Sept. 16, 1952 R. McREARY 2,610,782

INTERLOCKING SECTIONS FOR PAPER BOXES

Filed Jan. 28, 1950 2 SHEETS—SHEET 1

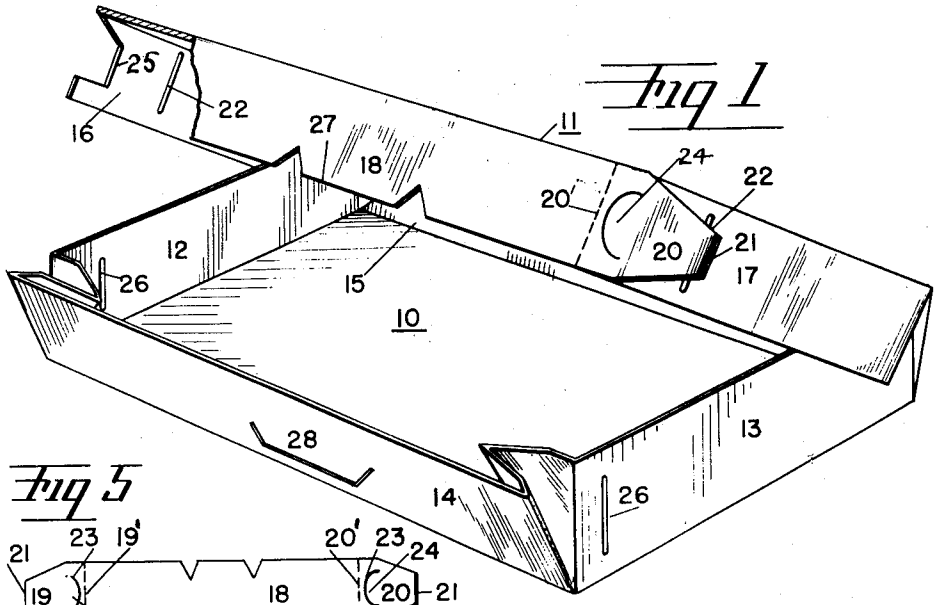


Fig 1

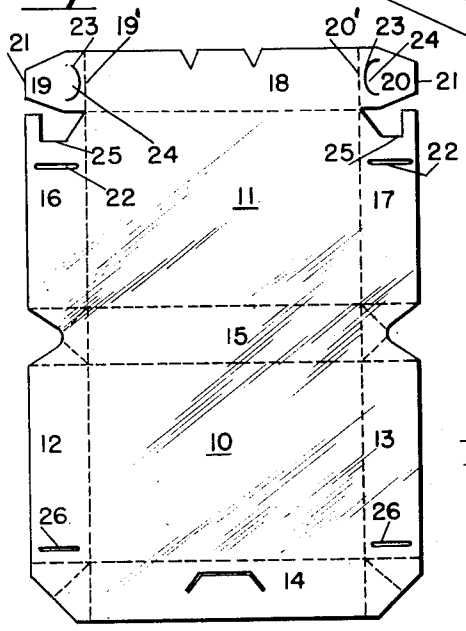


Fig 5

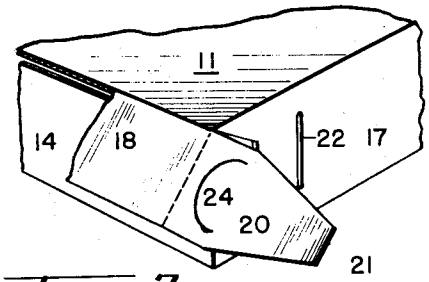


Fig 2

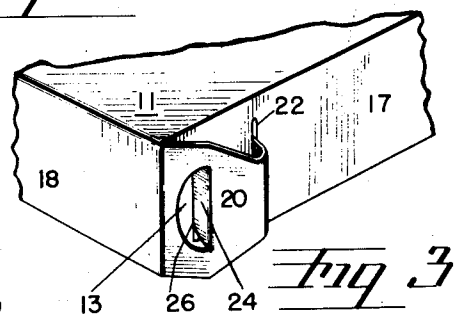


Fig 3

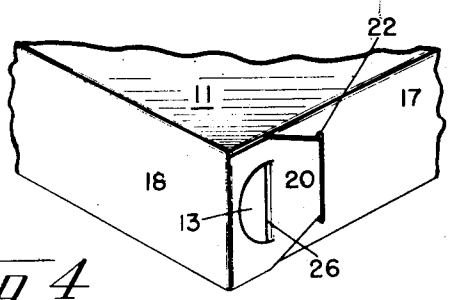


Fig 4

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INTERLOCKING SECTIONS FOR PAPER BOXES

Filed Jan. 28, 1950 2 SHEETS—SHEET 2

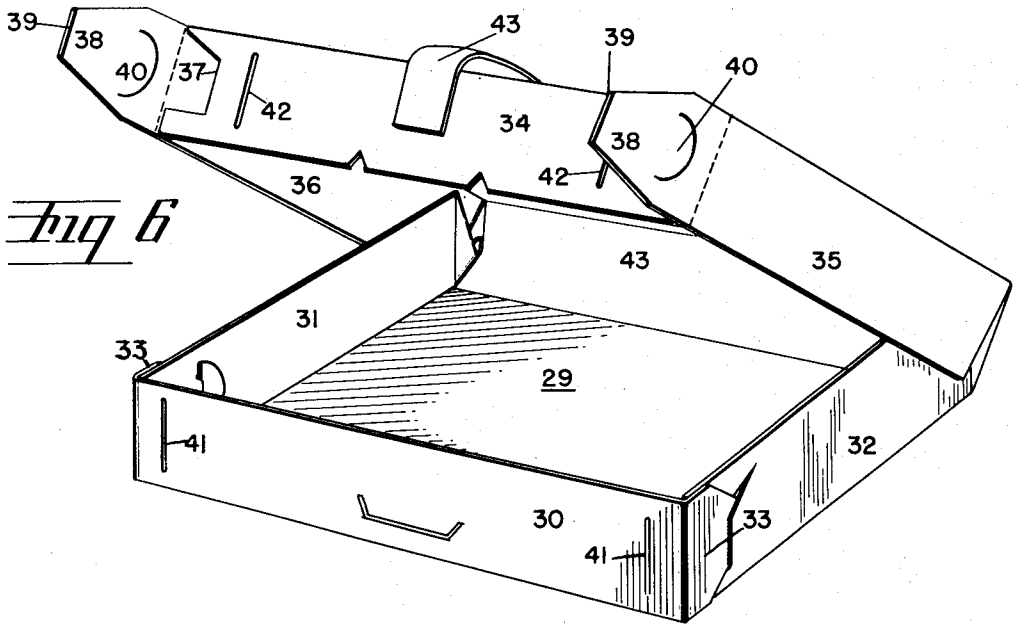


Fig 6

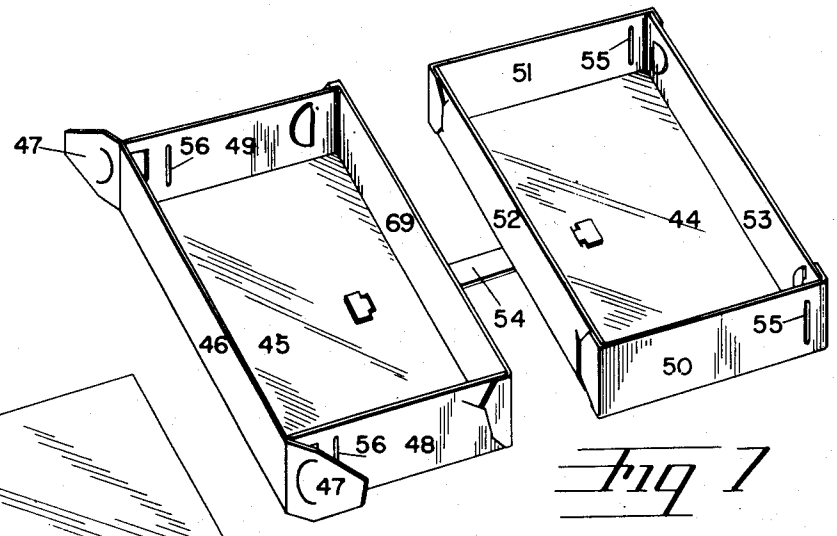


Fig 7

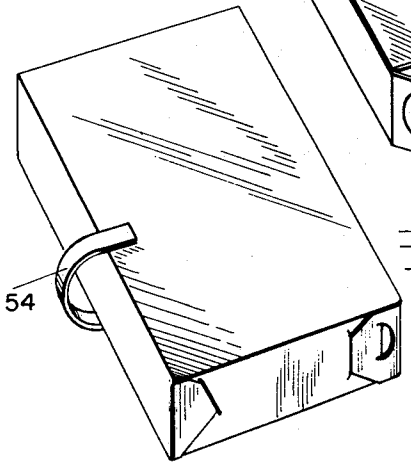


Fig 8

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INTERLOCKING SECTIONS FOR PAPER BOXES

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6 Claims. (Cl. 229—33)

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This invention relates to boxes made from paperboard or similar material, and more particularly, relates to boxes of the knock-down type in which either the entire box, or, in modified form, the bottom section and the cover section, is each made from a single blank, thus being of single-piece construction.

With boxes of the above mentioned type it is very desirable to have means whereby one section, for example the cover section, can be secured or locked in closed position with respect to the other section, for example the bottom section, so that the box can function properly as a closed container without requiring the box to be tied with twine or held in closed position by adhesive tape and the like, since, in such case, subsequent opening and closing of the box involves a certain amount of trouble or annoyance. An object of the present invention accordingly is to provide an improved box construction which will include means for locking the box in closed position, that is to say, means for locking the cover section and bottom section together.

Heretofore it has been customary practice, in cardboard boxes having locking means, to employ additional locks for the purpose of interlocking the cover and bottom sections after the corners in each section have been secured. Often this practice necessitates an increase in the size of the blank and additional cost. Another object of this invention is to avoid this by providing dual purpose interlocks at the corners, serving to secure the corners and lock the sections together in one operation.

A further object of the invention is to provide a box construction with such interlocking means as will enable the cover section repeatedly to be locked to and unlocked from the bottom section of the box, and thus enable the box to be closed and opened repeatedly and the cover section to be locked to the bottom section each time the box is closed.

An additional object of the invention is to provide an improved box construction in which such locking or interlocking means will be an integral part of the box and thus made from the same blank as the box.

Another object is to provide an improved one-piece box in which any squeezing or distorting of either section in the bringing of the cover section over the bottom section in the closing of the box, and in the locking of the same will be avoided.

A still further object of this invention is to provide an interlocking box construction which

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will be simple and easy to use and practical and inexpensive to manufacture, and also which will involve no difficulties in the stamping out of the blank for the box in the customary manner from a sheet of cardboard or similar material.

The manner in which these objects and incidental advantages are attained with my invention, and the manner in which my invention can be embodied in a simple and practical box construction will be briefly explained with reference to the accompanying drawings, in which:

Fig. 1 is a perspective view of the box embodying my invention, the box being shown with the cover section partly open;

Fig. 2 is a fragmentary perspective view of a front corner of the same box with the cover section in closed position preparatory to the locking of the box or to the interlocking of the cover to the bottom section of the box;

Fig. 3 is a fragmentary perspective view of the same corner of the box illustrating the manner in which the interlocking of the two sections is performed;

Fig. 4 is a corresponding view showing the interlocking completed;

Fig. 5 is a plan view of the blank for the box of Figs. 1 to 4;

Fig. 6 is a perspective view of a slightly modified form of box in which my invention is carried out in substantially the same manner as the box of the preceding figures, this view showing the box in partly opened position;

Fig. 7 is a perspective view of a further modified box construction in which the bottom section and the cover section are entirely separate but are capable of being locked together by my invention; and

Fig. 8 shows the two sections of the box of Fig. 7 in closed and locked position.

Referring first to Figs. 1 to 5 inclusive, the box construction illustrated in these figures and embodying my invention comprises an integral folding box formed from the single pre-cut and pre-folded blank shown in Fig. 5. The box comprises a bottom section, designated in general by the reference character 10 and a cover section, designated in general by the reference character 11. The bottom section 10 consists of the main bottom wall, a pair of side walls 12 and 13, a front wall 14, and a back wall 15 which is common to bottom and cover sections and which serves as the hinge connection between the two sections. The cover section 11 includes, in addition to the main top wall, the two side walls 16 and 17, and the front wall 18.

In the blank shown in Fig. 5 the broken lines indicate the fold lines on which the blank is folded when the box is set up. The front and side walls of both bottom and cover sections and the common back wall are formed by folding along these fold lines as indicated and since this general form of box construction is old, the setting up of the blank into the box as illustrated in Fig. 1 need not be further described. In this particular box illustrated, the cover section is intended to be closed down on the outside of the bottom section when the box is completely closed. However, in order to provide for the interlocking of the cover and bottom sections, certain modifications are made in the front and side walls of the cover section.

The front wall 18 of the cover section has a pair of identical flaps 19 and 20 (Fig. 5) extending longitudinally from each end and adapted to be folded on the broken lines 19' and 20' respectively so as to overlie portions of the side walls 16 and 17 respectively when the box is completely closed and locked. Each of the flaps 19 and 20 terminates in a tongue-like end 21 and each of the side walls 16 and 17 of the cover section has a slot 22 adapted to receive the tongue end 21 of the flaps 19 or 20 when the box is closed and locked as will presently appear.

A curved slit 23 is made in each of the flaps 19 and 20 so as to form an inner tongue 24 in each flap, and this inner tongue 24, as will be noted from Fig. 5, extends inwardly on the flap, that is to say, extends towards the corner fold line 19' or 20' of the flap, and thus extends in a direction opposite from that in which the end tongue 21 of the particular flap extends.

Each of the side walls 16 and 17 of the cover section has a cut-out portion 25 in the end adjacent the front wall 18. This cut-out section 25 is of sufficient size to extend beyond the boundaries of the corresponding inner tongue 24, when the flap is placed in contact with the side wall, but is not too large to be completely covered by the flap 19 or 20 when these flaps overlie the side walls 16 and 17. Thus when the flaps 19 and 20 are folded back on the corner fold lines 19' and 20', on the outside of the respective side walls 16 and 17 of the cover, the inner tongues 24 of the flaps 19 and 20 will overlie the cut-out portions 25 of the side walls.

A slot 26 (Fig. 5) is cut in each of the side walls 12 and 13 of the bottom section near the front end of the side walls of the bottom section (see also Fig. 1) and the slots 26 are so located that when the cover section is closed down over the bottom section these slots 26 will be positioned inside of the cut-out portions 25 of the overlying side walls of the cover section and will be capable of receiving the respective tongues 24 of the flaps 19 and 20 of the cover section.

The operation of closing the box and interlocking the cover and bottom sections is performed as follows: From the partly open position shown in Fig. 1, the cover section 11 is brought down into the position partly shown in Fig. 2 with the side walls of the cover section overlying the side walls of the bottom section respectively and with the front wall 18 of the cover section in front of the front wall 14 of the bottom section. The cover flap 20 is then bent around in the manner illustrated first in Fig. 3 and the inner tongue 24 of this flap is inserted in the slot 26 of the side wall 13 of the bottom section. The tongue-like end of this flap

20 is then inserted in the slot 22 of the side wall 17 of the cover section. Finally the flap 20 is pushed back flat against the outside of the box causing the two tongues of the flap 20 to be inserted the full distance in their respective slots, as illustrated in Fig. 4. This completes the interlocking of the two sections at this corner. Corresponding locking of the other flap 19 in the same manner produces the interlocking at the other front corner of the box, whereupon the box is firmly and securely locked in closed position.

The reverse procedure is followed for unlocking each interlocking flap. It will be found that by bending the flap slightly transversely along the line of junction of the tongue 24 with the flap (as illustrated in Fig. 3) the tongue 24 can be very easily inserted in its slot 25 and the tongue end of the flap then easily inserted in the slot 22. In this manner repeated locking and unlocking of each of the two flaps of the box can be performed without any difficulty and with very little effort.

Due to the fact that one tongue of each flap is inserted in a slot in the bottom section and the other tongue of the flap is inserted in a slot of the cover section, a very strong interlocking of the two sections is obtained. The flaps will not be pulled free from their locked position by any attempt forcibly to pull the two box sections apart. In fact the two box sections can not be pulled apart forcibly without unlocking the flaps unless the force is strong enough either to rupture the tongues 24 or tear the slots 26 in which these tongues are inserted. Also, due to the rounded edges of the tongues 24, any danger of inadvertent tearing or rupturing of either tongue is reduced to a minimum, and the engagement of the end tongues of the flaps with their respective slots 22 prevents the tongues 24 from pushing the flaps out away from their position of contact with the respective side walls.

When the interlocking of the sections takes place on the side walls in the manner described, and if the box is quite wide, I have found it desirable to form the front wall 18 of the cover with a center tongue 27 (Fig. 1) and to provide an engaging slot 28 for this center tongue in the front wall of the bottom section in order to prevent the front wall from having any tendency to bulge when the box is subjected to considerable strain. This, however, is not new and does not constitute any part of my invention.

In the box illustrated in Figs. 1 to 5 inclusive, the interlocking between the cover section and bottom section takes place on the side walls. However, it will be apparent that, with my invention, the interlocking between the sections can be made just as easily to take place on the front walls in a similar manner if desired. This slight modification is illustrated in Fig. 6.

In the box of Fig. 6 the front wall 30 of the bottom section has an ear flap 33 at each end which engages a slot in a corresponding side wall 31 or 32, this being old and well known in box construction. In this box of Fig. 6 in which my invention is carried out the front wall 34 of the cover section has a cut-out portion 37 at each end, similar to the cut-out portions 25 of the box previously described. Similarly each of the side walls 35 and 36 of the cover has a longitudinally-extending flap 38 extending from the front end of the side wall. The flaps 38 are similar to the flaps 19 and 20 of the box previously described and each flap has an inner tongue 40 and an outer tongue or tongue end

39. The front wall 30 of the bottom section has a pair of slots 41 adapted to be located within the cut-out portions 37 respectively when the cover is closed and arranged for engagement with the tongues 40 of the flaps 38. The front wall 34 of the cover section has a pair of slots 42 to engage the end tongues 39 of the flaps. The interlocking of the sections takes place in the same manner as previously described. A handle 43 extends over the cover section, the handle being attached to the box by having its ends secured to the front wall 34 and to the rear wall 43 respectively, in any suitable manner. A box of this type is desirable, for example, for the carrying of cakes and other pastries in upright position, and when the box is made more or less square in shape, the arrangement of the interlocking between the front walls of the two sections enables the front wall of the cover to withstand the pull on the handle in the carrying of the locked box with its contents.

The box shown in Figs. 7 and 8 differs from the boxes previously described in that the bottom section 44 and the cover section 45 are entirely separate and made from separate blanks. The side walls 50 and 51 of the bottom section are secured to the rear and front walls 52 and 53 of the bottom section in the usual manner, and the side walls 48 and 49 of the cover section are secured to the rear wall 69 of the cover section in the same manner. The two sections are connected by a strap-like handle 54 by which the closed box when locked can be conveniently carried. The interlocking of the two sections is similar to that of the box first described, the interlocking taking place in the side walls. Thus the front wall 46 of the cover section has the two longitudinally-extending locking flaps 47 at each end, each side wall 48 or 49 of the cover section has a cut-out portion arranged to underlie the inner tongues of the flaps, and the inner tongues of the flaps engage the slots 55 in the side walls of the bottom section, the side walls of the bottom section being located inside the side walls of the cover section when the box is closed, and the end tongues of the flaps are inserted in the slots 56 of the side walls of the cover section.

Thus in the various types of boxes in which my invention may be carried out, some of which I have shown in the accompanying illustrations and others of which I have referred to in the course of the description, the interlocking between the cover section and bottom section of the box obviates any necessity for using string or other separate means for holding the box closed, and a strong and sturdy locking of the two sections together when the box is completely closed is assured. Boxes with such means for interlocking the two sections can be used to advantage for many purposes. In each case the advantages of my invention are achieved merely by making simple provision and slight modification in the blank or blanks from which the box is made and nothing further is required.

I claim:

1. In a box construction of the character described, having a pair of companion sections, each section having front and side walls and the said walls of one section adapted to overlie the corresponding walls of the other section respectively when said box is closed, a flap extending longitudinally from a wall of said first mentioned section at a corner of said first mentioned section, said flap terminating in a tongue, a second tongue formed in said flap spaced longitudinally inwardly from said first mentioned tongue and extending in a direction opposite to that of the first mentioned tongue, a cut-out portion at the end of an adjacent wall of said first mentioned section adjacent said flap, said cut-out portion adapted to be covered by said flap and arranged so as to underlie said second tongue of said flap, an engaging slot for said second tongue in the corresponding wall of said other section so located as to be positioned inside of said cut-out portion when said box is completely closed, and a slot for said first mentioned tongue in the same wall having said cut-out portion, whereby the first and second tongues of said flap will be in engagement with slots in the walls of said first mentioned section and of said other section respectively when said box is closed and locked.

2. In a box construction of the character described, a pair of similar companion sections, each section having front and side walls and the said walls of one section adapted to overlie the corresponding walls of the other section respectively when said box is closed, a pair of flaps extending longitudinally from the walls of said first mentioned section and located at successive corners of said first mentioned section, each of said flaps terminating in a tongue, a second tongue formed in said flap spaced longitudinally inwardly from said first mentioned tongue and extending in a direction opposite to that of the first mentioned tongue, cut-out portions at the ends of the walls of said first mentioned sections adjacent said flaps respectively and arranged to underlie the second tongues of said flaps respectively, engaging slots for said second tongues in the corresponding walls of said other section so located as to be positioned inside of said cut-out portions respectively when said box is completely closed, and slots for said first mentioned tongues respectively in the same walls having said cut-out portions, whereby the first and second tongues of each of said flaps will be in engagement with slots in the walls of said first mentioned section and of said other section respectively when said box is closed and locked.

3. In a box construction of the character described, having a bottom section and a cover section, each section having front and side walls and the said walls of said cover section adapted to overlie the corresponding walls of said bottom section respectively when said box is closed, a flap extending longitudinally from a wall of said cover section at a corner of said cover section, an outer and an inner tongue longitudinally spaced on said flap, said tongues extending in opposite directions away from each other, a cut-out portion at the end of an adjacent wall of said cover section adjacent said flap, said cut-out portion adapted to be covered by said flap and arranged so as to underlie said inner tongue of said flap, an engaging slot for said inner tongue in the corresponding wall of said bottom section so located as to be positioned inside of said cut-out portion when said box is completely closed, and a slot for said outer tongue in the same wall having said cut-out portion, whereby the outer and inner tongues of said flap will be in engagement with slots in the walls of said cover section and of said bottom section respectively when said box is closed and locked.

4. A box construction of the character described including a bottom section and a cover section, each section having front and side walls and the said walls of said cover section adapted to overlie the corresponding walls of said bottom

section respectively when said box is closed, a flap extending longitudinally from each end of the front wall of said cover section, said flap terminating in a tongue, a second tongue formed in said flap spaced longitudinally inwardly from said first mentioned tongue and extending in a direction opposite to that of the first mentioned tongue, a cut-out portion at the front end of each side wall of said cover section and arranged to underlie said second tongues of said flaps respectively, engaging slots for said second tongues near the front end of each side wall of said bottom section so located as to be positioned inside of said cut-out portions respectively when said box is completely closed, and slots for said first mentioned tongues respectively in the side walls of said cover section, whereby the first and second tongues of each of said flaps will be in engagement with slots in the walls of said cover section and of said bottom section respectively when said box is closed and locked.

5. A box construction of the character described including a pair of similar companion sections, each section having front and side walls and the said walls of one section adapted to overlie the corresponding walls of the other section respectively when said box is closed, a flap extending longitudinally from the front end of each side wall of said first mentioned section, each of said flaps terminating in a tongue, a second tongue formed in each of said flaps spaced longitudinally inwardly from said first mentioned tongue and extending in a direction opposite to that of the first mentioned tongue, a cut-out portion at each end of said front wall of said first mentioned section and arranged to underlie said second tongues of said flaps respectively, engaging slots for said second tongues near each end of the front wall of said other section so located as to be positioned inside of said cut-out portions respectively when said box is completely closed, and slots for said first mentioned tongues respectively in the front wall of said first mentioned section, whereby the first and second tongues of each of said flaps will be in engagement with slots in the walls of said first section and of said

other section respectively when said box is closed and locked.

6. A box construction of the character described comprising a bottom section and a cover section integral with said bottom section, each section having front and side walls and the said walls of said cover section adapted to overlie the corresponding walls of said bottom section respectively when said box is closed, a pair of flaps extending longitudinally from the walls of said cover section and located at successive corners of said cover section, each of said flaps terminating in a tongue, a second tongue formed in each of said flaps spaced longitudinally inwardly from said first mentioned tongue and extending in a direction opposite to that of the first mentioned tongue, cut-out portions at the ends of the walls of said cover section adjacent said flaps respectively and arranged to underlie the second tongues of said flaps respectively, engaging slots for said second tongues in the corresponding walls of said bottom section so located as to be positioned inside of said cut-out portions respectively when said box is completely closed, and slots for said first mentioned tongues respectively in the same walls having said cut-out portions, whereby the first and second tongues of each of said flaps will be in engagement with slots in the walls of said cover section and of said bottom section respectively when said box is closed and locked.

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