

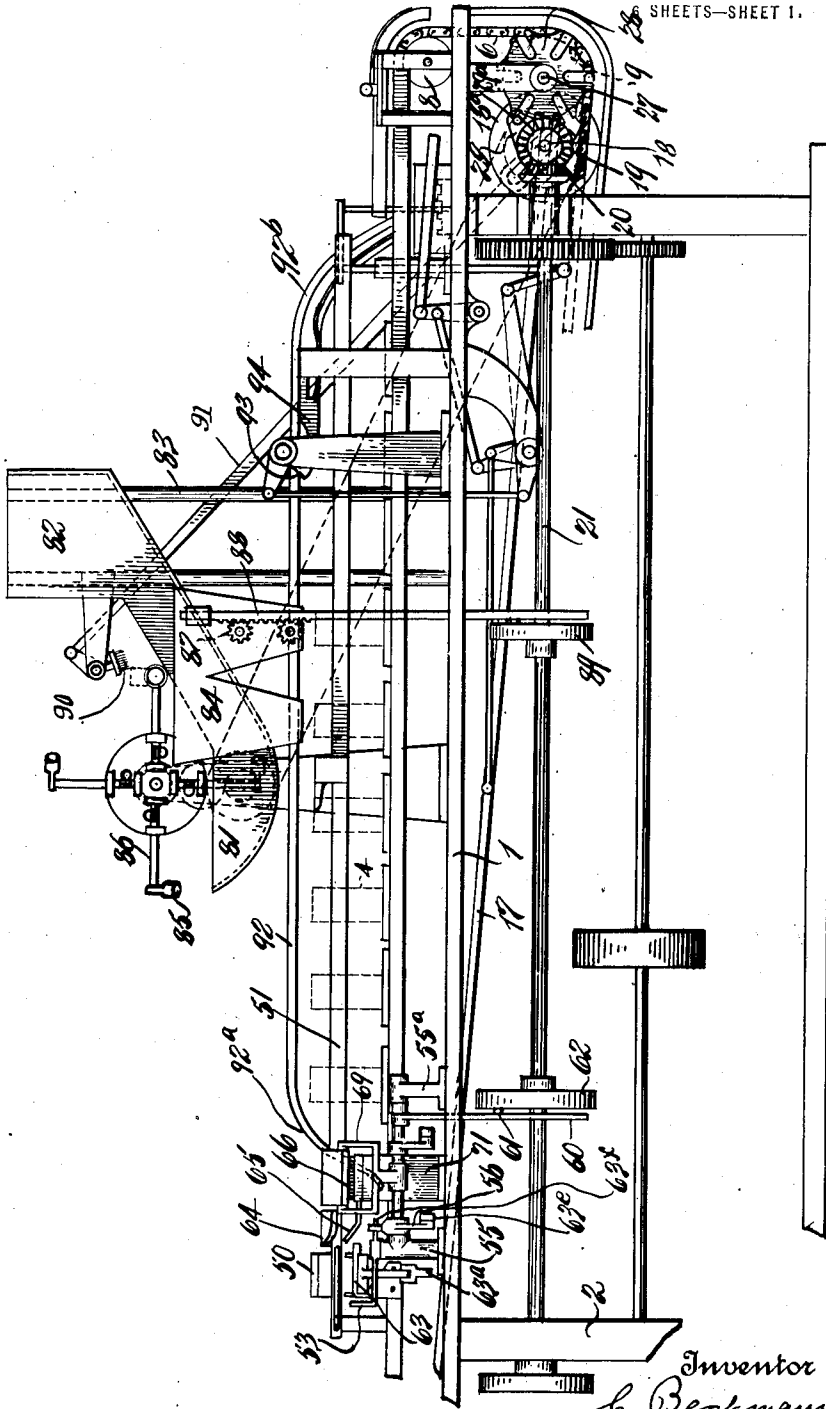
C. BECKMANN.
PACKAGING MACHINE.
APPLICATION FILED JULY 20, 1920.

1,406,165.

Patented Feb. 14, 1922.

SHEETS—SHEET 1.

Fig. 1.



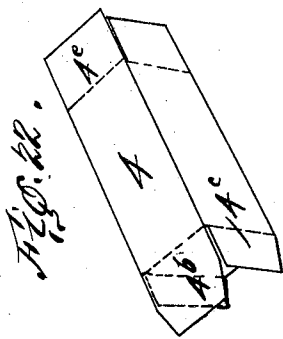
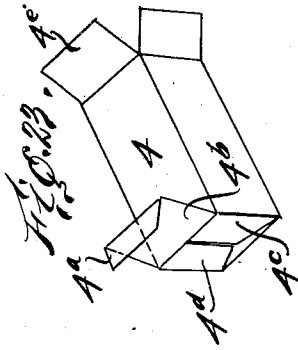
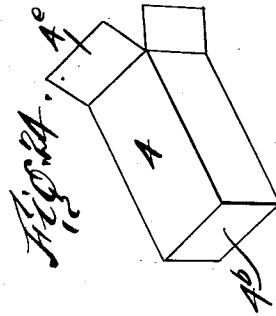
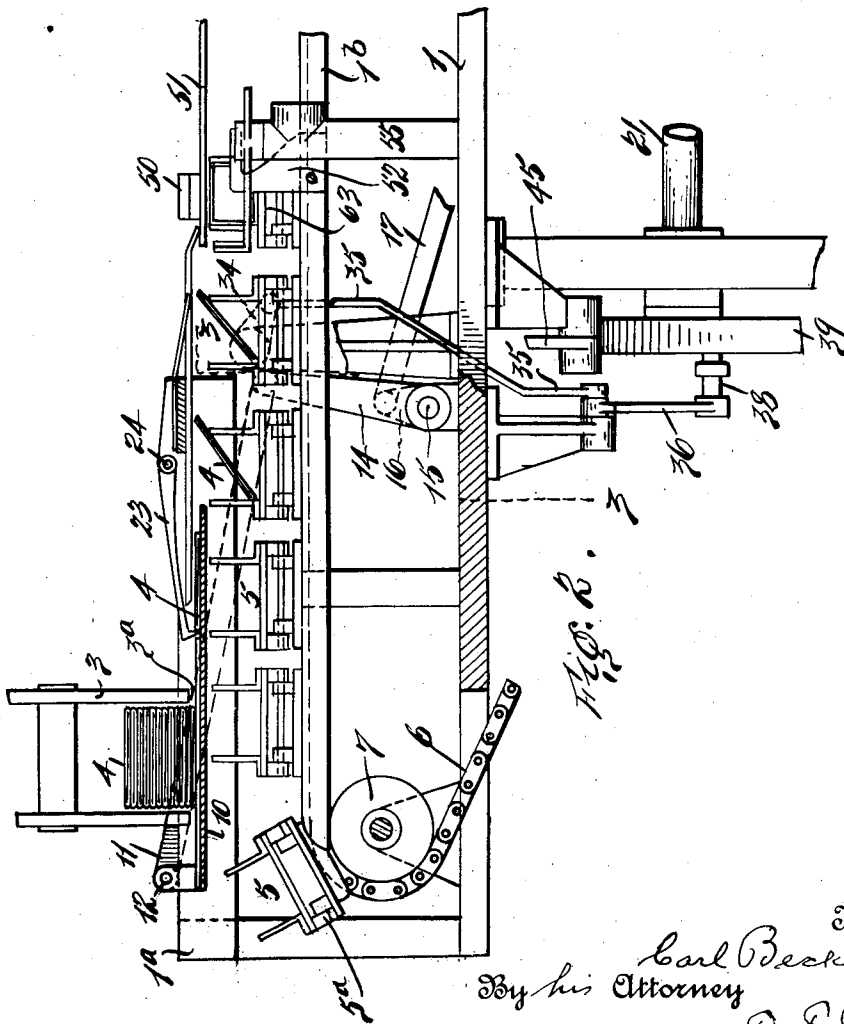
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6 SHEETS—SHEET 2.



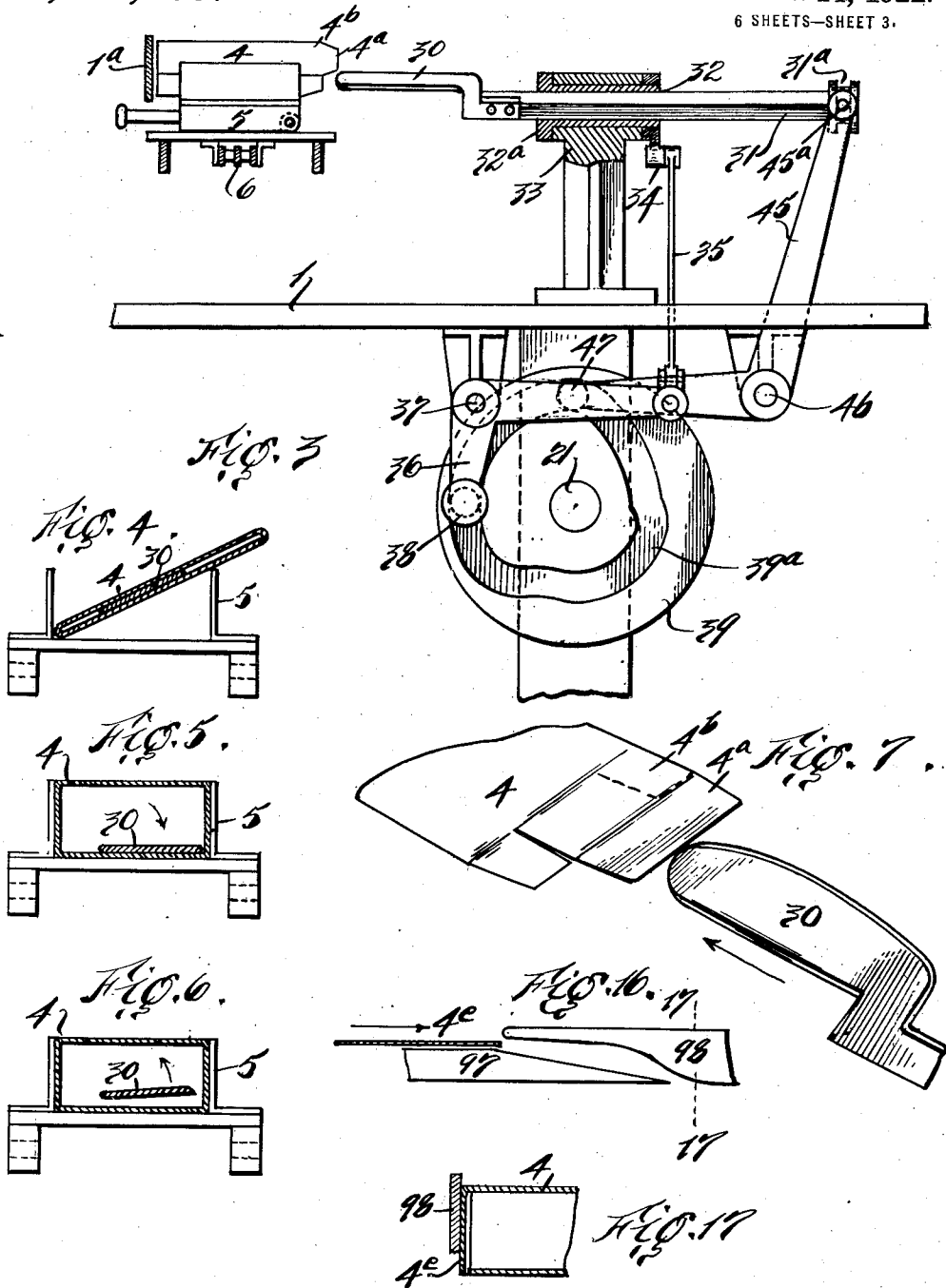
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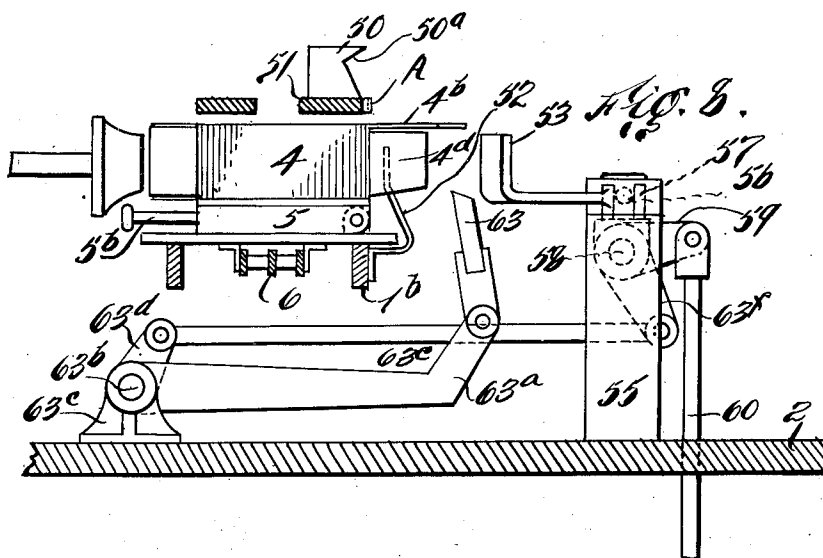
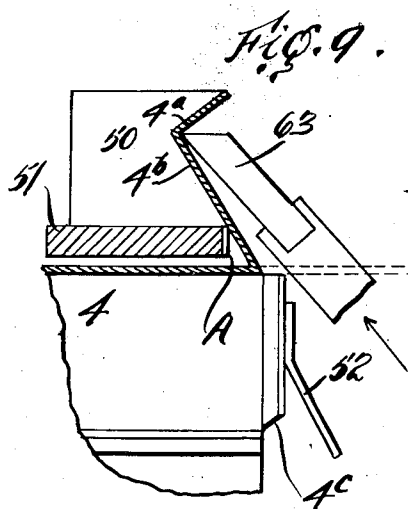
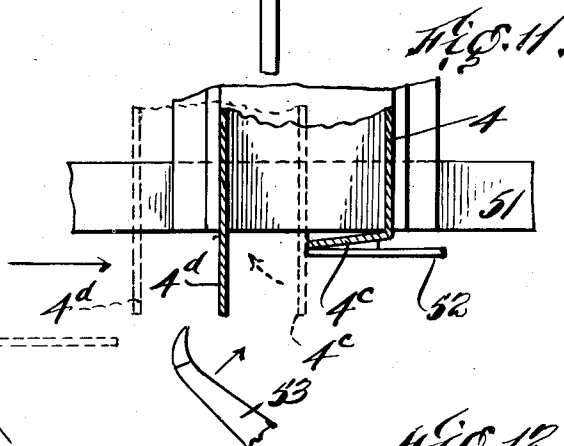
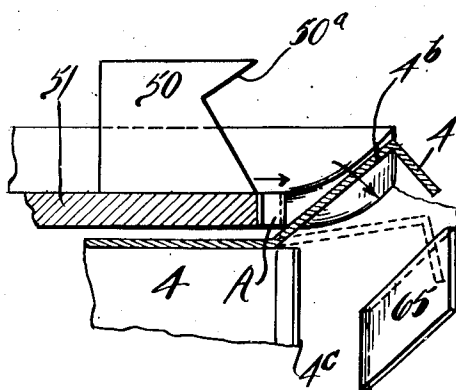
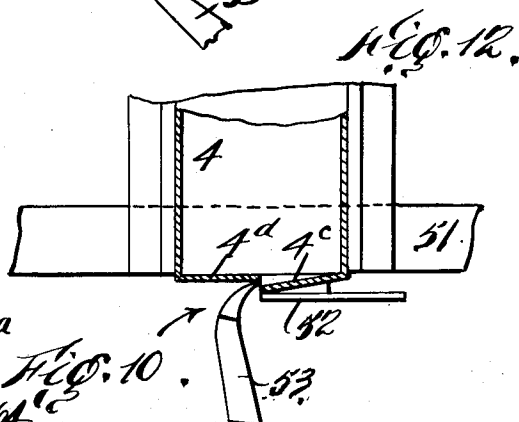
6 SHEETS—SHEET 3.



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6 SHEETS—SHEET 4.



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6 SHEETS—SHEET 5.

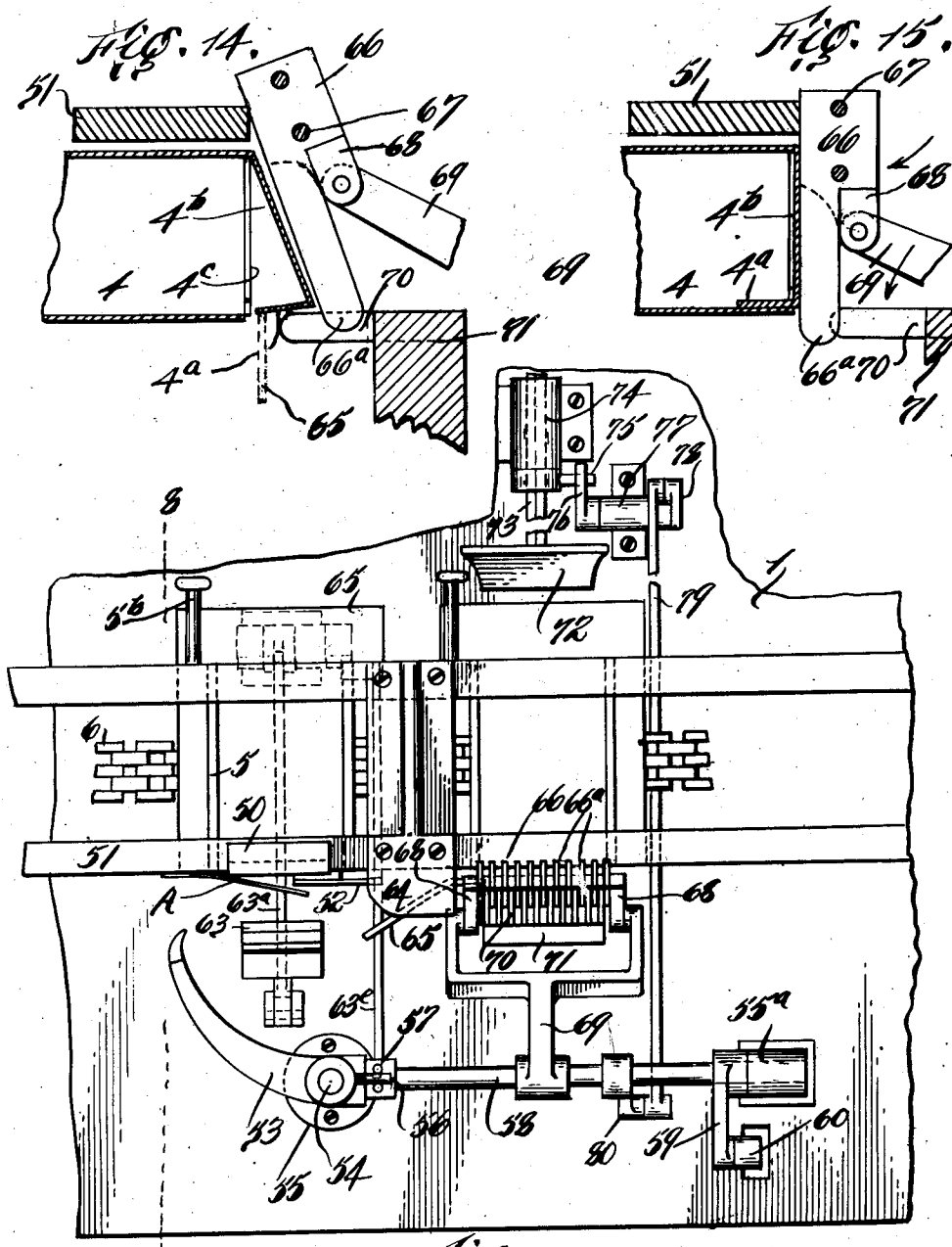


FIG. 13.

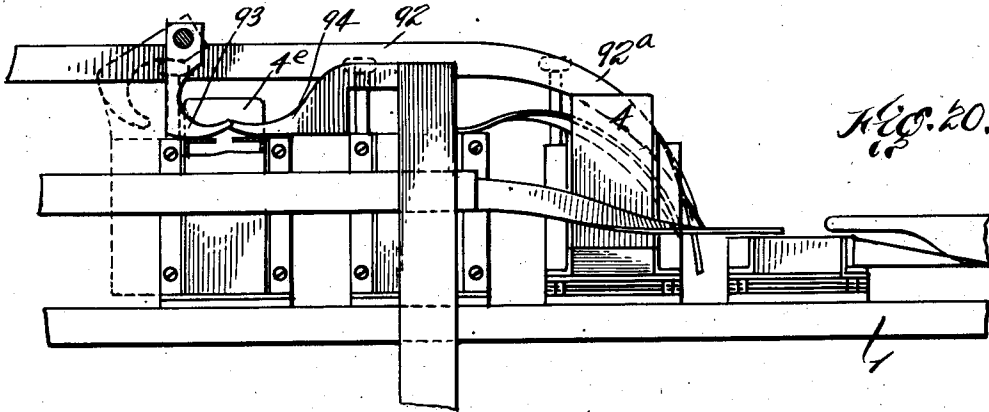
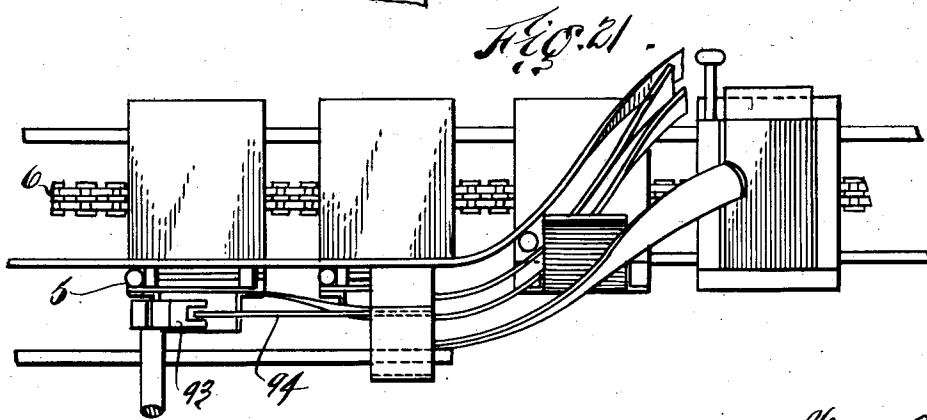
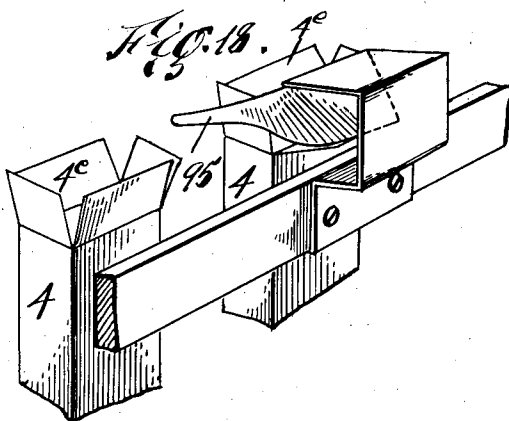
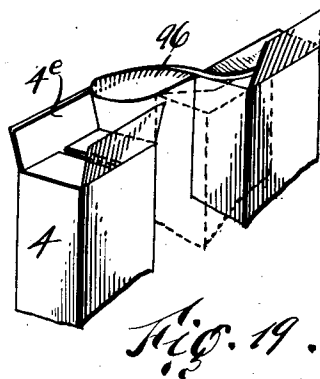
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APPLICATION FILED JULY 20, 1920.

1,406,165.

Patented Feb. 14, 1922.

6 SHEETS—SHEET 6.



Inventor
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UNITED STATES PATENT OFFICE.

CARL BECKMANN, OF NEW YORK, N. Y., ASSIGNOR TO E. D. ANDERSON, INC., OF NEW YORK, N. Y., A CORPORATION OF NEW YORK.

PACKAGING MACHINE.

1,406,165.

Specification of Letters Patent. Patented Feb. 14, 1922.

Application filed July 20, 1920. Serial No. 397,625.

To all whom it may concern:

Be it known that I, CARL BECKMANN, a subject of Germany, and resident of New York city, in the county of Queens and State of New York, have invented certain new and useful Improvements in Packaging Machines, of which the following is a specification.

My invention pertains to improvements in the class of machines in which collapsed receptacles or cartons having flaps are opened and charged and wherein the flaps are closed at the ends of the receptacles in a continuous and successive manner.

An object of my invention is to provide improved means to prepare tuck ends of flaps of receptacles ready to be tucked into receptacles that have been opened, as well as to close other flaps of such receptacles.

I have illustrated my invention embodied in a machine comprising an endless conveyer for the receptacles operating step by step, means to supply collapsed receptacles, means to open said receptacles, my improved means for preparing tuck-end flaps and closing flaps of the receptacles, and means to charge the receptacles with goods.

Reference is had to the accompanying drawings forming part hereof wherein—

Figure 1 is a side elevation of a machine embodying my improvements, the magazine and feeding means for the collapsed receptacles or cartons being omitted;

Fig. 2 is an enlarged view, partly in section, to be read in connection with the left hand end of Fig. 1, illustrating means to supply collapsed receptacles and showing part of my improvements;

Fig. 3 is an enlarged cross section on the line 3—3 in Fig. 2;

Figs. 4, 5 and 6 are diagrammatic views, partly in section, illustrating different positions of the receptacle and an opener before and after the receptacles are opened;

Fig. 7 is a diagrammatic view illustrating a portion of a receptacle and opener ready to enter the same;

Fig. 8 is an enlarged section on the line 8—8 in Fig. 13;

Fig. 9 is a detail section illustrating the

tuck-end flap of the receptacle being prepared for tucking;

Fig. 10 is a sectional view illustrating a portion of the folding of said flap;

Figs. 11 and 12 are detail plan sections illustrating side flap folding means;

Fig. 13 is a plan view illustrating parts shown in Fig. 8;

Figs. 14 and 15 are detail sections illustrating further steps in closing the tuck-end flap;

Fig. 16 is a diagrammatic detail view illustrating final flap folding devices;

Fig. 17 is a section on the line 17, 17 of Fig. 16;

Fig. 18 is a detail perspective view enlarged, illustrating means for bending outwardly flaps on one side of the receptacles before they are charged;

Fig. 19 is a perspective detail illustrating means to close side flaps of the receptacles;

Fig. 20 is an enlarged detail side view at the delivery end of the machine;

Fig. 21 is a plan view of Fig. 20;

Figs. 22, 23 and 24 are diagrammatic perspective views illustrating different steps in closing flaps of receptacles.

Similar numerals of reference indicate corresponding parts in the several views.

While my improvements may be utilized in a machine having suitable means to supply and open collapsed receptacles or cartons and to charge the same, as well as to close certain flaps thereof, I have illustrated my improvements embodied in a machine substantially of the class disclosed in Letters Patent to E. D. Anderson, No. 1,313,974, granted August 26, 1919.

The main frame of the machine is indicated generally at 1 having suitable legs 2, a magazine 3 for collapsed receptacles or cartons 4 being supported by said frame in any suitable or well known manner, (Fig. 2). Said receptacles or cartons have flaps at their ends to be closed. At 5 are receivers or pockets of the conveyer into which the receptacles 4 are to be opened, charged and closed, the conveyer illustrated being shown in the form of chain 6 passing over wheels 7, 8 and 9 journaled in the main frame (Figs. 100

1 and 2). A plate 10 beneath the magazine is suitably guided to reciprocate upon the frame, the lower forward corner 3^a of the magazine permitting the receptacles or cartons to pass thereunder one by one, (Fig. 2). Plate 10 may have suitable well known means to push the lowermost carton from the magazine, and may be reciprocated by means of a link 11 pivotally connected with plate 10 at 12 and pivotally connected with a rock arm 14 carried by shaft 15 journaled upon the main frame, said shaft being shown provided with an arm at 16 pivotally connected with rod or link 17, the opposite end of which is forked and co-operative with shaft 18 journaled upon the main frame, (Fig. 1). Said shaft is shown provided with a gear 19 to mesh with gear 20 secured on shaft 21 journaled in bearings in the main frame and which may be rotated in any suitable manner, (Fig. 1). A cam 18^a on shaft 18 is co-operative with rod 17 to reciprocate the latter. The foregoing parts are substantially similar to corresponding parts in the aforesaid Letters Patent. One or more hooks or fingers 23 above the delivery plate 10 are pivotally supported on the main frame at 24 in position to engage the rear edges of the receptacle as fed on plate 10. The fingers 23 are in position over the receivers 5 so that when the plate advances with the receptacles 4 beneath the magazine a receptacle will be moved beyond the hooked end of the finger or fingers 23, and when plate 10 next returns said finger or fingers will retain the receptacle or carton and the plate will slide thereunder, whereupon the receptacle will drop into the receiver 5, then at rest beneath it, and the receptacle will assume a position in the receiver indicated in Figs. 2 and 4. The conveyer may be operated to advance the receivers and receptacles step by step toward the right of Figs. 1 and 2 by any suitable means. The wheel 9 may be in the form of a sprocket receiving chain 6 and secured upon shaft 27 journaled upon the main frame, to which shaft is secured a slotted member 28 of a Geneva movement, the opposite member of which may be an arm 29 provided with a pin or projection 29^a operative in the slots of member 28 in a well known manner, said arm being secured upon the shaft 18, whereby as said shaft rotates continuously the conveyer will be operated step by step.

The receptacles or cartons 4 are shown provided with flaps at opposite ends, and they are adapted to travel for a suitable distance in a well known manner, (Fig. 2). Suitable means may be provided to open and seat the receptacles in the receivers or pockets of the conveyer. I have shown a longitudinally movable rotative opener 30, (Figs. 3 and 7) mounted and adapted to operate substantially the same as the corre-

sponding opener in the aforesaid Letters Patent as follows:—The opener is shown in the form of a suitable blade secured upon longitudinally movable rod 31 shown in angular section and adapted to reciprocate in a bearing or bushing 32 that is journaled in support 33 secured upon the main frame. Said bearing or bushing is shown provided with a flange or head 32^a at one end, and the opposite end of said bearing is secured to crank arm 34 shown pivotally connected by link 35 with a rock arm or bell-crank lever 36 journaled at 37 upon a bracket carried by the main frame. Said lever is shown provided with projection or roller 38 adapted to operate in cam groove 39^a of cam 39 secured upon shaft 21. Rod 31 is shown provided with an annular groove 31^a, (Fig. 3) receiving forked end 45^a of a rock arm or lever 45 pivotally supported at 46 upon the main frame, which forked arm is provided with projection or roller 47 adapted to operate in cam groove 39^a of cam 39.

The relative arrangement of cam 39 and levers 36, 45, is such that rod 31 and opener 30 will be retracted from the receptacles or cartons when they are to be advanced by the conveyer, but the tip end of the opener will be in the path of travel of the tuck ends 4^a of the flaps 4^b of the receptacles to slightly spread the same, substantially as the receptacle comes to rest opposing the opener, and when the receptacle is at rest the cam 39 will cause rod 31 and opener 30 to advance and insert the opener in the receptacle by first causing the lever 45 to rock and to come to rest, and thereupon cam 39 will cause lever 36 to operate, whereupon the arm 34 will rock the bearing or bushing 32 and correspondingly rock or rotate the opener 30 within the receptacle, which will bear against the lower side of the receptacle and cause its upper portion that is resting upon one side of the receiver 5 (Fig. 4) to be dragged therefrom to square and seat the receptacle or carton in the receiver, (Fig. 5). The cam 39 will next cause opener 30 to rock reversely a suitable distance to relieve the receptacle from the pressure of the opener, substantially as indicated in Fig. 6, and then said cam will cause continued rotative movement of lever 36 to return the opener to its normal position respecting the collapsed receptacles, and will cause the lever 45 to withdraw the opener from the opened receptacle, without disturbing the latter in its receiver, restoring the opener in position to enter the succeeding collapsed receptacle presented by the conveyer in front of the opener, and so on for each collapsed receptacle or carton to be opened.

Other well known means for opening and seating receptacles or cartons in receivers may be utilized in connection with my im-

improvements for closing flaps 4^c, 4^d and bending the flap 4^b to produce a tuck end 4^a in position to enter the receptacle and for closing in said tuck end flap over the previously closed flaps 4^c, 4^d.

My improved flap bending and closing devices are arranged as follows:—

After the opener 30 has receded from the opened receptacle in the conveyer the latter comes to rest with the receptacle beneath a flap bending member 50 (Figs. 1, 2, 8, 9, 10 and 13) as at the position shown in Fig. 13. Member 50 is shown supported on rail 51 carried by main frame 1 above the receivers of the conveyer. As a receptacle approaches the position shown in Fig. 13 its flap 4^c encounters a flap closer 52 supported by the main frame bar 1^b (Fig. 8) in the path of said flap to cause the flap to close at the end of the receptacle when the latter comes to rest, (Fig. 11). At 53 is a movable flap closer, located at the position shown in Fig. 13, to close flap 4^d of the receptacle when the latter is at rest. The closer 53 is carried by a pivot 54 supported by a post 55, (Figs. 8 and 13) on the main frame to swing horizontally. Closer 53 has a pin 56 co-operative with a jaw 57 on a rock shaft 58 journaled in posts 55, 55^a, (Figs. 1 and 13). Said shaft has a crank arm 59 connected with link 60 having a projection 61 co-operative with a cam 62 on shaft 21, (Fig. 1). As said cam is rotated the closer 53 will be rocked to close a flap 4^d of a receptacle each time a receptacle is brought to rest at the position shown in Fig. 13. At 63 is a movable flap bender secured to a rock arm 63^a carried by a shaft 63^b pivotally supported by bracket 63^c on the main frame, (Figs. 8 and 13). The shaft 63^b has a crank arm 63^d connected by link 63^e with crank arm 63^f secured on shaft 58, (Fig. 8), whereby as the latter is rocked the flap bender 63 will be moved toward and from flap bender 50. The flap bender 50 is shown provided with an angularly disposed side recess 50^a to receive flap 4^b when bender 63 pushes said flap against bender 50, (Fig. 9). A spring A secured to rail 51 is located between bender 50 and rail 51 to engage flap 4^b to push it away from bender 50.

When a receptacle comes to rest at the position stated before, its flap 4^c will first be closed by closer 52 and flap 4^b will protrude between flap benders 50 and 63, (Fig. 8); bender 63 will then advance and push said flap into the recess 50^a of bender 50 to crease or bend the flap and off-set the tuck end 4^a, as illustrated in Fig. 9, the flap then putting spring A under tension. Bender 63 next will recede and spring A will push flap 4^b outwardly, (Fig. 10). Flap closer 53 will operate to close flap 4^d and while said closer remains temporarily as in Fig. 12 the conveyer will advance the

receptacle so that flap 4^d will pass behind closer 52, whereupon closer 53 will recede. As the receptacle advances the closer 52 will retain the flaps 4^c, 4^d closed and flap 4^b will encounter an inclined closer 64, (Figs. 10 and 13) which will bend flap 4^d downwardly toward closed flaps 4^c, 4^d, the tuck end 4^a of flap 4^b encountering a guide 65, the receiving end of which is shown at an angle to the path of travel of the flap, part of said guide being parallel to the conveyer, (Figs. 1, 10, 13 and 14). When the conveyer comes to rest the tuck end 4^a of flap 4^b will be retained by guide 65, (Fig. 14), with the flap in position to be tucked and closed. At said position the flap 4^b is opposite a movable flap tucker 66, (Figs. 1, 13, 14, 15). Said tucker is shown comprising spaced finger-like members 66^a secured side by side by rods 67 attached to spaced arms 68. The arms 68 are pivotally carried by a forked-arm-member 69 secured upon shaft 58 to be rocked thereby. The tucker 66 may be pushed against rail 51 and members 66^a operate between spaced fingers 70, shown in comb-like form, projecting laterally from support 71 secured upon the main frame. When the receptacle 4 is advancing toward tucker 66 the latter will be elevated, as in Fig. 14, to receive thereunder the flap 4^b with its tuck end 4^a resting on guide 65, (Fig. 14). When the receptacle comes to rest the arm-member 69 will operate the tucker 66 toward flap 4^b to cause the latter to be folded toward the receptacle over the previously closed flaps 4^c, 4^d, with the tuck end 4^a of flap 4^b tucked into the receptacle, as indicated in Fig. 15. The tucker 66 will next move away from the receptacle and the latter will be moved along with the conveyer. The operations described of closing flaps 4^c, 4^d, and bending the tuck end of flap 4^d of one receptacle and of tucking flap 4^b of a different receptacle will occur each time the conveyer comes to rest.

While the flap closer 66 is against flap 4^b as an abutment the flaps 4^c at the opposite end of the receptacle may be flared or spread by a flap flarer or spreader 72 on the side of the conveyer opposite the closer, (Fig. 13). Said flarer may be similar to that shown in Letters Patent No. 1,313,974 aforesaid. I have shown said flarer provided with a slidable bar 73 mounted in a bearing 74 carried by the main frame. A projection 75 from bar 73 co-operates with a crank arm 76 carried by a shaft in a bearing 77, said shaft having a crank arm 78 connected by link 79 with crank arm 80 on shaft 58. The timing of said parts may be such that the flap closer 66 and flarer 72 will approach a receptacle 4 substantially simultaneously and correspondingly recede therefrom.

My improvements are particularly appli-

cable in a machine having means to charge goods into the receptacles at the open ends opposite the flaps 4^b, 4^c, 4^d, and to close the flaps 4^e after the receptacles are charged. I have illustrated a receptacle 81 for goods in bulk, having an open top and in communication with a filling chute 82 supported by posts 83 on the main frame. A funnel or duct 84 is supported over the open-end receptacles on the conveyer to deliver goods thereto. Rotative scoops 85 are supported on arms 86 to scoop up articles or goods in receptacle 81 to deliver them into funnel 84. Funnel 84 has valves or throttles connected with pinions 87 meshing with rack 88 operated by cam 89 on shaft 21. Arms 86 may be rotated by any suitable means. A brush 90 operated by link 91 serves to regulate the charges in the scoops. The foregoing parts are like similar ones set forth in Letters Patent No. 1,313,974 aforesaid. The receivers 5 may be pivotally carried by the conveyer at 5^a to lie horizontally when the flaps of receptacles 4 are being closed at one end and flared at the opposite end, the receivers having projections 5^b to be engaged by the upwardly extending part 92^a of guide 92 to turn the receivers and receptacles to an upward article-receiving position as the conveyer travels. After the receptacles 4 have been charged and closed the projections 5^b travel along the downwardly extending part 92^b of guide 92, to return the receivers and receptacles to a horizontal position. Said parts are similar to corresponding parts in the aforesaid Patent No. 1,313,974. A movable flap closer 93 and a stationary flap closer 94 serve to close the end flaps 4^e of the receptacles, as in the aforesaid Letters Patent. The flap guide 95, flap closer 96, and guides 97, 98, for closing such flaps 4^e, as well as flap pasting means may be provided similar to the corresponding parts set forth in the aforesaid Letters Patent, as well as suitable discharging means for the charged receptacles.

My improvements used in a machine of the character specified enable the accurate and expeditious formation of the tuck ends 4^a of receptacle flaps 4^b and the folding and tucking of the same over the folded flaps 4^c, 4^d, the arrangement being such that the bend of each such flap for production of its tuck end 4^a will be made in the proper position on each flap 4^b to be tucked into the respective cartons 4.

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

1. The combination of supporting means for receptacles having flaps, flap closers to close flaps of said receptacles, a flap bender above the path of the receptacles, a movable flap bender to push flaps against the first named bender to form tuck ends on said flaps,

means to operate said movable bender, a spring between said flap benders to engage flaps to push them from the first named bender, and means to close and tuck said tuck end flaps.

2. The combination of supporting means for receptacles having flaps, flap closers to close flaps of said receptacles, a flap bender above the path of the receptacles, and provided with a recess in one side, a movable flap bender to push flaps into said recess to form tuck ends on the flaps, means to operate the movable bender, and means to close and tuck said tuck end flaps.

3. The combination of supporting means for receptacles having flaps, flap closers to close flaps of said receptacles, a flap bender above the path of the receptacles, and provided with a recess in one side, a movable flap bender to push flaps into said recess to form tuck ends on the flaps, a spring to engage said flaps when in said recess to push the flaps therefrom, means to move said movable bender toward and from said recess, and means to close and tuck said tuck end flaps.

4. The combination of a conveyer for receptacles having flaps, a flap bender above the receptacles having a recess in one side, a movable flap bender to push flaps into said recess, means to move said bender toward and from said recess, and means to close and tuck said flaps.

5. The combination of a conveyer for receptacles having flaps, a flap bender above the receptacles having a recess in one side, a movable flap bender to push flaps into said recess, a spring between said flap benders to engage flaps when in said recess, means to operate said movable bender, and means to close and tuck said tuck end flaps.

6. The combination of a conveyer having receivers for receptacles having flaps, means to operate the conveyer, opposing flap benders one of which is movable toward and from the other to form tuck ends on flaps on the receptacles, means to operate the movable bender, a flap closer in the path of the tuck end flaps to fold them toward receptacles, a guide to retain the tuck ends of the flaps, a flap tucker to push the tuck ends of the flaps into the receptacles, and means to operate said tucker.

7. The combination of a conveyer having receivers for receptacles having flaps, means to operate the conveyer, opposing flap benders one of which is movable toward and from the other to form tuck ends on flaps on the receptacles, means to operate the movable bender, a flap closer in the path of the tuck end flaps to fold them toward the receptacles, a flap tucker to push the tuck ends of the flaps into the receptacles, means to operate said tucker, and a guide to engage the tuck ends of the flaps adjacent to the tucker.

8. The combination of a conveyer having receivers for receptacles having flaps, means to operate the conveyer, a flap closer in the path of flaps of said receptacles, a movable flap closer for other flaps of the receptacles, means to move the last named closer toward and from said flaps, a flap bender above the first named closer, a movable flap bender co-operative with the first named bender to form tuck ends on the flaps, means to operate the movable bender, and means to close and tuck said tuck end flaps.
9. The combination of a conveyer having receivers for receptacles having flaps, means to operate the conveyer, a flap closer in the path of the flaps of said receptacles, a movable flap closer for other flaps of the receptacles, means to move the last named closer toward and from said flaps, a flap bender above the first named closer, a movable flap bender co-operative with the first named bender to form tuck ends on the flaps, means to operate the movable bender, means to close and tuck said tuck end flaps, an inclined closer in the path of said tuck-end flaps, a guide for said flaps and means to tuck said flaps.
10. The combination of a conveyer having receivers for receptacles having flaps, means to operate the conveyer, a flap closer in the path of flaps of said receptacles, a movable flap closer for other flaps of the receptacles, means to move the last named closer toward and from said flaps, a flap bender above the first named closer, a movable flap bender co-operative with the first named bender to form tuck-ends on the flaps, means to operate the movable bender, a spring below the first named flap bender to push flaps therefrom, a closer in the path of said tuck-end flaps, a guide for said flaps, and means to tuck said flaps.
11. The combination of a conveyer having receivers for receptacles having flaps, means to operate the conveyer, a flap closer in the path of flaps of said receptacles, a movable flap closer for other flaps of the receptacles, means to move the last named closer toward and from said flaps, a flap bender above the first named closer, a movable flap bender co-operative with the first named bender to form tuck-ends on the flaps, means to operate the movable bender, an inclined closer in the path of said tuck-end flaps, a guide for said flaps, a tucker to push flaps from the guide to the receptacles to tuck the tuck-ends of the flaps into the receptacles.
12. The combination of a conveyer having receivers for receptacles having flaps, flap closers for flaps of the receptacles, means to bend other flaps of the receptacles to form tuck ends thereon, a guide for the tuck end flaps to present them opposite the receptacles, a rail above the receptacles, a flap tucker co-operative with said rail, an arm to actuate said tucker, and means to operate said arm.
13. The combination of a conveyer having receivers for receptacles having flaps, flap closers for flaps of the receptacles, means to bend other flaps of the receptacles to form tuck ends thereon, a guide for the tuck end flaps to present them opposite the receptacles, a rail above the receptacles, a flap tucker comprising spaced finger-like members to engage the tuck-end flaps, and co-operative with said rail, spaced fingers receiving said tucker, and means to operate said tucker relatively to said fingers for closing and tucking the tuck-end flaps.
14. The combination of means to support receptacles having flaps, means to open the receptacles, closers for flaps of said receptacles, a flap bender on one side of the receptacles and having a recess, a movable flap bender to push flaps into said recess to form tuck ends on said flaps, a tucker for said flaps, and means to operate the tucker to close and tuck said flaps.
15. The combination of means to support receptacles having flaps, means to open the receptacles, closers for flaps of said receptacles, a flap bender on one side of the receptacles and having a recess, a movable flap bender to push flaps into said recess to form tuck ends on said flaps, a closer and a guide in the path of the tuck-end flaps, a tucker adjacent to the guide to push flaps therefrom to close and tuck said flaps, and means to operate the tucker relatively to said receptacles.

Signed at New York, in the county of Queens and State of New York, this 2nd day of July, A. D. 1920.

CARL BECKMANN.