

Jan. 13, 1953

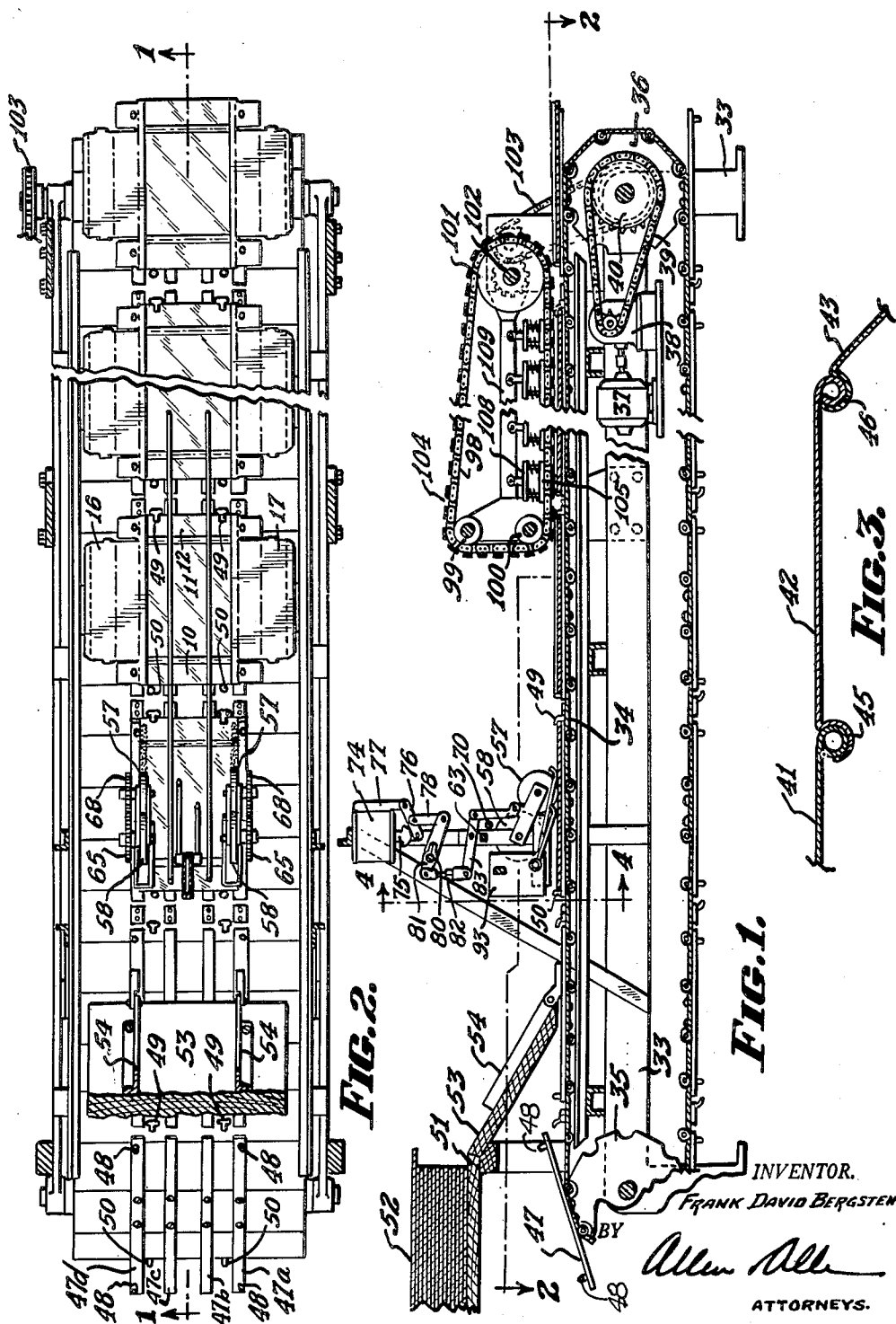
F. D. BERGSTEIN

2,625,085

APPARATUS FOR ASSEMBLING COMPOSITE CONTAINERS

Filed Feb. 9, 1949

3 Sheets-Sheet 1



Jan. 13, 1953

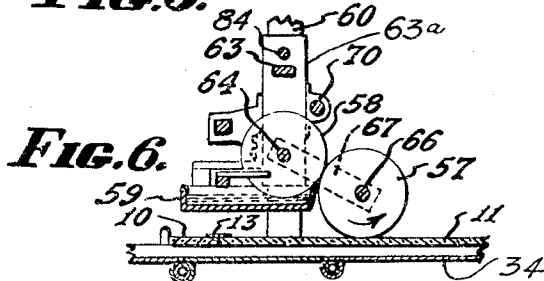
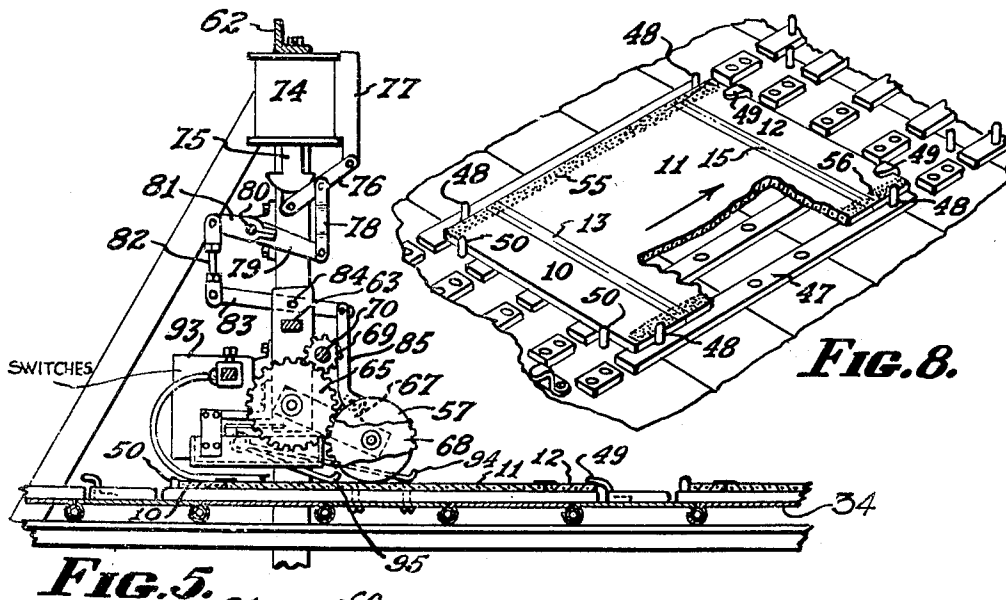
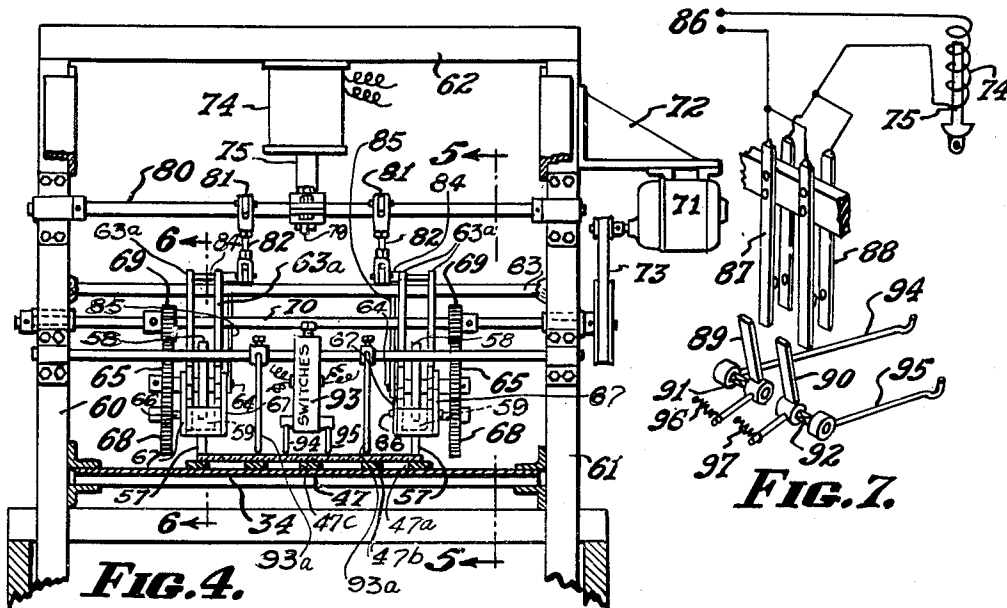
F. D. BERGSTEIN

2,625,085

APPARATUS FOR ASSEMBLING COMPOSITE CONTAINERS

Filed Feb. 9, 1949

3 Sheets-Sheet 2



INVENTOR.
FRANK DAVID BERGSTEIN,
BY *Allen Allen*
ATTORNEYS.

Jan. 13, 1953

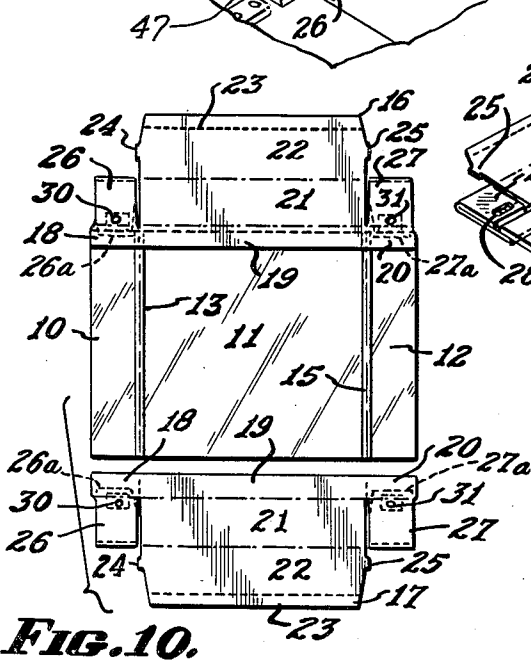
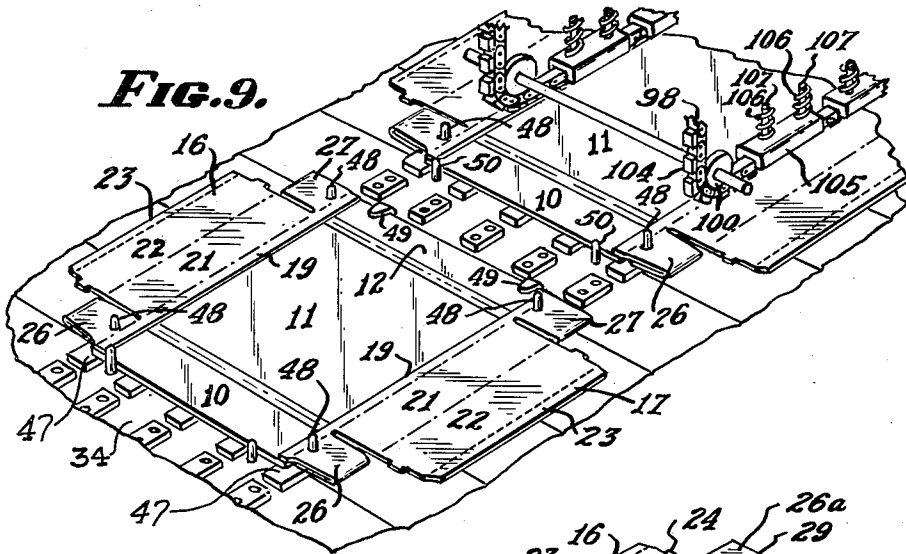
F. D. BERGSTEIN

2,625,085

APPARATUS FOR ASSEMBLING COMPOSITE CONTAINERS

Filed Feb. 9, 1949

3 Sheets-Sheet 3



UNITED STATES PATENT OFFICE

2,625,085

APPARATUS FOR ASSEMBLING COMPOSITE CONTAINERS

Frank David Bergstein, Wyoming, Ohio

Application February 9, 1949, Serial No. 75,467

7 Claims. (Cl. 93—55)

1

My invention relates to the problem of making knock-down or collapsible folding cartons or containers from a plurality of pieces which must be assembled and adhesively or otherwise secured together accurately in a predetermined relationship.

The principal objects of my invention are the provision of a machine for accomplishing this operation accurately, cheaply and rapidly, and at a minimum of expense.

It is an object of my invention to provide a new and positive mode of obtaining extreme accuracy in the alignment of parts, and of holding the parts accurately in alignment until they are permanently fastened together.

It is an object of my invention to provide a machine for the purpose which is simple and economical in construction, and dependable and accurate in operation.

My invention has utility wherever the joining of preformed container parts in accurate alignment to form a composite structure is required. I shall describe my invention in an exemplary embodiment which has to do with the manufacture of carton structures from a preassembly of articulated panels of non-scorable sheeting as one element, and a pair of cut and scored paperboard end pieces as two additional elements. Knock-down containers of this general form are described in the copending application of Robert M. Bergstein, Serial No. 720,407, filed January 6, 1947, and entitled Folding Boxes Employing Non-Scorable Sheeting. By "non-scorable sheeting" I means a material which cannot be given lines of fold or articulation by the simple operation of scoring, as can paperboard. An exemplary material of this class is a cellulose sheeting, say, .01 in. in thickness or heavier. Such a material may be bent or formed by the use of heat; but when so bent becomes rigid in the new formation. By establishing the angular relationship between adjacent panels of a carton by bending non-scorable sheeting through the use of heat, it is only possible to make set-up containers which are expensive to manufacture, ship and store. The provision of collapsible or knock-down carton structures implies the provision of true hinge lines or lines of articulation between the adjacent panels therein.

In copending applications Serial No. 695,143, of Robert M. Bergstein, filed September 6, 1946, entitled Knocked Down or Folding Structure Made From Acetate Sheeting or the like, now Patent No. 2,551,090 dated May 1, 1952, and Serial No. 727,212, of Robert M. Bergstein, filed

2

February 7, 1947, and entitled Apparatus and Method for the Manufacture of Articulated Panels, now Patent No. 2,587,685 dated March 4, 1952, there are described methods of forming articulated panel structures from non-scorable sheeting. A continuous supply of sheeting is slit longitudinally into pieces of the desired width of the several panels. Hinging strips of flexible material are applied over the lines of slit in the sheeting, and adhesively secured to the edges of the pieces. The hinging strips may be of any desired material; but the non-fibrous films of commerce, inclusive of cellophane, acetate and the others, serve the purpose very well. In actual practice cellophane strips bearing a coating of pressure-sensitive adhesive are applied over the lines of slit in the non-scorable sheeting. The slit pieces of non-scorable sheeting are forced apart sufficiently before the application of the hinging strips to provide a structure which will fold readily with the hinging strips on the outside of the erected structure, so that the slit edges of the sheeting are located within. The composite articulated supply is then cut transversely into pieces of the desired length of the panels making them up.

The articulated panel structures formed in this way have unidirectional or parallel lines of articulation only, as will be evident. While it is readily possible to form transverse lines of articulation by various methods, it is preferable for many uses to provide, by the method thus far described, an articulated structure of panels forming the body panels of a collapsible carton, and join this with cut and scored paperboard end pieces. This has a number of advantages in that, in general, it provides a stronger structure, more flexibility in the style of knockdown cartons or containers, and a better opportunity for printing and display, without sacrifice of visibility. In this way there may be formed collapsible or knockdown cartons simulating in panel arrangement the known range of such structures when formed of cut and scored paperboard alone, and including all of the current styles of one- and two-piece cartons. Tubular, one-piece cartons, such as those described in any of the applications referred to above, are readily made in accordance with the teachings of the present invention. I shall describe my invention in connection with the manufacture of one element of a two-piece box; but the application of the invention to other styles of knock-down cartons will be evident to the skilled worker in the art in the light of the teachings which follow.

In the manufacture of the one-piece or two-piece cartons referred to above, in addition to the unidirectionally articulated assembly of panels of non-scorable sheeting, there are provided cut and scored paperboard end pieces. These end pieces not only provide the missing panels of the carton structure, such as the closure elements of a one-piece tubular carton, or the end wall elements and corner connecting structures of a two-piece box part, but they also comprise short or rudimentary body panel elements to be attached in face-to-face relation with the end marginal portions of the articulated panels of non-scorable sheeting. These rudimentary elements are articulated together endwise, and are also articulated to the first mentioned paperboard elements along lines of articulation which will be angularly related to the hinge lines in the articulated panel structure of non-scorable sheeting in the final assembled box. As a consequence, in assembling the parts going to make up the knock-down carton or container structures, very accurate placement of the parts is required, as well as accurate coincidence of the hinge lines in the articulated sheeting panel assembly, and the corresponding score lines in the paperboard end pieces. It is an object of my invention to provide a means and mechanism to accomplish this.

The foregoing and other objects of my invention, which will be set forth hereinafter or will be apparent to one skilled in the art upon reading these specifications, I accomplish by that procedure and in that construction and arrangement of parts of which I shall now describe a simplified exemplary embodiment. Reference is made to the accompanying drawings wherein:

Figure 1 is a vertical, longitudinal sectional view of one form of my machine, taken along section 1—1 of Figure 2.

Figure 2 is a plan view of the machine with certain parts in section, the section being taken along the line 2—2 of Figure 1.

Figure 3 is a partial sectional view showing the relationship of certain elements in my exemplary conveyor.

Figure 4 is a partial vertical sectional view taken along the line 4—4 of Figure 1, transverse of the machine.

Figure 5 is a partial longitudinal sectional view taken along the line 5—5 of Figure 4.

Figure 6 is a partial longitudinal sectional view taken along the line 6—6 of Figure 4.

Figure 7 is a semi-diagrammatic perspective view of a control element for the adhesive applying mechanism.

Figure 8 is a partial perspective view of one section of the machine, illustrative of the mode in which the articulated panel assembly of non-scorable sheeting is positioned.

Figure 9 is a similar perspective view showing a mode of assembly and positioning of all of the parts going to make up the cartons and a portion of the pressing apparatus.

Figure 10 is a plan view of the partially assembled carton structure.

Figure 11 is a perspective view of the wholly assembled carton structure.

Figure 12 is a perspective view of the erected box element.

Figure 13 is a partial plan view of an adjustable pin structure.

Figure 14 is a partial vertical section of the same element taken along the line 14—14 in Figure 13.

Referring first to Figure 10, I have indicated

the preformed assembly of articulated panels 10, 11, and 12 of non-scorable sheeting hinged together by means of the hinging strips 13 and 15. This is to be joined in my machine and by my method to a pair of cut and scored paperboard end pieces indicated generally at 16 and 17. In the particular type of carton chosen for illustration, each of these end pieces comprises rudimentary panels 18, 19 and 20, corresponding to the panels 10, 11 and 12, and designed for attachment to their end marginal portions. Each end piece also comprises an outer end wall element 21, an inner end wall element 22, and a flap 23. At the ends of the inner end wall element 22, I have shown shallow tongues 24 and 25, for a purpose hereinafter set forth. The rudimentary panels 18 and 20 bear corner pieces or flaps 26 and 27, which are shown in doubled and adhesively secured position as at 26a and 27a in Figure 11. The doubled-over portions are provided with slots 28 and 29 to accept the tongues 24 and 25 in the erected structure. The portions 26 and 27 are also provided with small holes 30 and 31 in Figure 10, for a purpose hereinafter to be described.

It will be noted that the various panel structures in the paperboard end pieces are articulated to the rudimentary panels 18, 19 and 20 along a line of articulation which is transverse of the hinge lines in the preformed panel structure 10, 11 and 12.

The various parts of this carton are assembled as indicated in Figure 11. The paperboard end pieces are formed by the usual methods of cutting and scoring boxboard, which may be printed as desired; and in the particular structure chosen for exemplary illustration, the folding over and the securing of the flap portions 27a and 26a will have been accomplished by running the end pieces separately through an ordinary carton folding and gluing machine, as will be well understood by the worker in the art.

Adhesive securing of these parts may, however, be dispensed with if desired.

The assembled composite box element is shown in Figure 11 in the form in which it may be shipped to the user. The erected form of the structure is shown in Figure 12, and may be attained by folding upwardly the panels 10 and 12 in Figure 11, folding inwardly the flap elements 26 and 27, folding upwardly the end wall elements 21, and folding inwardly the inner end wall elements 22 so as to enclose the flap elements. The portions 27a and 26a are made of such length that their ends lap the side wall panels of the box, as shown in Figure 12 at 32, and the erected condition of the box is maintained by causing the tongues 24 and 25 to enter the exposed portions of the slots 28 and 29, as will be readily understood. The flaps 23 lie along the end portions of the panel 11.

There is thus provided a structure, as shown in Figure 12, having in effect paperboard end walls, and side walls 10 and 12 in the top panel 11 of non-scorable sheeting. The sheeting may be, and preferably is, transparent, so that the structure of Figure 12 forms a display package for merchandise contained therein. It may be employed with any suitable type of bottom element for a complete two-piece box, such as a bottom element formed in the same way but of such dimensions that its side and end walls will fit within the side and end walls of the top element, or a bottom element formed of cut and scored paperboard alone.

As has been indicated, the primary object of

5

this invention is the provision of a mode and mechanism for assembling the various parts going to make up the composite carton structures, such as the one illustrated in collapsed form in Figure 11. In the practice of my invention I place an assembly of the several elements on a suitable conveyor structure. The conveyor structure is provided with essentially laterally extending locating elements for the articulated assembly of panels of non-scorable sheeting longitudinally of the conveyor, and essentially longitudinally extending locating elements for the paperboard end pieces which serve not only to fix their positions in both directions on the conveyor, but coact preferably with the other locating elements to fix the lateral position of the assembly of panels of non-scorable sheeting, at least to confine its lateral position within certain limits. It is characteristic of my mechanism and method that the parts may be assembled in various orders, and with either the inside or outside surface of the assembled container uppermost. For example, it is possible to locate the paperboard end pieces on the conveyor, and apply adhesive to the rudimentary panel portions 13, 19 and 29, the inner surfaces of the paperboard end pieces being located uppermost. Then the articulated assembly of sheeting panels may be fed into position with the hinging strips located downwardly. Or, as illustrated herein, the assembly of articulated sheeting panels may be positioned on the conveyor with the hinging strips uppermost, adhesive may be applied to marginal end portions of the assembly, and thereafter the paperboard end pieces may be positioned on the conveyor with their outer surfaces uppermost.

Referring now to Figures 1, 2 and 3, I have shown a machine having a frame 33 on which a conveyor 34 is mounted by means of end sheaves 35 and 36 on appropriate shafts. The conveyor may be driven in any suitable manner, as by an electric motor 37 through a gear box 38 having a pinion connected by a chain 39 to a sprocket wheel 40 on the shaft of the end sheaves 36.

The nature of the conveyor may be widely varied; and it may be of belt or chain form. I prefer to employ a conveyor which is made up of laterally extending metal plates 41, 42 and 43 articulated together as at 45 and 46 in Figure 3. Such conveyors are known; and my preference for them lies in the fact of their inherent rigidity, and the ease with which platforms or other elements may be attached to the plates 41, 42 and 43.

In the exemplary form of my mechanism, I attach certain of the plates to the platform elements 47 in Figure 1 which, as shown in Figure 2, are preferably though not necessarily made up of a plurality of strips 47a, b, c and d. The platform, taken as a whole, will be somewhat larger than the assemblies of articulated sheeting panels which will be brought to rest on them. At the lateral marginal portions of these platforms, I provide elements 48, the functions of which will presently be described. The platform elements of the machine may be exchanged for other elements when different sizes of cartons are being assembled, or the platform elements may be made large enough to accommodate the largest size of carton to be operated upon, and made adjustable as to position. The conveyor will be understood as provided with a series of these platform elements for the support of a plurality of carton assemblies. Between the several platforms I prefer to provide on the conveyor locating fingers 49 to establish the forward position of the assembly of articulated panels. I may also provide

6

on the conveyor pins 50 which act to fix the rearward position of the articulated panels of sheeting. The elements 49 and 50 may be provided on the platforms instead of on the conveyor if so desired.

At the entering end of my machine, and far enough above the conveyor to provide for the turning of the platform 47 into position around the sprocket 35, I provide a platform or hopper element 51 upon which may be positioned a stack of the articulated sheeting panel elements indicated at 52. A slide 53 is provided to guide each such element into position on the conveyor, and the slide 53 may have adjustable side guides indicated at 54. Individual panel assemblies from the stack 52 may be fed to the conveyor either by hand or by known types of feeding means; but the feeding will be accomplished in timed relationship to the movement of the conveyor so as to bring an articulated panel assembly into position to be located by the fingers 49 as each of the platforms 47 is moved beneath the slide 53. As shown in Figure 8, the panel assembly will now be positioned on the conveyor, with its leading edge located by the fingers 49, its trailing edge being positioned by the pins 50, and its lateral position substantially determined by the elements 48 on the platform.

The next operation in the illustrated embodiment will be the application of adhesive to marginal portions of the articulated panel assembly 10, 11 and 12. Areas of such adhesive are indicated at 55 and 56 in Figure 8. Adhesive may be applied to the areas 55 and 56 by continuous glue wheels or discs, one of which is shown at 57 in Figure 6. This disc turns against the surface of a transfer roller 58 rotating in a bath 59 of suitable adhesive. This arrangement may be considerably varied. However, I prefer to employ a continuous adhesive applicator instead of a glue printing roller, and to move the applicator into and out of operative relation with the conveyor depending upon the presence and proper position of the element to which the adhesive is to be applied. This not only obviates the necessity of a glue printing mechanism, but also prevents the adhesive from fouling the parts, including the platform and its associated elements, if an articulated panel assembly fails to be positioned thereon or is incorrectly positioned. A mechanism by which this is accomplished is illustrated in Figures 4 to 7 inclusive.

The machine is provided with a pair of vertical supports 60 and 61 lying off the lateral edges of the conveyor 34, and connected at their tops by a cross piece or bridge 62. The glue applying mechanism is supported from a bar or brace 63 extending across between the vertical elements 60 and 61, by means of suspending elements 63a which are preferably laterally adjustable. The transfer rollers 58 are fixed on shafts 64 which carry gears 65. The glue applicator rollers 68, however, are journaled on shafts 66 in arms 67 which also are pivoted on shafts 64. The shafts 66 carry gears 68 meshing with the gears 65. The glue applicator rollers 57 can thus move about the shafts 64 while the gears 65 and 68 remain in mesh. The gears 65 are driven by gears 69 on a shaft 70, which in turn is driven by a motor 71 mounted upon a bracket 72 fixed to the vertical element 61, through a transmission such as the belt 73 and suitable sheaves.

On the bridge 62 I mount a prime mover such as a solenoid having a coil 74 and an armature 75. A lever 76 is pivoted to a bracket 77 on the

coil 74, and to the armature as shown. It is connected by a link 78 to a lever arm 79 affixed to a shaft 80 extending across the machine and journaled on the vertical supports 60 and 61. This shaft in turn is connected by lever arms 81 and links 82 to lever arms 83 pivoted as at 84. These lever arms in turn are connected by links 85 respectively to the arms or levers 67 by which each of the applicator rollers 57 is supported.

As is most clearly shown in Figure 5, actuation of the solenoid coil 74 will serve to raise the applicator rollers 57 out of operative position. When the solenoid is not actuated, the applicator rollers will be returned by gravity to the proper operative position to apply adhesive to the container elements.

The energization of the solenoid is accomplished from a suitable power means 86 through parallel switches 87 illustrated in Figure 7. These switches are actuated by arms 89 and 90 affixed to shafts 91 and 92, separately journaled in a supporting element 93 (Figures 4 and 5).

The shafts 91 and 92 bear members 94 and 95, the ends of which are adapted to pass downwardly between the bars 47a, 47b, etc. making up the platforms 47, under the influence of springs 96 and 97, when no panel assembly rests upon the platforms, but an articulated assembly of panels will serve to raise the ends of the members 94 and 95, as will be readily understood. When the elements 94 and 95 are in their lowermost position, the elements 89 and 90 close the switches 87 and 88, thus energizing the solenoid and raising the glue applicator rollers.

Since the switches are in parallel, it will be understood that the adhesive applicator rollers will remain in the upraised or inoperative positions so long as either switch remains closed. The two fingers or operating elements 94 and 95 are, as shown in Figures 5 and 7, of different lengths. As an articulated panel assembly passes beneath these elements, the shorter one 95 will be raised first, thus opening switch 88, but because switch 87 remains closed, the applicator rollers will remain in the upraised position until the finger 94 is contacted and raised by the panel assembly, thus opening switch 87. The end of the finger 94 is so located as to bring the applicator rollers into contact with the articulated panel assembly just short of the leading end thereof. Hold down bars 93a are also provided to maintain the panel assembly in flat condition as they are moved along.

As the movement of the articulated panel assembly continues with respect to the applicator rollers, the shorter finger 95 will be the first to ride off the trailing edge of the panel assembly. When this happens, switch 88 will be closed and the applicator rollers will be raised to inoperative position, thus terminating the application of adhesive just short of the trailing edge of the panel assembly. The subsequent closing of the switch 87 when the finger 94 rides off the assembly will not affect the energization of the solenoid.

The combination of fingers and switches described results positively in the continuous application of adhesive all along the lateral marginal portions of the articulated panel assembly, and in bringing the applicators into and out of operative position accurately with respect to the leading and trailing edges of the structure to which the adhesive is applied.

The next operation upon the machine will be the assembly of the paperboard end pieces 16 and 17 to the articulated panel structure 10, 11

and 12, the ends of which have been prepared with the adhesive areas 55 and 56. These end pieces may be placed in position by hand, or they may be fed from suitable hoppers (not shown). In either event they will be positioned as shown in Figure 9, with the pins 48 engaging in the holes 30, 31 formed in the paperboard end pieces. This serves positively to locate the end pieces with respect to the articulated panel assembly, and to align the lines of articulation in the panel assembly with the score lines in the end pieces lying between the rudimentary panel elements 18, 19 and 20.

Next, the assembled carton parts pass beneath a suitable pressure or holding mechanism. This may take various forms. I have illustrated in Figures 1 and 9 a form of pressing device comprising a chain 98 which passes over sprockets 99, 100 and 101. The last of these sprockets is fastened to a shaft 102 which is driven by the motor 37 in timed relationship to the movements of the conveyor. A chain drive is indicated in Figure 1 at 103.

The chain 98 bears blocks or pressure devices 104, and in that portion of its flight which parallels the conveyor 34, the chain and its pressure devices are pressed against the conveyor by shoes 105 held downwardly by springs 106 surrounding posts 107, by means of which the shoes are connected to overhead supports 108 which, in turn are mounted on an overhead support 109 extending across the machine. It will be evident from Figure 9 that there is a pressing mechanism for each of the seams adhesively secured by the areas 55 and 56 of adhesive, previously described. In the illustrated embodiment, the pressure means are so located as to lie just inside the pins 48.

The extent of the travel of the pressing mechanism with the carton elements may be determined by the setting characteristics of the adhesive, and in any case will be sufficient to assure the formation of a strong and permanent bond.

It will be evident that the pins 48, the fingers 49, and the pins 50 will have to be accurately located with respect to each other and accurately positioned with respect to the dimensions of the particular carton being manufactured. In Figures 13 and 14 I have illustrated a form of pin which, in itself, permits a restricted range of adjustment. The numeral 110 represents either one of the bars forming the platform 47, or one of the plates 41, 42, 43 or the like of the conveyor 34. The pin proper is indicated at 48. It has an integral, downwardly extending, threaded shank 111 by means of which it may be fastened to the support 110 through the use of the nut 112 or the like. The shank 111 is, however, eccentric of the pin 48. By loosening the nut 112 and slightly rotating the pin 48 in either direction, a certain degree of adjustment of the pin position may be obtained. For major adjustment of pin position, the platform elements 47 or the conveyor plate elements may be provided with a plurality of holes for accepting the pin shanks, as will be readily understood.

Modifications may be made in my invention without departing from the spirit of it. Having thus described my invention in a certain exemplary embodiment, what I claim as new and desire to secure by Letters Patent is:

1. In a device for the purposes described a conveyor locating means for an assembly of articulated panels fixing its position in the direction of the length of the conveyor, and locating means for fixing its position laterally of the conveyor,

said last mentioned means serving an additional function as locating means for end pieces to be associated with said assembly of articulated panels, said last mentioned locating means comprising pins lying off the edges of said assembly of articulated panels and adapted to be engaged in holes in said end pieces, and including adhesive applying means located above said conveyor and substantially above lateral marginal portions of said articulated panel assembly, said adhesive applying means comprising a continuous applicator mounted for up and down movement so as to be brought into and out of contact with the said marginal portions of the articulated panel assembly, and means actuated by the articulated panel assembly on said conveyor for moving said adhesive applying means upwardly and downwardly.

2. In a device for the purposes described a conveyor, locating means for an assembly of articulated panels fixing its position in the direction of the length of the conveyor, and locating means for fixing its position laterally of the conveyor, said last mentioned means serving an additional function as locating means for end pieces to be associated with said assembly of articulated panels, said last mentioned locating means comprising pins lying off the edges of said assembly of articulated panels and adapted to be engaged in holes in said end pieces, and including adhesive applying means located above said conveyor and substantially above lateral marginal portions of said articulated panel assembly, said adhesive applying means comprising a continuous applicator mounted for up and down movement so as to be brought into and out of contact with the said marginal portions of the articulated panel assembly, and means actuated by the articulated panel assembly on said conveyor for moving said adhesive applying means upwardly and downwardly, said moving means being electrically actuated, and said control means comprising a pair of switches in parallel, each switch having an actuating means contacting said assembly of articulated panels, one of said contacting means being located before and the other behind the said applicator in the direction of movement of said conveyor.

3. In a device for the purposes described a conveyor, locating means for an assembly of articulated panels fixing its position in the direction of the length of the conveyor, and locating means for fixing its position laterally of the conveyor, said last mentioned means serving an additional function as locating means for end pieces to be associated with said assembly of articulated panels, said last mentioned locating means comprising pins lying off the edges of said assembly of articulated panels and adapted to be engaged in holes in said end pieces, and including adhesive applying means located above said conveyor and substantially above lateral marginal portions of said articulated panel assembly, said adhesive applying means comprising a continuous applicator mounted for up and down movement so as to be brought into and out of contact with the said marginal portions of the articulated panel assembly, and means actuated by the articulated panel assembly on said conveyor for moving said adhesive applying means upwardly and downwardly, said moving means being electrically actuated, and said control means comprising a pair of switches in parallel, each switch having an actuating means contacting said assembly of articulated panels, one of said contacting means

being located before and the other behind the said applicator in the direction of movement of said conveyor, said last mentioned locating means being associated with a platform on which said articulated panel assembly rests, said platform being made up of strips extending in the direction of the length of said conveyor, and separated laterally thereof, and said actuating means engaging said assembly of articulated panels in positions intermediate said strips.

4. In a device for the purposes described a conveyor, locating means for an assembly of articulated panels fixing its position in the direction of the length of the conveyor, and locating means for fixing its position laterally of the conveyor, said last mentioned means serving an additional function as locating means for end pieces to be associated with said assembly of articulated panels, said last mentioned locating means comprising pins lying off the edges of said assembly of articulated panels and adapted to be engaged in holes in said end pieces, and including adhesive applying means located above said conveyor and substantially above lateral marginal portions of said articulated panel assembly, said adhesive applying means comprising a continuous applicator mounted for up and down movement so as to be brought into and out of contact with the said marginal portions of the articulated panel assembly, and means actuated by the articulated panel assembly on said conveyor for moving said adhesive applying means upwardly and downwardly, said moving means being electrically actuated, and said control means comprising a pair of switches in parallel, each switch having an actuating means contacting said assembly of articulated panels, one of said contacting means being located before and the other behind the said applicator in the direction of movement of said conveyor, and pressing means extending in the direction of the length of said conveyor and located so as to overlie the lateral marginal portions of said articulated panel assembly.

5. In a device for the purposes described a conveyor, locating means for an assembly of articulated panels fixing its position in the direction of the length of the conveyor, and locating means for fixing its position laterally of the conveyor, said last mentioned means serving an additional function as locating means for end pieces to be associated with said assembly of articulated panels, said last mentioned locating means comprising pins lying off the edges of said assembly of articulated panels and adapted to be engaged in holes in said end pieces, and including adhesive applying means located above said conveyor and substantially above lateral marginal portions of said articulated panel assembly, said adhesive applying means comprising a continuous applicator mounted for up and down movement so as to be brought into and out of contact with the said marginal portions of the articulated panel assembly, and means actuated by the articulated panel assembly on said conveyor for moving said adhesive applying means upwardly and downwardly, said moving means being electrically actuated, and said control means comprising a pair of switches in parallel, each switch having an actuating means contacting said assembly of articulated panels, one of said contacting means being located before and the other behind the said applicator in the direction of movement of said conveyor, said last mentioned locating means being associated with a platform on which said articulated panel assembly rests, said platform

11

being made up of strips extending in the direction of the length of said conveyor, and separated laterally thereof, and said actuating means engaging said assembly of articulated panels in positions intermediate said strips, and pressing means extending in the direction of the length of said conveyor, and located substantially above the lateral marginal portions of said articulated panel assembly and above the strip means making up part of said platform.

6. In a device for assembling composite carton blanks, a conveyor for moving the rudimentary carton parts in a predetermined path of travel, laterally extending locating means on said conveyor for fixing the position of said rudimentary parts in the direction of the length of said conveyor, and longitudinally extending locating means for fixing the position of the rudimentary parts laterally of the conveyor, said last mentioned means comprising pins lying off opposite side edges of said rudimentary parts, said pins being of a height greater than the thickness of said rudimentary parts and adapted to additionally engage holes in additional carton parts when said additional carton parts are associated with said rudimentary parts in overlapping relation, said pins serving to align said additional parts both longitudinally and laterally with respect to said rudimentary parts, platform means on said conveyor and underlying said rudimentary parts, said pins being mounted on said platform means, and adhesive applying means located above said conveyor and substantially above lateral marginal portions of said rudimentary parts, said adhesive applying means comprising an applicator mounted for movement so as to be brought into and out of contact with the said marginal portions of the rudimentary parts and means actuated by the forward movement of the rudimentary parts on said conveyor for moving said adhesive applying means into and out of contact with said rudimentary parts.

7. In a device for assembling composite carton blanks, a conveyor for moving the rudimentary carton parts in a predetermined path of travel, laterally extending locating means on said conveyor for fixing the position of said rudimentary parts in the direction of the length of said conveyor, and longitudinally extending locating

12

means for fixing the position of the rudimentary parts laterally of the conveyor, said last mentioned means comprising pins lying off opposite side edges of said rudimentary parts, said pins being of a height greater than the thickness of said rudimentary parts and adapted to additionally engage holes in additional carton parts when said additional carton parts are associated with said rudimentary parts in overlapping relation, said pins serving to align said additional parts both longitudinally and laterally with respect to said rudimentary parts, platform means on said conveyor and underlying said rudimentary parts, said pins being mounted on said platform means, adhesive applying means located above said conveyor and substantially above lateral marginal portions of said rudimentary parts, said adhesive applying means comprising an applicator mounted for movement so as to be brought into and out of contact with the said marginal portions of the rudimentary parts and means actuated by the forward movement of the rudimentary parts on said conveyor for moving said adhesive applying means into and out of contact with said rudimentary parts, and pressing means extending in the direction of the length of said conveyor and located so as to overlie the lateral marginal portions of said rudimentary parts, said pressing means adapted to press together the rudimentary parts and the additional parts while supported on said platform.

FRANK DAVID BERGSTEIN.

REFERENCES CITED

35 The following references are of record in the file of this patent:

UNITED STATES PATENTS

Number	Name	Date
40 1,018,948	Walser	Feb. 27, 1912
1,293,782	Hren et al.	Feb. 11, 1919
1,555,767	Spencer	Sept. 29, 1925
1,922,412	Allen et al.	Aug. 15, 1933
2,022,371	Eisenlohr	Nov. 26, 1935
45 2,036,975	Wilkins	Apr. 7, 1936
2,071,003	Scholz	Feb. 16, 1937
2,135,755	Lawshe	Nov. 8, 1938
2,266,171	Davis	Dec. 16, 1941
2,331,525	Walker et al.	Oct. 12, 1943