Aug. 16, 1966 H. G. GENTRY 3,266,389

METHOD FOR FORMING CARRIER HAVING CUSHIONING PARTITION

Original Filed Sept. 22, 1961 5 Sheets-Sheet 1

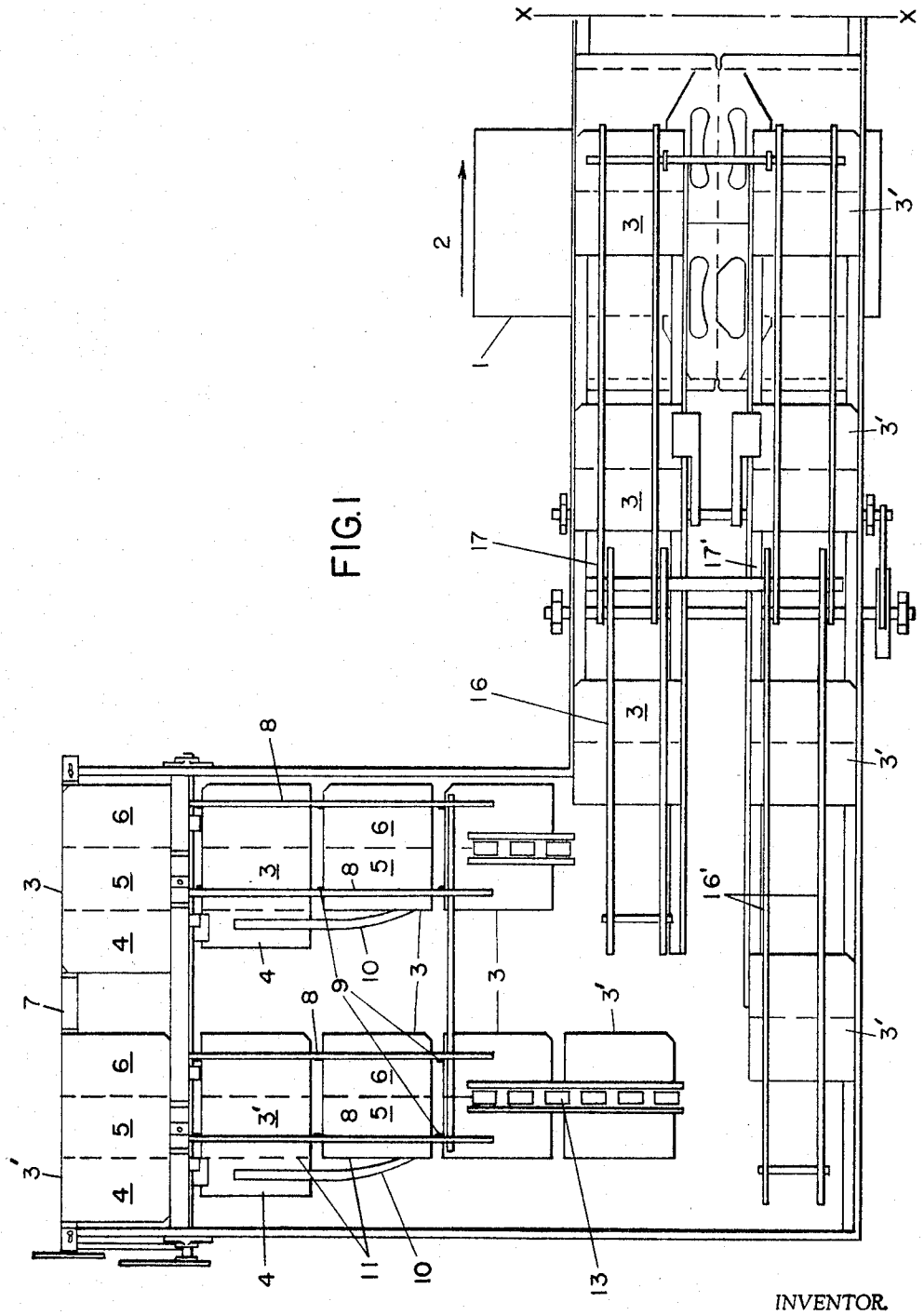


FIG. 1

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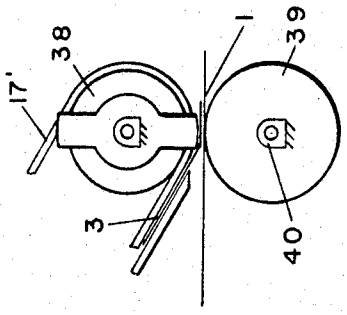


FIG. 3

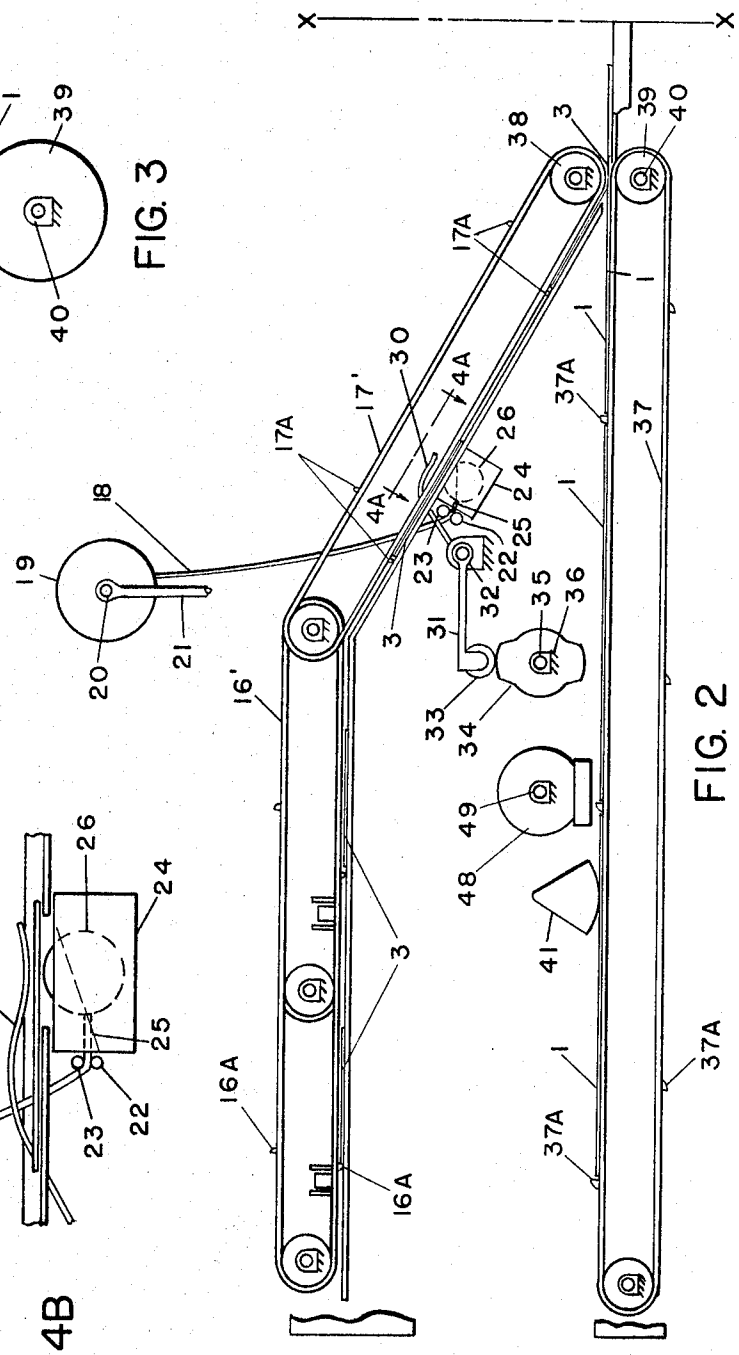


FIG. 2

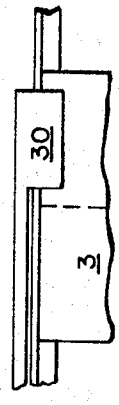


FIG. 4A

FIG. 4B

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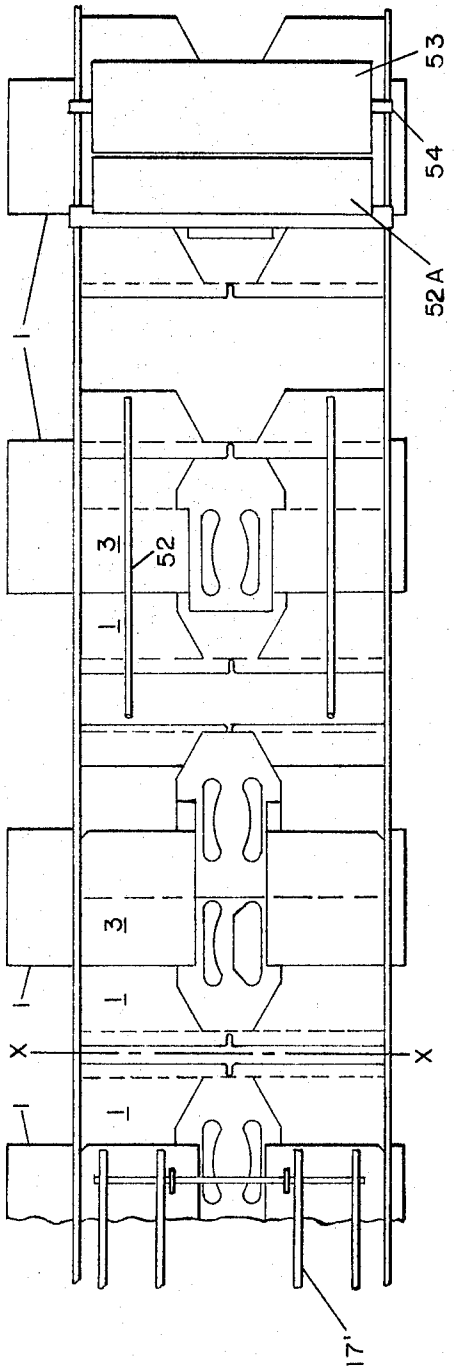


FIG. 5B

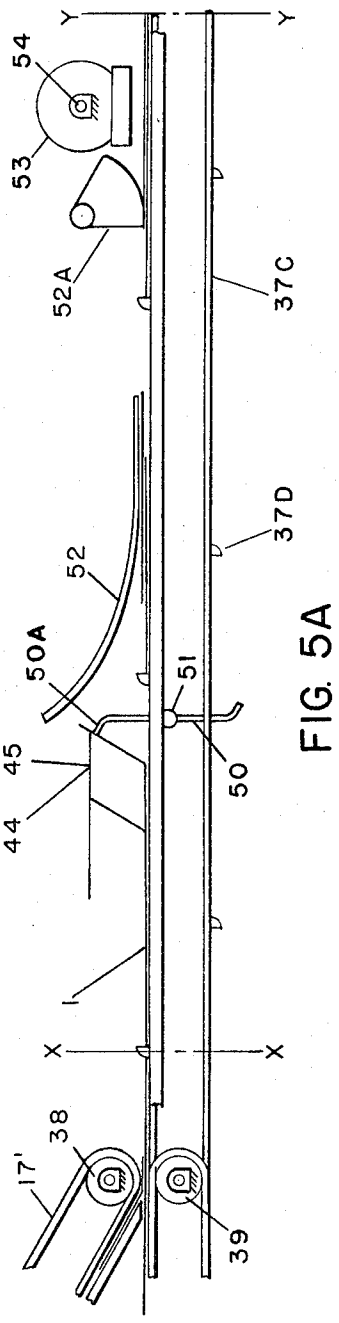


FIG. 5A

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METHOD FOR FORMING CARRIER HAVING CUSHIONING PARTITION

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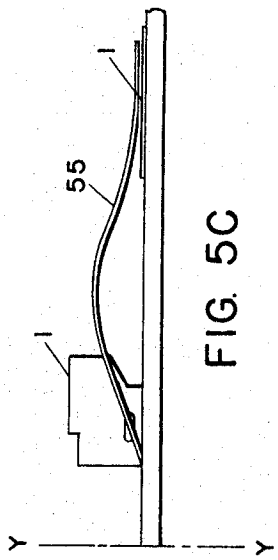


FIG. 5C

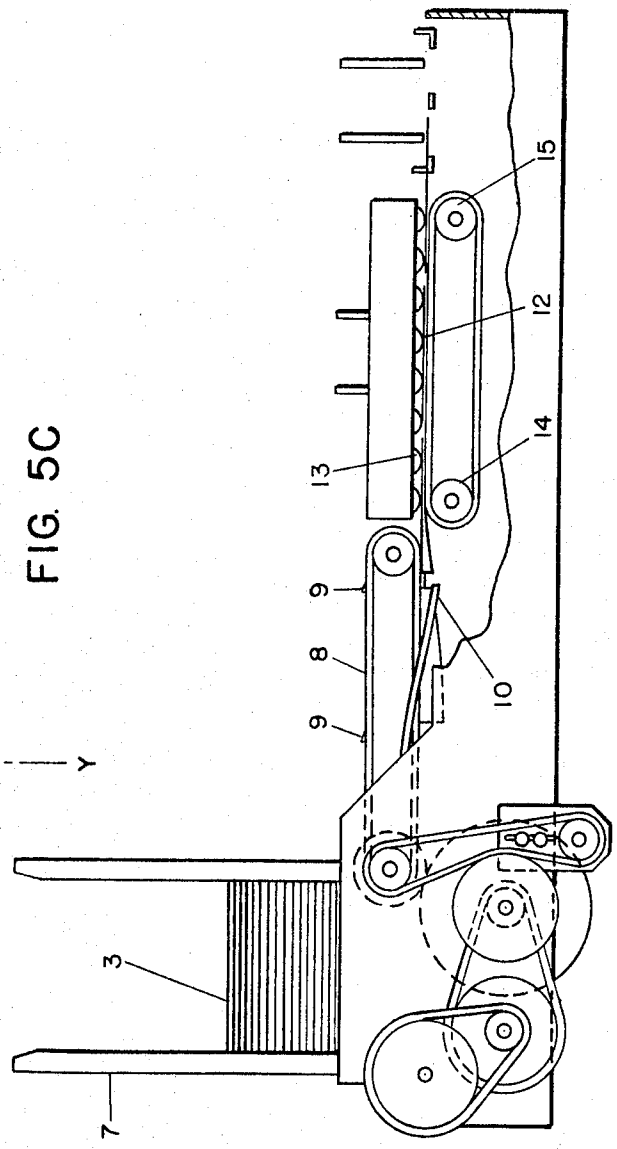


FIG. 6

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METHOD FOR FORMING CARRIER HAVING CUSHIONING PARTITION

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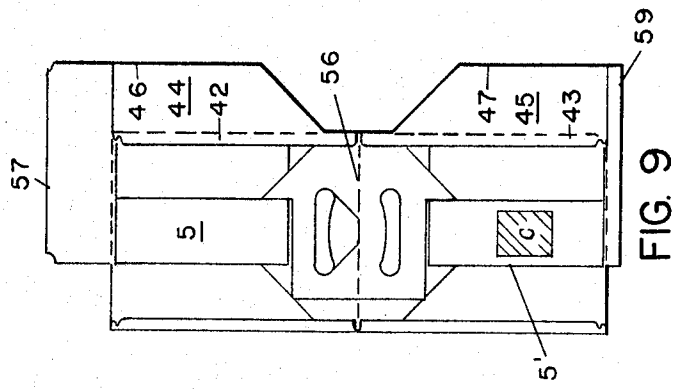


FIG. 9

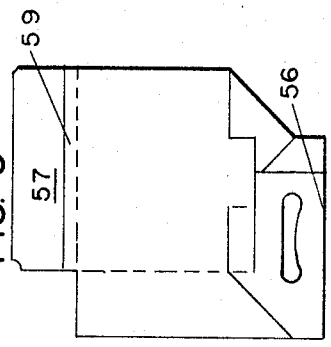


FIG. 10

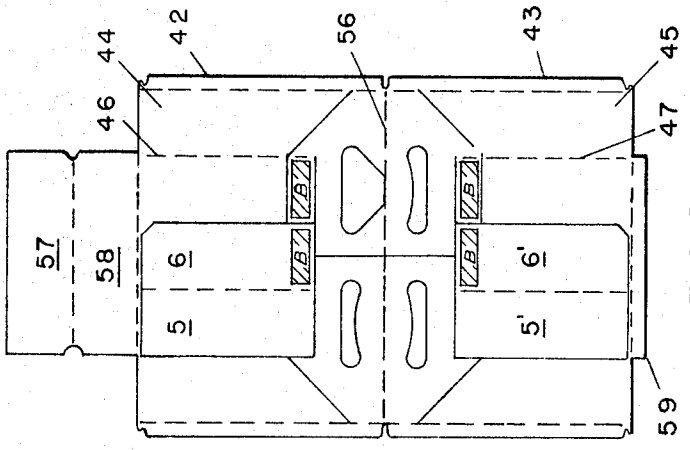


FIG. 8

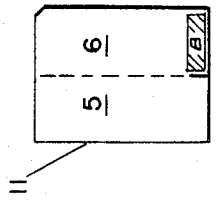


FIG. 12

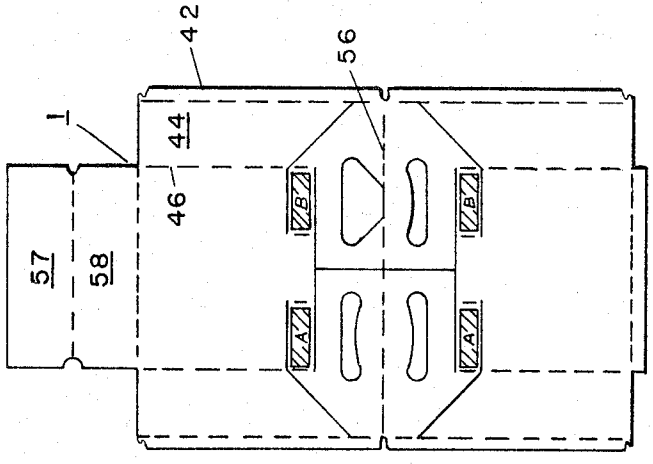


FIG. 7

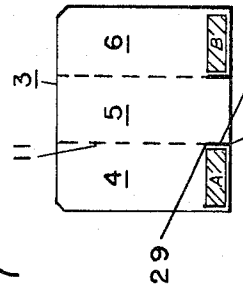


FIG. 11

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United States Patent Office 3,266,389 Patented August 16, 1966

3,266,389

METHOD FOR FORMING CARRIER HAVING CUSHIONING PARTITION

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Original application Sept. 22, 1961, Ser. No. 140,045, now Patent No. 3,203,324, dated Aug. 31, 1965. Divided and this application July 21, 1965, Ser. No. 457,892
4 Claims. (Cl. 93—36)

This application is a division of application Ser. No. 140,045, filed September 22, 1961, now Patent 3,303,324, issued August 31, 1965.

This invention relates to a method for forming a carrier preferably of paperboard in which a cushioning partition is secured, the main body of the carrier being formed from a main blank and the cushioning partition being multi-panelled and being formed from a separate blank.

In Patent 2,537,452, issued January 9, 1951, and owned by the assignee of this invention, a sturdy and reliable carrier is disclosed which is constructed of a single paperboard blank and which is specially adapted to keep board waste at a minimum. This type of carrier can be manufactured in quantity at reasonable cost and is particularly well suited for use with certain articles to be packaged, such for example, as soft drinks and is commonly referred to as a "strap" style carrier, due to the shallowness of its transverse partitions.

In Patent 2,688,421, granted September 7, 1954, and owner by the assignee of this invention, a carton is disclosed and claimed which is somewhat similar to the carrier disclosed and claimed in Patent 2,537,452. The carrier of Patent 2,688,421, however, is of the type wherein the medial and transverse partitions are substantially coextensive with the carrier side walls and is therefore commonly known as "full depth" type of carrier. As will be readily apparent, the so-called full depth carrier is of a more rugged construction than the so-called "strap" style carrier and naturally is more costly to manufacture.

In accordance with U.S. application Serial No. 7,820, filed February 10, 1960, now Patent 3,017,054, issued January 16, 1962, and assigned to the assignee of this invention, a cushioning insert is secured into a carrier constructed along the lines of the aforementioned Patent 2,537,452 and the insert is secured into the carrier after the formation of the carrier by mechanical locking means. A carrier in which the cushioning partition is secured into the main portion of the carrier by the method of this invention is disclosed and claimed in U.S. application Serial No. 124,405, filed July 17, 1961, now Patent 3,083,865, issued April 2, 1963, and assigned to the assignee of this invention.

A principal object of this invention is to provide an improved method whereby a cushioning partition insert is formed into the main structural elements of a "strap" style carrier as an integral part of the process of forming the carrier itself rather than as a separate operation.

Another object of this invention is to provide an improved method for forming a carrier of the type disclosed and claimed in the above mentioned Patent 3,083,865 by the expedient of using not quick-setting glue to form an initial bond between the cushioning partition and the main body of the carrier so that the two may be formed together as a simultaneous operation.

The invention in one form comprises a method which is specially adapted to fold one panel of a multi-panellel cushioning partition relative to the remaining panels thereof, which then applies a quick-setting hot glue to such one panel of the cushioning partition, which thereafter forces such panel of the cushioning partition into the firm contact making secure engagement with a part of the main body of the carrier while in flat separate blank form and which then completes the formation of the carrier with its cushioning partition.

For a better understanding of the invention, reference may be had to the following detailed description taken in conjunction with the accompanying drawings in which FIG. 1 is a plan view of one end of a machine embodying the present invention; FIG. 2 is a side view of that portion of the machine depicted in FIG. 1; FIG. 3 is an enlarged fragmentary view of the right hand portion of that part of the machine depicted in FIG. 2; FIGS. 4A and 4B are top and side fragmentary views of a portion of the machine depicted in FIG. 2, FIG. 4A being taken on line 4A–4A of FIG. 2 and FIG. 4B being a side view of FIG. 4A; FIG. 5A is a side view of another portion of the machine which forms a continuation of the right hand end of FIG. 2 beginning with line X—X; FIG. 5B is a plan view of FIG. 5A; FIG. 5C is a continuation of FIG. 5A beginning at line Y—Y; FIG. 6 is an end view taken from the left hand end of the machine as depicted in FIG. 1; FIGS. 7–10 inclusive are plan views of a carrier formed on the machine; and in which FIGS. 11 and 12 are plan views of the multi-panelled cushioning partition which is formed into the carrier of FIGS. 7–10 by the machine and method of this invention.

With reference to FIG. 1, the flat main body of the blank is designated generally by the numeral **1**. The blank **1** is moved in the direction of arrow **2** and is in the condition generally depicted in FIG. 7 at the stage of manufacture represent in FIG. 1. It will be understood that the blank **1** is received into the machine from a hopper not shown but which is disposed at the left hand end of the machine and which is fed underneath the structure in FIG. 1.

From FIG. 11 it will be understood that the cushioning partition generally designated by the numeral **3** comprises three panels designated by the numerals **4**, **5** and **6**. Also it is apparent from FIG. 11 a shade area is designated on panel **4** by the letter A and another shade area is designed on panel **6** by the letter B. Thus it will be understood that the method of this invention is adapted to secure to portion A on each of two cushioning partitions **3** to the parts designated A in FIG. 7 and similarly to secure parts B of two cushioning partitions to areas B of the main body of the blank designated by the numeral **1**.

With reference to FIGS. 1 and 6, a hopper structure generally designated by the numeral **7** is arranged to rereceived two stacks of partition blanks **3** and **3'**. A single cushioning blank **3** is drawn from the bottom of each stack by a rotary disc on which a rubber shoe is formed in conventional manner. This blank feeding mechanism is old and is not depicted in the drawings. Suffice it to say that a pair of blanks **3** are fed simultaneously from their respective stacks of blanks and carried along toward the right as viewed in FIG. 6 by means of a conveyor belt **8** on which abutments **9** are formed. Movement toward the right as viewed in FIG. 6 is effected due to the engagement of a particular abutment **9** with the trailing edge of the associated blank **3**. As the blank moves toward the right as viewed in FIG. 6, panel **4** of each insert engages a guide **10** which folds the panel **4** downwardly and generally underneath panel **5** along the fold line **11** which separates panels **4** and **5**. Thereafter the blank moves into engagement wtih the upper reach of conveyor element **12** above which a plurality of weighted rollers **13** are mounted. Belt **12** is arranged so that its upper reach moves toward the right as viewed in FIG. 6 and of course such movement is about the belt pulleys **14** and **15** which are driven by conventional means.

As is best shown in FIG. 1 the left hand blank **3'** is moved until it comes under the control of conveyor **16'** whose operating reach travels from left to right as viewed

in FIGS. 1 and 2. In like fashion the cushioning blank 3 moves forwardly as viewed in FIG. 1 until it comes under the control of the operating reach of conveyor 16. Tabs 16A on conveyor 16 and 16' engage and push the inserts. The system is so synchronized that the pair of blanks 3 and 3' are oppositely disposed from each other and move together along the conveyors 16 and 16' and then subsequently move underneath and under control of downwardly extending conveyors 17 and 17' on which tabs 17A are mounted.

For the purpose of applying hot glue to area A of panel 4 of each blank 3, 3' a film of quick-setting glue 18 is mounted on a roller 19 supported by a shaft 20 mounted on fixed structure 21. Film 18 is fed between a pair of rollers 22 and 23 which feed the glue into a heated glue pot 24. The glue in glue pot 24 normally is disposed at the level indicated by the line 25, for example. Rotatably mounted so that a part thereof is always immersed within the glue pot 24 is a glue applicator 26 which is spaced relative to the path of movement of inserts 3 and 3' and which is moved over to swab the area of each insert 3, 3' as movement down conveyors 17 and 17' progresses.

Glue film 18 and glue 24 are of the quick setting variety in order to form a quick bond between the blanks 3, 3' and the blank 1. It is necessary to prevent undesired application of the glue to any areas except the area designated by the letter A. To this end of the inserts 3 are moved in spaced relation to applicator 26. If desired, the fold line 11 may take the form of a slit 27 from the edge 28 of the blank to the point designated at 29 and in this way the blank may be rendered slightly easier to manipulate. Also the slit may serve as an aid in accommodating minor maladjustment of the insert 3 relative to the main body of the blank. It will be understood that the slits 27 may be formed in the fold line 11 and also, if desired, in the fold line separating panels 5 and 6. Such slits are not necessary, however, and should be regarded as optional features. Thus panel 4, which is folded underneath panel 5, moves into the region of the glue applicator 26. The separator arm designated in the drawings by the numeral 30 moves into engagement with panel 5. Element 30 is moved downwardly in synchronism with the operation of the machine by lever 31 which is mounted on a fixed pivot 32 and which at its left hand end is provided with a roller 33. Roller 33 rides on and is controlled by cam 34 driven in synchronism with the machine and mounted on a shaft 35 which is secured to a supporting structure 36 mounted on the frame of the machine. Thus element 30 forces area A of panel 5 into contact with adhesive applicator 26.

Having applied glue to the inserts 3 and 3' as described above in connection with FIG. 2 it is then only necessary to affix part A of the two blanks 3, 3' into secure contacting relation to part A of the blank 1 which is being moved forwardly toward the right as depicted in FIGS. 1 and 2 by the conveyor belt designated by the numeral 37 and its tabs 37A. The operation is depicted best in the fragmentary enlarged view designated as FIG. 3. At the instant depicted in FIG. 3 the cushioning inserts 3 and 3' are brought into engagement with the single carton blank designated by the numeral 1. A roller 38 forces the inserts 3 and 3' into secure engagement with the main blank 1 which is supported at that point by a roller 39 mounted on a shaft 40 which is supported by the frame of the machine.

Element 30 and associated parts are shown in some detail in FIGS. 4A and 4B.

The condition of the blank after the manufacturing operation has proceeded to the point described above is depicted in FIG. 8.

For the purpose of affixing the areas B of the cushioning blanks 3 and 3' to the strap designated by the letter B, it is necessary to fold the blank as depicted in FIG. 8 into the condition depicted in FIG. 9 so that the area B designated in FIG. 8 will come into contact with the corresponding areas of the cushioning blanks. The glue used to form the bond between the areas designated B on the blank 1 and on the cushioning blanks 3 is applied to blank 1 by the glue wheel designated in FIG. 2, for example, by the numeral 41. Since glue applied by the applicator 41 which receives glue from the glue wheel 48 on shaft 49 and is applied in conventional fashion and since such glue is of the slow setting variety it may be applied to the blank 1 before the above described operation is performed by the compression rolls 38 and 39 whereby the cushioning blanks are initially secured to the main blank 1. It will be understood that in order to form the blanks into the position depicted in FIG. 9 from that depicted in FIG. 8 it is necessary to fold the end flaps 42 and 43 over into contact with the end panels 44 and 45 and to swing the end panel 44 along the fold line 46 and the end panel 45 along the fold line 47. At such time the straps designated by the letters B swing into secure contacting engagement with the corresponding areas of panels 6 respectively. The above described folding operation is disclosed in considerable detail in the aforementioned Patent 3,017,054.

The particular apparatus of the machine by which the above described folding operation is effected, i.e., whereby the structure of FIG. 8 is formed into the arrangement depicted in FIG. 9, is depicted in FIG. 5A and designated by the numeral 50. This element 50 is mounted on a shaft 51 and is driven in synchronism with the machine. As shown in FIG. 5A the upper end of the rotatable element 50 is in engagement with the panels 44 and 45 of the main body of the carrier and the folding operation is in progress.

The flaps 42 and 43 are folded initially by the guide elements designated in FIG. 5A by the numeral 52.

Once the carrier is folded into the form depicted in FIG. 9 by the elements 50 and 52 it is necessary to affix a spot of glue to one of the inserts such as 5 or 5' and this operation is effected by the glue applicator 52A which receives glue from glue wheel 53 which is rotatably mounted on shaft 54 and which is driven in synchronism with the machine. Glue applied by the applicator 52A is designated in FIG. 9 by the shaded area designated by the capital letter C. For the purpose of folding the carrier depicted in FIG. 9 into the condition depicted in FIG. 10 the guide element depicted in FIG. 5C and designated by the numeral 55 is utilized. This operation simply causes the carrier depicted in FIG. 9 to be folded along its medial fold line 56 so that it occupies the position depicted in FIG. 10.

It is deemed unnecessary to describe in detail the particular operation whereby the bottom panels 57 and 58 are folded and glued to form a unitary bottom panel with the lap panel 59, since such operation is well known and forms no part of the present invention.

While a particular method has been shown and described, it will be understood that the invention is not limited thereto and it is intended in the appended claims to cover all such changes and modifications as fall within the true spirit and scope of the invention.

What I claim as new and desire to secure by Letters Patent of the United States is:

1. A method of securing one panel of a multi-panelled cushioning partition into firm engagement with a part of a carrier comprising folding said one panel into flat face contacting relation with a second panel of said multi-panelled cushioning partition, applying adhesive means to an exposed part of said one panel, and subsequently forcing said exposed part of said one panel into firm engagement with said part of said carrier.

2. A method of securing a cushioning insert into a carrier, the insert having a pair of panels whose adjoining edges are interconnected by a fold line extending along said adjoining edges and the carrier having a partition strip interconnected between a side wall and a handle panel, the method comprising folding the pair of panels

into face contacting relation along said adjoining edges, passing said pair of panels along a path adjacent an adhesive applicator but in spaced relation thereto, forcing a part of at least one of said panels into contact with the adhesive applicator, and subsequently forcing said part of said one panel into firm engagement with the partition strip.

3. A method of securing a three panelled cushioning partition into a carrier having a pair of spaced partition strips extending between a side wall and a handle panel comprising folding one panel of said cushioning partition underneath and into flat overlapping relation to a second panel of said cushioning partition, applying glue to a part of the bottom surface of said one panel, forcing said part of said one panel into firm engagement with one of said partition strips, applying glue to the other of said partition strips, and forcing said other of said partition strips into firm engagement with said third panel.

4. A method of securing a three panelled cushioning

partition into a carrier having a pair of spaced partition strips extending between a side wall and a handle panel comprising folding one panel of said cushioning partition underneath and into flat overlapping relation to a second panel of said cushioning partition, applying hot quick-setting glue to a part of the bottom surface of said one panel, forcing said part of said one panel into firm engagement with one of said partition strips, applying cold relatively slow setting glue to the other of said partition strips, and forcing said other of said partition strips into firm engagement with said third panel.

References Cited by the Examiner

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2,942,532	6/1960	Pearce	93—37
3,073,217	1/1963	Spalding et al.	93—52

BERNARD STICKNEY, *Primary Examiner.*