March 7, 1933. J. W. LOW 1,900,892

BOX MAKING MACHINE

Filed Dec. 3, 1930 2 Sheets-Sheet 1

Fig. 1.

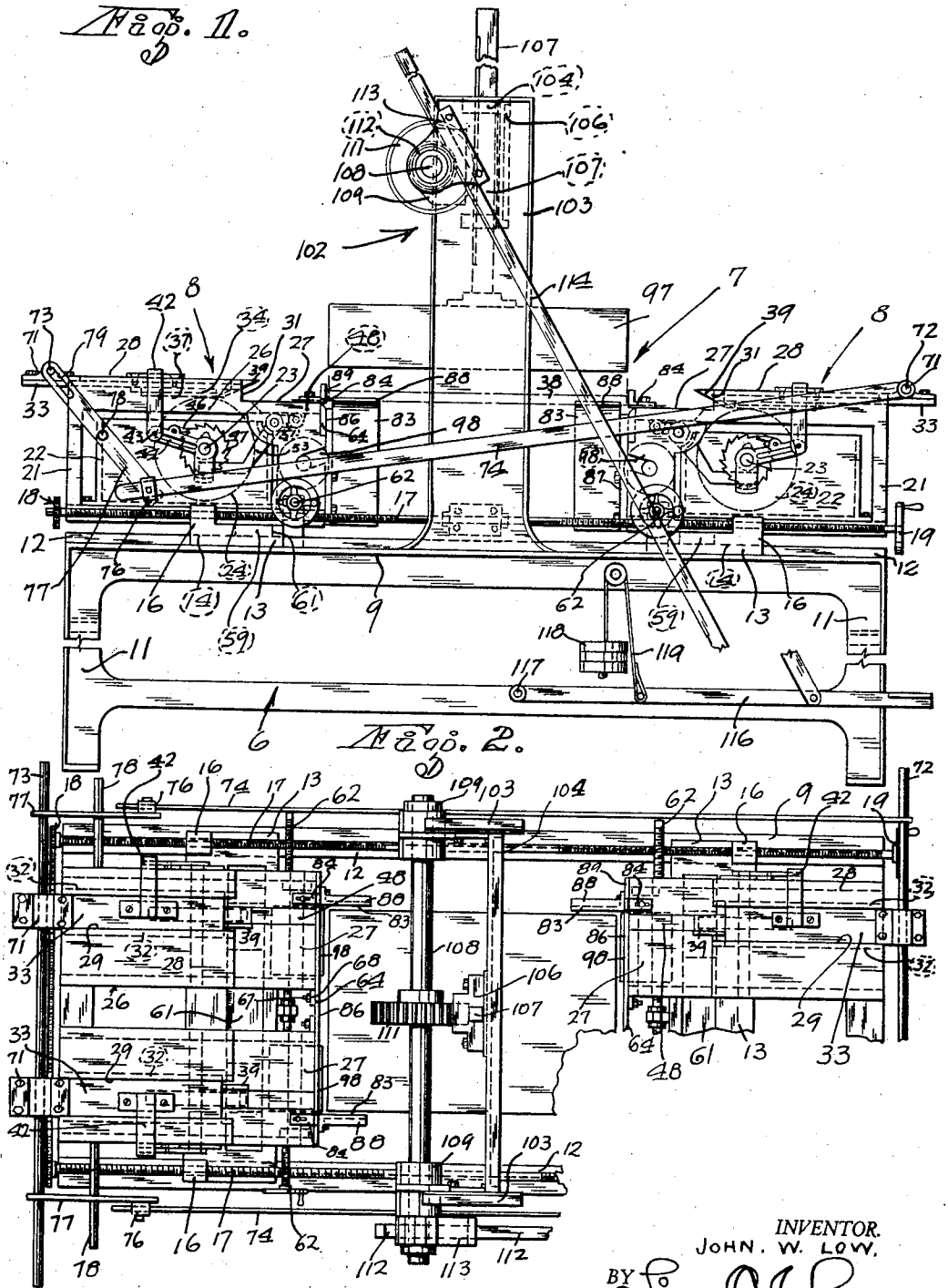

Fig. 2.

INVENTOR.
JOHN. W. LOW.
BY Linard & Johnson
ATTORNEYS.

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Fig. 3.

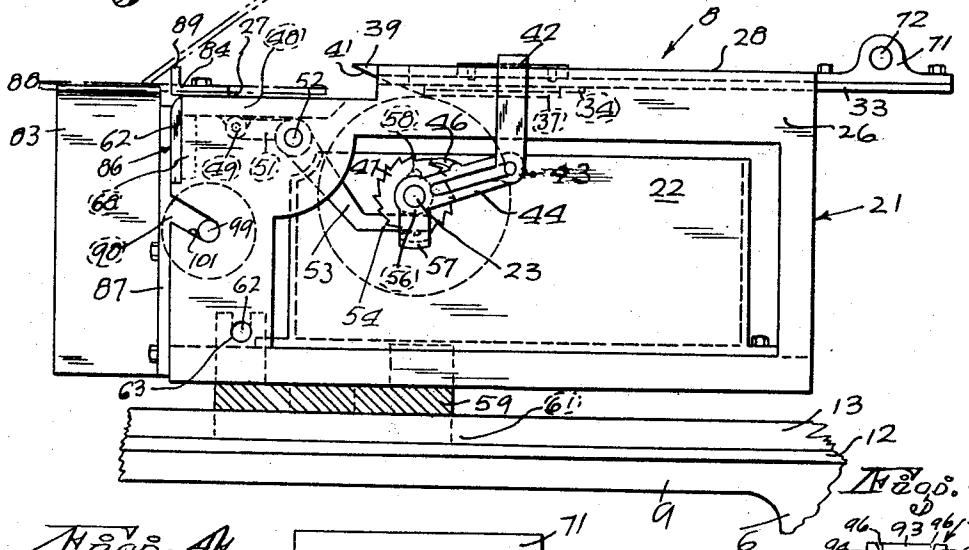

Fig. 4.

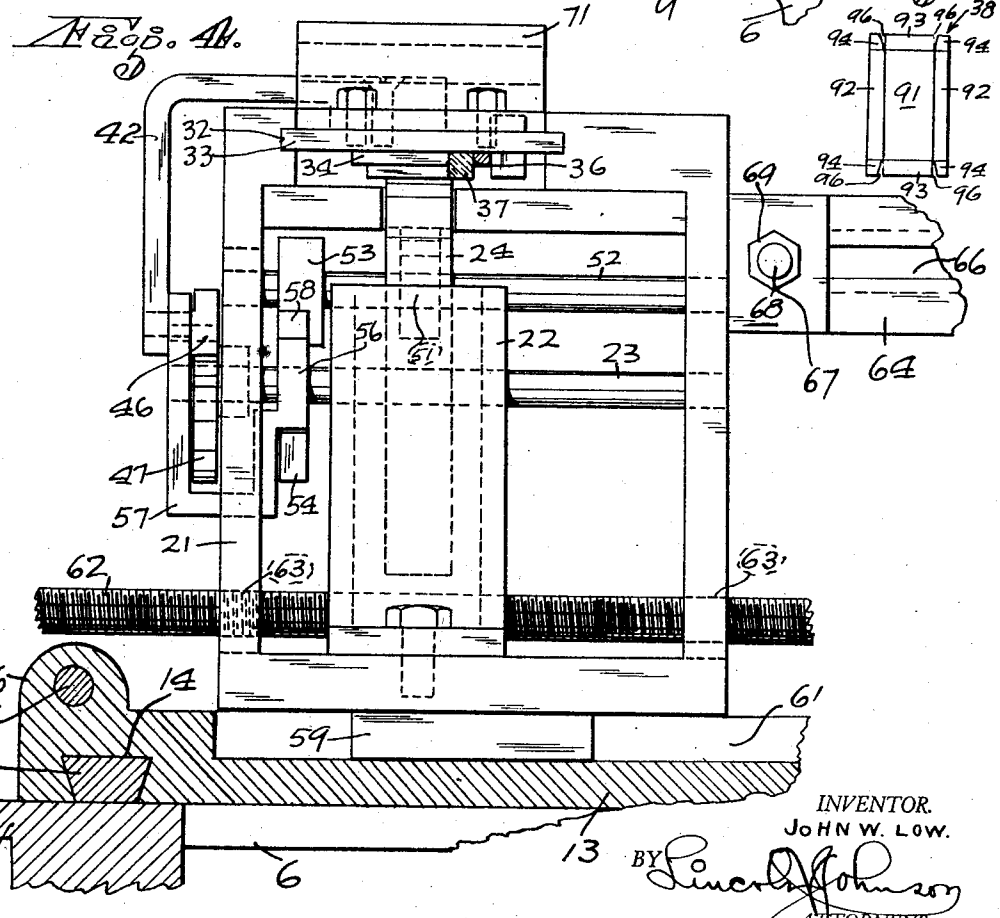

Fig. 5.

INVENTOR.
JOHN W. LOW.
BY Lincoln J. Johnson
ATTORNEYS.

Patented Mar. 7, 1933 1,900,892

UNITED STATES PATENT OFFICE

JOHN W. LOW, OF MILL VALLEY, CALIFORNIA

BOX MAKING MACHINE

Application filed December 3, 1930. Serial No. 499,713.

This invention relates to box making machines.

An object of the invention is to provide a box folding machine in which adhesive is applied to predetermined portions of a box blank, and then the blank is folded so that the said portions of the blank overlie complemental portions of the box, means being provided to exert pressure on said portions when the adhesive is applied thereto, and means being provided also for exerting pressure on said portions after the box blank is folded.

Another object of the invention is the provision of a box folding machine, wherein a plurality of adhesive-spreading mechanisms are provided to apply adhesive to portions of a box blank before the same is folded, said mechanisms being adjustable relatively to each other on the frame for different size blanks and boxes; means being provided to operate said mechanisms simultaneously, and also to urge said portions of the blank toward said spreaders.

Another object of the invention is to provide a folding machine having members to form a female support for the folding of the blank, with which a reciprocating male element cooperates to fold the blank into the shape of a box, said female members being adapted to support the blank in operative relation to the adhesive spreaders of the machine, means being provided in relation to the female members to exert pressure on the adhesive coated portions of the blank after the blank is folded and while it is advanced between the female members by said reciprocating plunger.

Another object of the invention is to provide a novel adjustable mechanism on a box folding machine to apply adhesive to predetermined portions of a box blank on the machine.

Other objects and advantages are to provide a box folding and making machine that will be superior in point of simplicity, inexpensiveness of construction, positiveness of operation, and facility and convenience in use and general efficiency.

In this specification and the annexed drawings, the invention is illustrated in the form considered to be the best, but it is to be understood that the invention is not limited to such form, because it may be embodied in other forms; and it is also to be understood that in and by the claims following the description, it is desired to cover the invention in whatsoever form it may be embodied.

The invention is clearly illustrated in the accompanying drawings, wherein,

Fig. 1 is a side view of the box folding machine.

Fig. 2 is a plan view of the machine.

Fig. 3 is a side view of an adhesive-spreader mechanism constructed in accordance with my invention.

Fig. 4 is an end view of the adhesive spreader mechanism.

Fig. 5 is a plan view of a blank from which the box is made.

In its general organization the folding machine herein described includes a frame 6, a folding mechanism 7, and a plurality of adhesive-spreader mechanisms 8 associated with the said folding mechanisms 7.

The top 9 of the frame 6 is supported on legs 11. Adjacent the opposite longitudinal edges of the top 9 are formed upwardly extended, inverted dovetail guide rails 12, on which in turn are supported transverse platforms 13.

There are two such platforms 13. In the bottom side of each end of each platform 13 is formed a dovetail groove 14 slidably fitting over the respective guide rails 12 to allow the adjustment of the platforms 13 longitudinally of the top 9 of the frame 6. An upwardly extended, internally threaded bearing lug 16 is provided on each end of each platform 13. The lugs 16 on the aligning ends of the platforms 13 are in alignment with each other and are oppositely threaded. A threaded adjusting bar 17 extends above each guide rail 12. Each bar 17 is oppositely threaded adjacent its opposite ends, and engaging the aligning lugs 16 to move the platforms 13 toward and away from each other when the bar 17 is rotated. The parallel bars 17 are connected to each other by a sprocket

and chain connection 18 at an end of the frame 6, so that rotation of one bar 17 simultaneously rotates the other bar 17 to adjust both ends of the platforms 13 in synchronism, thus maintaining the said platforms 13 in parallelism with each other at all times. To facilitate the rotation of the bars 17, a hand wheel 19 is provided on the free end of each bar 17.

The platforms 13 are spaced from each other. On each platform are supported two parallel adhesive spreader mechanisms 8. Each spreader mechanism 8 includes a frame or box 21 resting on the adjacent platform 13. In the frame 21 is fixedly mounted a tank or container 22, containing the adhesive paste or glue, that is used in the making of the boxes out of cardboard or the like material. A shaft 23 is journaled in the frame 21 and extends through the container 22. A spreader wheel 24 within the container 22 is fixed on the shaft 23 to rotate therewith. A portion of the wheel 24 extends outside of the top of the container above the level of the adhesive to carry the adhesive out of the container when rotated.

At an end of the top 26 of the frame 21 is formed a platform 27, below the level of the top surface 28. Thus, in effect the portion of the top 26 outside of the platform 27 is elevated above the level of the platform. A slot 29 is cut through the higher portion of the top 26, extending from the shoulder 31 at the platform 27 to the outer end of the top 26. The slot 29 is comparatively wide and a groove 32 is cut in each vertical side of the slot 29. The opposed grooves 32 are in horizontal alignment with each other to guide a reciprocating plate 33 inserted therein. On the underside of the plate 33 is secured a recessed retainer plate 34, in the recess 36 of which is fixed a spreader pad 37 protruding beyond the under face of the plate 34. The pad 37 is preferably made of rubber.

It is to be noted that the slot 29 is cut through the entire thickness of the frame top 26, so that the plate 34 and the pad 37 move in an open passage, and the pad 37 is in contact with the periphery of the spreader wheel 24.

A box blank 38 has one of its sides disposed on the surface of the platform 27, the latter being on the level of the lower face of the pad 37. Thus when the plate 33 is reciprocated, the pad 37 takes off adhesive from the periphery of the wheel 24 and then it travels over the portion of the blank 38 above the platform 27 and spreads the adhesive thereover.

In order to assure the flattening of the said portion of the box blank 38, a wedge projection 39 is provided on one side edge of the plate 33, extending beyond the end of said plate 33 and being mitered at 41 to engage the end of the blank 38 and urge the same into flat position on the platform 27.

A bent arm 42 is secured to the top of the plate 33 and extends downwardly on one side of the frame 21. The free end of the arm 42 has a pin 43 therein extended toward the frame 21 and slidable in an elongated slot in a crank arm 44. The end of the crank arm 44 is rotatable on the end of the shaft 23 outside of the frame 21. On the crank arm 44 is a pivoted pawl 46 engaging the teeth of a ratchet 47, which latter is fixedly secured to the shaft 23 between the crank arm 44 and the adjacent side of the frame 21.

Whenever the plate 33 is moved over the platform 27 the arm 42 is moved therewith, rotating the crank arm 44, which latter rotates the shaft 23 by reason of the pawl engagement with the ratchet 47. Thus, at the time of the reciprocation of the plate 33, the shaft 23 is rotated, and the wheel 24 rotating therewith carries the adhesive out of the container 22 and onto the underside of the spreader pad 37. Before the use of the spreader it is necessary to reciprocate the plate 33 a number of times to cover the entire periphery of the wheel 24 with adhesive, ready for the actual operation.

The portion of the blank 38 overlying the platform 27 is pressed against the pad 37 by means of a pressure plate 48 in the platform 27 of the top 26. The pressure plate 48 is so disposed that its top surface is normally flush with the top surface of the platform 27. From the underside of the plate 48 extends a lug 49 in which is pivoted an end of a lever 51. The other end of the lever 51 is fixed on a shaft 52 journaled in the frame 21 in front and above the container 22 and below the plate 48. A crank lever 53 is secured to the shaft 52 and extends between the container 22 and the side of the frame 21 adjacent the ratchet 47. The free end 54 of the lever 53 is bent to extend substantially horizontally below the shaft 23. On the shaft 23 is rotatable a cam 56 in operative relation to the lever end 54. The cam 56 is connected by a yoke 57 to the hub of the crank arm 44, so that whenever the latter is rotated by reason of the reciprocation of the plate 33, the cam 56 also rotates therewith on the shaft 23. The eccentric portion 58 of the cam 57 is so adjusted that it reaches the lever end 54 at about the time when the pad 37 extends over the blank portion on the pressure plate 48. At this time the said lever end 54 is moved downwardly by the eccentric cam portion 58, whereby the shaft 52 is rocked and the outer end of the lever 51 is moved upwardly so as to urge the pressure plate 48 against the underside of the blank 38. Thus the blank 38 is pressed against the adhesive spreader pad 37. When the plate 33 is returned to its original position the weight of the pressure plate 48 moves the lever 51 downwardly

and returns the shaft 52 to its original position. The plate 48 then rests on the top of the lever 51. Normally the lever 51 is in substantially horizontal position.

All the adhesive spreader mechanisms 8 are constructed similarly to the afore-described mechanisms 8. The opposed pairs of mechanisms 8 are adjusted longitudinally of the frames by adjusting the platforms 13 toward each other in the aforedescribed manner. Each frame 21 has a projection 59 extended from its bottom, slidably fitting in the respective transverse guide slots 61 in the platforms 13. These projections 59 prevent the longitudinal movement of the frames 21 relatively to the respective platforms 13, but allow transverse adjustment of the frames 21 toward each other on the same platform 13. An adjusting rod 62 extends through each pair of frames 21 on the same platform 13. The rod 62 is oppositely threaded at its opposite ends and threaded holes 63 in the adjacent frames 21 engaged by the same rod 62 are also threaded oppositely to each other so as to cause the adjustment of the adjacent spreader mechanisms 8 toward and away from each other as the rod 62 is rotated. If necessary more than one rod 62 can be provided above each platform.

Each pair of frames 21 of the adjacent mechanisms 8 is held in laterally adjusted position by means of a stay member 64 which has an axial groove 66 in the face thereof to be engaged by a bolt 67 extended from a fixed lug 68 on each frame 21. The lugs 68 of the adjacent frames 21 extend toward each other and over the grooved face of the member 64, and are disposed adjacent the tops of the respective frames 21. When the nuts 69 of the bolts 67 are tightened against the respective lugs 68, the member 64 is fixedly held in position preventing movement of the adjacent frames 21 toward or away from each other.

All the spreader mechanisms 8 are simultaneously operated. On the outer end of each plate 33 is bolted a bearing bracket 71. The brackets 71 on the adjacent mechanisms 8 are in registery to allow the insertion of a handle bar 72 therethrough. Another handle bar 73 is similarly held in the brackets 71 of the other set of mechanisms 8. The ends of the handle bars 72 and 73 are extended beyond the sides of the frame 6. On each end of the bar 72 is pivoted an end of a link 74, the other end of which is pivotally secured in a trunnion 76 on the end of a lever 77. Each lever 77 is pivoted intermediate its ends on a fixed pivot pin 78 extended outwardly from the adjacent tank 22. The other end of the lever 77 has an elongated slot 79 therein engaging the adjacent end of the handle bar 73.

When the handle bar 72 is moved to reciprocate the respective plates 33, then the links 74 turn the levers 77 around their pivots 78 and the slotted ends of the levers 77 reciprocate the plates 33 of the other mechanisms 8 in synchronism with the first mentioned plates 33. Thus all the portions of the blank 38, that are coated with adhesive, receive the adhesive at the same time and in one operation.

The frames 21 of the spreader mechanisms 8 also carry the female folding elements of the machine, so that the position of the mechanisms 8 and of the folding elements can be adjusted for different sizes of box blanks, and boxes, by the afore-described adjustment of the mechanisms 8. The female folding elements of the folding mechanism 7 include side folding elements 83, flap folding elements 84 and end folding elements 86.

The side folding elements or side folders 83 extend at right angles to the inner ends of the respective frames 21. Each side folder 83 has a flange 87 on the outer vertical edge thereof extending outwardly from the folding mechanism 7 for attachment to the end of the frame 21. The side folders 83 are only of sufficient length that each forms a corner, the four corners being arranged in alignment to include a rectangular space within which the blank is folded. It is to be noted that the stay members 64 are countersunk into the respective inner ends of the frames 21 so as to allow true alignment of the folder elements. The upper end of each side folder 83 is flared outwardly to facilitate the bending of the box blank without tearing the same, and to form a supporting rim 88 for said blank.

Each flap folding element or flap folder 84 consists of a short angle iron section bolted on the top of the frame adjacent the top of the flange 87 of the side folder 83. The upwardly extended lugs 89 of the flap folders 84 extend above the said corners formed by the respective side folders 83, and are in registry with the outer ends of the respective rims 88, so as to bend the flaps of the box blank before the sides thereof are folded.

The end folder elements or end folders 86 are secured to the inner ends of the respective frames 21 adjacent the side folders 83 and consist of the inner faces of the stay member 64.

The usual box blank 38 from which the box is formed is preferably made as shown in Fig. 5. From the bottom 91 extend the longitudinal sides 92, and from each end of the bottom extends a transverse side or end 93. At each end of each longitudinal side 92 is formed a flap 94, which is cut away at 96 to allow the bending thereof at right angles to the adjacent side 92 so that the ends 93 can be folded over the respective flaps 94. In order to securely form a box it is necessary to apply adhesive only to portions of the ends 93 which will overlie the flaps 94, so as to cause the ends 93 to adhere to the flaps 94 and hold the box in shape.

It is to be noted that the flap folders 84 extend above the level of the side rims 88 and the inner sides of lugs 89 thereof are in alignment with the end folder faces 86. The top edges of the end folder faces 86 are below the level of the side folder rims 88. The blank 38 is laid upon the said folders so that the flaps 94 thereof rest upon the flap folder lugs 89 and are bent upwardly thereby. The ends 93 of the blank 38 rest on the platforms 27 and on the pressure plates 48. Then the adhesive spreader mechanisms 8 are actuated in the aforesaid manner and adhesive paste or glue is applied to portions of the ends 93 above the platforms 27.

Then a male folding plunger 97 is lowered into the female die formed by the said folders 83, 84 and 86. The plunger 97 is of such dimensions as to engage the box bottom 91 and advance the same into and through said female die formed by the said folders. Due to the relative arrangement of the folders 83, 84, and 86, the flaps 94 are bent first, then the sides 92 are bent at right angles to the longitudinal edges or creases of the bottom 91, and lastly the ends 93 are folded over the flaps 94, and adhere thereto.

In order to assure firm adhesion of the ends 93 to the flaps 94, a roller 98 is provided in the inner end of each frame 21. The rollers 98 have stub shafts 99 extended from the ends thereof which latter are inserted into downwardly inclined bearing slots 101, to be journaled therein. The rollers 98 are so arranged that the peripheries thereof project slightly beyond the respective planes of the end folder faces 86, substantially below the platforms 27, so that when the folded box blank 38 is passed into the female die formed by said folders, the rollers 98 exert pressure on the outside face of the box ends 93 at points opposite the flaps 94, to insure the adhesion of the same to each other.

The plunger 97 is operated by a plunger actuating mechanism 102, which includes brackets 103 extended upwardly from the top 9 of the frame 6, and connected to each other at the tops thereof by a cross member 104. On the cross member 104 is supported a vertical rack guide 106 to slidably receive a rack 107. The male plunger 97 is supported on the lower end of the rack 107. A shaft 108 is journaled in bearings 109 on the brackets 103 and has a gear 111 fixedly mounted thereon intermediate the ends thereof. The gear 111 is in mesh with the teeth of the rack 107. An end of the shaft 108 is extended beyond the adjacent bearing 109 and has a pinion 112 fixed thereon. Around the pinion 112 is a swinging guide 113 fulcrumed on the end of the shaft 108, which slidably guides another rack 114 in mesh with the pinion 112. The rack 114 extends downwardly and has its lower end pivoted to a foot lever 116, the latter being pivoted at 117 to the frame 6. A counterweight 118 is suspended on the frame 6 and has its line 119 connected to the foot lever 116 at a point between the pivot 117 and the end of the rack 114. The free end of the foot lever 116 is extended beyond the end of the frame 6 to facilitate the operation thereof by the operator of the machine.

In operation, normally the counterweight 118 urges the foot lever 116 upwardly to move the rack 114 upwardly and to turn the pinion 112, the shaft 108, and the gear 111, so as to move the rack 107 and the plunger 97 upwardly and to counterbalance and hold it in its uppermost position. After adhesive is applied to the box, the operator depresses the foot lever 116 so as to move the rack 114 downwardly and to rotate the pinion 112, the shaft 108, and the gear 111 in a clockwise direction, viewing Fig. 1, thereby to lower the rack 107, and the plunger 97 into the female die formed by the said folders. After the box is folded the foot lever 116 is released and the counter-weight 119 causes the raising of the plunger 97 in the afore-described manner.

It will be recognized that a particularly efficient machine is provided for the forming of box blanks into secure and firm boxes; the machine is readily adjustable to any size of box, and the adjustment of the folder elements of the female die automatically determines the proper location of the adhesive spreader mechanisms, so that adhesive is applied at all times to the proper portions of the blank; the adhesive spreaders are simultaneously actuated by the single manipulation of a handle bar; waste of adhesive is eliminated; the box is folded in shape by a foot lever; the machine, after its initial adjustment, does not require any further setting, it is simple in operation, and readily lends itself to effective application by labor ordinarily available.

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

1. In a box making machine a frame, folder elements disposed on the frame to fold the flaps, the sides, and the ends of the blank and to support the blank thereon before folding; spreader members associated with the folders, being adapted to be extended over portions of the blank to apply an adhesive to the surfaces that overlie the flaps when the box is folded; an adhesive container in operative relation to each member; a rotary adhesive carrier in each container being operatively connected to the adhesive receiving face of the said members to be rotated in synchronism with said member, and to transfer adhesive from the container to said member; means to urge said blank into engagement with the folder elements; and means to actuate said blank-urging means.

2. In a box making machine a frame, folder elements disposed on the frame to fold the flaps, the sides, and the ends of the blank and to support the blank thereon before folding; spreader members associated with the folders, being adapted to be extended over portions of the blank to apply an adhesive to the surfaces that overlie the flaps when the box is folded; an adhesive container in operative relation to each member; a rotary adhesive carrier in each container being operatively connected to the adhesive receiving face of the said members to be rotated in synchronism with said member and to transfer adhesive from the container to said member; a platform on the frame adjacent each portion of the blank to which adhesive is applied, being adapted to press the respective blank portions against said member; and means to press said platform against said blank portion.

3. In a box making machine a frame, folder elements disposed on the frame to fold the flaps, the sides, and the ends of the blank, and to support the blank thereon before folding; spreader members associated with the folders being adapted to be extended over portions of the blank to apply an adhesive to the surfaces that overlie the flaps when the box is folded; means to simultaneously actuate said members; an adhesive container in operative relation to each member; a rotary adhesive carrier in each container being operatively connected to the adhesive receiving face of the said members to be rotated in synchronism with said member, and to transfer adhesive from the container to said member; means to urge said blank into engagement with the folder elements; and means to actuate said blank-urging means.

4. In a box making machine a frame, folder elements disposed on the frame to fold the flaps, the sides, and the ends of the blank and to support the blank thereon before folding; spreader members associated with the folders, being adapted to be extended over portions of the blank to apply an adhesive to the surfaces that overlie the flaps when the box is folded; an adhesive container in operative relation to each member; a rotary adhesive carrier in each container being operatively connected to the adhesive receiving face of the said members to be rotated in synchronism with said member and to transfer adhesive from the container to said member; a platform on the frame adjacent each portion of the blank to which adhesive is applied, being adapted to press the respective blank portions against said member; and means operated in synchronism with said spreader members to press the said platforms against the respective blank portions when the said members are extended over said blank portions.

5. As a sub-combination in a machine of the character described, a container having an adhesive therein, an element being rotatable in said container and extending outside of the container to carry adhesive out of the container, a reciprocative member associated with said rotary element to rotate the latter and to take off the adhesive therefrom, means to support a box blank; means to move said member over a portion of the blank to apply adhesive onto said portion; means adjacent the said blank portion to urge the same toward said member; and means of connection between the said urging means and said rotary element to operate said urging means in synchronism with the reciprocating movement of said member.

6. As a sub-combination in a machine of the character described, a container having an adhesive material therein, an element rotatable in the container, and being partially extended outside of the adhesive material, a reciprocable adhesive spreader disposed in contact with said element to take off the adhesive therefrom; a support for a box blank in operative position relatively to the spreader, means of connection between the adhesive spreader and the said element to rotate said element as the spreader is moved toward and over the blank to spread the adhesive on a surface of the blank; means to press the said blank against said spreader; and means operatively connected to said means of connection to actuate said pressing means when the spreader is disposed on the said surface of the blank.

7. In a box making machine, a frame, adhesive applying mechanisms on the frame, a support for the box blank on each mechanism forming a folding element, each mechanism comprising a container support on the frame, a container for adhesive supported on the support; a shaft extended through the container and journaled in the support, a rotary wheel on the shaft being partially immersed in the adhesive, an adhesive spreader contacted with the wheel and adapted to be moved over a surface of the blank on said blank support; and means of connection between the shaft and the spreader to rotate said shaft and wheel as the spreader is moved to said blank.

8. In a box making machine, a frame, adhesive applying mechanisms on the frame, a support for the box blank on each mechanism forming a folding element, each mechanism comprising a container support on the frame, a container for adhesive supported on the support; a shaft extended through the container and journaled in the support, a rotary wheel on the shaft being partially immersed in the adhesive, an adhesive spreader contacted with the wheel and adapted to be moved over a surface of the blank on said blank support; means of connection between the shaft and the spreader to rotate said

shaft and wheel as the spreader is moved to said blank; a platform on the frame adapted to engage the blank so as to press the said blank against said spreader, and means of connection between said shaft and said platform to operate said platform in synchronism with the movement of the spreader.

9. In a box making machine, a frame, adhesive applying mechanisms on the frame, a support for the box blank on each mechanism forming a folding element, each mechanism comprising a container support on the frame, a container for adhesive supported on the support, a shaft extended through the container and journaled in the support, a rotary wheel on the shaft being partially immersed in the adhesive, an adhesive spreader contacted with the wheel and adapted to be moved over a surface of the blank on said blank support; means of connection between the shaft and the spreader to rotate said shaft and wheel as the spreader is moved to said blank; a platform on the frame adapted to engage the blank so as to press the said blank against said spreader; means of connection between said shaft and said platform to operate said platform in synchronism with the movement of the spreader; and means to adjustably hold each container support on the frame.

10. In a box making machine, a frame, adhesive applying mechanisms on the frame, a support for the box blank on each mechanism forming a folding element, each mechanism comprising a container support on the frame, a container for adhesive supported on the support, a shaft extended through the container and journaled in the support, a rotary wheel on the shaft being partially immersed in the adhesive, an adhesive spreader contacted with the wheel and adapted to be moved over a surface of the blank on said blank support; means of connection between the shaft and the spreader to rotate said shaft and wheel as the spreader is moved to said blank; a platform on the frame adapted to engage the blank so as to press the said blank against said spreader; means of connection between said shaft and said platform to operate said platform in synchronism with the movement of the spreader; and means to adjustably hold each container support on the frame, said blank support being adapted to hold and unfolded blank with flaps of the blank bent out of the plane of the blank, and being adapted to support the sides of the blank which overlie said flaps when the blank is folded, in operative relation to the spreader.

11. In a box making machine, a frame, adhesive applying mechanisms on the frame, a support for the box blank on each mechanism forming a folding element, each mechanism comprising a container support on the frame, a container for adhesive supported on the support; a shaft extended through the container and journaled in the support, a rotary wheel on the shaft being partially immersed in the adhesive, an adhesive spreader contacted with the wheel and adapted to be moved over a surface of the blank on said blank support; means of connection between the shaft and the spreader to rotate said shaft and wheel as the spreader is moved to said blank; and means of connection between the adhesive applying mechanism to operate the same simultaneously.

12. In a box making machine, a frame, adhesive applying mechanisms on the frame, a support for the box blank on each mechanism forming a folding element, each mechanism comprising a container support on the frame, a container for adhesive supported on the support; a shaft extended through the container and journaled in the support, a rotary wheel on the shaft being partially immersed in the adhesive, an adhesive spreader contacted with the wheel and adapted to be moved over a surface of the blank on said blank support; means of connection between the shaft and the spreader to rotate said shaft and wheel as the spreader is moved to said blank; means of connection between the adhesive applying mechanism to operate the same simultaneously; and means to adjust the position of said adhesive applying mechanisms on the frame.

13. In a box folding machine a frame, a plurality of adhesive-spreading mechanisms on the frame, a support on each mechanism for a box blank, being adapted to form a part of a female element of the folding machine, means to simultaneously operate said spreading mechanism to apply adhesive to portions of the blank; and a reciprocating plunger on the frame adapted to be passed into the female folding element formed by said supports, thereby to fold the box blank.

14. In a box folding machine a frame, a plurality of adhesive-spreading mechanisms on the frame, a support on each mechanism for a box blank, being adapted to form a part of a female element of the folding machine, means to simultaneously operate said spreading mechanism to apply adhesive to portions of the blank; a reciprocating plunger on the frame adapted to be pressed into the female folding element formed by said supports, whereby to fold the box blank; and means to adjust the said mechanisms on the frame for boxes of various sizes.

In testimony whereof, I have hereunto set my hand at San Francisco, California, this 10th day of November, 1930.

JOHN W. LOW.