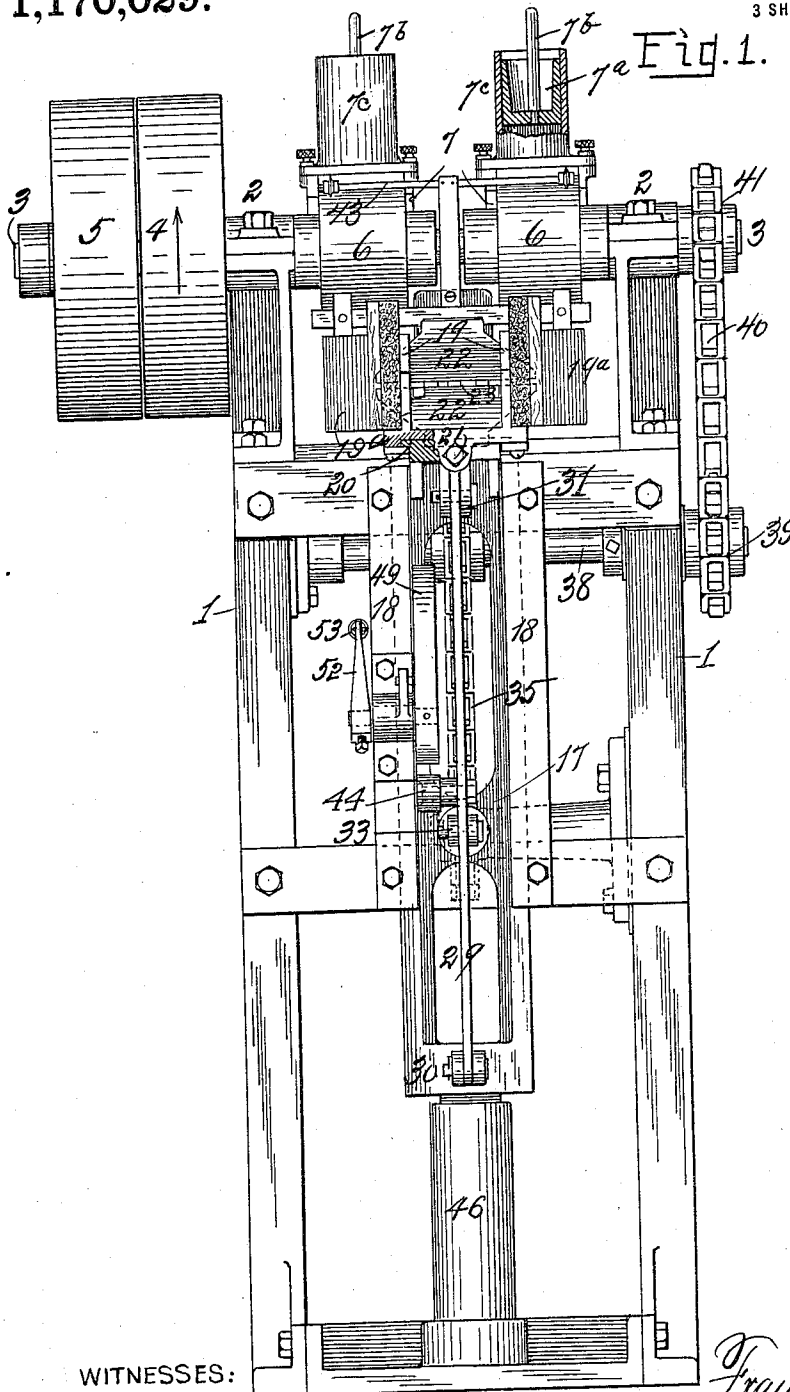


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APPLICATION FILED JUNE 12, 1914.

Patented Feb. 1, 1916.
3 SHEETS—SHEET 1.

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WITNESSES:

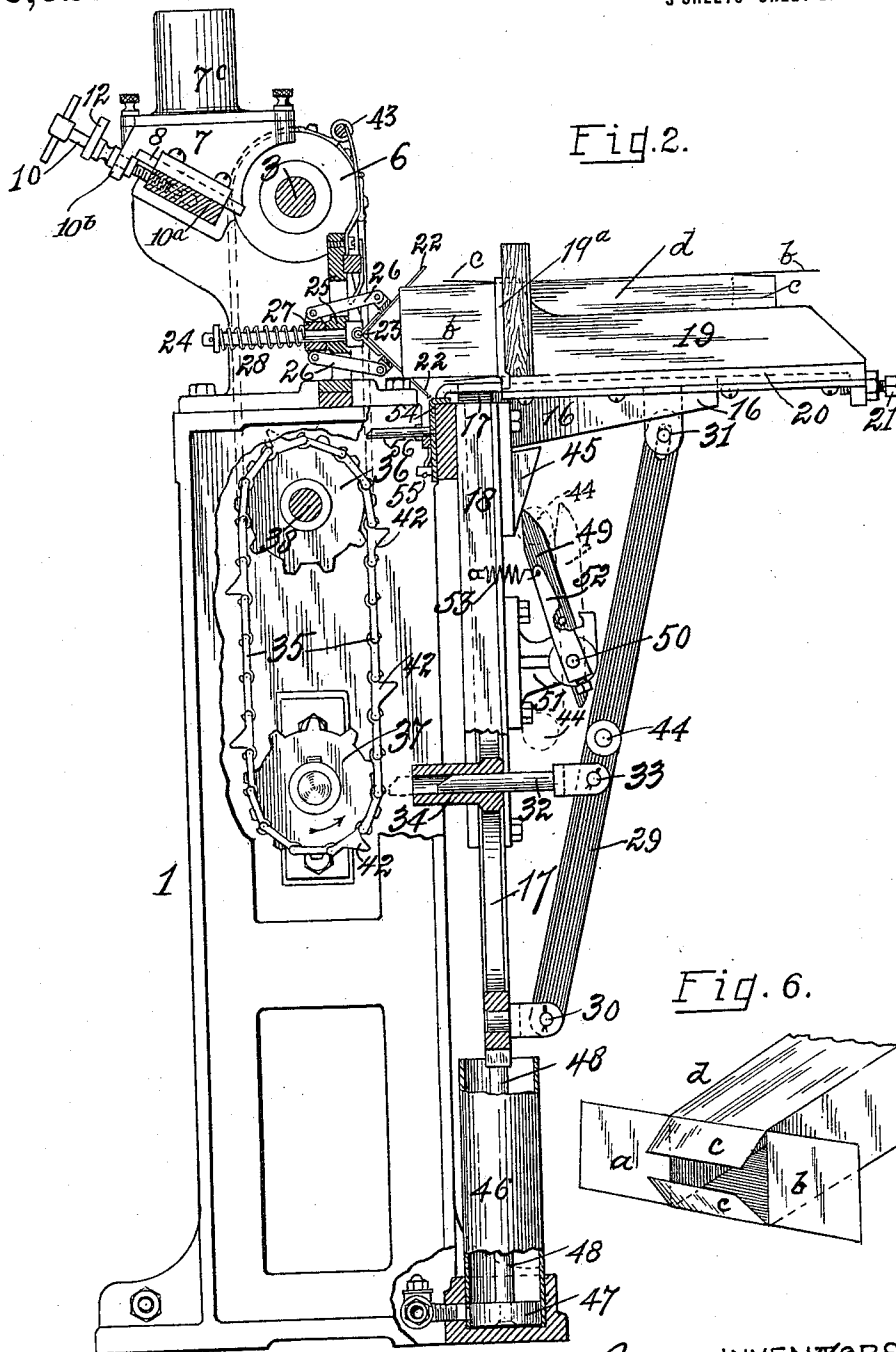
L. C. Walter
Gertrude Bracker.

INVENTOR'S
Frank N. Weis.
William C. Weis.
By Arthur Hall, Atty.

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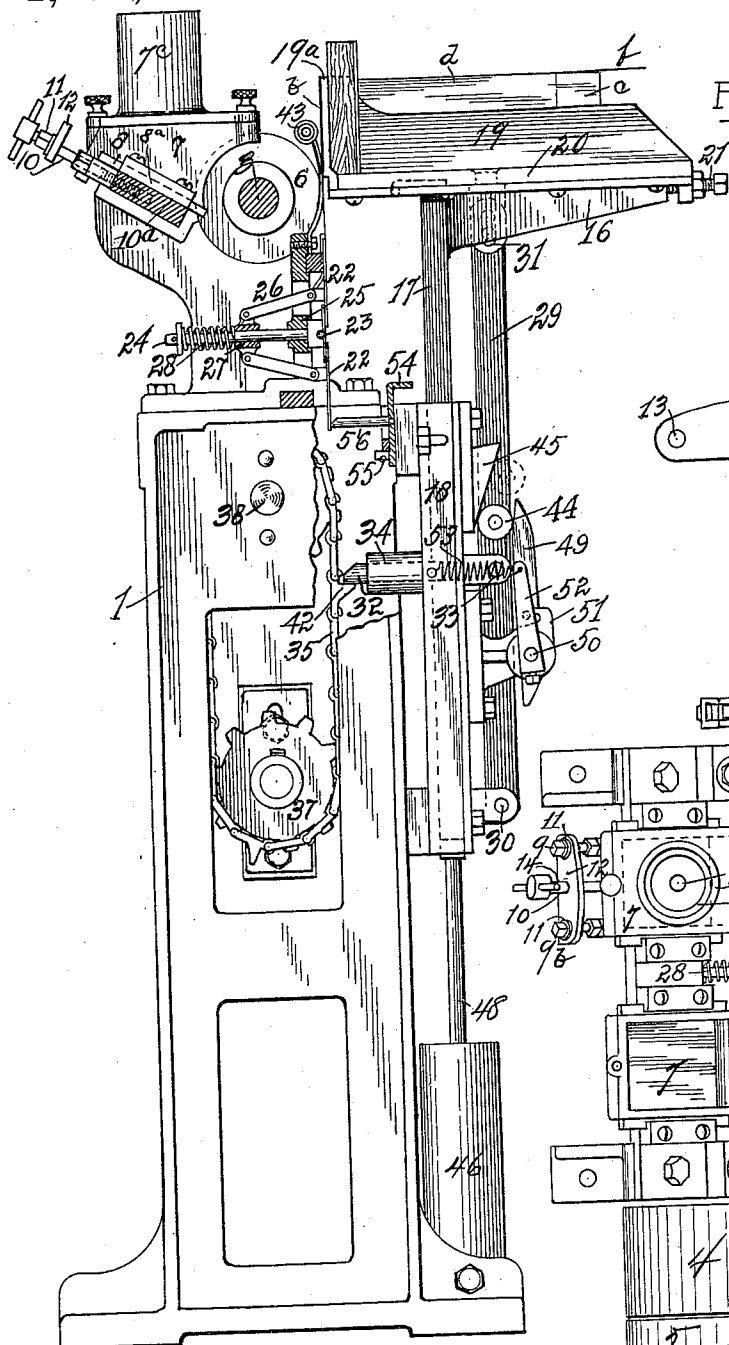


Fig. 3.

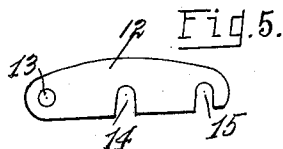
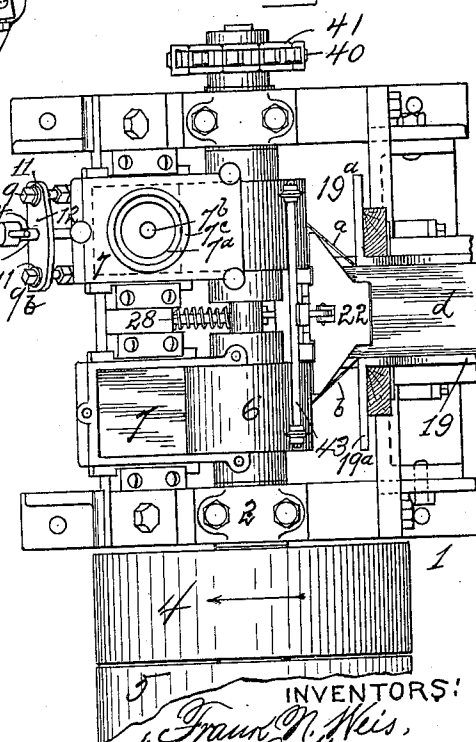


Fig. 4.



WITNESSES:
D. C. Walter
Gertrude Bracker.

INVENTORS:
Frank N. Weis,
William C. Weis,
By Howard Hall, Atty.

UNITED STATES PATENT OFFICE.

FRANK N. WEIS AND WILLIAM C. WEIS, OF MONROE, MICHIGAN, ASSIGNORS TO THE
WEIS-VAN WORMER COMPANY, OF MONROE, MICHIGAN, A CORPORATION.

GLUING-MACHINE FOR PAPER BOTTLES.

1,170,029.

Specification of Letters Patent.

Patented Feb. 1, 1916.

Application filed June 12, 1914. Serial No. 844,606.

To all whom it may concern:

Be it known that we, FRANK N. WEIS and WILLIAM C. WEIS, citizens of the United States, residing at Monroe, in the county of Monroe and State of Michigan, have invented certain new and useful Improvements in Gluing-Machines for Paper Bottles; and we do declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it appertains to make and use the same, reference being had to the accompanying drawings, and to the letters and figures of reference marked thereon, which form a part of this specification.

Our invention relates to a machine for performing one of the steps in the manufacture of a box or bottle composed of paper, cardboard or the like, and is intended, more particularly, to rapidly and uniformly coat with glue or similar adhesive the surfaces of certain of the overlapping flaps of a box-blank. These flaps comprise the end of the box, as hereinafter described, it being understood that the side-edges of the blank have by a separate operation been previously secured together in operative form.

Our invention also consists in details of construction hereinafter described and pointed out in the claims.

Our invention consists of the devices, construction and arrangement of parts hereinafter described, and shown and illustrated in the accompanying drawings, in which—

Figure 1, is a front-elevation of our machine with one of the glue-pots hereinafter referred to shown in section; Fig. 2, a side-elevation of said machine with portions hereinafter referred to shown in section and showing the box-blank carrier hereinafter referred to in its initial position; Fig. 3, the same showing the box-blank carrier elevated to near the end of its upward travel; Fig. 4, a top-plan-view of the same with the box-blank carrier lowered as shown in Fig. 2; Fig. 5, a side-elevation of the lock-piece hereinafter referred to designed to retain the adjustment of the feed of the semi-liquid adhesive, and Fig. 6, an end-view of the box-blank as it is fed into the machine.

Like numerals and letters of reference indicate like parts throughout the drawings.

In the drawings, 1 is a frame across the top of which is journaled as at 2 a shaft 3. This shaft carries a driving-pulley 4, and, if

desired, a loose-pulley 5 as a means for throwing the machine into or out of operation. Upon the shaft 3 are fixed two glue-rolls 6, the upper rear surfaces of which fit closely into and revolve in the front lower part of glue-boxes 7. The glue-pots or boxes are open at their front for the reception of the rolls and have sides which overlap and fit closely against the ends of the rolls. The bottoms of the boxes 7 are forwardly and downwardly inclined and their sides have laterally projecting flanges 8 which engage and slide in guides 8^a carried by the frame of the machine. The lower forward edge of the bottom of each of the boxes is adapted to contact with or to be moved away from the glue-roll any desired distance to either stop the flow of the glue or to permit its flow upon the side of the roll at such rate and in such quantity as may be desired. The position of each glue-box relatively to its roll is controlled by means of an adjusting screw 10 engaged with a stationary piece 10^a carried by the frame and passing through a lug 10^b projecting from the box. (See Figs. 2 and 3.) The lug 10^b is engaged at opposite sides by shoulders or nuts on the screw 10 so that the inward or outward movement of this screw imparts a corresponding movement of the glue-box toward or away from its roll.

9—9^b are stop-screws located at opposite sides of the adjusting screw 10, each having a shoulder 11.

12 is a plate pivoted as at 13 upon the shank of screw 9 and having a notch 14 and a notch 15 in its lower edge. (See Fig. 5.) Assuming that the three screws 9—9^b—10 are set to permit exactly the required flow of the adhesive and that it becomes necessary to stop the machine, it will of course be also necessary to stop the flow of glue. To accomplish this, the screws 10 are set forward bringing the bottoms of the boxes into close contact with the glue-rolls. To reopen the glue orifices to exactly the proper adjustment, it is only necessary to throw the piece 12 with its notches 14—15 into engagement with the screws 9^b—10 and to withdraw the boxes by means of screws 10 until the pieces 12 contact with the shoulders 11 on the screws 10. Now the boxes are stopped at their original adjustment, thus obviating the necessity for further experiment or test. Under some conditions it

is desirable to apply pressure to the contents of the glue-pots. For this purpose we provide for each glue-pot a plunger 7^a having a handle 7^b and which moves with a working fit in a cylinder 7^c open at top and bottom and connected with the chamber of the glue-box. The plunger is readily removable and may be weighted as may be desired to give the requisite pressure upon the semi-liquid glue.

In Fig. 6 is illustrated a box having its end-flaps unclosed. That form of our machine here illustrated is designed to coat with glue the inner surfaces—exposed in the drawing—of the flaps *a—b*. In the completed box the surface *a* will adhere to the outer surface of the flaps *c* and the surface *b* will adhere to the outer surface of the flaps *a*, thus forming a closely sealed three-ply end. The two rolls 6 are of the same width and of the same distance apart as the flaps *a—b*. A bracket 16 is secured to the top of a frame 17 which slides vertically in guides or ways 18 secured to the front of the frame 1. Upon the top of the bracket is mounted a box 19, open at its ends and top, and arranged to slide horizontally in guides or ways 20 secured to the bracket 16. The box is provided with an adjusting stop-screw 21 which contacts with the outer end of the bracket 16 and limits the inward movement of the sliding box. The open box 19 is of such dimensions as to receive with a loose fit the box-blank *d*, and has at its forward end lateral wings 19^a against which the flaps *a—b* rest during the operation of the glue-rolls. In order that the glue-rolls may act upon the flaps *a—b*, it is necessary that these flaps be spread apart and in the same plane, as shown in Fig. 6, and that the flaps *c* be folded inwardly into the same plane with the flaps *a—b* and out of the way. To accomplish this, we provide the devices now to be described. 22—22 are a pair of thin metal plates of the same width as the flaps *c*, pivoted together at their horizontal meeting edges, as at 23, upon the end of a horizontal rod 24 fixed in a cross-bar 25, extending between the side members of the frame 1. The plates 22 are respectively pivotally connected by means of toggle-bars 26 with a block 27 which slides on the rod 24. A spring 28 pressing against the block 26 holds the block pressed normally forward so that the plates 22 flare toward the open mouth of the blank *d* and in horizontal alinement therewith. Now when the box 19 is pushed forward carrying with it the blank *d* with its flaps projecting in front of the box 19, the side flaps *a—b* are caught by the side margins of the plates 22 and are spread apart while the flaps *c* are at the same time deflected inwardly. The end-pressure of the box-blank *d* upon the plates 22 will now spread the plates 22 apart and will at the same time spread the

flaps *a—b* apart and the flaps *c* together, all in a flat vertical plane, the plates 22 yielding to this movement through the toggles 26—27 and the spring 28. At about the instant that the flaps *a—b* have been positioned as just described, the box 19 containing the paper box is lifted vertically so that the exposed surface of the flaps *a—b* rub against the revolving gluey surfaces of the glue-rolls 6. This lifting of the box 19 is accomplished by means of the mechanism now to be described. 29 is a bar the lower end of which is pivotally connected as at 30 with the vertically sliding frame 17, the upper end of the bar being pivotally connected as at 31 with the under side of the sliding box 19. 32 is a pawl pivotally connected as at 33 with the bar 29 and sliding horizontally in a sleeve 34 fixed between the side members of the sliding frame 17. 35 is a sprocket-chain running upon an upper sprocket-wheel 36 and a lower sprocket-wheel 37. The upper sprocket-wheel is fixed upon a shaft 38 which carries at its outer end a sprocket-wheel 39 upon which runs a sprocket-chain 40 driven by a sprocket-wheel 41 upon the shaft 3. The sprocket-chain 35 carries at regular intervals lugs 42.

When the box 19 is pushed inwardly, as above described, the bar 29 is swung on its lower pivot, thus forcing the inner end of the pawl 32 into the path of the upwardly traveling lugs 42 on the sprocket-chain 35. Now the first lug 42 which comes along catches the pawl, thus lifting the frame 17, carrying with it the bracket 16, the box 19 and the paper box. Thus the flaps *a—b*, which are held spread apart by the wings 22 until they reach the glue-rolls, are moved upwardly against and beyond the glue-rolls 6. To prevent the flaps *a—b* from adhering to the glue-rolls as the box 19 ascends, we provide a small roller 43 close to and above the glue-rolls, and which holds the flaps away from the glue-rolls after the application of the glue. The flaps *a—b* having now been lifted to their uppermost point and having been brought in contact with the revolving glue-rolls, it becomes necessary to retract the box 19 and to permit the parts to resume their initial position, ready for a repetition of the operations thus far described. To this end we provide the following devices: Upon the bar 29 is journaled a roller 44 which, when the box 19 is pushed inwardly to its limit, assumes the position shown by the adjacent dotted line. As the frame 17 with its burden moves upwardly, the roller 44 comes in contact with and rides upon the outwardly inclined surface of the piece 45, thus swinging the bar 29 outwardly carrying with it at its upper end the box 19 and at the same time pulling the pawl 32 out of engagement with that lug 42 with which it happens to be in

engagement. The frame 17 with its appendages immediately drop to their original position. To prevent undue noise, jar or concussion from the fall of the frame 17, we provide a dash-pot 46 having a piston 47 connected by rod 48 with the lower end of the frame 17, operating in the usual manner. When the pawl 32 is tripped from lug 42 the box 19 has not been withdrawn upon its bracket the requisite distance for the reception of a box *d*. To obviate this we provide a bar 49, pivoted at its lower end, as at 50, on a bracket 51, secured to one of the guides 18 and in the path of the roller 44. The pivot or shaft-piece 50 carries, rigid therewith, an arm 52 which at its upper end is connected by means of spring 53 with the frame of the machine in such manner that the bar 49 is held normally pressed inwardly at its top. Now as the roller 44 ascends, it traverses the inner edge of the bar 49 which yields to the upward movement of the roller. When the roller 44 has passed above the upper end of the bar 49 the bar, thus released, springs inwardly so that the roller in its descent traverses the outwardly inclined outer edge of the bar, thus swinging the upper end of the bar 29 outwardly the required distance. The parts are thus restored to their initial position. The box *d* is now removed from the holder 19, and the machine is ready for a repetition of the above described operation. It will be seen that when the flaps *a-b* move upwardly out of contact with the plates 22, these plates, under the pressure of spring 28 will, unless prevented, swing upon their pivots into the path of the falling flaps *a-b*. To obviate this we provide a plate 54 having a limited sliding movement upon the frame of the machine and held normally elevated by a spring 55. The plate has rigidly connected thereto an inwardly projecting finger 56. When the box-blank carrier 19 is at its lowest position it strikes and holds depressed the plate 54 with its fingers 56, as in Fig. 2. When the carrier moves upwardly the plate 54 is released and is moved by its spring upwardly with the inner end of the finger 56 touching the lower plate 23. Now both of the plates are held in the same vertical plane, as in Fig. 3, until they are released by the fall of the carrier 19 upon the plate 54.

Having described our invention what we claim and desire to secure by Letters Patent, is—

1. In a device of the described character, a pair of revoluble glue-rolls, means for feeding to such rolls a regulated supply of glue, a holder adapted for the reception of a paper box-blank, a support upon which said holder may be moved to and fro, devices disposed in operative relation to said glue-rolls and to said holder and controlled by

the movement of said holder for deflecting the flaps of such box-blank into a common plane, and means for moving said holder into and out of operative relation to said rolls.

2. In a device of the described character, means for deflecting the projecting flaps of a box-blank into a common plane, comprising a pair of plates pivotally connected at their meeting edges, a spring and connections between the spring and plates which hold said plates normally inclined at an angle to each other, and a sliding box-blank holder adapted to move toward and away from said pivoted plates and to press them into a common plane combined with glue applying devices, and means, controlled by the movement of said blank-holder toward said pivoted plates, for moving the blank-holder into operative relation to the glue applying devices.

3. In a device of the described character, means for deflecting the projecting flaps of a box-blank into a common plane, comprising a pair of plates pivotally connected at their meeting edges, a spring and connections between the spring and plates which hold said plates normally inclined at an angle to each other, and a sliding box-blank holder adapted to move toward and away from said pivoted plates and to press them into a common plane; combined with glue-rolls; means for contacting such deflected flaps with the rolls; means for holding said pivoted plates in their said common plane during such contact; devices for moving the box-blank holder away from the rolls; mechanisms which permit the return of said holder to its initial position, and a trip, controlled by said latter mechanisms, for releasing said pivoted plates.

4. In a device of the described character, means for throwing the projecting flaps of a box-blank into a common plane, comprising a pair of plates pivotally connected at their meeting edges, a spring and connections which hold said plates normally inclined at an angle to each other, and a sliding box-blank holder adapted to move toward and away from said pivoted plates and to press them into a common plane, combined with a pair of glue-rolls, spaced apart, and means governed by the movement of the holder toward said pivoted plates for carrying said holder into operative relation to said glue-rolls.

5. In a device of the described character, a glue-roll, a box-blank carrier in front of and below said roll, a vertically movable support upon which the carrier moves horizontally to and fro, and means for raising said support with the carrier into operative relation to the roll, comprising a pair of sprocket-wheels, a sprocket-chain traveling upon said wheels and having a series of pro-

jecting lugs, means carried by said support for detachably engaging said lugs, and connections between said engaging means and said carrier whereby said engaging means 5 are actuated in harmony with the horizontal movement of the carrier.

6. In a device of the described character, a glue-roll, a box-blank carrier, a vertically movable support for said carrier upon which 10 the carrier reciprocates horizontally, and devices controlled by the movement of said carrier for lifting said support with its carrier into operative relation to said glue-roll.

7. In a device of the described character, 15 a glue-roll, a carrier for a box-blank, a vertically movable support upon which said carrier moves horizontally, means controlled by the inward horizontal movement of the carrier for lifting said support with 20 the carrier into operative relation to the glue-roll, and means for imparting an outward movement of the carrier upon its support to permit the support and carrier to drop.

25 8. In a device of the described character, a glue-roll, a box-blank carrier, a vertically movable support upon which the carrier reciprocates horizontally, means for lifting the support, means controlled by the inward 30 movement of the carrier for engaging said support with said lifting means, means governed by the upward movement of the support for disengaging the support from said lifting means whereby the support and its

burden is permitted to drop, and devices 35 governed by the downward movement of the support for moving the carrier outwardly.

9. A machine of the character described comprising a frame, a shaft journaled therein, a pair of glue-rolls carried by said shaft, 40 devices for supplying said rolls with a regulated quantity of glue, a box-blank holder, a vertically movable support for said holder upon which the holder reciprocates horizontally, a pair of sprocket-wheels journaled in 45 said frame, a sprocket-chain running upon said sprocket-wheels, driving-connections between said sprocket-wheels and the shaft first mentioned, a series of lugs projecting from said sprocket-chain, a pawl, connections 50 whereby, by the inward movement of said carrier, the pawl is projected into the upward path of said lugs, a roller associated with said pawl, an outwardly inclined piece 55 secured to the frame and with which said roller contacts in its upward course to withdraw said pawl, and an outwardly inclined piece with which said roller contacts in its 60 downward course to move said carrier outwardly.

In testimony whereof we affix our signatures in presence of two witnesses:

FRANK N. WEIS.
WILLIAM C. WEIS.

Witnesses:

F. L. HAYES,
WALTER E. WEIS.

Copies of this patent may be obtained for five cents each, by addressing the "Commissioner of Patents, Washington, D. C."