov. 24, 1930 10 Sheets-Sheet 9

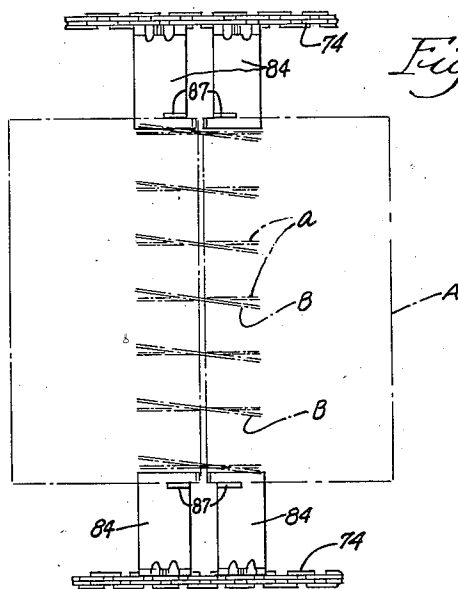


Fig. 21

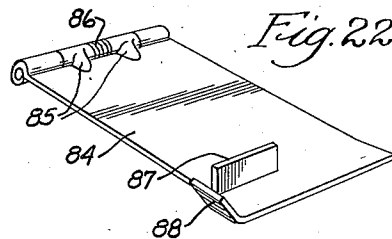


Fig. 22

Fig. 24

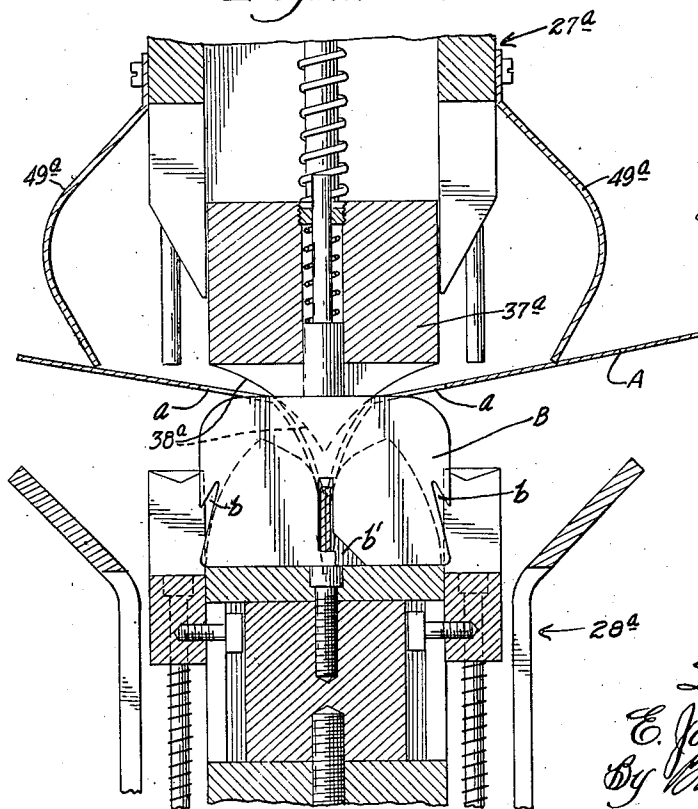
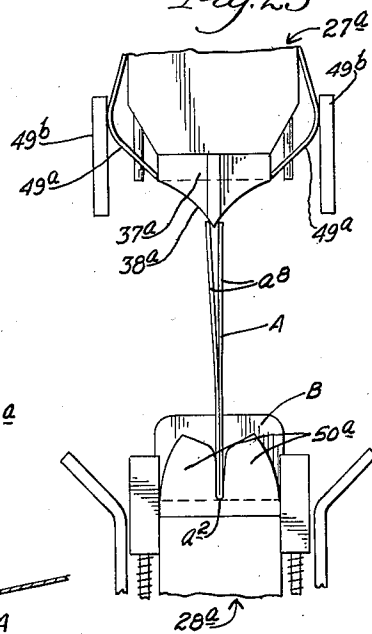


Fig. 23



Inventors:
Leon Benoit and
E. Joseph Hanabay,
By *Wm. H. H. H. H. H.*
Attys

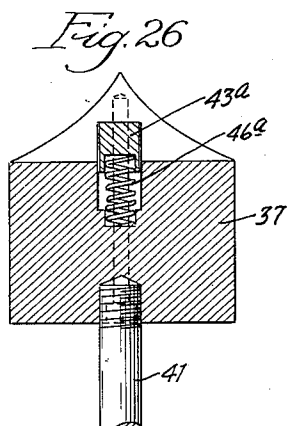
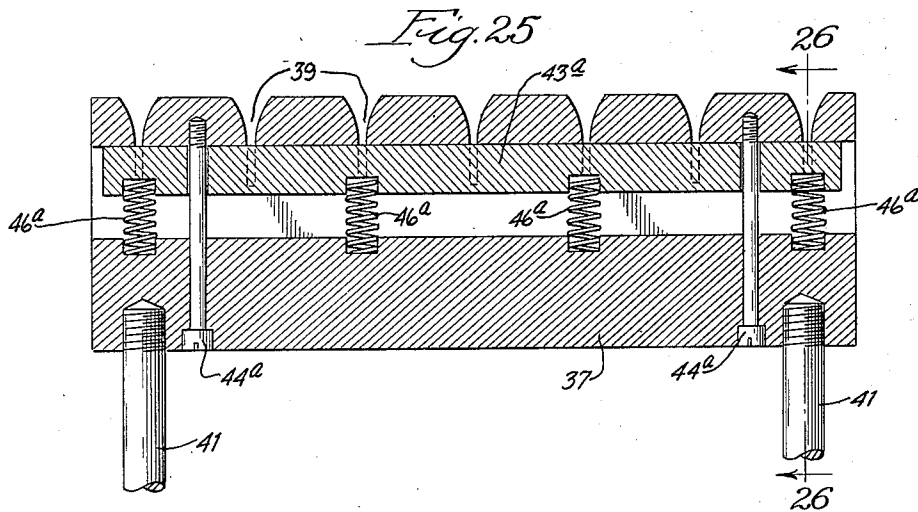
Dec. 17, 1935.

L. BENOIT ET AL

2,024,201

CARTON SETTING-UP MACHINE

Original Filed Nov. 24, 1930 10 Sheets-Sheet 10



Inventors:
Leon Benoit and
E. Joseph Kazabay,
By Fleming + Fleming
Attys.

UNITED STATES PATENT OFFICE

2,024,201

CARTON SETTING-UP MACHINE

Leon Benoit and E. Joseph Kanabay, Chicago, Ill.;
said Kanabay assignor to said Benoit

Application November 24, 1930, Serial No. 497,689
Renewed October 29, 1932

45 Claims. (Cl. 93—37)

This invention relates to carton setting up machines, and its principal object is to provide novel mechanism for completing the assemblage of partly assembled cartons, and has particular reference to a machine for setting up cartons of the general type represented by the one set forth in the Coyle Patent No. 1,327,946, of January 13, 1920, which, however, is merely suggestive of a carton that may be set up by the present machine.

A carton of the type specified usually comprises a rectangular blank bent up to form longitudinal side and bottom wall sections and cover sections and a plurality of cards that form cross walls having interlocking connections with the longitudinal walls of the blank. At one stage of the assemblage of the carton, the cross walls are attached to one of the longitudinal walls and are folded into substantially parallel relation with the longitudinal walls, whereby the entire carton is folded into a flattened or collapsed condition and occupies but little space for the purpose of storage and transportation. The cross walls of this type of carton usually have notched edges which engage in slots formed in the longitudinal wall sections to interlock the cross walls with the longitudinal walls, and the present invention provides mechanism for engaging the notches of the cross walls in the slots of the longitudinal walls so as to interlock the walls.

Another object is the provision of a carton setting up machine which may be manually operated, or may be mechanically operated and is automatic in its action. Another object is to provide feeding means in connection with a carton setting up machine, whereby the partially assembled cartons may be deposited in the machine, set up for service therein, and discharged therefrom in completed form.

Other objects and advantages will occur in the course of this specification, and with all of said objects and advantages in view, this invention consists in the several novel features herein-after fully set forth and claimed.

The invention is clearly illustrated in the accompanying drawings in which:—

Figure 1 is a front elevation of a carton setting up machine embodying one form of the present invention;

Fig. 2 is a detail view, partly in side elevation and partly in vertical cross section, of certain gearing employed in the machine, the section being taken on the line 2 in Fig. 1;

Fig. 3 is a detail fragmental vertical longitudinal section of the two setting up heads seen

in Fig. 1, and showing the upper head in a position occupied during its down stroke, the line of section being taken at 3—3 in Figs. 7 and 8;

Fig. 4 is a detail vertical longitudinal section similar to Fig. 3 with certain parts broken away and showing the upper setting up head nearer the end of its down stroke;

Fig. 5 is a view similar to Fig. 4, showing the upper setting up head at the bottom of its down stroke;

Fig. 6 is a view similar to Fig. 5, showing the setting up heads in a position occupied near the commencement of the up stroke of the upper head and before the parts of the carton are interlocked;

Fig. 6a is a view similar to Fig. 5, showing the setting up heads in a position occupied in the up stroke when the parts of the carton have become interlocked;

Fig. 7 is a view of the upper setting up head looking in the direction of the arrow 7 in Fig. 3;

Fig. 8 is a plan of the lower head;

Fig. 9 is a detail side elevation, partly broken away and partly in section, of the upper head, the line of section being indicated at 9—9 in Fig. 7;

Fig. 10 is a detail side elevation, partly broken away and partly in section, of the lower head, the line of section being indicated at 10—10 in Fig. 8;

Fig. 11 is a fragmental side elevation of the upper and lower heads illustrating certain mechanism for depositing the partially assembled blanks on the lower head;

Fig. 12 is a view similar to Fig. 11, but showing the parts in a position assumed after the blanks have been deposited on the lower head;

Fig. 13 is a perspective view of a completely set up carton partly broken away and fragments of the conveyor which feeds the carton blanks to the setting up heads;

Fig. 14 is a perspective view of a partially assembled carton showing the parts folded for storage and shipment before being set up;

Fig. 15 is a plan of the blank which forms the longitudinal wall and cover sections of the carton;

Fig. 16 is a fragmental perspective view of the partially assembled carton in the condition assumed when fed to the setting up heads, a fragment of the conveyor being illustrated in connection therewith;

Fig. 17 is an end elevation of the partly assembled carton in the condition assumed when fed to the carton setting up machine;

Fig. 18 is an end elevation of the partly assembled and partly set up carton illustrating the condition assumed when the carton shaping members have reached the position illustrated in Fig. 5;

Fig. 19 is an end elevation of the partly set up carton illustrating the condition assumed by it when the carton shaping members have reached the position illustrated in Fig. 6a;

Fig. 20 is an end elevation of the completely set up carton;

Fig. 21 is a plan of fragments of the conveyor showing thereon, in dotted lines, a partially assembled carton;

Fig. 22 is a perspective view of a carton carrier which forms part of the conveyor;

Fig. 23 is a fragmental front elevation of the upper and lower setting up heads illustrating a modification thereof and showing the upper head at the top of its up stroke;

Fig. 24 is a fragmental vertical longitudinal section of the setting up heads seen in Fig. 23, showing the upper head in a position occupied near the bottom of its down stroke.

Fig. 25 is a vertical longitudinal section through the lower head illustrating a slight modification therein; and

Fig. 26 is a vertical cross section taken on the line 26—26 of Fig. 25.

Referring to the drawings, a carton illustrating the type set up by the machine comprises a rectangular blank A (see Figs. 13 and 15) and cross walls B interlocked therewith. The blank A is formed with spaced longitudinally extending slots a and apertures a' therebetween, and the cross walls B are formed with notches b and b' in the end and upper edges thereof. The blank A is scored or creased transversely along the lines a^2 , a^3 and a^4 and folded up along said lines to provide middle wall sections a^5 , middle bottom wall sections a^6 , outer wall sections a^7 , which include the outer bottom wall and outer side wall sections, and cover sections a^8 . The cross walls extend part way through the slots a with the middle wall sections a^5 of the blank A held in the notches a' by the overhanging projections b^2 at the upper edges of the notches b' , and the notches b being interlocked with the blank A at the upper ends of the slots a .

Initially the cards or cross walls or partitions B are assembled on the middle wall sections a^5 of the folded together halves of the blank A, and the cross walls are thereupon swung into substantially parallel relation with the middle wall sections a^5 , and the sections a^7 and a^8 of each half of the blank A folded together with the cross walls contained therebetween, as is seen in Fig. 14. In this condition, a large number of the folded partially assembled cartons may be packed into a small space for storage and shipment.

To enable the carton setting up machine to set up the partly assembled cartons, the cover sections a^8 are pulled apart and laid out flat, thereby causing the middle bottom wall sections a^6 and the cross walls B to assume the position seen in Fig. 16 with the cross walls standing substantially parallel with each other and at right angles to the middle wall section a^5 over the slots a of the blank A. In this condition they are fed to the carton setting up machine which completes the assemblage, interlocks and sets the parts up into the condition seen in Fig. 13.

The machine for setting up the partly assembled cartons may be manually operated or

may be power operated, as desired, and, for the purpose of illustrating the invention, a power operated machine has been shown in the accompanying drawings.

In the embodiment of the invention illustrated, a main supporting frame 25 (see Fig. 1) is employed upon which are mounted the operating elements of the machine. Stationarily supported upon a cross member 26 of the frame 25, as by bolting it thereto, is a stationary carton setting up head 27 which co-operates with a movable carton setting up head 28 which is bolted or otherwise fastened to a plunger 29 that is guided to move vertically upon guide members 30 mounted upon the side frame members 31 of the machine. The plunger 29 is connected to the cranks 34 of a crank shaft 32 journaled in the bearings mounted upon the upper end of the side frame members 31, by a connecting rod 33. Power is applied to the crank shaft through a fly wheel 35. The exact construction of the parts thus far described is not material to the invention, but serves for the purpose of illustration.

The lower carton setting up head 27 comprises a stationary vertically chambered housing 36 (see Figs. 3 to 10, inclusive) in the chamber of which is guided a wall spreading member 37 having a ridge-like upper face 38 which acts to spread apart the two middle bottom wall sections a^6 of the blank A. In the operation of the machine, the ridge-like face 38 enters the space between the two middle sections a^6 and spreads them apart, after which the outer wall sections a^7 are brought over the side edges of the cross walls and interlocked therewith, as will be hereinafter explained.

The ridge portion 38 of the wall spreading member is formed with a number of transversely extending grooves or slots 39 (see Figs. 8 and 10) spaced apart to receive the cross walls B of the partly assembled carton, and, as a preference, the upper faces of the grooves or slots 39 adjacent the peak of the ridge are flared outwardly to act as guiding surfaces for the introduction of the cross walls to the grooves or slots 39. The spreading member 37 is capable of movement from an upper to a lower position and is yieldingly held in its upper position by coiled compression springs 40 which surround rods 41 that are threadedly secured in the wall spreading member 37 and extend down through and are guided in lugs 42 formed on the inner wall of the housing 36. The coiled springs are interposed between said lugs and the wall spreading member 37.

Ejecting means, such as plungers 43 are provided for ejecting the completed carton from the wall spreading member 37, and, as a preference, one ejecting plunger 43 is provided in each groove or slot 39 in position to be engaged by a cross wall B entering the same. The ejecting plungers 43 are guided in bores formed in the wall spreading member 37 and have stems 44 which are guided in plugs 45a threadedly secured in the lower ends of the bores. Coiled compression springs 46 interposed between the plugs and lower sides of the ejecting plungers 43 serve to raise the plungers to the upper end of their limit of movement whenever released by the cross walls B of the carton which is being set up.

The upper end of each bore forms a shoulder 47 for limiting the upward movement of the ejecting plungers 43 caused by the spring 46. During a step in the setting up operation, the ridge 38 of the wall spreading member 37 enters the space

between the two middle bottom wall sections a^6 of the blank A and spreads them apart, as is clearly seen in Fig. 4, and, at the same time, the cross walls B enter the grooves or slots 39 and depress the ejecting plungers 43. During the remainder of the downward movement of the upper head 28, the lower edges of the cross walls B encounter the bottoms of the grooves or slots 39 and certain hereinafter described members on the upper head depress the wall spreading member 37 farther into the chamber of the housing 36, as is clearly seen in Fig. 5. During such downward movement of the parts, the lower portions of the cross walls B are projected through the slots a of the blank A.

The side walls 45 of the housing 36 extend up along the sides of the wall spreading member 37 and are slotted vertically at places aligned with the grooves or slots 39, as shown at 48 in Figs. 8 and 10, to receive the end edges of the cross walls B of the partially assembled cartons during their downward movement below the upper edges of the side walls 45 of the housing 36 (see Fig. 5). In the downward movement of the partially assembled carton, the protruding portions a^7 and a^8 of the blank A encounter certain blank folders 49 and are brought across the lower half of the end edges of the cross walls B into a position wherein the ends of the slots a in the blank A pass above the end notched portions of the cross walls B (see Fig. 5).

The upper carton setting up head 28 is provided with means for parallelizing the cross walls B of the partly assembled carton so as to align them with the slots a of the blank A and also to align them with the grooves or slots 39 of the wall spreading member 37. The means for parallelizing the cross walls also act to depress the lower head 27 while the cross walls are being inserted through the slots a in the blank A. The upper head 28 is also provided with means co-acting with members of the lower head for bringing the outer wall section a^7 of the blank A into interlocked condition with the cross wall blanks B, which will be presently described.

As shown in Figs. 3 to 7, inclusive, and Fig. 9, the means for parallelizing the cross wall blanks may take the form of two parallel rows of tapered blocks or portions 50 which enter the spaces between the cross walls. The blocks project down from a plate or bar 51 secured to a body member 52 of the upper head 28 by screws 53. The outer and inner oppositely inclined faces 54 and 55 of the tapered blocks 50 converge downwardly preferably along curved lines, as shown in Fig. 3, thereby giving inverted arch-like configurations to the tapered blocks 50.

The inclined faces 55 of the tapered blocks 50 form a lengthwise extending crotch 56 into which the middle longitudinal wall section a^5 of the blank A enters when the upper head 28 is brought down upon the partly assembled carton. The faces 57 of the tapered blocks are inclined, as seen in Fig. 9, to form crotches 58 which extend transversely of the head and receive the cross walls B of the partly assembled carton when the head is depressed. The upper ends 59 of the crotches 58 comprise shoulders or abutments that engage with the upper edges of the cross walls and force them down into the slots or grooves 39 of the wall spreading member 37 of the lower head.

It will be seen, therefore, that during the downward movement of the upper head, the tapered blocks 50 enter the spaces between the

cross walls, the tapered faces 57 engaging the sides of the cross walls, bringing them into parallel relation with each other over the slots a in the blank A, after which the upper ends of the crotches 58 engage the upper edges of the cross walls and force the partly assembled carton downwards until the middle bottom wall sections a^6 of the blank A engage with the inclined faces of the ridge 38 of the wall spreading member 37, whereupon said middle bottom wall sections a^6 are spread apart permitting the cross walls B to be inserted farther into the slots a (see Fig. 4), while the sections a^7 are being acted on by the blank folders 49.

The blank folders 49 are disposed at the side of the lower head and co-operate with companion folders 60 and yieldable fingers 63 on the upper head to engage the sections a^8 with the cross walls B during the operation of interlocking the cross walls with the blank.

During the operation of the machine, the downward movement of the upper head brings the lower edges of the cross walls into engagement with the ejector plungers 43 (see Fig. 4) thereby depressing said plungers into the wall spreading member, and the further downward movement of the upper head brings the lower ends of the parallelizing blocks down upon the middle bottom wall sections a^6 , bringing them down upon the ridge portion of the wall spreading member 37 near the peak thereof, whereupon the wall spreading member 37 is depressed into the chamber of the housing 36 and moved to a position where the ridge is located below the upper ends of the slotted side walls 45 thereof, as is clearly seen in Fig. 5.

During this downward movement of the partially assembled carton, the sections a^7 and a^8 of the blank A have been brought down into engagement with the upper edges of the blank folders 49 and the sections a^8 have been bent over said blank folders 49 by the companion folders 60, and the sections a^7 have been moved across the end notched portions of the cross walls. At this time, the cross walls have been forced downward below their normal position in a finished carton so as to move the upper edges of the end notched portions of the cross walls below the ends of the slots a in the blank, as seen in Fig. 5.

The means for moving the sections a^7 and a^8 of the blanks A into position, just described, comprises the resilient blank folders 49, above referred to, and the companion folders 60, which are here shown in the form of inclined plates carried by the upper head 28, as, for instance, by arms 61 that are bolted or otherwise secured to one of the body members 62 of the head. The body members 62 and 52 comprise the body portion of the head and may be fastened together by 60 screws 62^a, or the like, or they may be made in one piece. The blank folders 49 may take the form of relatively thin resilient plates fastened at their lower edges to the housing 36. They extend along the sides of the slotted walls 45 of the housing and are preferably bowed, as seen in Fig. 3. Normally the blank folders occupy the position seen in Fig. 3 and resume that position when they are released after having been drawn towards each other in performing their functions of bringing the sections a^7 across the notched end portions of the cross walls.

In the downward movement of the upper head, the scored parts of the blank A, between the sections a^7 and a^8 , encounter the upper edges of 75

the blank folders 49, and thereafter the companion folders 60 engage and fold the sections a^8 of the blank A down upon the blank folders 49, and by reason of their cam-like action, said companion folders 60 finally bring the blank folders 49 and therewith the sections a^7 and a^8 of the blank A towards each other into the position indicated in Fig. 5. During the downward movement of the upper head, after the sections a^8 have been caught between the blank folders 49 and 60, the blank A is held by the blank folders 49 at the scored portions a^4 and, upon the continued downward movement of the head, the lower tapered ends of the parallelizing blocks encounter the middle bottom wall sections a^6 and wall sections a^7 , temporarily bending them into the shape seen in Fig. 5 and therewith pulling the blank folding members 49 towards each other and bringing the sections a^7 across the end notched portions of the cross walls. As the upper head approaches the limit of its down stroke, the companion folders 60 force the blank folders 49 and therewith the scored parts a^4 between the sections a^7 and a^8 under the fingers 63.

The fingers 63 are disposed at the sides of the body member 52 and are slidably mounted thereon and overhang the tapered blocks 50 in position to engage with the upper edges of the blank folders 49 or the interposed scored parts a^4 of the blank A between the sections a^7 and a^8 , as seen in Fig. 5. The lower edges of the fingers 63 are formed with longitudinally extending grooves 64 which receive the upper edges of the blank folders 49 and said interposed scored parts of the blank A.

The fingers 63 are spaced apart to receive between them the end edge portions of the cross walls B, and they may be formed upon or as a part of the horizontally extending bars 65 (see Fig. 9) guided to move in a vertical direction upon the body member 52 as by bolts 66 secured in the bars 65 and having heads that move in undercut slots 67 formed in the side faces of the body member 52. The fingers 63 are capable of yielding in an upward direction, and, as shown, are spring pressed downwardly by light coiled compression springs 68 interposed between the upper edges of the finger bars 65 and flanges 69 which project out from the ends of the body member 62. Headed pins or rods 70 secured in the flanges 69 extend through said coiled compression springs 68 and through the end portions of the finger bars 65 and form stops limiting the downward movement of the finger bars 65 relative to the parallelizing blocks 50.

Extending up from the housing 36 of the lower head are abutment or stop members 71 which are encountered by the end portions of the finger bars 65 and determine the limit of the down stroke of the fingers 63 relative to the blank folders 49. The fingers reach the limit of their downward movement with the upper head after the sections a^7 and a^8 of the blank A have been folded over the blank folders 49 at the time or shortly before the scored parts a^4 of said sections reach a position in the grooves 64 of the fingers. At the lower limit of the down stroke of the upper head the middle bottom wall sections a^6 and the wall sections a^7 are held against the tapered faces of the parallelizing fingers 50 with the ends of the slots a disposed above the end notched portions of the cross walls B.

At the commencement of the up stroke of the upper head, the springs 40, below the wall spreading member 37, urge said member upward with

the upper head, thereby holding the middle bottom wall sections a^6 gripped between the ridge of the wall spreading member 37 and the lower ends of the parallelizing fingers 50.

The upper thrust of the wall spreading member 37 on the cross walls B and the blank A causes these parts to be moved up, the wall sections a^7 lifting the fingers 63, so that when the parts reach the position seen in Fig. 6, and the companion folders 60 have receded from the blank folders 49, the latter are freed and permitted to resume their normal spread condition. Upon the continued up stroke of the upper head, and as the wall spreading member 37 reaches the upper limit of its movement, the ejecting plungers 43, under the influence of the springs 40, are thrust upward, thereby moving the cross walls B up with the upper head, which is now receding from the lower head, and when the upward pressure against the sections a^7 and a^8 of the blank has ceased, the fingers 63 are urged down by the springs 68, thereby holding the wall sections a^7 stationary while the plungers 43 are pushing the cross walls upwardly, bringing the end notched portions of the cross wall B into an interlocked condition with said sections a^7 at the upper ends of the slots a , as is clearly seen in Fig. 6a. As the two heads continue to separate, the ejecting plungers 43 raise the assembled carton into a position slightly above that seen in Fig. 6a, and when the heads 72 of the rods 70 encounter the finger bars 65, the fingers 63 move with the upper head, and the entire upper head recedes from the completed carton, leaving it resting on the ejecting plungers 43.

Obviously, the partially assembled carton blanks may be manually fed to the machine, but in order to make the machine practically automatic, mechanical feed mechanism is provided for feeding the partially assembled blanks to the machine and for ejecting the completed cartons from the machine. As illustrated in Fig. 1, a conveyor 73 is employed for conveying partially assembled carton blanks to the machine, positioning them between the upper and lower carton setting up heads, and discharging the completed cartons therefrom.

For the purpose of illustrating the invention, a pair of conveyor chains 74 (see Fig. 21) are shown, which are trained around driving sprocket wheels 75 (see Fig. 1) and idle sprocket wheels (not shown). The conveyor chains travel through a plane slightly above the lower head 27 and are spaced far enough apart to permit the upper head 28 to pass between them. The conveyor chains are driven in timed relation to the movements of the upper head 28 so as to bring a partly assembled carton blank into position over the lower head 27 just before the upper head 28 reaches the blanks. Means are also provided for placing the blanks in precise position over the lower head. The mechanism illustrated for performing these functions will now be described.

Intermittent motion gearing is provided between the crank shaft 32 of the machine and the shaft 76 which carries the sprocket wheels 75, and, as shown, said gearing comprises a sprocket wheel 77 on the crank shaft 32, a sprocket wheel 78, a sprocket chain 79 trained over the sprocket wheels and intermittently acting driving connections between the sprocket wheel 78 and shaft 76. Suitable bearings are provided for the shafts of the sprocket wheels 75 and 78, and may be carried by the main frame of the machine, or by separate supports. The driving connections be-

tween the sprocket wheel 78 and shaft 76 of the sprocket wheels 75 comprise, as shown, a mutilated gear wheel 80 connected to and rotating with the sprocket wheel 78 and meshing with a mutilated pinion 80' mounted on a shaft 81, and a beveled pinion 82 mounted on the shaft 81 and meshing with a beveled gear wheel 83 mounted on the shaft 76 for the sprocket wheels 75.

The mutilated gear wheel 80 and pinion 80' provide a timed intermittent rotation for the sprocket wheels 75 and consequently a timed intermittent movement for the conveyor chains 73. The teeth and blank spaces of the mutilated beveled gear wheel and pinion are so disposed that upon a complete revolution of the crank shaft 32, the mutilated beveled pinion and, as a consequence, the conveyor chains driven thereby are allowed to remain at rest during the interval that the carton is being acted upon by the setting up heads, and the conveyor chains are propelled the required distance to bring another partially assembled carton over the lower head, after the movable head has been fully disengaged from the completed carton.

Pivotaly mounted on adjacent links of the conveyor chains at points directly opposite each other are carton carriers 84 (see Figs. 21 and 22) spring pressed against lugs or stop members 85 on the links by coiled springs 86 so as to lie in a carrying position for conveying the partly assembled cartons. The carton carriers 84 may take the form of plates having upstanding lugs 87 and 88 (see also Fig. 16) which locate the cartons on the conveyor chains, so that they will be carried thereby to a position directly above the lower head 27 to be deposited on said head. The lugs 87 engage the side edges of the carton blanks A, and the lugs 88 engage the middle bottom wall sections a^6 thereof and effectively position the carton on the conveyor chains. Rails 89 may be provided for the chains to run on so as to prevent them from sagging.

Means are provided for releasing the partly assembled cartons from the conveyor and, as shown, said means comprise arms 90 (see Figs. 11 and 12) carried by the upper head 28 and arranged to strike against the carton carriers 84 thereunder during a portion of the down stroke of the upper head and thereby swing said carton carriers down and away from each other, thereby releasing the partially assembled carton and permitting it to drop upon the lower head. Before the partially assembled carton is released from the conveyor, the latter has come to rest with the partially assembled carton held directly above the lower head. The ends of the wall spreading member 37 are cut away as at 91 to permit the carton carrying plate 84 to swing past said member (see Figs. 11 and 12).

In the operation of the machine, the partially assembled cartons are opened out, as seen in Fig. 16, and are fed to the lower setting up head either manually or by the feeding mechanism, as desired, and placed upon the wall spreading member 37 with the cross walls B entering the grooves or slots 39 thereof. When the feed mechanism illustrated is employed, the partially assembled cartons are manually placed upon the conveyor, as seen in Fig. 16, and conveyed thereby to a position above the lower head, released from the conveyor by the arms 90, and deposited on the lower head in the same position as they are placed thereon by hand. Upon the down stroke of the upper head, the tapered parallelizing blocks enter

the spaces between the several cross walls B and bring the cross walls into perfect parallelism.

As the upper head proceeds in a downward direction, the faces 59 at the top of the tapered crotches 58 between the blocks 50 engage the upper edges of the cross walls B and the faces at the top of the crotches 56 engage the middle wall a^5 of the blank A and force the middle bottom wall section a^6 down over the inclined upper faces of the ridge 38, thereby spreading said sections apart, as seen in Fig. 4. The continued downward movement of the upper head inserts the cross walls B through the slots a of the blank A bringing the lower edges of the cross walls into engagement with the ejector plungers 43, thereby depressing said plungers, and thereafter the lower edges of the cross walls encounter the bottoms of the grooves or slots 39 in the wall spreading member 37 and depress said member into the chamber of the housing 36, during which time the scored parts of the blank A between the sections a^7 and a^8 encounter the upper edges of the blank folder 49.

During this portion of the down stroke of the upper head, the companion folders 60 encounter the protruding sections a^8 of the blank A, folding them down over the blank folders 49, and the sections a^7 are drawn down, thereby swinging the blank folders 49 and therewith the sections a^7 towards each other, during which time the finger bar 65 encounters the stop members 71 whereby the downward movement of the fingers 63 is arrested the companion folders 60 finally moving the scored parts a^4 between the sections a^7 and a^8 of the blank A into engagement with the grooved undersides of the fingers 63, in which condition the blank A is temporarily held as the upper head approaches the lower limit of its down stroke as illustrated in Fig. 5. In this position of the parts, the middle bottom wall sections a^6 of the blank A have been spread to an abnormal condition which permits the cross walls to take a position considerably below their normal position in the completed carton, namely, a position wherein the notches b of the cross walls have been brought considerably below the upper edges of the slots a through which the cross walls have been projected.

During the initial portion of the up stroke of the upper head, the scored parts of the sections a^7 and a^8 of the blank A remain in the grooves 64 of the fingers 63, and as the upper head moves up, the wall spreading member 37 moves upward with it under the influence of the springs below it, and the ejecting plungers are projected, thereby raising the cross walls from the position seen in Fig. 5 to that seen in Fig. 6a, thereby bringing the end notches b of the cross walls B into engagement with the upper ends of the slots a in the blank A and interlocking the cross walls B with the blanks A. During the continued upward movement of the upper head, the heads 72 of the rods 70 (see Fig. 9) encounter the finger bars 65 and raise said bars and therewith the fingers 63 to their normal position, leaving the completed carton resting on the ejecting plungers 43. The arms 90 move upward with the upper head and permit the spring pressed carrier plates 84 to swing upward and raise the completed carton from the lower head.

When the parallelizing blocks 50 have been withdrawn from the spaces between the walls of the completed carton, the teeth of the mutilated gear wheel 80 run into mesh with the teeth of the mutilated pinion 80', causing a partial rotation

thereof, and, as a consequence, rotation of the sprocket wheels 75 and onward movement of the conveyor chains through a sufficient distance to bring another partly assembled carton over the lower head. During such movement of the conveyor chains, the upper head completes its up stroke and commences its down stroke for the next operation. The completed carton may be discharged from the conveyor, or it may be taken therefrom by an attendant, and placed in position to receive the commodities to be packed therein.

In the modified form of the invention illustrated in Figs. 23 and 24, the carton setting up heads 27^a and 28^a are of substantially the same construction as in the preferred form, but they are inverted, the head 28^a, corresponding with the upper movable head 28 of the preferred form, becoming the lower stationary head, and the head 27^a, corresponding with the stationary lower head 27 of the preferred form, becoming the upper movable one. The operation of the two heads of the modified form is substantially the same as that of the preferred form of the invention.

With this modified form of the invention, however, the blank A, instead of being folded into the condition seen in Fig. 14, is folded only along the transverse line a^2 thereby bringing the two halves thereof into parallel relation with each other with the cross walls B held in the slots of the blank A and extending at right angles thereto, as seen in Fig. 23. The partly assembled carton is placed upon the lower head 28^a in this condition with the tapered blocks 50^a of the lower head entering the spaces between the intersecting walls of the partly assembled carton.

At the commencement of the down stroke of the upper head 27^a, the ridge 38^a of the wall spreading member 37^a enters the space between the sections a^b of the blank A, spreads the sections apart and later enters the space between the middle bottom wall sections a^c spreading them apart, as seen in Fig. 24. From this point on, the operation of the two heads on the carton blanks is substantially the same as that which has been described in connection with the preferred form, except as above stated, the parts are inverted and operate in that condition.

In this form of the invention, the blank folders 49^a, corresponding to the blank folders 49 of the preferred form, are held close to the wall spreading member 37^a by guides 49^b to permit the sections a^b of the blank to spread apart. As the upper head moves down the blank folders 49^a run off the guides 49^b and resume their spread apart condition seen in Fig. 24, where they operate in the same manner as in the preferred form.

In the modified form illustrated in Figs. 25 and 26, an ejecting bar 43^a is shown in place of the individual ejecting plungers 43. The ejecting bar extends through a slot in the wall spreading member 37, from end to end, and is guided for movement on pins 44^a secured in the wall spreading member. Coiled springs 46^a interposed between the ejecting bar 43^a and the bottom of the slot urge the ejecting bar in an upward direction. This form of ejecting has a particular advantage in that it acts simultaneously on all of the cross walls.

From the above it will be understood that partly assembled cartons may be stored and shipped in their folded condition to the establishment where the cartons are to be filled. Also, that the machine provides facilities for rapidly

setting up the partially assembled cartons into completed form for receiving the commodities. To increase the output of the machine, two or more sets of carton setting up heads and conveyors may be employed in the one frame.

More or less variation of the exact details of construction is possible without departing from the spirit of this invention. We desire, therefore, not to limit ourselves to the exact form of the construction shown and described, but intend, in the following claims, to point out all of the invention disclosed herein.

We claim:

1. In a carton setting up machine for setting up cross walls with a blank having bottom wall sections containing parallel slots for receiving the cross walls, the combination of two relatively movable setting up heads one having tapered elements entering spaces between the cross walls and co-operating to parallelize the cross walls and align them with said parallel slots.

2. In a carton setting up machine for setting up cross walls with a blank having bottom wall sections containing parallel slots for receiving the cross walls, the combination of two relatively movable setting up heads one having tapered elements entering spaces between the cross walls and cooperating to parallelize the cross walls, and other elements co-operating to insert said cross walls into said parallel slots.

3. In a carton setting up machine for setting up edge notched cross walls with a blank having bottom wall sections containing parallel slots for receiving the cross walls, the combination of two relatively movable setting up heads one having elements co-operating to parallelize the cross walls, an inserting element on one of said heads for inserting said cross walls into the parallel slots of said blank, and other elements on said heads co-operating to interlock said cross walls with said blank.

4. In a carton setting up machine for setting up cross walls with a blank having middle and outer bottom wall sections containing parallel slots for receiving the cross walls, the combination of two relatively movable setting up heads, one of which contains means for spreading apart said middle bottom wall sections.

5. In a carton setting up machine for setting up edge notched cross walls with a blank having middle and outer bottom wall sections containing parallel slots for receiving the cross walls, the combination of two relatively movable setting up heads, one of which contains means for spreading apart said middle bottom wall sections, other means for bringing the outer slotted bottom wall sections across the notched edges of the cross walls, means for temporarily holding said sections in place across said edges, and means co-operating with said last mentioned means for interlocking the cross walls with the blank.

6. In a carton setting up machine for setting up edge notched cross walls with a blank having slotted bottom wall sections, the combination of a stationary and a movable setting up head, coacting means on said heads for folding slotted sections of the blank across the edge notched ends of the cross walls, and means carried by one of said heads for moving the cross walls into interlocked engagement with said blank.

7. In a carton setting up machine for setting up edge notched cross walls with a blank having slotted bottom wall sections, the combination of a stationary and a movable setting up head, a movable member contained in one of said heads

capable of movement with the other head during a portion of the stroke of said head, co-acting means on said heads for folding slotted sections of the blank across the edge notched ends of the cross walls, and means carried by said movable member for moving said cross walls into interlocked engagement with said blank.

8. In a carton setting up machine for setting up edge notched cross walls with a blank having a slotted bottom wall section, the combination of a stationary and a movable setting up head, one of said heads comprising members for parallelizing the cross walls, yieldable fingers, and a blank folder, and the other head comprising a depressible member and blank folders, the blank folders of one head co-operating with those of the other to bring sections of the blank across the edge notched ends of the cross walls and the fingers serving to temporarily hold said sections in place, and said depressible member containing means for moving the cross walls into interlocked relation with said sections when held by said fingers.

9. In a carton setting up machine for setting up and interlocking edge notched cross walls with a blank having middle and outer bottom wall sections containing parallel slots for receiving the cross walls, the combination of two relatively movable setting up heads, one containing an element for spreading apart the middle bottom wall sections, and other elements for bringing the outer bottom wall sections across the notched edges of the cross walls, and means for causing relative movement between the cross walls and the blank whereby to interlock said cross walls with the blank.

10. In a carton setting up machine for setting up and interlocking edge notched cross walls with a blank having sections including middle and outer bottom wall sections containing parallel slots for receiving the cross walls, the combination of two relatively movable setting up heads, one containing an element for spreading apart the middle bottom wall sections, and other elements for bringing the outer bottom wall sections across the notched edges of the cross walls, means for temporarily resisting movement of the sections of the blank which contain the bottom wall sections, and means for moving the cross walls relative to said sections of the blank whereby to interlock said cross walls with the blank.

11. In a carton setting up machine for setting up and interlocking edge notched cross walls with a blank having sections including middle and outer bottom wall sections containing parallel slots for receiving the cross wall blanks, the combination of two relatively movable setting up heads, one containing an element for spreading apart the middle bottom wall sections, and other elements for bringing the outer bottom wall sections across the notched edges of the cross walls, means on one of the heads for temporarily resisting movement of the sections containing the bottom wall sections, and means on the other head for moving the cross walls relative to said sections of the blank whereby to interlock said cross walls with the blank.

12. In a carton setting up machine for setting up and interlocking edge notched cross walls with a blank having sections including middle and outer bottom wall sections containing parallel slots for receiving the cross walls, the combination of two relatively movable setting up heads, one containing a depressible wall spreading member and blank folders, means on the other

head co-acting with said blank folders to fold sections of the blank across the notched edges of the cross walls, and yielding fingers operating to yieldingly resist movement of the sections containing the outer bottom wall sections, said wall spreading member having spring actuated means to hold said side wall sections in engagement with said fingers, whereby to engage the edge notches of the cross walls with the ends of the slots in the blank.

13. In a carton setting up machine for setting up and interlocking edge notched cross walls with a blank having sections including middle and outer bottom wall sections containing parallel slots for receiving the cross walls, the combination of two relatively movable setting up heads, one having a spring returned wall spreading member formed with a transversely grooved ridge for spreading apart said middle bottom wall sections, and the other head having tapered blocks for parallelizing the cross walls and operating to move the cross walls through the slots in the blank and into the grooves of the wall spreading member, means for folding slotted sections of the blank across the notched edges of the cross walls, and means carried by said wall spreading member operating to move the notched edges of the cross walls into interlocked engagement with the ends of the slots of the blank.

14. In a carton setting up machine for setting up and interlocking edge notched cross walls with a blank having bottom wall sections containing parallel slots for receiving the cross walls, the combination of two relatively movable setting up heads, one having two parallel rows of tapered parallelizing blocks adapted to parallelize the cross walls and bring them into alignment with the slots in the blank.

15. In a carton setting up machine for setting up and interlocking cross walls with a blank having middle and outer bottom wall sections containing parallel slots for receiving the cross walls, the combination of two relatively movable setting up heads, one having two parallel rows of tapered blocks adapted to engage and parallelize the cross walls and therewith align said cross walls with the slots of the blank, and a wall spreading member on the other head co-operating therewith to spread apart the middle bottom wall sections, whereby the cross walls are inserted into the slots of said blank.

16. In a carton setting up machine for setting up and interlocking edge notched cross walls with a blank having middle and outer bottom wall sections containing parallel slots for receiving the cross walls, the combination of two relatively movable setting up heads, one having two rows of tapered blocks adapted to parallelize the cross walls and therewith align them with the slots in said blank, and the other head having a depressible wall spreading member for spreading apart the middle bottom wall sections of the blank to position the same for the insertion of the cross walls through the slots therein, and co-operating means on the two heads for moving the outer bottom wall sections into interlocked relation with the notched edges of the cross walls.

17. In a carton setting up machine for setting up and interlocking edge notched cross walls with a blank having middle and outer bottom wall sections containing parallel slots for receiving the cross walls, the combination of relatively movable setting up heads, one containing a depressible member having means for spreading apart the middle bottom wall sections, means on said

last mentioned head co-operating with means on the other head to move the outer bottom wall sections across the notched edges of the cross walls, fingers for temporarily holding sections of the blank in position for interlocking engagement with the cross walls, and means carried by the depressible member operating to move the cross walls into interlocking engagement with the blank.

18. In a carton setting up member for setting up and interlocking edge notched cross walls with a blank having middle and outer bottom wall sections containing parallel slots for receiving the cross walls, the combination of relatively movable setting up heads, one containing a depressible member having means for spreading apart the middle bottom wall sections, means on said last mentioned head operating to move the outer bottom wall sections across the notched edges of the cross walls, blank folders on one of said heads over which sections of the blank are folded, co-acting fingers on the other head, means carried by one head co-operating with the blank folders on the other head for moving said blank folders and the interposed sections of the blank into engagement with the fingers, and means carried by the depressible member for moving the cross walls into interlocked engagement with said blank.

19. In a carton setting up machine for setting up interlocking edge notched cross walls with a blank having middle and outer bottom wall sections containing parallel slots for receiving the cross walls, the combination of relatively movable setting up heads, one containing a carton depressing member and the other containing a depressible member having means for spreading apart the middle bottom wall sections, said depressible member having also crosswise extending grooves therein for receiving the bottom edges of the cross walls when inserted into the slots of the blank, blank folders on said last mentioned head operating to move the outer bottom wall sections across the notched edges of the cross wall blanks, fingers co-operating with said depressible member for temporarily resisting movement of sections of the blank, and ejector means in said depressible member for moving the cross walls into interlocked relation with the blank.

20. The combination of relatively movable carton setting up heads, one head containing parallelizing members for parallelizing cross walls and aligning them with the slots of a slotted blank, the other head having transversely grooved wall spreading means for spreading apart the slotted portions of the blank, and other means carried by said heads co-operating to move said slotted portions of the blank into interlocked relation with the cross walls.

21. In a carton setting up machine for setting up and interlocking edge notched cross walls with a blank having middle and outer bottom wall sections containing parallel slots for receiving the cross walls, the combination of relatively movable carton setting up heads having means co-operating to insert the cross walls through the slots of the blank, and other means operating to cause relative movement between the cross walls and blank whereby to interlock the cross walls with the blank.

22. In a carton setting up machine for setting up and interlocking edge notched cross walls with a blank having middle and outer bottom wall sections containing parallel slots for receiving the cross walls, the combination of two relatively movable carton setting up heads having co-oper-

ating means for spreading apart the middle bottom wall sections and simultaneously inserting the cross walls into the slots of the blank, and additional means on the two heads co-operating to interlock the cross walls with the blank.

23. In a carton setting up machine, the combination with two relatively movable carton setting up heads co-operating to finally assemble and set up the cross walls and blank of a partially assembled carton, of carton feed mechanism for separately feeding the partially assembled cartons to the heads and depositing them on one of the heads.

24. In a carton setting up machine, the combination with a stationarily mounted carton setting up head and a movable carton setting up head co-acting therewith to set up the cross walls and blank of a partially assembled carton, of feed mechanism operating in timed relation to said movable head to feed the partially assembled cartons to the heads, and means for releasing said partially assembled cartons from said feed mechanism, whereby to deposit the same upon one of the heads.

25. In a carton setting up machine, the combination with two relatively movable carton setting up heads co-acting to finally assemble and set up the cross walls and blank of a partially assembled carton, of conveyor mechanism operating in timed relation to the movable head to feed the partially assembled cartons to said heads, and means for releasing said partially assembled cartons from the feed mechanism.

26. In a carton setting up machine, the combination of relatively movable carton setting up heads, actuating mechanism for moving one of said heads, a conveyor for feeding partially assembled cartons to said heads, and intermittently acting driving connections between an element of said actuating mechanism and the conveyor operating to advance said conveyor in timed relation to said heads.

27. In a carton setting up machine, the combination of a stationary and a movable carton setting up head, actuating mechanism for moving the movable head, a conveyor for feeding partially assembled cartons to said heads, intermittently acting driving mechanism for said conveyor operated by an element of said actuating mechanism for the movable head, and means carried by the movable head for releasing the partially assembled cartons from the conveyor, whereby they are deposited on the stationary head.

28. In a carton setting up machine, the combination of a stationary and a movable carton setting up head, actuating mechanism for moving the movable head, conveyor chains for feeding partially assembled cartons to said heads, said chains having spring actuated carton carrying members, intermittently acting driving mechanism for said conveyor chains operated by an element of said actuating mechanism for the movable head, and means carried by the movable head for depressing said carton carrying members and releasing said partially assembled carton from the conveyor, whereby they are deposited on the stationary head.

29. In a carton setting up machine, carton feed mechanism for feeding partially assembled cartons to a setting up head, comprising conveyor chains each provided with inwardly directed depressible carton carrying members having carton centering lugs thereon.

30. In a carton setting up machine, a carton setting up head having a depressible member

formed with transversely extending grooves for receiving cross walls of a partially assembled carton, ejecting means in said depressible member extending across said grooves, and means for moving said ejecting means in an outward direction.

31. In a carton setting up machine, a carton setting up head having a depressible member formed with transversely extending grooves for receiving cross walls of a partially assembled carton, and a bar extending across said grooves and spring pressed in an outward direction.

32. In a setting up mechanism for a carton having a body blank formed with slots through which partition walls in parallelism are inserted for interlock therewith, the combination of a member comprising two rows of blocks having parallel partition wall sustaining faces inclined in a direction which is lengthwise of the block rows, the confronting faces of the blocks in the two rows extending away from the member in closely spaced parallel relation and then inclining away from each other to provide therebetween a diverging space having its maximum width at a point furthest removed from the member, the space between the block rows adjacent their bases being such as to receive and sustain a slotted part of the carton body blank whereby the partition walls for insertion therein may be advanced to final interlocking relation therewith, and the outer sides of the blocks in the two rows having blank folding faces which are so inclined with respect to the confronting inclined faces of the blocks as to expose portions of the partition walls and shape and position unsustained portions of the body blank when folded thereover to interlock with the exposed portions of the partition walls.

33. In a setting up mechanism for a carton having a body blank formed with slots through which partition walls in parallelism are inserted for interlock therewith, the combination of a member whereon are rigidly mounted two rows of blocks, the confronting faces of the blocks in the two rows extending away from the member in closely spaced parallel relation and then inclining away from each other to provide therebetween a diverging space having its maximum width at a point furthest removed from the member, the space between the block rows adjacent their bases being such as to receive and sustain a slotted part of the carton body blank whereby the partition walls for insertion therein may be advanced to final interlocking relation therewith, and the outer sides of the blocks in the two rows having blank folding faces which are so inclined with respect to the confronting inclined faces of the blocks as to shape and position unsustained portions of the blank when folded thereover for interlocking with the partition walls.

34. A carton setting up device, comprising means for sustaining a plurality of partitions in vertical arrangement, means for sustaining a slotted carton body blank in intersecting relationship with the partitions with slots of the blank aligned with said partitions, and means between the partitions for shaping the blank as the blank is folded to interlock with the partitions.

35. A carton setting up device, comprising means for sustaining a folded portion of a slotted carton body blank, means for sustaining a plurality of partitions within the slots of the blank, and blank shaping means extending between the partition sustaining means and adapted to shape an unsustained portion of the blank as

the latter is folded to interlock with the partitions.

36. A carton setting up device, comprising means for sustaining an intermediate folded portion of a slotted carton body blank, means for sustaining a plurality of partitions within the slots of the blank to each side of said intermediate folded portion, and blank shaping means on each side of said first mentioned means and extending between said second mentioned means for shaping unsustained portions of the blank as the latter is folded to interlock with the partitions.

37. A setting up device for foldable carton body blanks having slots therein to receive and interlock with a partition, comprising means for sustaining the blank and partition in intersecting relationship, and means cooperating with an unsustained portion of the blank to position a slot thereof for interlocking engagement with a partition when folded thereover.

38. A setting up device for foldable carton body blanks having slots therein to receive and interlock with a series of partitions, comprising means for sustaining the blank and partitions in intersecting relationship, and means extending between the blank and partition sustaining means and cooperating with unsustained portions of the blank to position slots therein for interlocking engagement with the partitions when folded thereover.

39. A setting up device for foldable carton blanks having slots therein to receive and interlock with cross partitions, comprising means for sustaining an intermediate folded portion of the blank in intersection with the cross partitions, and means extending to each side of said means and cooperating with unsustained portions of the blank to position slots therein for interlocking engagement with the partitions when folded thereover.

40. A setting up device for foldable carton blanks having slots therein to receive and interlock with a partition member, comprising means for sustaining a folded portion of the blank in intersecting relationship with the partition, and means having faces inclined with respect to said first mentioned means to shape and position an unsustained slotted portion of the blank when folded thereover to interlock with the partition.

41. A setting up device for foldable carton blanks having slots therein to receive and interlock with a cross partition, comprising means for sustaining a reversely folded longitudinal partition portion of the blank and the cross partition in predetermined relationship, and means having oppositely inclined faces which determine the shape of an unsustained portion of the blank when folded to interlock with the partition.

42. A setting up device for foldable carton blanks having slots therein to receive and interlock with cross partitions, comprising means for sustaining a folded portion of the blank and the cross partitions in predetermined relationship, and means having oppositely inclined blank folding faces spaced from said sustaining means and adapted to cooperate with an unsustained portion of the blank, one of said faces being so inclined with respect to the other as to position a slotted portion of the blank for interlocking relationship with the partitions.

43. A carton setting up device for foldable carton blanks having slots therein to receive and interlock with a partition member, comprising means for sustaining an intermediate folded por-

tion of the blank in intersecting relationship with an intermediate portion of the partition, and means extending to each side of said sustaining means to shape and position unsustained portions of the blank for interlocking engagement with opposite sides of the partition when folded there-
 5 over.

44. A setting up device for cartons formed from a folded slotted blank and cross walls having
 10 means for interlocking with the slots of the blank, comprising a rigid forming block having means for sustaining a plurality of cross partitions in parallelism, said block having means for sus-
 15 taining a longitudinally folded portion of said blank, and oppositely inclined blank shaping faces disposed on each side of said blank sustain-
 ing means, the faces remote from said blank sus-
 taining means being so inclined with respect to

the faces adjoining said blank sustaining means that the sides of said blank may be folded there-
 upon for interlocking engagement with the cross
 partitions while the latter are supported within
 the transverse slots of the blank.

45. The method of setting up cartons formed
 from a foldable slotted blank body, and a series of
 slotted cross partitions having means for inter-
 locking with the slots of the blank, which com-
 prises sustaining the series of cross walls with
 10 their slots in alignment and intersecting a sus-
 tained portion of the body blank, and while thus
 sustained folding and shaping unsustained por-
 tions of the body blank to position slots therein
 to interlock with means on the partitions.
 15

LEON BENOIT.
 E. JOSEPH KANABAY.