June 25, 1935. T. H. GAGEN 2,005,991

BOX

Filed Jan. 24, 1934

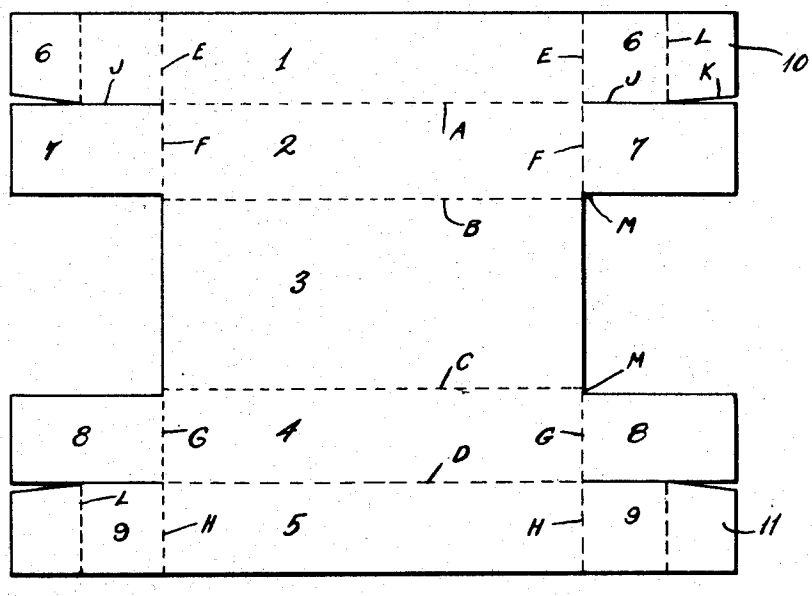


Fig. 1

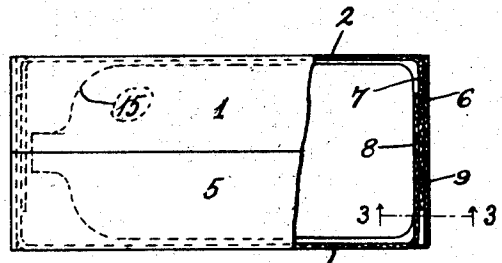


Fig. 2

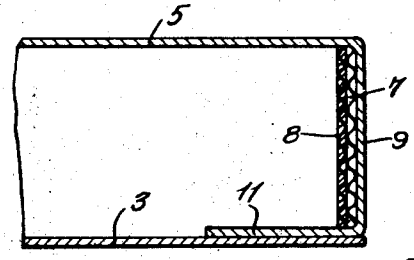


Fig. 3

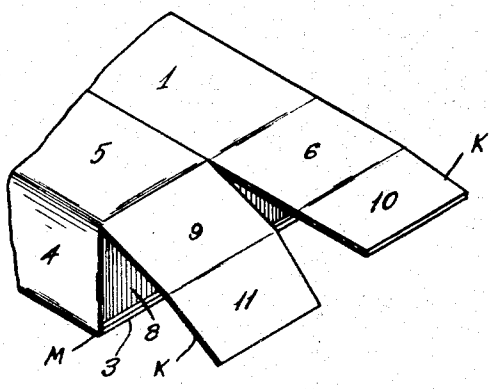


Fig. 4

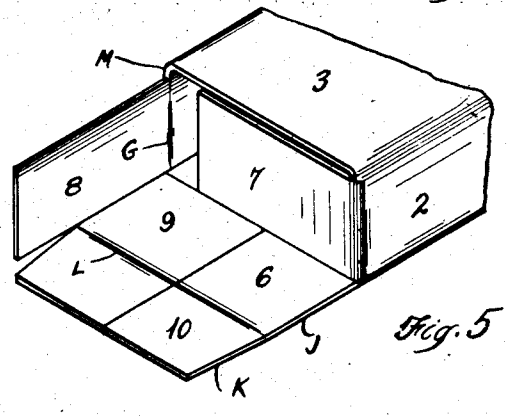


Fig. 5

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Patented June 25, 1935 2,005,991

UNITED STATES PATENT OFFICE

2,005,991

BOX

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Application January 24, 1934, Serial No. 708,098

3 Claims. (Cl. 229—40)

This invention pertains to a box, ordinarily made of fiber board, either corrugated or plain, or other like material, corrugated board being the preferred material at the present time. The invention aims to produce a box which can be made from a single blank, which will be entirely self-fastening without paste, tape, staples or the like, and which, among other uses, will serve effectively as a carrier preferably for a single breakable article of relatively considerable weight, such as a bottle of medicine. Further objects of the invention are to provide such a container having well reenforced ends, thus giving a cushion effect to prevent breakage of the contents; one that will fasten without the use of paste, tape, staples or other securing means, the fastening being entirely by inter-engagement of the various end flaps. Also the arrangement is such that the box can be constructed along one side by bringing together the two side edges of the original blank with a simple abutting joint running the full length of one face of the assembled box which joint will be held firmly closed by the fastening effect of the end flaps without any flap or tape, and cannot bulge open to expose or lose the contents.

To the accomplishment of the foregoing and related ends, said invention, then, consists of the elements hereinafter fully described and particularly pointed out in the claims, the following description and the annexed drawing setting forth in detail certain illustrative embodiments of the invention, these being indicative however, of but a few of the various ways in which the principle of the invention may be employed.

In said annexed drawing:

Fig. 1 is a plan view of the blank, exposing the ultimate inside surface, cuts being illustrated thereon by solid lines and folds by dotted lines; Fig. 2 is a side elevation of a box, closed, showing the contents in position, this view being partly broken away to also show certain features of the end construction; Fig. 3 is a section taken on the line 3—3, Fig. 2, on a larger scale than Fig. 2 and omitting the contents; Fig. 4 is an end view of the box, partly closed, illustrating certain features of the end construction; and Fig. 5 is a view similar to Fig. 4, but inverted with respect thereto, showing the first step of closing.

Referring now to Fig. 1, the blank is integral, of the general form of an H, comprising body sections 1, 2, 3, 4 and 5, separated by scores or folding lines A, B, C, and D, on the longer sides. The body sections 1, 2, 4 and 5 each have two end extensions 6, 6, 7, 7, 8, 8, and 9, 9, each of which is defined by a score line common with its corresponding body section, such score lines for convenience being designated as E, E, F, F, G, G, and H, H. It will be seen in Fig. 1 that each set of these score lines is in fact the same line, which is completely cut away along the end of the body section 3. Thus the section 3 has no end flaps. The portions 3, 1 and 5 ultimately form faces of the box, and 2 and 4 become sides.

Each end flap 6 is separated from its adjacent flap 7 by a full cut line J in prolongation of the score A and is relieved or cut diagonally back from the flap 7 for about half its length, as indicated at K. The flaps 6 are also scored along the line L parallel to the score E thus bringing the outer end of the flap 6 as a tuck element 10. The free side edges of the flaps 7 and 8 are parallel to but offset as at M a distance approximately equal to the thickness of the material from the score lines B and C, respectively, so that each of these flaps is sufficiently narrower than its corresponding body portion 2 or 4 to allow the flaps 10 to be tucked under in closing the end. The flaps 8 and 9 are formed in all respects to correspond to the flaps 7 and 6, respectively, the outer tuck of the flap 9 being designated as 11 for identification.

The assembly of the formed box will appear from the description below. The exact sequence of operations in making up a box into its closed form is subject to some variation, but ordinarily will be as follows:

Keeping the portion 3 on the work-bench, the blank will be folded upward at a right angle along the lines B and C, and again inward at a right angle along the lines A and D, thus bringing the outer edges of the portions 1 and 5 of the blank into abutment to form one face of the box, as shown in Figs. 2 and 4. The contents, such as the bottle 15, Fig. 2, is inserted and either one of the end flaps 7 or 8 turned in across the end opening, as best seen in Figs. 2 and 5. The other end flap 8 or 7 is then folded over as shown in Fig. 2. Next, the end portions 9 and 6 are bent downward along the lines E and H, as shown in Fig. 4, and further bent along the line L, after which the tucks 10 and 11 are pushed under the space left by the offset M between the flaps 7 and 8 and the body portion 3.

When thus made up it will be seen, particularly from Fig. 3, that the box is firmly and completely closed, whether empty or full. The tucks 10 and 11 are held by the flaps 8 and 7 so that the body portions 1 and 5 are closely held down

and firmly held together. If the material used is of inherent stiffness suitable to the size of the box, the portions 1 and 5 will retain their position and not bulge apart.

Especially when made of the usual corrugated board, the triple thickness at the end, afforded by the length of the flaps 7 and 8 which, in the preferred form overlap almost the entire width of the box, and the elements 6 and 9, provides a slightly yieldable cushion effect, as is well shown in Figs. 2 and 3, thus protecting the contents, as for example when the package is set down on end forcibly.

The mutual friction of the various end elements, plus the direct support afforded to each by its connection to the box body gives a strong and secure end fastening and support which prevents the weight of the contents from forcing open the end of the box even when held upright. That is, the end closure is substantially interlocked by having the free parts of one element adjacent the fixed parts of another, and also by having large overlapping surfaces which cannot slide upon one another without bending or breaking of the box material. In particular, the engagement of the tucks 10 and 11 between the edges of the flaps 7 and 8 and the body portion 3, positively locks the body portions 1 and 5 in their abutting assembled position. On the other hand it is obvious that the box may be opened up, either at an end only, or entirely, without injury and without impairing its availability for re-use.

It will be seen from the foregoing that I have invented a box, particularly adapted to be made of corrugated fiber board or like material, and characterized by simplicity of the blank, simplicity and ease of assembly, and security when assembled.

Other modes of applying the principle of my invention may be employed instead of the one explained, change being made as regards the structure herein disclosed, provided the elements stated by any of the following claims or the equivalent of such stated elements be employed.

I therefore particularly point out and distinctly claim as my invention:

1. In a box of the character described, a face portion, side elements each hinged to said face portion and each having hinged thereto a tongue adapted to overlap with the corresponding tongue on the opposite side element, another face element comprising two abutting parts, and an end flap secured to each of said partial face elements and no wider than the element to which it is secured and adapted to tuck between an edge of each of said flaps and the first-named face portion.

2. A box comprising face, sides, and a back of two abutting members, flaps on said sides adapted substantially to overlie the end opening and each other, tongues on said back members not wider than their respective members and adapted each to overlap parts of both said flaps and end tucks on said tongues not wider than their respective tongues, said tucks being adapted to slide between said face and the edges of said overlapping tongues.

3. A box comprising face, sides, and a back of two abutting members, flaps on said sides of side width minus thickness of the material, said flaps being adapted to overlie the end opening from side to side, tongues on said back members each as wide as the back member to which it is attached, said tongues being adapted to cover the end from back to face, and a tuck on each tongue adapted to engage over the edges of the side flaps and beneath the face.

THOMAS H. GAGEN.