

Aug. 22, 1933.

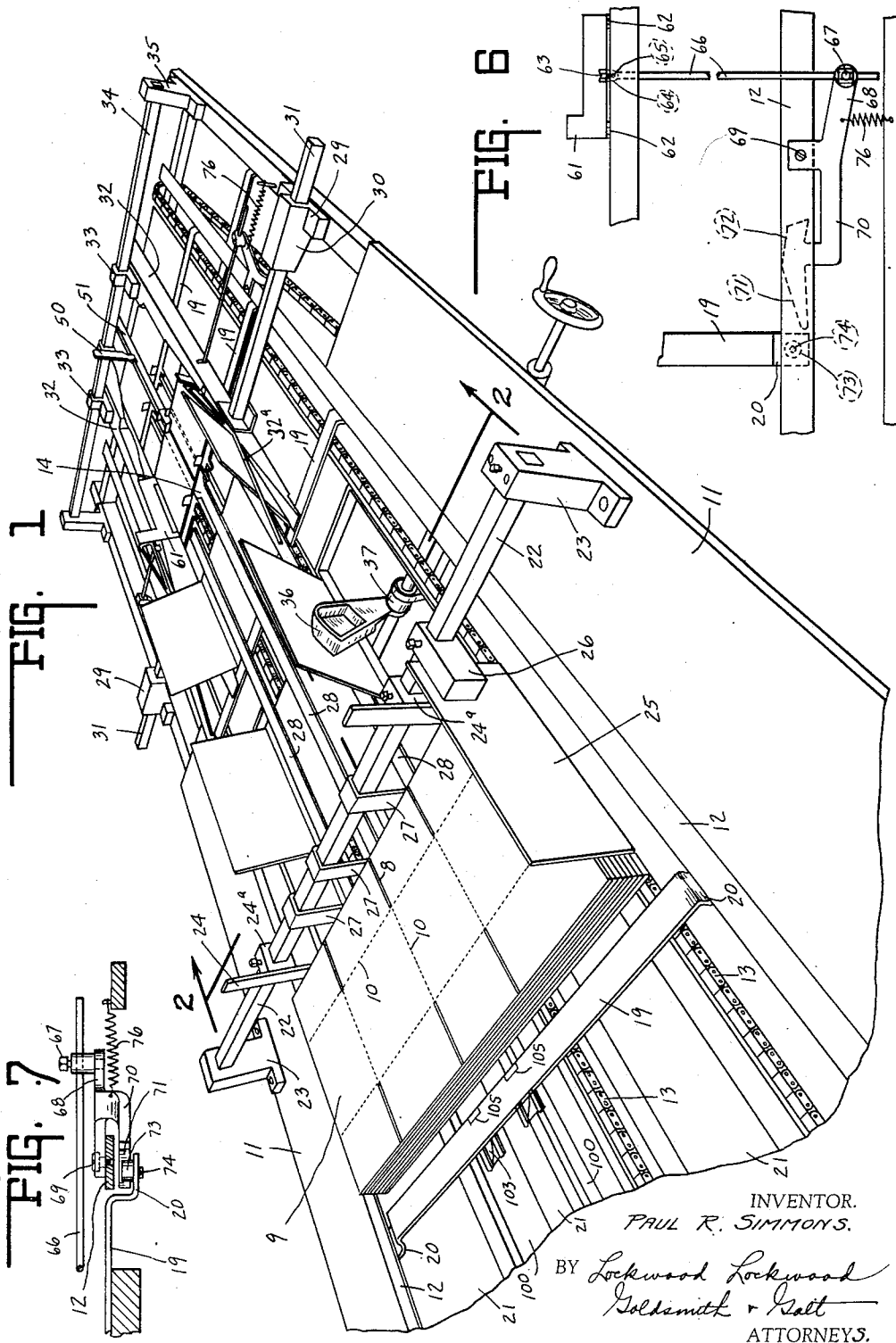
P. R. SIMMONS

1,923,121

BOX FOLDING MACHINE

Filed Feb. 25, 1932

2 Sheets-Sheet 1



Aug. 22, 1933.

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BOX FOLDING MACHINE

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2 Sheets-Sheet 2

FIG. 2

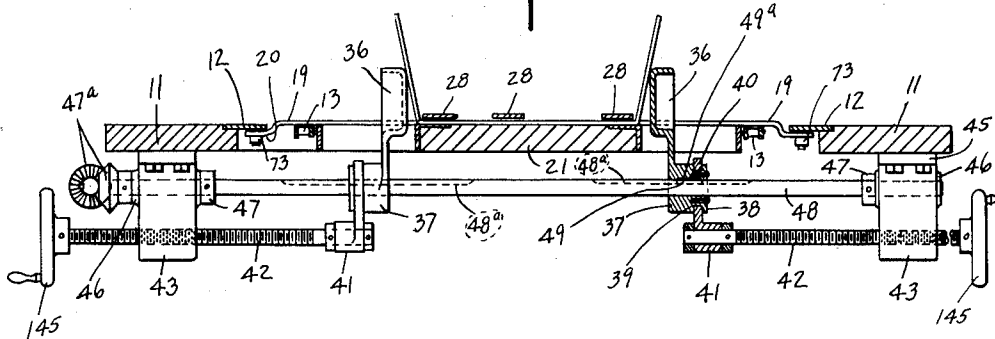


FIG. 3

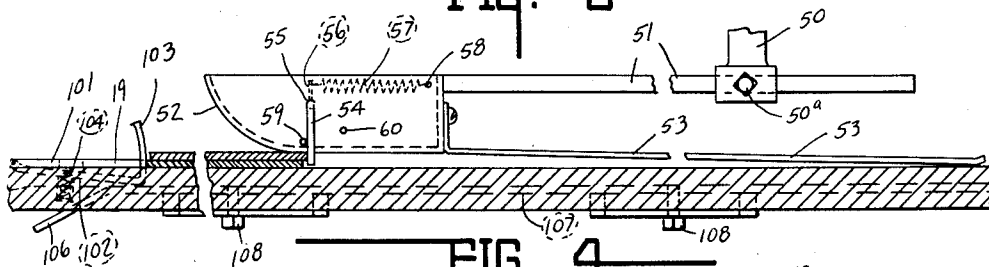


FIG. 4

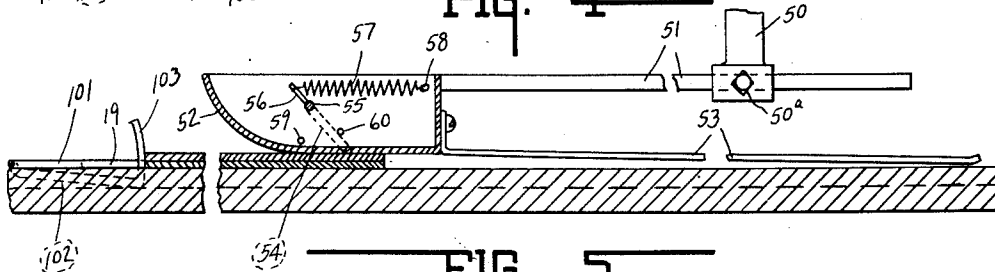


FIG. 5

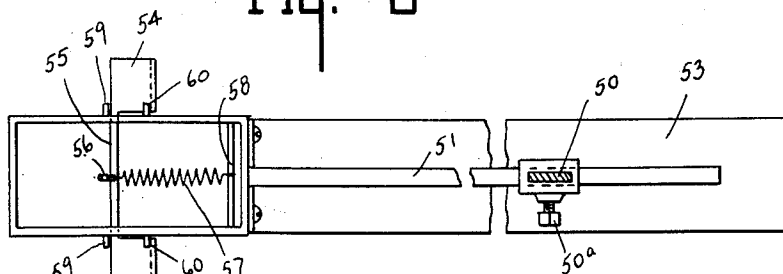
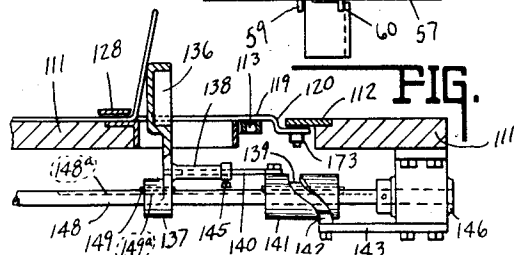


FIG. 8



INVENTOR.
PAUL R. SIMMONS.

BY
Lockwood Lockwood Goldsmith & Galt
ATTORNEYS.

UNITED STATES PATENT OFFICE

1,923,121

BOX FOLDING MACHINE

Paul R. Simmons, Marion, Ind., assignor to
Indiana Fibre Products Company, Marion, Ind.,
a Corporation

Application February 25, 1932. Serial No. 595,086

18 Claims. (Cl. 93—49)

This invention relates to a folding machine for forming tubularly arranged flattened box blanks from flat scored pieces. This application is a continuation in part of a co-pending application filed June 1, 1931, Serial No. 541,297, entitled "Universal continuous folder for boxes".

The before-mentioned invention and the present invention are directed to mechanisms for forming from flat scored sheets flattened tubularly-arranged box blanks with the ends thereof lying substantially in abutting relation and with the line of abutting relation substantially at right angles to the length of a box so that substantially square or rectangular box arrangement will be obtained from the tubular blanks when opened for filling purposes.

Folding boxes, when handled by machines of this general character, have, by reason of the blank travel while infolding of the ends, usually varied from the exact transverse arrangement from one-eighth of an inch to one-fourth of an inch or more deviation between one long side of the blank to the other side of the blank. This, when the box is set up or arranged tubularly, does not form a box of an exact rectangular or square cross section with the result that the end forming flaps of the box will not lie square with the adjacent sides, which results in an imperfect box. An absolutely so-called squared box is called for the packaging of very small articles.

The present invention, like that disclosed in the before-mentioned application, provides a machine wherein the several parts cooperate in a substantially fool-proof manner. In common with the previous disclosure, the present invention is so arranged that the parts may be quickly adjusted for operation upon various sizes of sheets for forming the box blanks of different sizes.

The chief object of the invention, therefore, is to provide a machine which will not only eliminate so-called manual folding of box forming sheets or blanks, but which will also have a capacity or rate of production far in excess of manual operation and of previous machines, as well as that illustrated and described in the copending application, and which will form absolutely square or transverse joints and folds in the box so that the blanks as discharged in folded and flattened relation from this machine can be directly discharged to an automatic taping machine of which there are several commercial forms now on the market, which taping machine automatically applies sealing tape to the substantially abutting edges of the infolded ends of the blank and thereby secures them in the desired relation and forms the tubular blank that can be later set up as a box at the point where the box is to be used. These blanks are shipped flat to the customer and usually in bundles or bales which permit the customer to store them

in a minimum amount of space, and this form of shipment also reduces the transportation costs because a greater number of box blanks can be placed in the same transportation space.

The chief feature of the invention consists in the formation of a machine which accomplishes all of the foregoing purposes and the object of this invention.

Other features of the invention will appear more fully from the detailed description hereinafter set forth.

The full nature of the invention will be understood from the accompanying drawings and the following description and claims:

In the drawings, Fig. 1 is a perspective view of a machine embodying the invention, certain of the power mechanism being omitted, for the same is illustrated and described in the copending application to which reference is herein made. Fig. 2 is a transverse sectional view through the machine and is taken in the plane of line 2—2 of Fig. 1 and in the direction of the arrows. Fig. 3 is a longitudinal sectional view of a portion of the machine adjacent the discharge end showing the clamp for maintaining the infolded ends in infolded relation, parts being shown at the point of engagement of the clamp by the box. Fig. 4 is a similar view showing the same parts in a subsequent position. Fig. 5 is a top plan view of the clamp mechanism and a part of the support therefor. Fig. 6 is a top plan view of a portion of one of the infolding mechanisms. Fig. 7 is a sectional view of some of the same parts illustrated in Fig. 6. Fig. 8 is a view similar to Fig. 2 and of a modified form of device.

In the drawings 11 indicates platform portions suitably mounted upon any conventional framework, and the platform portions lie flush with the angle guide members. Extending from one end of the machine to the other is an endless conveyor construction shown herein as comprising four parallel chains 13, each of which rides over sprocket gears at opposite ends of the machine, and power is applied to one of the shafts associated with the sprockets at one end of the machine. The respective chains are connected by transversely-positioned bars 19. Each bar is secured in predetermined and equidistant spaced relation relative to the others. Each bar includes a projecting free end which is down-turned as at 20, and which underlies an angle member 12. Said bar is thereby prevented from elevating above the plane of the platform or the predetermined operating plane of the device. Suitable intermediate platform portions, indicated at 21, are also provided and lie in the operating plane. They are spaced from each other and from the other platform portions forming channels or

longitudinal slots 100 in the planes on which are mounted the chains.

An overhead cross member 22 is suitably supported as at 23 and adjustably carried thereby 5 are the vertically positioned guide and stop members 24. The cross member is squared so that the members 24 are always maintained vertically or approximately so, no matter in what adjusted position they may be. These members 24 may be 10 adjusted longitudinally along cross member 22 and, therefore, towards and away from each other, depending upon the width of the sheets of corrugated paper board stock or like material which had been previously cut and scored and 15 are positioned so that one edge of all of the sheets bears against the members 24 and all sheets are aligned thereby. The thickness of each sheet determines the vertical adjustment of the members 24 with respect to its support 24a upon the 20 cross member 22. Each vertical support 24 terminates above the plane of operation and the opening therebeneath is just sufficient to permit a single sheet 9, which, as before stated, has been scored as at 10 and slotted as at 8, to pass 25 beneath the lower ends of the vertical supports 24. The bar members 19 are also of such thickness that they too will just pass beneath the lower edge of each member 24, whereby single sheet feeding is obtained. Preferably the space 30 between the bars 19 on the chains 13 is sufficient to accommodate the largest width of blank or sheet to be operated upon. The thickness of the bar 19 is also limited in amount, being no greater than the minimum thickness of the stock or sheet 35 to be handled. Thicker sheets, of course, will be readily handled thereby.

To insure the predetermined positioning of the sheet upon the conveying mechanism so that the subsequent functions of the folding mechanisms may be properly co-ordinated for obtaining a square folded box, there is positioned a longitudinal side aligning member 25 which is adjustably mounted on the support 22, as at 26.

Suitably supported by the member 22 and 45 extending downwardly therefrom are the guide and bearing members having the depending portions 27 and the longitudinal downwardly-inclined although approximately horizontally-positioned bearing portions 28. Herein three of said 50 members are illustrated and the same are positioned in spaced relation to each other and in predetermined relation relative to the infolding mechanisms subsequently to be described. The two outer portions 28 are adjusted in position 55 upon the cross member 22 so that they lie adjacent the two end longitudinal scorings 10, but within the same, or otherwise expressed, their outer longitudinal edges are spaced a less distance apart than the space between the two longitudinal end scorings 10. 60

In certain instances these two members 28 may be omitted, but in the present form of the invention, the intermediate member 28, or its equivalent, it is believed cannot be dispensed with. 65 Said intermediate member 28 is extended beyond the ends of the other members 28, as indicated at 14, and, as shown clearly in Fig. 1, said intermediate member is enlarged laterally for forming a wide bearing surface. The position of 70 this intermediate member 28 is determined by the normal position of the gap between the two substantially abutting ends of the blank when infolded. The blank 9 is herein illustrated as rectangularly outlined and will form a box with 75 two sides wider than the two other sides. That

accounts for the fact that herein the intermediate member 28 is positioned closer to one of the outer members 28 than the other member 28.

As the carrier bar 19 moves from beneath the members 24, it carries with it the bottom sheet 80 9 and said sheet is carried forwardly by the conveyor mechanism and beneath the pressing members 28. To insure positive forward movement of the sheet that has passed beneath the members 24, each of the carrier bars 19 is provided 85 with a pivot forming support 101 upon which is pivotally supported an arm 102 terminating in a large radius curved guide and aligning plate 103. Each carrier bar 19 supports at least one of these structures and preferably one 90 in each of the channels or longitudinal slots 100. Gravity normally retains the arms and plates in depending relation when the bar 19 is in the upper run. To positively insure non-interference 95 with members 24 and 27, even if longitudinally aligned therewith, although preferably the members 27 are never so aligned, and more particularly to prevent engagement of the plates 103 with the approaching edge of more than the 100 lowest sheet in the stack, a spring 104 retains each guide plate retracted. To obtain full aligning benefit from the plates and each bar 19, the latter is notched as at 105 to nestingly receive the plate 103. The rear edge of the blank, therefore, simultaneously bears against the forward 105 edge of the bar 19 and all of the forward faces of the plates 103 carried thereby.

Positioned below the plane of the platform and in alignment with the slots or channels 100 are support guides that tilt the aforesaid plate mechanism upwardly in opposition to spring 104 to insure positive forward movement of the sheet. In other words, in addition to the pressing bars 28, the sheet is prevented from disengagement with the forward edge of the carrier bar 19 and 115 sliding back over the bar. Whenever the outside pressing members 28 must of necessity be positioned such that they overlie the slots 100, the cam member last mentioned is omitted and that is substantially what is illustrated in Fig. 1. 120 However, the tiltable members must be elevated substantially at the position corresponding to the enlargement indicated at 14 in Fig. 1, and member 106 must not be removed. This member 106 then elevates the plate and the portion 107 125 retains the plates elevated until the completely folded box blank is ready for discharge from the device to the automatic paster. Longitudinal adjustment of this cam and support portion 106—107 with relation to the time cycle can be 130 obtained as indicated at 108. A cam guide and support member 106—107 is provided for each longitudinally aligned set of plates 103.

Suitably supported upon the framework of the machine, as at 29, is a transversely-positioned 135 member 31, and the member 31 is slidably supported in an elongated bearing 30. A pair of said members are oppositely disposed and adjustably mounted in the bearings 30 at opposite sides of the machine. Each member 31 is suitably 140 secured to the outside of an infolding guide member 32. Each guide member 32 is adjustably supported as at 33 upon a transverse member 34 carried by the main frame through the brackets 35. The elongated members 28 extend parallel 145 to the members 32 and lie between the same so that the main body of the sheet, by means of the members 28, is caused to pass between the guide and folding members 32, as shown clearly 150 in Fig. 1. The shape of the guide and folding

members 32 for the infolding of the ends of the sheet is likewise shown clearly in said figure and is substantially the same as that illustrated in the before-mentioned application.

Positioned between the discharge station and the ends of the members 32 is an adjustable folding mechanism that is adapted to engage the ends of the blank and elevate the same. These mechanisms cooperate with the outside members 28 which hold down the body of the sheet. At each side and in one of the slots 100 there is movable a cam member 36 which has the conformation shown in Figs. 1 and 2, and is arranged to be rotated. In its rotation and when advancing upwardly, the cam member engages the end of the sheet when the middle of the end is positioned directly thereover so that the end is folded along the outside longitudinal scoring 10 in substantially transverse relation to the top and bottom.

The cam and infolding member 36 includes a hub 37 that is reduced at 39 to form a groove, a plate 38 completing the groove. Supported in the groove and permitting rotation of the hub 37 is a yoke 40 which terminates in a hub 41 having rotatable engagement with a shaft 42 threadedly mounted in a bracket 43 secured to the machine frame structure as at 45. The shaft 42 terminates in the hand wheel 145.

Rotatably supported in the bracket 43 and in bearing 46 thereof, is a shaft 48 which is restrained against longitudinal movement by the collars 47. The shaft 48 has keyways 48a therein and the hub 37 has a complementary keyway 49a. A key 49 secures the two together. The plate 38, in addition to forming part of the groove for the yoke, also retains the key 49 associated with the cam guide and infolding member 36. The shaft 48 is rotated through the bevel gears 47a. The mechanism, as shown in Fig. 2, is duplicated, and as will also be apparent from said figure, the relative spacing between the cam members 36 can be adjusted by adjusting the hand wheels 44 without interfering with the rotation of the cam members. The gears 47a are operable in timed relation with the chains and, therefore, cams 36 are operable in predetermined relation relative to the carrier bars 19.

Depending from the support 34 and longitudinally adjustable thereon is a bracket 50. The bracket 50 adjustably supports at 50a an arm 51 which terminates in a cam faced shoe or presser member 52 which is curved upwardly and forwardly, see Figs. 3 and 4. Extending rearwardly from the shoe is a pressing extension 53.

Pivotally supported at 55 by the shoe is a yielding-mounted stop or transverse aligner 54 which has limited movement determined by the pins 59 and 60. The member 54 normally projects below the bottom level of the shoe so that it is engaged by the forward edge of the sheet and the infolding ends in the forward travel thereof. The member 54 is thereupon tilted counterclockwise, see Fig. 3, to the position shown in Fig. 4, in opposition to a spring 57 secured to an arm 56 of the member 54, said spring being anchored at 58. The continued travel of the sheet retains the member 54 in the position shown in Fig. 4 until the sheet has passed therebeneath, whereupon the member 54 is returned to the position shown in Fig. 3 by spring 58. The relative relationship and shape of the parts is shown clearly in Figs. 4 and 5.

If additional infolding mechanism is desired,

there are provided stationary extensions 32a carried by the member 32 which prevent the upwardly-directed ends of the blank from returning to their original positions. The shape of the cam 36 is such that the ends of the blanks are held elevated until the forward edge of the upwardly-folded ends clears or passes beyond the free end of the member 32a.

To positively insure complete infolding and lowering movement of the upwardly-folded ends of the blank, infolding mechanism is provided which is operated in timed relation to the travel of the bars 19 so that the infolded ends are folded flat and in parallel relation to the body of the sheet prior to the engagement of the same, which position is substantially that illustrated in Fig. 3, by the cam shoe 52.

Such mechanism is shown clearly in Figs. 1, 6 and 7. Each carrier bar upon its outer and depressed lower end 20 mounts a roller 73 upon a pivot 74. The upper face of the pivot may ride upon or rather immediately below the angle members without interference. The roller 73 is arranged to engage the inclined face 71 of a lever 70 having a receding face 72. The lever 70 is pivoted at 69 and has an arm 68 that is connected by a universal joint to a reciprocating rod 66. The reciprocating rod 66 is pivotally connected at 65 to a link 64 which in turn is pivotally connected to a support 63 carried by an infolding member 61. The pivotal connection between the link 64 and portion 63 is at right angles to the connection 65 so that substantially universal joint operation is obtained therewith. The infolding member 61 is pivotally supported at opposite ends by a hinge arrangement 62. When the cam portion 71 is engaged by the roller, the member 66 is projected inwardly toward the shoe or transversely of the line of travel, and this causes the member 61 to tilt inwardly and downwardly which carries with it the adjacent upwardly folded and partially infolded end of the blank. A spring 76 serves to return the member 61 and associated mechanism to receiving or upwardly-tilted position.

The duration of contact between the roller and the cam is sufficient to permit the two inwardly directed infolding members 61 to be moved inwardly and moved downwardly for causing the ends to lie adjacent the main body of the sheet and parallel thereto in infolding relation with the outer edges in substantially abutting relation to the members 61 holding down these ends until the forward edge of the blank and the ends engage the shoe and the member 54. The members 28, as illustrated in Fig. 1, terminate short of the position designated by the members 61 so that the members 61 when positioned parallel to the sheet, serve the same function that the outer members 28 have theretofore served, but with this addition, that they also hold down the superimposed ends during the continued travel of the sheet and the ends. The members 61 hold down the ends of the sheet parallel to the blank until the various portions thereof have squared themselves by reason of the forward edge contacting the wide member 54 which forces rearwardly the portions of the blank and ends against the plates 103 which have at this station been caused to be elevated by the engagement of the cooperating cam portions 106—107 if not previously actuated.

In Fig. 8 there is illustrated a modified form of infolding rotating cam structure. In said figure like and similar parts are indicated by similar numerals of the one hundred series. The

rotating form of the invention, it has been found, will tear the infolding end of the blank from the same when the rate of folding exceeds one hundred a minute.

5 In this form of the invention, the cam 136 in addition to rotating with shaft 148, also at a predetermined portion of its travel, is slid longitudinally thereof for infolding without severance of the blank end. The cam 141 rotates with shaft 148. Its longitudinal movement is 10 controlled by groove 139 therein that receives the roller 142 carried by arm 143. As the cam 141 moves to and fro on shaft 148, it shifts cam 136 therewith through the adjustable connection 138—140—145 provided for different sizes of boxes. In other words, the cam 136 is adjusted for box sizes thereby and is the full equivalent of the hand wheel adjustment shown in Fig. 2. The cam 136 in addition to rotating as cam 36 in Fig. 2, also moves toward and away from the blank body. The combination rotation and sliding of cam 136 does not tear the folding end from the blank when the rate of folding exceeds one hundred per minute.

25 The invention claimed is:

1. In a folding machine for forming tubularly arranged collapsed box blanks from flat scored sheets, the combination with an endless conveyor, of means supplying but a single sheet to said conveyor, the sheets being supplied in successive and spaced relation thereto, spaced means simultaneously elevating towards each other the opposite ends of the sheets and from the plane of sheet travel, including rotatable cam guides for inturning the elevated ends of the sheet in the forward movement thereof, spaced means for positioning the inturned and downward ends with edges substantially abutting, and means arranged to engage the substantially abutting edges for initially squaring the infolded ends, compressing the same adjacent the lower portion of blank and then holding the same in that position for taping.

2. A device as defined by claim 1, characterized by the addition of means arranged to adjustably support the guides for axial adjustment.

3. In a folding machine for forming tubularly arranged collapsed box blanks from flat scored sheets, the combination with an endless conveyor, of means supplying but a single sheet to said conveyor, the sheets being supplied in successive and spaced relation thereto, spaced means simultaneously elevating towards each other the opposite ends of the sheets and from the plane of sheet travel, including cam guides movable in the direction of sheet travel for inturning the elevated ends of the sheet in the forward movement thereof, spaced means for positioning the inturned and downturned ends with edges substantially abutting, and means arranged to engage the substantially abutting edges for initially squaring the infolded ends, compressing the same adjacent the lower portion of the blank and then holding the same in that position for taping.

4. In a folding machine for forming tubularly arranged collapsed box blanks from flat scored sheets, the combination with an endless conveyor, the sheets being supplied in successive and spaced relation thereto, of spaced cam guides for elevating the ends of the sheet in the forward movement thereof, means spaced further apart than the cam guides for retaining the elevated ends in elevated position, spaced means 75 for engaging the elevated sheet end for in-

turning and downwardly folding the same until the ends lie parallel to the sheet body and the outer edges of the ends are substantially abutting, means arranged to engage the substantially abutting ends at the adjacent edges for initially holding the infolded ends in infolded relation, and other means for engaging the forward edges of the ends for aligning same with the adjacent lower forward edge of the body of the sheet, said abutting edge engaging means pressing the ends and body together and holding the same together and in position for taping after the forward edge engaging means has aligned the ends.

5. A device as defined by claim 4, characterized by the spaced elements being adjustably mounted for different size sheet accommodation.

6. In a folding machine for forming a tubularly arranged collapsed box in squared relation for pasting, the combination of spaced means arranged to engage the ends of a sheet for turning same to lie parallel to and above the body of the sheet with the remote edges of the ends in substantially abutting relation, means for engaging the forward edges of the ends for aligning the same in the forward travel of the sheet, and other means for pressingly engaging the infolded ends to hold the same infolded adjacent the sheet body and in squared relation for pasting.

7. A device as defined by claim 6, characterized by the last-mentioned means comprising a cam-shaped pressing member including an elongated extension.

8. A device as defined by claim 6, characterized by the second last-mentioned means including spaced and aligned wings, a support tiltably supporting said wings, and yielding means normally projecting the lower ends of the wings into the path of the forward moving sheet.

9. A device as defined by claim 6, characterized by the second last-mentioned means including spaced and aligned wings, a support tiltably supporting said wings, and yielding means normally projecting the lower ends of the wings into the path of the forward moving sheet and said other means comprising a cam shaped pressing member including an elongated extension extending therefrom in the direction of sheet travel.

10. In a folding machine for forming tubularly arranged collapsed box blanks from flat scored sheets, the combination of an endless conveyor arranged to move progressively a succession of spaced single sheets, each sheet including spaced longitudinal scorings to form ends, a pair of elongated members longitudinally directed and having their outer edges positioned within the longitudinal scorings but adjacent thereto, spaced means for elevating the ends and inturning the elevated ends over said members and with the inturned and downturned end edges substantially abutting, and means arranged to engage the substantially abutting edges for initially squaring the infolded ends, compressing the same adjacent the lower portion of blank and holding the same in that position for taping said last-mentioned means engaging the sheet subsequent to the freeing of the sheet from said members.

11. In a folding machine for forming tubularly arranged collapsed box blanks from flat scored sheets, the combination of an endless conveyor having a plurality of spaced sheet-moving members arranged to progressively move a succession of spaced single sheets, each sheet including spaced longitudinal scorings to form ends, spaced means simultaneously elevating towards each oth-

er opposite ends of the sheets and from the plane of sheet travel, a pair of spaced means hingedly mounted and arranged for inward movement towards each other for positioning the inturned and downturned ends with edges substantially abutting, a plurality of spaced actuators carried by the conveyor, one for each member, cam means engageable by each of said actuators, and means connecting the cam means to the pair of hinged means for actuating the same in timed relation to sheet travel.

12. In a folding machine for forming tubularly arranged collapsed box blanks from flat scored sheets, the combination of a plurality of connected but spaced sheet-moving members arranged to progressively move a succession of spaced single sheets, each sheet including spaced longitudinal scorings to form ends, spaced means simultaneously elevating towards each other opposite ends of the sheets and from the plane of sheet travel, a pair of spaced means hingedly mounted and arranged for inward movement towards each other for positioning the inturned and downturned ends with edges substantially abutting, an actuator carried by each member, cam means engageable by each of said actuators, means connecting the cam means to the pair of hinged means for actuating the same in timed relation to sheet travel, an upwardly movable plate carried by each member and normally constrained toward lowered position, means for moving the plates upwardly in opposition to the constraint, other means arranged to engage the forward edge of the sheet and infolded ends to square the same subsequent to plate movement, and further means for retaining the squared sheet and ends in collapsed and squared position for pasting.

13. In a folding machine for forming tubularly arranged collapsed box blanks from flat scored sheets, the combination of a plurality of connected but spaced sheet moving members to progressively move a succession of spaced single sheets, each sheet including spaced longitudinal scorings to form ends, a pair of elongated members longitudinally directed and having their outer edges positioned within the longitudinal scorings but adjacent thereto, spaced means for elevating the ends and inturning the elevated ends over said members and with the inturned and downturned end edges substantially abutting, an upwardly movable plate carried by each of the first mentioned members and normally constrained toward lowered position, means for moving the plates upwardly in opposition to the constraint, said last mentioned means and plates being arranged for operation without interference from the elongated members, and means arranged to engage the substantially abutting edges for initially squaring the infolded ends, compressing the same adjacent the lower portion of the blank and then holding the same in that position for taping, said last mentioned means engaging the sheet subsequent to the freeing of the sheet from said second mentioned members.

14. In a folding machine for forming tubularly arranged collapsed box blanks from flat scored sheets, the combination of a plurality of connected but spaced sheet-moving members arranged to progressively move a succession of spaced single sheets, each sheet including spaced longitudinal scorings to form ends, a pair of elongated members longitudinally directed and having their

outer edges positioned within the longitudinal scorings, spaced means simultaneously elevating towards each other opposite ends of the sheets and from the plane of sheet travel, a pair of spaced means hingedly mounted and arranged for inward movement towards each other for positioning the inturned and downturned ends with edges substantially abutting, said elongated members terminating ahead of the hingedly mounted means, an actuator carried by each first mentioned member, cam means engageable by each of said actuators, and means connecting the cam means to the pair of hinged means for actuating the same in timed relation to sheet travel.

15. In a folding machine for forming tubularly arranged collapsed box blanks from flat scored sheets, the combination of a plurality of connected but spaced sheet-moving members arranged to progressively move a succession of spaced single sheets, each sheet including spaced longitudinal scorings to form ends, a pair of elongated members longitudinally directed and having their outer edges positioned within the longitudinal scorings, spaced means simultaneously elevating towards each other opposite ends of the sheets and from the plane of sheet travel, a pair of spaced means hingedly mounted and arranged for inward movement towards each other for positioning the inturned and downturned ends with edges substantially abutting, said elongated members terminating ahead of the hingedly mounted means, an actuator carried by each first mentioned member, cam means engageable by each of said actuators, means connecting the cam means to the pair of hinged means for actuating the same in timed relation to sheet travel, an upwardly movable plate carried by each of the first mentioned members and normally constrained toward lower position, and means for moving the plates upwardly in opposition to the constraint, said last mentioned means and plates being arranged for operation without interference from the elongated members.

16. In a folding machine for forming tubularly arranged collapsed box blanks from flat scored sheets, the combination with an endless conveyor, sheets being supplied in successive and spaced relation thereby, a rotating cam for elevating a scored end of the sheet from the plane of the sheet in a travel of the sheet, and means associated with the rotating cam for moving the same longitudinally toward the folding end in the folding movement and retracting the rotating cam after the cam has secured the elevation of the blank end.

17. A device as defined by claim 16, characterized by the last mentioned means comprising a rotating cam having a spiral groove, and means associated with said groove whereby the second mentioned rotating cam is caused to reciprocate for predetermined travel of the first mentioned cam in the rotation of the cams.

18. A device as defined by claim 16, characterized by the last mentioned means comprising a rotating cam having a spiral groove, and means associated with said groove whereby the second mentioned rotating cam is caused to reciprocate for predetermined travel of the first mentioned cam in the rotation of the cams, the two cams including an adjustable connection therebetween for sheet size accommodation.