United States Patent

[11] **3,545,801**

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[45] Patented **Dec. 8, 1970**

[54] **BOX CLOSURE FASTENING**
5 Claims, 24 Drawing Figs.

[52] **U.S. Cl.** **292/288;** 229/45; 24/81
[51] **Int. Cl.** **B65d 45/00;** E65c 19/18; A44b 21/00
[50] **Field of Search** ..... 292/288, 258; 229/45, 47; 24/81(BFH)

[56] **References Cited**

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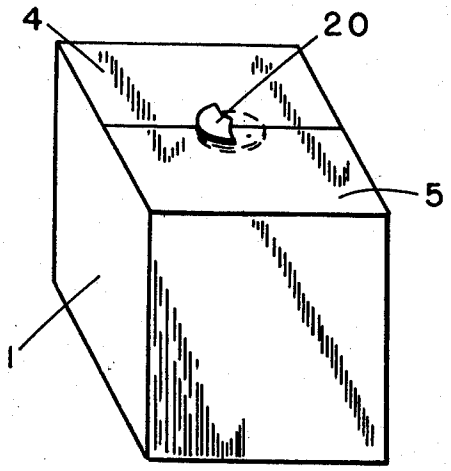
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Primary Examiner—Marvin A. Champion
Assistant Examiner—Edward J. McCarthy
Attorney—John M. Diehl

ABSTRACT: Fastening means at substantially the center of a cardboard of corrugated board box grasps two or preferably four flaps and holds them closed.



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SHEET 1 OF 2

FIG 1

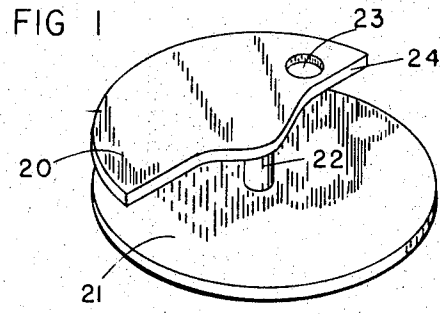


FIG 2

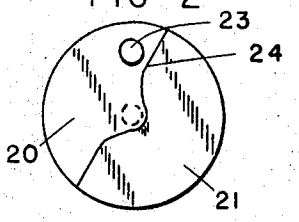


FIG 3

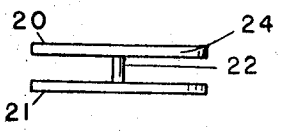


FIG 4

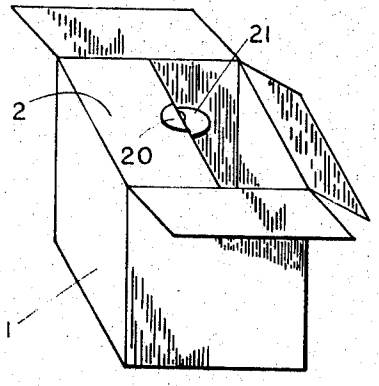


FIG 5

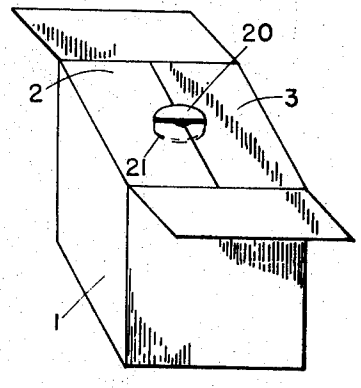


FIG 6

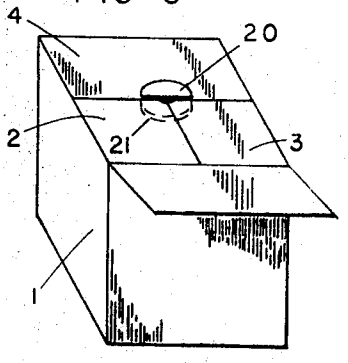


FIG 7

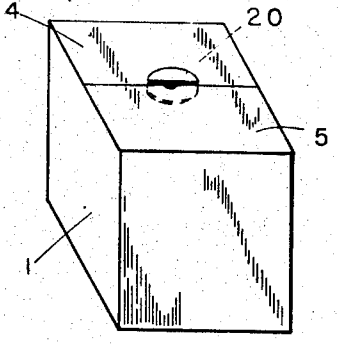


FIG 8

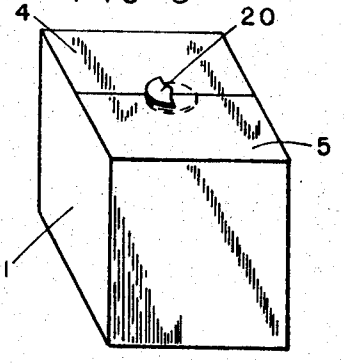


FIG 9

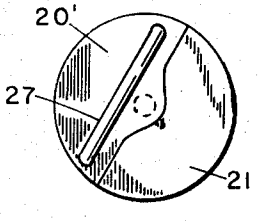
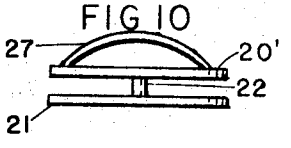


FIG 10



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FIG 11

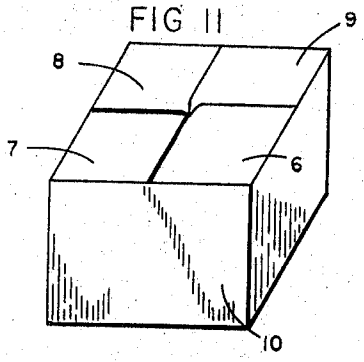


FIG 12

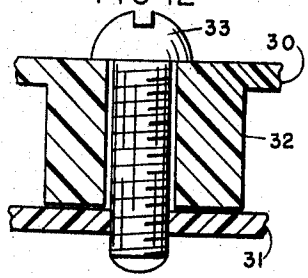


FIG 13

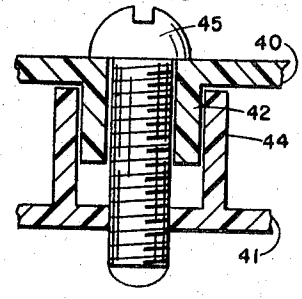


FIG 14

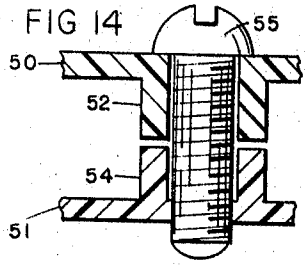


FIG 15

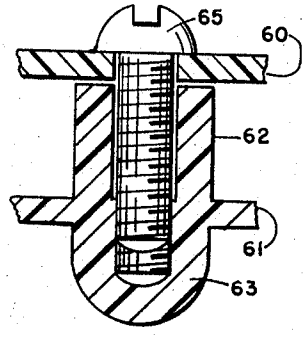


FIG 16

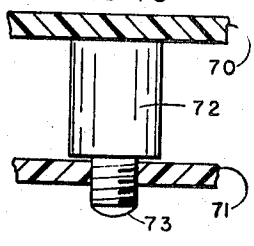


FIG 17

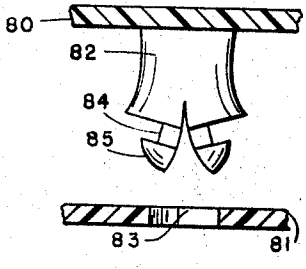


FIG 18

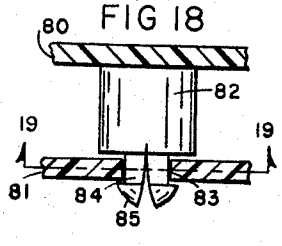


FIG 19



FIG 20

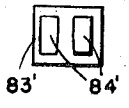


FIG 21

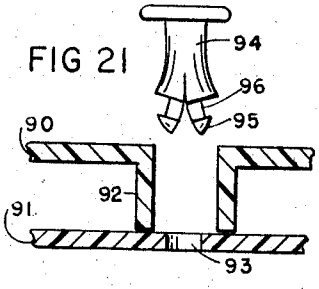


FIG 22

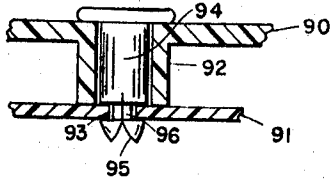


FIG 23

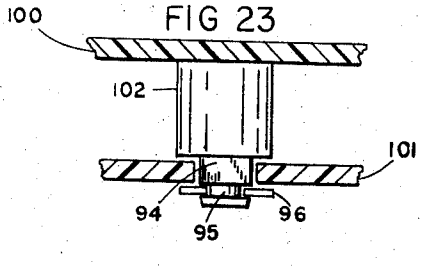
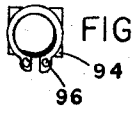


FIG 24



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BOX CLOSURE FASTENING

FIELD

This invention relates to method and means for closing cardboard or corrugated board boxes and more particularly to such method and means applicable to boxes having four inwardly folding upper flaps.

SUMMARY

Boxes made from corrugated board and having four upper flaps are widely used to ship goods from wholesale distribution points to retail outlets. They are then often and widely reused, for example, by homemakers, retailers and others for storage of miscellaneous materials and on occasion for shipment of miscellaneous materials. Such users, or more properly reusers, seldom have at hand suitable means for adequately closing the upper flaps of the box such as the staples, wire wrappings, band wrappings or reinforced adherent tapes of various sorts used by the original shipper. Therefore, it has been common for the reuser to close such a box by depressing one corner of each flap so that it lies under an adjacent flap in the manner shown in FIG. 11, discussed more fully below, which provides in many instances an inadequate and insecure closure but in any event is accomplished by a method which is difficult for many to execute and which in many instances provides or results in considerable deterioration of the flaps due to being folded or bent at corners.

OBJECTS

It is therefore an object of the invention to provide an improved closure for corrugated board boxes having four upper flaps.

A further object is to provide a handy, economic, fastening means which may be used to secure either two opposite flaps or the four upper flaps of such a box in a closed position without exercise of force or ingenuity to securely maintain said flaps closed. Another object is such a closure or more properly fastening means with which said flaps can be secured closed with a simple and inexpert motion which may best be described as "a twist of the wrist."

Other objects will become apparent from the drawings and from the following detailed description in which it is intended to illustrate the applicability of the invention without thereby limiting its scope to less than that of all equivalents which will be apparent to one skilled in the art.

DRAWINGS

In the drawings like reference numerals refer to like parts and:

FIG. 1 is a perspective view of one embodiment;

FIG. 2 is a top view of the embodiment of FIG. 1;

FIG. 3 is a elevation of the embodiment of FIGS. 1 and 2;

FIG. 4 is a perspective view of a box showing a first step in application of the device;

FIG. 5 is a perspective view of the same box showing a second step in the application of the device;

FIG. 6 is a perspective view of the same box showing a third step in the application of the device;

FIG. 7 is a perspective view of the same box showing a fourth step in the application of the device;

FIG. 8 is a perspective view of the same box showing a fifth and final step in the application of the device;

FIG. 9 is a top view of another embodiment;

FIG. 10 is an elevation of the embodiment of FIG. 9;

FIG. 11 is a perspective view of a box illustrating the prior art;

FIG. 12 is a fragmentary cross-sectional view of one embodiment;

FIG. 13 is a cross-sectional fragmentary view of another embodiment;

FIG. 14 is a cross-sectional fragmentary view of another embodiment;

FIG. 15 is a cross-sectional fragmentary view of another embodiment;

FIG. 16 is a cross-sectional fragmentary view of another embodiment;

FIG. 17 is a cross-sectional fragmentary exploded view of another embodiment;

FIG. 18 is a cross-sectional fragmentary view of the assembled embodiment of FIG. 17;

FIG. 19 is a cross-sectional view taken on lines 19–19 in FIG. 18;

FIG. 20 is a view corresponding to FIG. 19 showing a modification thereof;

FIG. 21 is a cross-sectional fragmentary exploded view of another embodiment;

FIG. 22 is a cross-sectional fragmentary view of the assembled embodiment of FIG. 21;

FIG. 23 is a cross-sectional fragmentary view of another embodiment; and

FIG. 24 is a bottom view of the embodiment of FIG. 23.

DESCRIPTION

Referring now to FIGS. 1, 2 and 3 there is shown a fastening device of the invention which may comprise upper substantially flat portion 20, lower substantially flat portion 21 and stem portion 22 joining the aforesaid two portions. The entire device may be made as an integral unit for example by injection molding. Upper portion 20 may be provided with finger hole 23 to facilitate rotating the device by insertion of a finger therein. Portion 21 may have the form of a disc as shown and upper portion 20 may have the form of a disc cut away to provide an edge 24 adjacent stem 22, said edge being adapted to be received between the opposite inner edges of the outer flaps of a box as more fully hereinafter described. Stem portion 22 may attach to lower flat portion 21 substantially at the center thereof if desired, as shown.

The manner in which the device is used is illustrated in FIGS. 4—8. Thus, as shown in FIG. 4, inner flap 2 of box 1 is folded in and a portion of its inner edge is received substantially between member 20 and a portion of member 21 over which member 20 extends. As shown in FIG. 5, inner flap 3 is now folded in so that it passes by edge 24 and the device is then twisted 90° as shown so that the inner flaps are joined by each extending under a portion of member 20 and over a portion of member 21. Now as shown in FIG. 6, one of the outer flaps 4 is folded in and passes by edge 24 to lie against stem 22. Then as shown in FIG. 7, the other outer flap 5 is folded in so that it passes by edge 24 and the device is then again twisted 90° so that portions of member 20 overlie portions of inner edges of each of the outer flaps and portions of member 21 underlie portions of the inner edges of each of the inner flaps, thus effectively fastening the flaps closed in a suitably economical and entirely positive manner.

The effectiveness of the device of the invention is further realized by consideration of the prior art as shown in FIG. 11 wherein the upper flaps of a box are held closed by the insertion of one corner of each flap underneath the next adjacent flap. Thus the corner of flap 7 which is not shown underlies the corner of flap 8 which is shown, the corner of flap 8 which is not shown underlies the corner of flap 9 which is shown, the corner of flap 9 which is not shown underlies the corner of flap 6 which is shown, the corner of flap 6 which is not shown underlies the corner of flap 7 which is shown, all being flaps of box 10.

Referring now to FIGS. 9 and 10, there is shown another embodiment wherein upper substantially flat portion 20′ is provided with a carrying handle 27 and portions 21 and 22 remain unchanged. Due to the presence of such a handle, twisting is easily accomplished and a finger hole would be superfluous.

Portions 20 or 20′ and 21 need not be circular discs as shown but may be polygonal, for example, they may be octagonal or might even be hexagonal or square if desired.

Referring now to FIG. 12, there is shown a modification of the embodiments of FIGS. 1, 2, 3, 9 and 10 wherein the upper and lower portions are held together with a screw. Thus upper portion 30 may be integral with stem portion 32 and may be attached to lower portion 31 by screw 33 threadedly received therein.

Alternatively, as shown in FIG. 13, upper portion 40 may be attached to a stem portion 42 which may be received in a stem portion 44 which is integral with lower portion 41. The portions may be held together by screw 45 threadedly received in part 41.

Another method of fastening the portions together with screw means is shown in FIG. 14 wherein upper portion 50 is integral with a stem portion 52 and lower portion 51 is integral with a stem portion 54. Portions 50 and 51 are held together and portions 52 and 54 are held in abutting relationship by screw 45 received threadedly in member 51.

A variation of the embodiment of FIG. 12 may be provided to prevent the end of the screw from protruding and possibly catching or snagging on adjacent objects. Thus, as shown in FIG. 15, member 61 is provided integral with stem portion 62 and boss 63 and upper portion 60 is attached thereto by screw 65 threadedly received in an internal threaded passage in boss 63.

If desired, an externally threaded member may be made integral with a portion of the device, as shown for threaded portion 73 which is integral with stem portion 72 which is integral with upper portion 70 in the device of FIG. 16. Lower portion 71 is then threadedly received on portion 73.

As shown in the following FIGS., the upper and lower substantially flat portions may be held together with snap fastener means. Thus as shown in FIG. 17, upper portion 80 may be provided with a split stem portion 82 having wedging portion 85 and locking portion 84. Lower portion 81 is provided with hole 83 to receive portions 85 and 84. When assembled as shown in FIG. 18, head 85 is first received in hole 83 and then by reason of biasing outward spring action of the split form of stem portion 82, locking portion 84 is received in hole 83 thereby attaching the portions together.

As shown in FIG. 19, hole 83 and portion 84 may be circular but as shown in FIG. 24, hole 83' and portions 84' may be square.

Alternately as shown in FIG. 21, top portion 90 may be provided with integral stem portion 92 and bottom portion 91 may be provided with small hole 93 to receive separate snap fastener member 94 which may be split at its lower end and have a head portion 95 and locking portion 96 comparable to those described for member 82. Member 94 may be made of metal or plastic. When assembled, the device of FIG. 21 has the form shown in FIG. 22 and portions 90 and 91 are held together by snap fastening means 94.

Referring now to FIG. 23, upper substantially flat portion 100 may be provided with integral stem portion 102 which may be provided at its lower end with a locking square boss portion 94 and groove 95 to receive snap ring 96. Lower substantially flat portion 101 is held onto stem portion 102 by snap ring 96 and portion 94 may be square as shown in FIG. 24 to prevent rotation of portion 101 with respect to portion 100.

The substantially flat portions described herein need not be actually flat but may be somewhat disc-shaped or the like, that is, they may be slightly concave, slightly convex and may be wrinkled, ridged or the like. All such variations in shape are encompassed within the term "substantially flat" as used herein.

It may thus be seen that the invention is broad in scope and includes such modifications as will be apparent to those skilled in the art and is to be limited only by the claims.

I claim:

1 Means to fasten closed the upper flaps of a paperboard box which has two inner flaps extending inwardly from opposite upper edges of the box and two outer flaps extending inwardly from opposite upper edges of the box above said inner flaps, comprising the combination of:

an upper substantially flat portion;

a lower substantially flat portion;

said upper substantially flat portion extending over substantially one-half of said lower portion on one side of the center thereof;

said upper substantially flat portion having one edge adapted to be passed by inner edges of said outer flaps;

a stem portion; and

said stem portion extending from said upper substantially flat portion near said edge to substantially the center of said lower flat portion.

2. The means of claim 1 wherein said upper substantially flat portion is provided with a carrying handle.

3. The means of claim 1 wherein said lower substantially flat portion is substantially a circular disc and said upper substantially flat portion is substantially a cutaway circular disc.

4. The means of claim 1 wherein said upper and lower substantially flat portions are held together with screw means.

5. The means of claim 1 wherein said upper and lower substantially flat portions are held together with snap fastener means.