March 5, 1935. W. E. BOWERSOCK ET AL 1,993,205

METHOD OF AND APPARATUS FOR MAKING CONTAINERS

Filed May 2, 1933 4 Sheets-Sheet 1

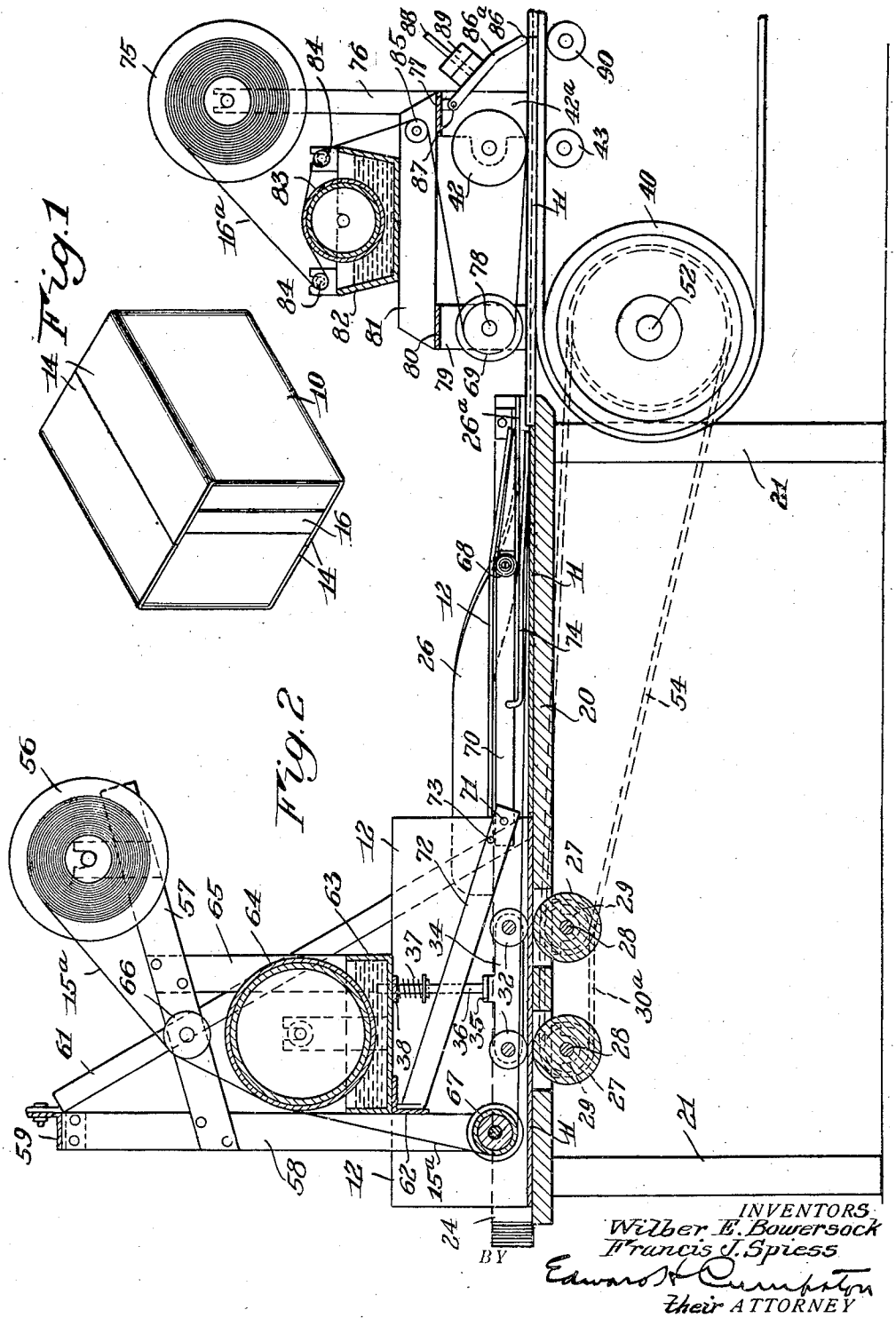


Fig. 1

Fig. 2

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Fig. 3

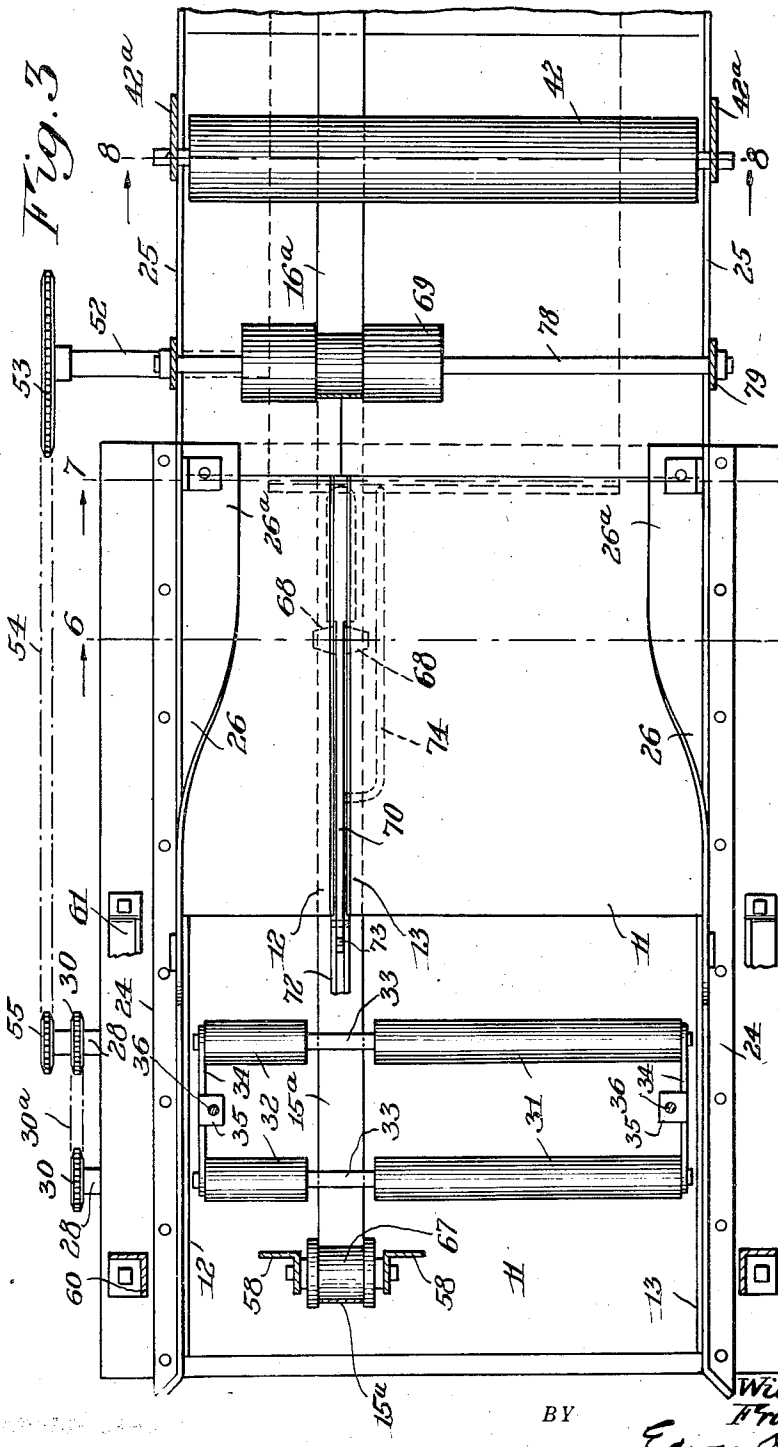
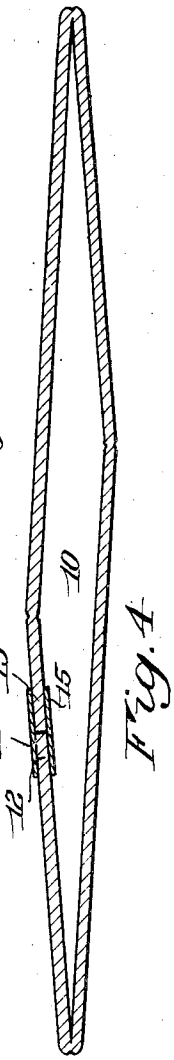


Fig. 4



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Fig. 5

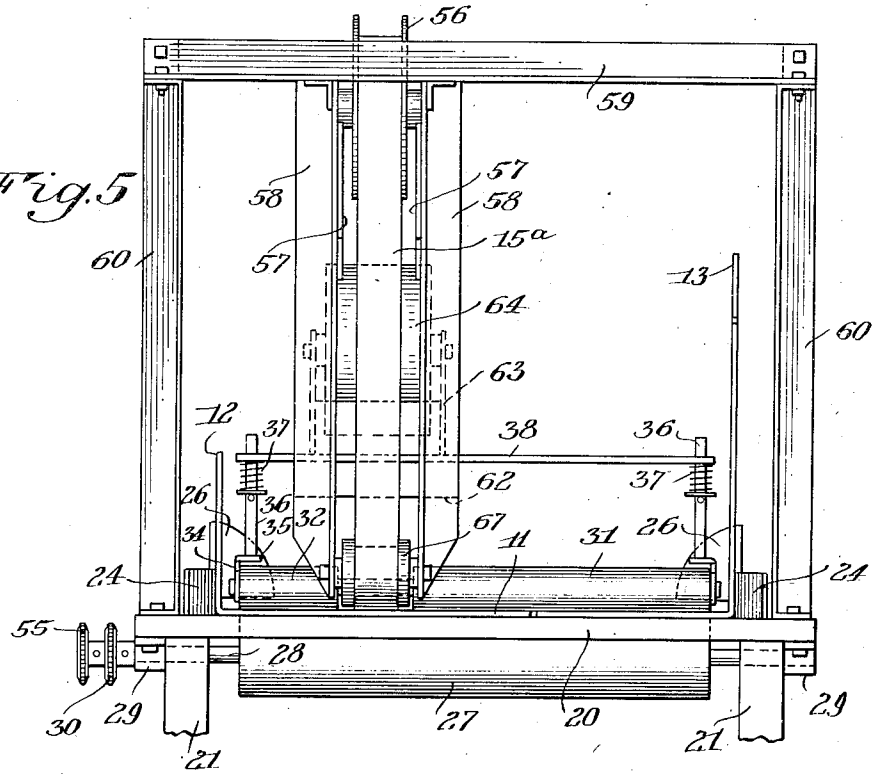


Fig. 6

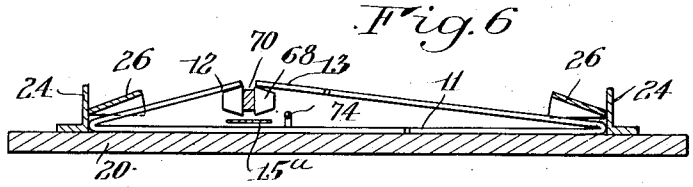


Fig. 7

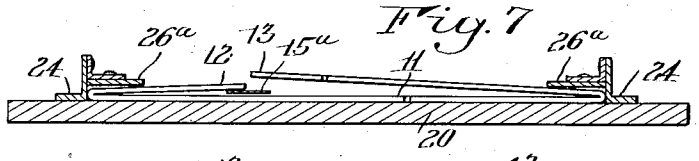
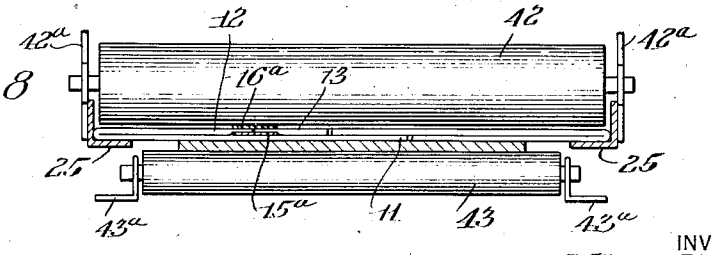


Fig. 8

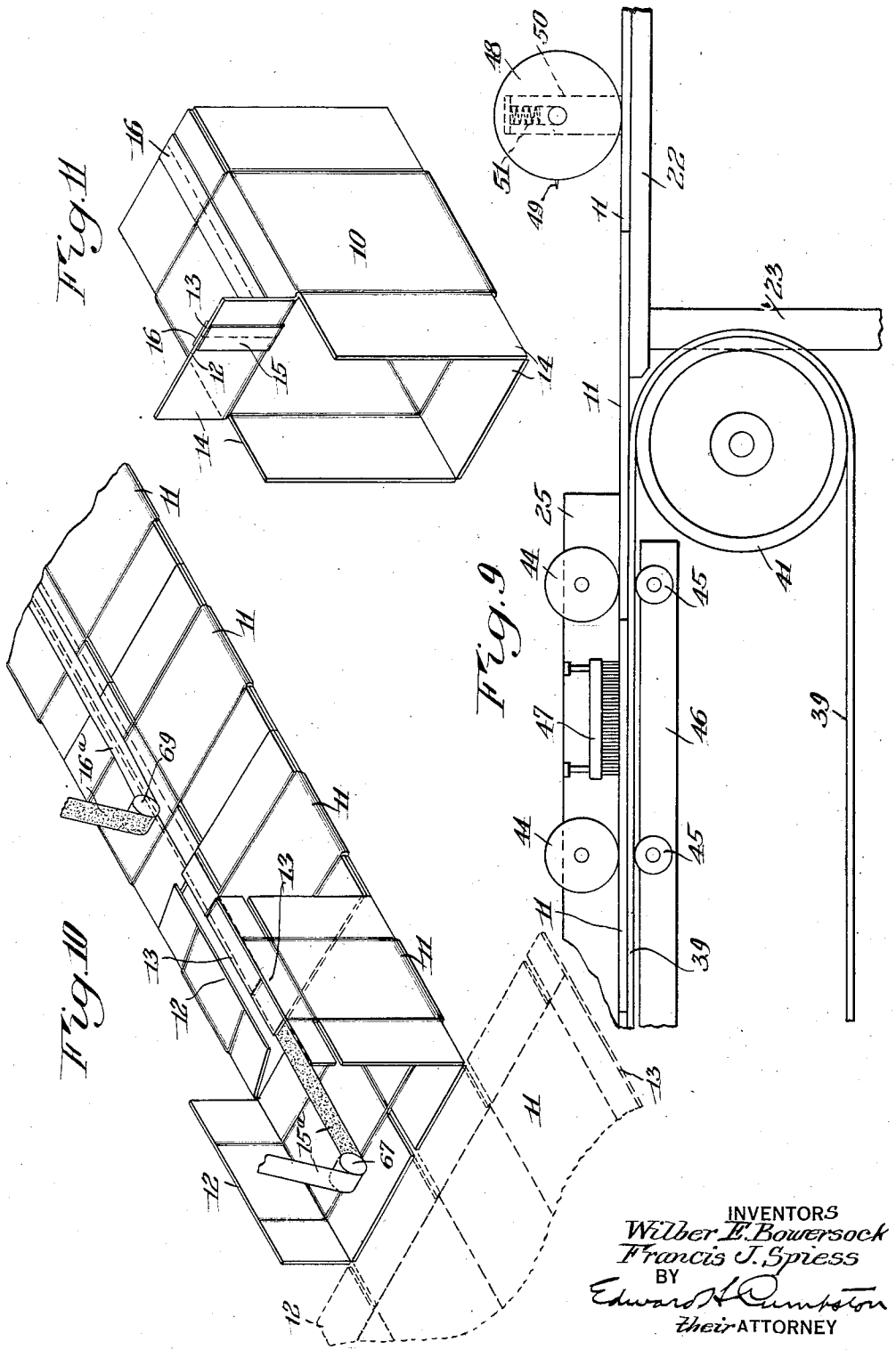


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Patented Mar. 5, 1935 1,993,205

UNITED STATES PATENT OFFICE

1,993,205

METHOD OF AND APPARATUS FOR MAKING CONTAINERS

Wilber E. Bowersock and Francis J. Spiess, Rochester, N. Y., assignors to The Rochester Folding Box Co., Rochester, N. Y., a corporation of New York

Application May 2, 1933, Serial No. 668,994

17 Claims. (Cl. 93—52)

The invention relates to an improved method of and apparatus for making containers, and has particular reference to the manufacture of boxes or containers formed of sheet material such, for example, as corrugated paper board or the like, made up in the form of blanks cut and scored to provide for folding to form the sides and ends of the box, one object being to provide an improved method of joining the edges of opposite side portions of the blanks in an economical and efficient manner.

A further object of the invention is to provide an improved method of uniting or connecting the adjacent edges of opposite side portions of the blank at the inner side of the latter to effectively seal the joint between said portions by means which is rendered non-removable from the exterior of the box when closed whereby to make it difficult to obtain access to the contents of the box by attempting to remove the connecting means for said side portions.

A further object of the invention is to provide an improved method of uniting opposite edge portions of a box forming blank to afford a sealed joint at one side of the box in spaced relation to the corner portions thereof by applying adhesive or gummed strips to the inner and outer faces of said opposite edge portions whereby to afford a joint having the strength of an unbroken side of the box.

A further object of the invention is to provide an improved method of joining opposite edge portions of a box forming blank which includes positioning a connecting strip adjacent the inner face of the blank, folding the blank around the strip to position the inner faces of said edge portions in contact with the strip and uniting the strip with the inner faces of said edge portions by the use of suitable adhesive material to connect said edge portions one with another.

A still further object of the invention is to provide an improved method of joining the opposite edge portions of the blanks which comprises feeding the blanks one in advance of another and continuously feeding a connecting strip for said edge portions over the inner faces of the advancing blanks, folding the blanks around the strip while advancing to position the inner faces of said edge portions in contact with the strip and uniting the strip with the inner faces of said edge portions by the use of suitable adhesive material to connect said edge portions one with the other.

A still further object of the invention is to provide an improved method of connecting the opposite edge portions of the blanks which includes feeding the blanks one in advance of another, continuously feeding a connecting strip for said edge portions over the inner faces of the advancing blanks, applying adhesive material to the strip while feeding the same, folding the blanks about the strip while advancing to position the inner faces of said edge portions in contact with the strip, applying pressure to the edge portions of the blanks to cause the strip to adhere to the inner faces thereof, subsequently applying a second strip to outer faces of said edge portions, and severing the strips between the blanks to separate the latter.

A still further object of the invention is to provide an improved machine for use in carrying out the present method which is adapted to apply the strips to the blanks in an efficient and economical manner.

To these and other ends the invention resides in certain improvements and combinations of parts, all as will be hereinafter more fully described, the novel features being pointed out in the claims at the end of the specification.

In the drawings:

Fig. 1 is a view in perspective of a container to which the tape is applied by the machine described herein;

Fig. 2 is a longitudinal sectional elevation through one end of the machine;

Fig. 3 is a sectional plan of the same;

Fig. 4 is a section through the container shown in Fig. 1, drawn to an enlarged scale and illustrating the manner of applying the tape to the opposite sides of the adjoining edges of one wall of the container;

Fig. 5 is an end elevation of the machine as viewed from the left of Fig. 2;

Fig. 6 is a sectional elevation taken on the line 6—6 of Fig. 3;

Fig. 7 is a sectional elevation taken on the line 7—7 of Fig. 3;

Fig. 8 is a sectional elevation on line 8—8 of Fig. 3;

Fig. 9 is a side elevation illustrating the rear portion of the machine which forms a continuation of that portion shown in Fig. 2;

Fig. 10 is a diagrammatic view illustrating the method of feeding and folding the box forming blanks and of applying the inner and outer tapes or strips to the adjacent edges of the portions to be joined comprising one of the walls of the box, and

Fig. 11 is a perspective view of the box as it appears before folding the flaps to closing posi-

tion, one of the flaps being turned upwardly to illustrate the application of the tape to the inner face of the box.

The improved box or container indicated generally at 10 in Fig. 1, is preferably formed of a one-piece blank of any suitable material such, for example, as corrugated or like composite board, indicated generally at 11. The blanks are properly cut and scored in order that they may be readily folded to form the box or collapsed when desired as shown in Fig. 4. The side walls include the foldable flaps shown in open position in Fig. 11 which afford opposite side or end walls when properly folded into position as shown in Fig. 1.

Heretofore in producing blanks of this kind from which to form the boxes it has been customary to cut them in such a manner as to make it necessary to join the ends or sides thereof at the corners of the box and it has also been the practice to unite the ends at the corners by applying an adhesive strip to the exterior surfaces of said ends or on the outer face of the box. This method of forming the blanks and of uniting the ends thereof has proven undesirable and unsatisfactory for the reason that in a number of cases where goods have been shipped in boxes or containers constructed in this manner, unscrupulous persons have found it comparatively easy to remove the gummed strips from the containers with a view to appropriating the contents thereof, and in certain cases have reapplied the strips to avoid suspicion and detection at least for a time. This has necessarily made it more difficult to determine at what point and at what time the contents were removed from the container while enroute to its destination. These objections have been overcome in the present construction without sacrificing either the strength or durability of the containers.

Another important feature of the invention is that of feeding the box forming blanks one in advance of another and at the same time continuously feeding a securing strip opposite the inner faces of the blanks and folding the blanks around the strip while advancing and positioning their opposite edge portions upon and connecting them by means of the strip so that the latter will lie interiorly of the blanks when the boxes have been closed and sealed, whereby the strips cannot be removed, as in cases where they are applied exteriorly of the box.

Another improved feature is the provision of means for supporting and steadying the joint-forming edge portions of the blank upon folding the blank around the strip to prevent the contacting of the strip with said edge portions until such time as they are in position to be moved gradually into engagement with the strip by the means provided for that purpose.

The adjacent or meeting edges of the opposing ends 12 and 13 of the blank including the adjacent edges of the portions thereof constituting the flaps 14 are united or joined together by the inner and outer strips or tapes 15 and 16, as shown in Figs. 1 and 11.

The strips may be attached to the ends of the blank by any suitable means, but it is preferred to secure them by the use of adhesive material which may be applied either to the edge portions of the blank or to the strips before securing the latter upon said edge portions.

The present method in its preferred form comprises generally the feeding of the blanks one in advance of another, continuously feeding a connecting strip for the opposite edge portions of the blanks over the inner faces of the blanks while advancing, folding the advancing blanks and positioning the inner faces of said edge portions in contact with the strip, uniting the strip with said edge portions by the use of adhesive material to connect one edge portion with another and severing the strip between the blanks to separate the latter. The method further contemplates applying a second strip to the exterior faces of said connected edge portions by advancing the strip in contact with said edge portions while continuing to advance the blanks and uniting it by means of adhesive material with said edge portions, under the application of pressure applied to the strip while advancing, and subsequently severing both the inner and outer strips during advancement of the blanks.

In addition to the improved method described herein, an important feature of the invention is that of joining the opposite edge portions of the blank at one side of the container in spaced relation to the corners thereof. One advantage of this feature is that the material of the blank at the corners of the container remains unbroken and therefore retains its normal strength throughout the full length of the joint. For this reason it will not rupture when subjected to pressure, as in the case where the joint is formed at the corner of the container as has been the practice heretofore. In such cases the tape is cut to a length somewhat shorter than the length of the joint in order to avoid having it interfere with the folding of the flaps for closing the ends of the container, thus leaving short unconnected end portions of the blank. These portions tend to spread when subjected to considerable pressure, as, for example, when the containers are stacked one upon another after being packed for shipment and as a result they sometimes become crushed, this disadvantage being avoided in the present construction.

A further advantage in uniting the opposite edge portions of the blank independently of the corner forming portions is due to the fact that the strips serving to connect said portions can be applied throughout the entire length of the blank whereby to permit severing of the strips at points between the abutting edges of the blanks during advancement of the latter. With this method it is preferred to advance the blanks and at the same time advance the strips 15a in overlying relation with respect to the inner faces of the blanks and to fold the blanks while advancing for the purpose of positioning their end portions 12 and 13 in substantially abutting relation or one adjacent another upon the gummed face of the strip and to firmly press said edge portions and the strips together whereby to insure proper application of the strips to the blanks.

Furthermore an additional strip 16a is applied to the exterior faces of said edge portions which is preferably done while continuing to advance the blanks by advancing the additional strip at the speed of the blanks and in overlying relation with respect to said edge portions and firmly pressing the strip into engagement therewith by the use of any means suitable for the purpose. During continued advancement of the blanks the tapes or joint forming strips are automatically severed at points between the abutting edges of the blanks by the use of suitable means as described hereinafter.

The blanks are advanced by suitable means provided for that purpose and the strips are pref-

erably unwound from the supply roll by the pull exerted by the blanks to which the strips are applied. The adhesive material is preferably applied to the strips while they are being advanced by the blanks, but if preferred it may be applied to the inner faces of the opposite edge portions of the blanks instead.

Any suitable apparatus may be employed for carrying out the method described herein, such as that shown in the drawings, by way of example, for accomplishing the desired purpose.

In Fig. 2 is shown a frame or base comprising a table 20 having supporting legs or standards 21. In Fig. 9 is also shown a table 22 having supporting legs 23. A suitable frame or table, not shown, is interposed between the tables 20 and 23 for supporting the advancing blanks and certain parts of the mechanism for feeding and applying the strips to the blanks as will be described hereinafter. Mounted on the table 20 are suitable guides 24 for the blanks which are preferably in the form of angle irons, as shown in Figs. 6 and 7. Additional members 25 for guiding the blanks are mounted between the tables 20 and 22 and are supported by suitable frame work, not shown.

Suitable cams 26 are positioned in overlying relation with respect to the table 20 for folding the blanks while they are being advanced whereby to move the ends of the blanks into position to contact with the gummed face of the strip or tape 15*a*.

The blanks are advanced upon the table 20 by means of the feed rolls 27, the shafts 28 of which are journaled in suitable bearings 29 connected with and supported by the table, the shafts having sprockets 30 thereon by which they are driven.

Rolls 31 and 32 overlie the table 20 and serve to urge the blanks into engagement with the feed rolls whereby to insure advancement of the blanks. The rolls 31 and 32 are supported by shafts 33 connected at their ends by suitable bearing plates 34 provided with lugs 35 carrying upstanding rods 36 having springs 37 at their upper ends for urging the rolls into engagement with the blanks to maintain the latter in frictional engagement with the feed rolls 27. The rods 36 are connected by a transverse tie plate 38 against the lower face of which the upper ends of the springs are seated as best shown in Fig. 5.

The rolls 31 and 32 are spaced apart, as shown in Fig. 3, to afford clearance for the strip 15*a* which is advanced in overlying relation with respect to the blanks by means described hereinafter. The blanks are advanced by the rolls to a feed belt 39 interposed between the tables 20 and 22 and carried by the rolls 40 and 41 supported by any suitable means, not shown. The blanks are advanced by the feed belt beneath a roll 42 overlying the belt and operating to press the gummed strip 16*a* into engagement with the edge portions 12 and 13 of the blanks in a manner described hereinafter.

A roll 43 beneath the upper flight of the belt serves to urge it into engagement with the blanks, the roll being positioned immediately below the roll 42 whereby sufficient pressure is afforded to urge the gummed strip 16*a* in engagement with the adjacent edge portions of the blanks to cause the strip to adhere thereto.

The blanks are also fed between additional rolls which operate to exert pressure upon the blanks and the strips to effectively apply the latter to the adjoining edges of the blanks, these rolls being shown in Fig. 9 and designated by the reference characters 44 and 45. The upper rolls 44 are carried by the angle irons 25 for guiding the blanks and the lower rolls by a pair of side rails 46, only one of which is shown.

A brush 47 is mounted between the rolls 44 in position to overlie the strip 16*a* and operates in engagement therewith to insure contacting of all parts of the strip with the adjacent edges of the blanks. Additional brushes may be employed to operate upon the strips at other points if required and any suitable means may be provided for supporting the brushes in the desired positions.

The blanks upon discharging from the belt are fed beneath a roll 48 overlying the table 22 and having a knife 49 for severing the tape at points between the abutting edges of the blanks to separate one from another. The roll 48 is carried by suitable supporting means 50 which has spring means 51 for yieldingly maintaining the roll in contact with the advancing blanks for operation thereby through frictional engagement therewith. The diameter of the knife carrying roll is proportional to the length of the blank so that it will make one revolution during the period required for each blank to pass a given point, or in other words, the circumference of the roll is equal to the length of the blank and the knife is so positioned as to move into contact with the strip when the rear edge of the blank reaches a point immediately below the pivoted axis of the roll.

The feed belt 39 is driven by the roll 40, the shaft 52 of which is provided with a sprocket 53 driven by a chain 54 engaging a sprocket 55 on the shaft 28 of one of the feed rolls 27 shown in Fig. 2. The sprockets 30 on the feed roll shafts 28 are connected by a chain 30*a* whereby one of said shafts is driven by the other, the latter being driven by the chain 54 and sprocket 53 on shaft 52 which in turn may be driven by means, not shown.

The tape or strip 15*a* which may be formed of paper, linen, or other suitable material, is wound on a supply roll 56 suitably supported by a pair of arms 57, the front ends of which are connected with a pair of spaced angle bars 58 depending from a cross bar 59, as shown in Fig. 5. The cross bar is supported by uprights 60, the lower ends of which are suitably connected with the frame or table 20. Diagonal braces 61 are extended upwardly from the table and connected with the vertical supports 60 at their upper ends. The depending angle bars 58 are connected near their lower ends by an angle bar 62 upon which is seated a tank or receptacle 63 for the reception of the roll 64 provided for applying mucilage or other suitable adhesive material carried by the tank to the tape 15*a*, the roll being preferably rotated by the advancing tape through frictional engagement therewith. The tank is also supported by the members 65 extending upwardly therefrom and connected with the arms 57 for supporting the tape supply roll 56. The tank is seated upon and connected with the transverse tie member 38 connecting the upper ends of the rods 36.

The tape 15*a* is extended over a roll 66 supported by the arms 57 and is carried around a cloth covered roll 67 rotatably supported by the angle bars 58 at a point slightly above the table 20 and the blanks thereon. From this point the strip is advanced horizontally over the blanks with its gummed face uppermost as indicated in Fig. 10. The strip is thus advanced over a portion of the blank which serves to support

it when the ends of the blank are folded by means of the cams 26 down into engagement with the upper or gummed face of the strip to be joined or connected by the latter. The folding of the blank takes place in advance of the feed rolls 27 and the overlying rolls 31 and 32 after it has passed from beneath the latter.

It has been found desirable to provide means for controlling the movement of the ends of the blanks when they are initially moved toward the gummed face of the strip to prevent them from contacting therewith whereby to avoid what would result in undue movement of the strip from its normal course by the tendency of the folded blank portions to swing upwardly or to vibrate slightly when moved by the cams to a substantially horizontal position. As soon however as the folded blank portions have passed from beneath and become steadied by the horizontal portions 26*a* of the cam elements they can safely be permitted to contact with the strip. In order to avoid or overcome the difficulty referred to the tapered or cone-shaped supports 68 have been provided at a point slightly above the strip and opposite the cam elements 26 as a means for receiving the ends of the folded portions of the blank, as shown in Fig. 6 and upon which said ends finally come to rest as said folded portions pass beneath the horizontal ends of the cam elements. As the folded portions of the blanks emerge from beneath the cam elements they are passed under a roll 69 which also operates to overcome any tendency of said folded portions to swing upwardly, thus avoiding the lifting of the strip by reason of its adherence to the blanks and any consequent jerks or pulls upon the strip tending to tear or twist it during advancement of the same.

The supporting means for the members 68 is in the form of a bar 70 extending longitudinally of the table 20 and overlying the path of the strip, Fig. 3. The bar is pivotally connected at 71 with an arm 72 having a pin 73 overlying the bar and limiting its pivotal movement in a downward direction but permitting it to swing upwardly from normal position to a limited extent whereby to accommodate itself to the blanks passing therebeneath.

Furthermore means is provided for preventing the intermediate portion of the blank lying upon the table 20 from springing upwardly and moving the gummed face of the strip into contact with the bar 70. This means comprises a guard 74 carried by the bar 70 which is preferably in the form of a rod having its free end relatively close to or in engagement with the intermediate portion of the blank whereby to prevent it from moving up into contact with the strip. The arm 72 which carries the rod 70 may be supported by any suitable means such, for example, as the angle bar 32 which forms a support for the receptacle 63.

The strip 16*a* provided for application to the outer faces of the edge portions of the blank is wound on a supply roll 75 mounted between and rotatably supported by a pair of standards 76, only one of which is shown. Any suitable means may be provided for supporting the tape applying roll 42, said bearing members being preferably connected by a transverse tie plate 77, Fig. 2. The shaft 78 for supporting the roll 69 is journaled in bearing plates 79 which are preferably connected by a transverse tie plate 80, Fig. 2, the bearing plates 79 and 42*a* being supported by any suitable means, not shown.

Mounted on the tie plates 77 and 80 are a pair of angle bars 81 which serve to support the container 82 shown in Fig. 2, which carries a supply of liquid adhesive material for application to the strip 16*a* and which is applied to the strip by a roll 83 supported for rotation within the container and over which the strip is fed. Rolls 84 are carried by the container for supporting and guiding the strip and an additional guide roll 85 is provided which is carried by the supporting means for the container. The roll 69 is grooved at its center to receive the strip 16*a*, as shown in Fig. 3, whereby the strip is held out of contact with the folded ends of the blanks at this point and is subsequently made to contact with the adjacent edges of the blanks by the pressure applying roll 42.

In the scoring or creasing operations to which the blanks are subjected groove-like depressions are formed in the walls thereof to permit the blanks to be folded along predetermined lines, and in order to insure perfect contact between the strip and the scored portions of the blank a weighted member 86 has been provided for pressing the strip into engagement with said portions, including the groove-like depressions at one side of the blank and the corresponding ridge-like portions at the opposite side thereof. The member 86 is hinged at 87 upon the transverse plate member 77, as shown in Fig. 2, but may be located at any other desired point for operation upon the strip. The free or lower end of the weighted member is rounded or curved as at 86*a* to correspond substantially to the contour of the depressions of the blank, into which it moves during advancement of the strip in contact with the advancing blanks. It will be understood that the rounded portion of the weighted member will also ride freely over the ridge-like portions of the blank, produced by the scoring operations, and will firmly press the strip into engagement with said portions during advancement of the blanks.

The pivoted member 86 is provided with an upstanding pin 88 for receiving the weights 89 which are preferably in the form of rings. A roller 90 is positioned beneath the upper flight of the belt 39 at a point opposite the end 86*a* of the weighted member for resisting the pressure of the latter upon the blanks.

In the operation of the machine, the blanks 11 are positioned upon a suitable support, not shown, located at the front end of the table 20 upon which they are fed between the guides 24 by the operator or, if preferred, by a suitable mechanism provided for the purpose. In moving the blanks forwardly the parts to be folded are swung to a substantially vertical position, as shown in Fig. 5, and upon continued movement of the blanks the horizontal portions thereof are received by the feed rolls 27 and 31 which serve to adavnce the blanks upon the table, during which time the cams 26 operate to swing the upstanding end portions inwardly and downwardly to the position shown in Fig. 6. However, in advance of these operations, the gummed strip or tape 15*a* is unwound from the supply roll 56 and carried forwardly over the table 20 and over the horizontal portions of the blanks and is then held in position to receive the ends 12 and 13 of the upstanding portions of the blanks to be subsequently folded, it being understood that the strip will have the adhesive material applied thereto by the roll 64 as it passes over the latter. When the ends of the blanks are folded downwardly by the cams 26 to the position shown in Fig. 6. they will be

steadied by the parts 68 on the pivoted bar 70 and will be prevented by said parts from contacting with the gummed face of the strip. However, during advancement of said ends over the parts 68 they will be gradually brought into closer relation with respect to the strip by the portions 26a of the cams after which they will pass under the rolls 69 and 42, the latter operating to firmly press said ends upon the gummed face of the strip to effectively apply the strip to the inner faces of the adjacent ends of the blanks while advancement of the blanks is being continued by the feed belt 39, which is firmly held in contact with the under side of the blanks by the roll 43, Fig. 2. In the operations described above, it will be understood that it is preferred to maintain the blanks in abutting relation while being fed through the machine and that those passing under the cams are advanced one by another under the action of the feed rolls 27 and 32.

The strip 16a is applied to the outer faces of the adjacent ends or edge portions 12 and 13 of the folded blanks by the pressure roll 42 beneath which said strip is fed, after it has received the adhesive material, which is applied by the cloth covered roll 83 over which the strip is passed while being unwound from the supply roll 75. Continued advancement of the blanks and the inner and outer strips applied thereto is effected by means of the feed belt 39 which serves to move the blanks under the spaced rolls 44 and beneath the brush 47 mounted between said rolls, Fig. 9. The pressure exerted by the rolls 44 and brush 47 upon the adjacent edges of the blanks and the inner and outer strips thereon is sufficient to cause the strips to properly adhere to the blanks. The brush 47, however, is intended to operate primarily as a smoothing element for the gummed strip 16a and will effectively remove therefrom any wrinkles or puckered portions which may not have been eliminated by the feed rolls operating in advance of the brush. The brush will therefore operate to insure proper adherence between the blanks and all portions of the strip whereby to effectively unite the ends of the blanks.

As the feed belt continues to advance the blanks the knife 49 carried by the roll 48 will operate to sever the tape only at points between the abutting edges of the blanks, the roll being operated preferably through frictional engagement with the blanks fed therebeneath. However, if preferred, the roll may be positively driven by suitable means timed to insure movement of the knife into position to sever the tape at the desired points.

With the present arrangement, however, it will be understood that the circumference of the roll is so proportioned with respect to the length of the blank as to cause the knife to engage and sever the tape at the joints between the blanks as they appear opposite the vertical axis of the roll.

After the strips 15a and 16a have been united with the first blanks to which they are applied they will be subsequently unwound from their respective supply rolls by the pull exerted by advancement of said first blanks and those to which the strips subsequently become attached by the pressure rolls under which they are passed.

After the strips have been applied and severed in the manner described, the flaps forming the ends of the box can be readily folded to closing position to form a complete box or container, as shown in Fig. 1 or permitted to remain collapsed as indicated in Fig. 10.

We claim:

1. The method of joining opposite edge portions of box forming blanks, comprising feeding the blanks one in advance of another, continuously feeding a connecting strip for said edge portions over intermediate portions of the inner faces of the advancing blanks, folding opposite portions of each of the blanks about the strip and down over the intermediate portions of the corresponding blanks while advancing the blanks to position the inner faces of said edge portions in contact with the strip, uniting the strip with the inner faces of said edge portions by the use of adhesive material to connect one of the edge portions with the other, continuously advancing a second strip in contact with the outer faces of said edge portions while continuing to feed the blanks one in advance of another, and uniting said second strip with said outer faces by means of adhesive material whereby to connect said edge portions exteriorly of the blanks.

2. In a machine for securing a strip to the opposite edge portions of a box forming blank by means of adhesive material applied between the strip and said edge portions, the combination of means for positioning the strip adjacent the inner face of the blank between said opposite edge portions, means for folding the blank around the strip to position the inner faces of said opposite edge portions in contact with the strip, means for advancing the blank after the strip has been positioned thereon, means for applying a second strip to said edge portions on the outer face of the blank during advancement of the latter, and means for applying pressure to the strips and said opposite edge portions to cause the strips to adhere to the inner and outer faces thereof to connect said edge portions one with another.

3. In a machine for securing gummed strips to the inner and outer faces of opposite edge portions of box forming blanks to connect said edge portions one with another, the combination of means for continuously feeding the blanks one in advance of another, means for continuously feeding a gummed strip over the inner faces of the advancing blanks, means for folding the blanks around the strip to position the inner faces of said edge portions in contact with the gummed face of the strip, means for continuously feeding a second gummed strip in contact with the outer faces of said edge portions, means for applying pressure at opposite sides of the blanks to cause said strips to adhere to said edge portions, and means for severing the strips at points between the blanks during advancement of the latter.

4. In a machine for securing a connecting strip to the opposite edge portions of box forming blanks by means of adhesive material applied between the strip and said edge portions, the combination of means for feeding the blanks one in advance of another, means for continuously feeding the connecting strip for said edge portions over the inner faces of the advancing blanks, means for folding the blanks around the strip to position said edge portions at predetermined positions adjacent the strip during advancement of the blanks, guard means for holding said edge portions out of contact wth the strip when moved to said predetermined position, and means operating when said edge portions are moved in advance of the guard means to urge them into engagement with the strip.

5. In a machine for securing a connecting strip to the opposite edge portions of box forming blanks by means of adhesive material applied between the strip and said edge portions, the combination of supporting means for the blanks,

means for feeding the blanks upon the supporting means one in advance of another, means for continuously feeding the connecting strip over the inner faces of the intermediate portions of the blanks, means overlying the supporting means adapted to hold the intermediate portions of the blanks in contact with the supporting means during advancement of the blanks, means for folding the blanks to move said edge portions to predetermined positions adjacent the strip during advancement of the latter, guard means for holding said edge portions out of contact with the strip when moved to said predetermined positions, and means operating when said edge portions are moved in advance of the guard means to urge them into engagement with the strip.

6. In a machine for securing a connecting strip to the opposite edge portions of box forming blanks having scored portions extending transversely of said edge portions to permit the blanks to be folded, the combination of means for feeding the blanks one in advance of another, means for folding the blanks during advancement to position said edge portions one adjacent another, means for feeding the connecting strip over the inner faces of said edge portions, means for applying adhesive material to the strip during advancement thereof, means for applying a second strip to the outer faces of said edge portions, means including one or more pressure rolls for applying the strips to said edge portions, and means adapted during advancement of the blanks and strips to press the strips into engagement with the scored portions of the blanks to insure contact of the strips with said portions.

7. The method of constructing a box from a blank, comprising scoring the blank along lines to form foldable side walls and also scoring it to form foldable extensions on two of the opposing side walls for cooperation to provide an additional side wall having a joint between opposite corners of the box, advancing the blank and at the same time folding one of the opposing side walls and its extension down over an intermediate portion of the blank and simultaneously folding the extension on the opposite side wall down over said intermediate portion to position the free edges of said extensions one adjacent another, positioning a securing strip opposite the inner faces of said edge portions, and uniting it with said edge portions by the use of adhesive material.

8. The method of constructing a box from a blank, comprising scoring the blank along lines to form foldable side walls and also scoring it to form foldable extensions on two of the side walls for cooperation to provide an additional side wall having a joint between opposite corners of the box, advancing the blank and at the same time folding one of the opposing side walls and its extension down over an intermediate portion of the blank and simultaneously folding the extension on the opposite side wall down over said intermediate portion to position the free edges of said extensions one adjacent another, advancing a securing strip adjacent the inner faces of said edge portions while advancing the blank, and uniting it with the inner faces of said edge portions by the use of adhesive material while advancing the blank.

9. The method of forming a box from sheet material, comprising scoring and cutting a blank from said material to provide foldable side walls two of which include extensions for cooperation to form one wall of the box and closure flaps for opposite ends of the box, positioning a connecting strip opposite the inner face of the blank, folding the blank around the strip to position the inner faces of the opposite edge portions of said extensions and said closure flaps upon the strip, and uniting the strip with the inner faces of said edge portions by adhesive material to connect said extensions one with another.

10. The method of forming boxes from sheet material, comprising scoring and cutting blanks from said material to provide foldable side walls two of which of each blank are provided with foldable extensions for cooperation to form one wall of the box, feeding the blanks one in advance of another, continuously feeding a connecting strip for opposite edge portions of said extensions over intermediate portions of the advancing blanks, folding one extension of each blank and the side wall having the other extension around the strip and down over said intermediate portions to position the inner faces of said edge portions in contact with the strip, and uniting the strip with the inner faces of said edge portions by means of adhesive material to connect said extensions one with another.

11. The method of forming boxes from blanks each having side wall portions including extensions on two of said portions for connection to form one side wall having a joint between opposite corners of the box, comprising feeding the blanks one in advance of another, feeding a connecting strip for said extensions over the inner faces of intermediate portions of the advancing blanks, folding opposite portions of the blanks down over the intermediate portions thereof to position the inner faces of the opposite edge portions of said extensions in contact with the strip, advancing a second strip over the outer faces of said edge portions while continuing to feed the blanks one in advance of another, and uniting said strips with the opposite faces of said edge portions by means of adhesive material during advancement of the strips whereby to connect said edge portions interiorly and exteriorly of the blanks.

12. The method of constructing a box from a blank, comprising scoring the blank along lines to form foldable side walls and also scoring it to form foldable extensions on two of the opposing side walls for cooperation to provide an additional side wall having a joint between opposite corners of the box, advancing the blank and at the same time folding one of the opposing side walls and its extension down over an intermediate portion of the blank and simultaneously folding the extension on the opposite side wall down over said intermediate portion to position the free edges of said extensions one adjacent another, advancing a securing strip adjacent the inner faces of said edge portions while advancing the blank, positioning a second securing strip adjacent the outer faces of said edge portions while continuing to advance the blank and uniting said strips with the opposite faces of said edge portions by means of adhesive material while the blank is in folded position.

13. The method of forming a box from a blank having side wall portions including extensions on two of said portions for connection to form one side wall having a joint between opposite corners of the box, comprising folding the blank to position the opposite edge portions of said extensions one adjacent another, positioning a connecting strip adjacent the faces of said edge portions at one side of the blank, and advancing the blank

and at the same time positioning a second connecting strip adjacent the faces of said edge portions at the opposite side of the blank, and uniting said strips with the opposite faces of said edge portions by the use of adhesive material and by simultaneously pressing said strips and said edge portions together.

14. The method of forming a box from a blank having side wall portions including extensions on two of said portions for connection to form one side wall having a joint between opposite corners of the box, comprising advancing the blank and at the same time folding it to position the opposite edge portions of said extensions one adjacent another, positioning a connecting strip having a coating of adhesive material adjacent said edge portions at one side of the blank while advancing the latter, positioning a second connecting strip having a coating of adhesive material adjacent said edge portions at the opposite side of the blank while continuing to advance the blank, and simultaneously pressing said strips and said edge portions together to cause said adhesive material to unite the same.

15. The method of joining opposite extensions of a box forming blank to form one side wall having a joint between opposite corners of the box, comprising positioning a connecting strip for the edge portions of said extensions over the inner face of an intermediate portion of the blank, folding the blank and positioning the inner faces of said edge portions over said strip, positioning a second strip upon the outer faces of said edge portions, and uniting said strips with the opposite faces of said edge portions by the use of adhesive material and by simultaneously pressing said strips and said edge portions together while the blank is in folded position.

16. The method of joining opposite extensions of a box forming blank to form one side wall having a joint between opposite corners of the box, comprising advancing the blank and at the same time advancing and positioning a connecting strip for the opposite edge portions of said extensions over the inner face of an intermediate portion of the blank, folding the blank while advancing the latter and positioning the inner faces of said edge portions over said strip, positioning a second strip upon the outer faces of said edge portions while continuing to advance the blank, and uniting said strips with the opposite faces of said edge portions by the use of adhesive material and by simultaneously pressing said strips and said edge portions together while the blank is in folded position.

17. The method of joining opposite extensions of a box forming blank to form one side wall having a joint between opposite corners of the box, comprising positioning a connecting strip for the extensions having a coating of adhesive material over the inner face of an intermediate portion of the blank, folding the blank to position the extensions down over the intermediate portion thereof with the inner faces of the edge portions of the extensions over the strip for contact with the coated surface thereof, placing a second strip having a coating of adhesive material over the outer faces of said edge portions to position the coated surface of said strip in contact with said outer faces and operating a pressure producing element to apply pressure to said strips and said edge portions against the resistance of the intermediate portion of the blank whereby to effectively unite said strips with said edge portions.

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