

July 18, 1944.

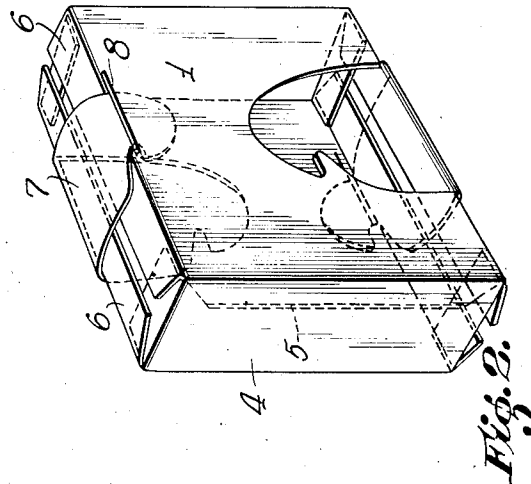
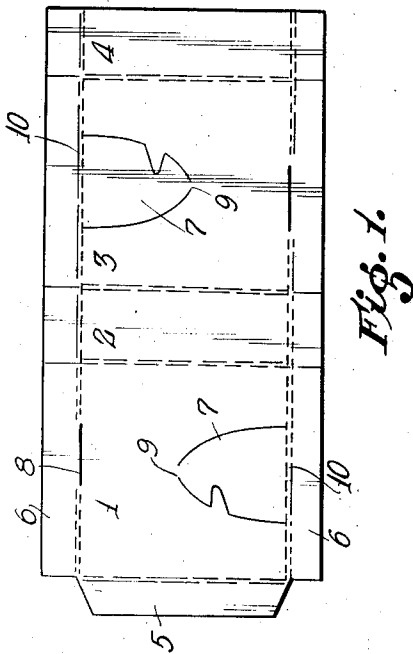
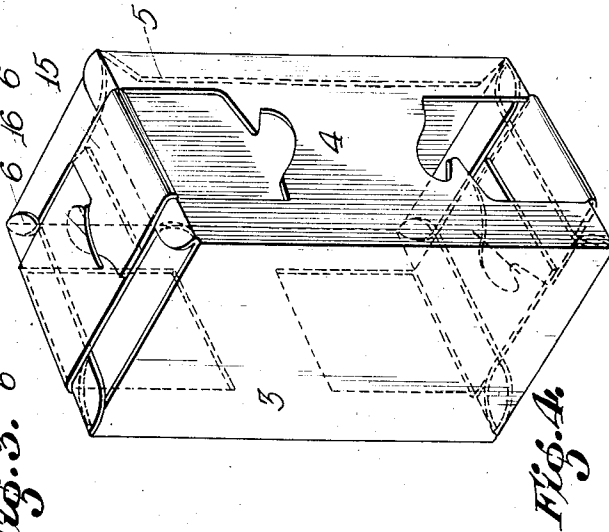
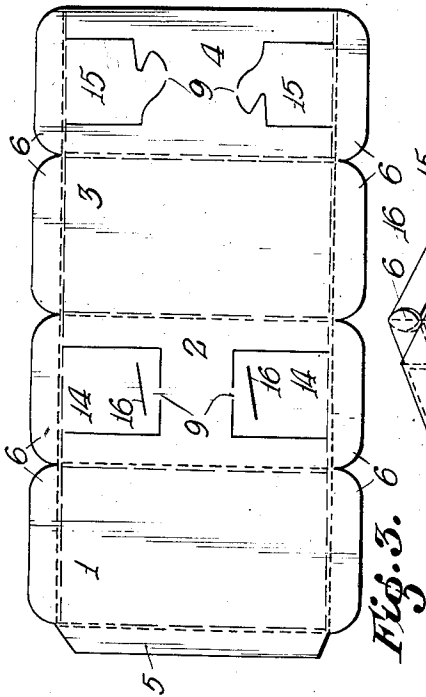
W. BAMBER

2,354,098

CARDBOARD BOX

Filed July 21, 1942

3 Sheets-Sheet 1



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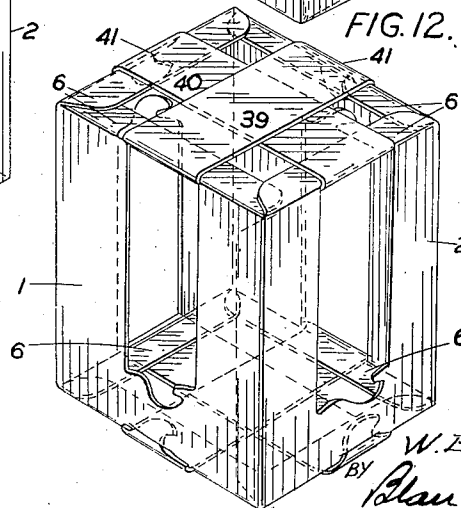
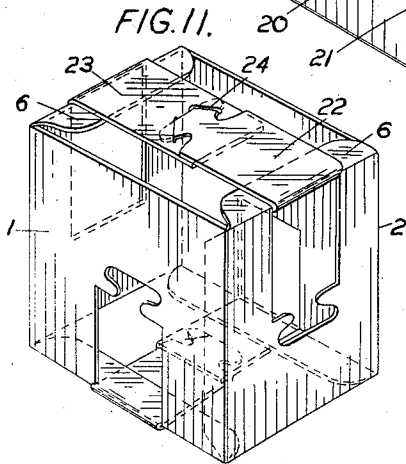
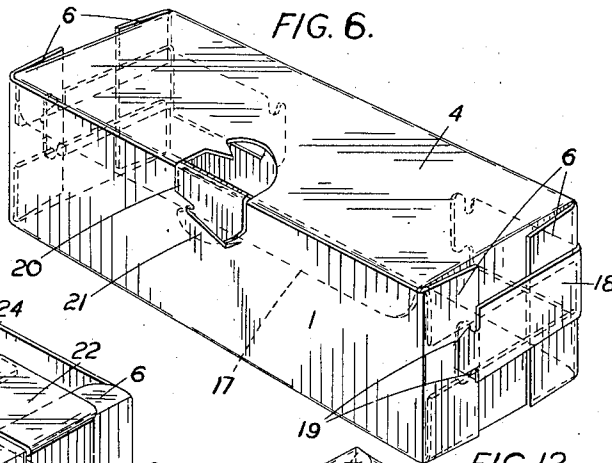
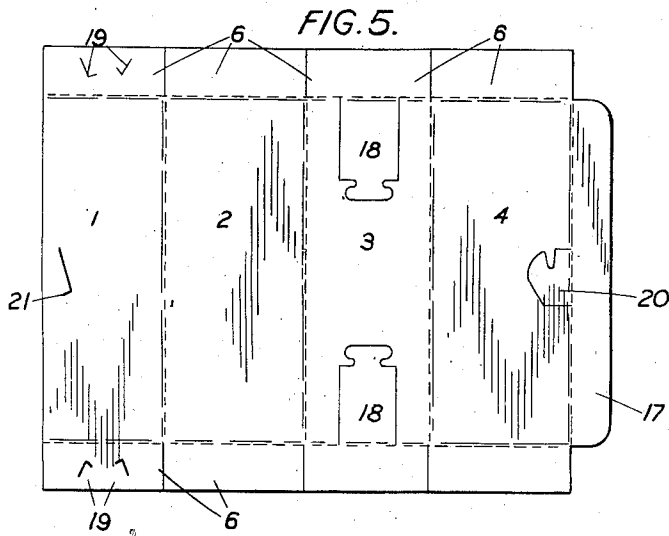
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CARDBOARD BOX

Filed July 21, 1942

3 Sheets-Sheet 2



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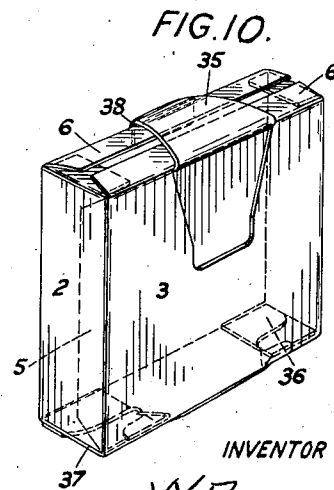
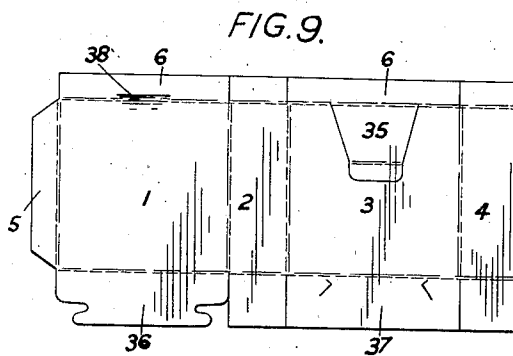
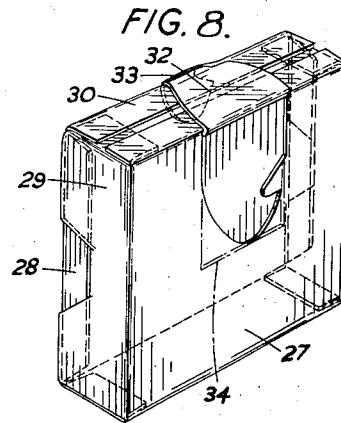
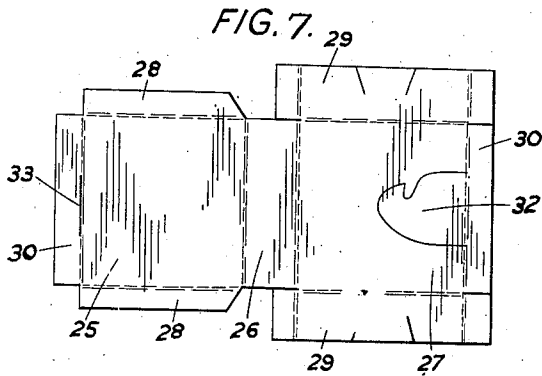
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2,354,098

CARDBOARD BOX

Filed July 21, 1942

3 Sheets-Sheet 3



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UNITED STATES PATENT OFFICE

2,354,098

CARDBOARD BOX

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Application July 21, 1942, Serial No. 451,766
In Great Britain November 11, 1941

7 Claims. (Cl. 229—16)

This invention relates to cardboard boxes or cartons, and it has for its main object to provide a skeleton carton in the form of a box with four side panels and means for providing end closures, while effecting a substantial economy in the amount of cardboard required. In the case of cardboard outer boxes to contain smaller packets, for example cereals or biscuits in paper bags, or cigarettes in small cartons, it has been usual to provide flaps at the ends of the outer boxes which may be interlocked in pairs or two flaps may be turned inwards from opposite sides, while a third flap overlies the crossing flaps and has a tongue which is tucked in at the opposite side of the box. The closure at the opposite end may be similar or of another form.

It is the object of this invention to effect the closure of such boxes at one or both ends by the use of flaps cut out of one or more of the four side panels forming the body of the box and bent back so as to overlie the ends, while being provided with suitable means of engagement such as tongues engaging in slots or hook-shaped projections. When flaps are cut out from panels forming part of the body of the box in this way of course the side panels are left partly open where the flaps are cut out, and the flaps may not completely cover the ends so that boxes of this character cannot be used with loose materials but only with articles which by their packing or their nature will hold together and merely require a skeleton box for convenience of distribution. This applies particularly to goods in packages made of materials such as grease-proof paper, and to any other objects done up in small but regular packages. The openings or windows left in panels of a box by the cutting and bending back of flaps as indicated above, may be of advantage in exposing in part the contents of the box, particularly where such contents consist of smaller cartons or the like.

The ends of the boxes to be closed by such bent-back flaps may have short flanges left upon them to turn inward and to form a sort of frame round the box ends which will add to the strength and prevent any of the contents from slipping out, while the bent back flaps are attached to these flanges at their crease lines.

Various constructions according to the invention are illustrated by way of example in the accompanying drawings, in which:

Figures 1, 3, 5, 7, and 9 are views illustrating different types of box blanks to which the invention is applied;

Figures 2, 4, 6, 8 and 10 are corresponding per-

spective views drawn to a larger scale of these blanks made up into boxes; and

Figures 11 and 12 are perspective views showing other alternative constructions.

In each case illustrated in Figures 1 to 6 it will be seen that the blank is substantially rectangular in outline and that it takes very little more cardboard than is required for the four side panels of a box, the closure at the ends being effected by the flaps cut out from one or more panels of the box and turned backwards over the ends.

In Figures 1 and 2 the box consists essentially of four panels 1, 2, 3 and 4 with a tongue 5 at one end which is glued or otherwise secured to the panel 4 in making up the box. Each of the panels has short flanges 6 left at the top and bottom so that they can be turned in at the ends of the box, as seen in Figure 2, to complete the closure of the end to any required extent.

The locking flaps 7 are cut out in this case from the panels 1 and 3 of the box leaving the flaps attached to the flanges 6 at the crease lines 10, each of these flaps being shown with a hook-shaped projection, but double-tongued projections, as in Figures 5 and 6, or any other suitable type of projections may be used. Slots are formed at 8 in the crease lines of the end flanges on the panels 1 and 3 for engagement by the locking tongues of the flaps 7 when bent backwards over the box ends, as seen in Figure 2. The flaps 7 may be kept in place in the blanks by contact points at 9 where the cutting through of the blanks is not complete so that the flaps will not tend to project while the blanks are being passed through a machine for glueing them together at the tongues 5. The flaps are easily pushed out afterwards in completing the boxes when these flaps are bent back along the crease lines at 10 across the box ends, and their hooks or projections tucked into the slots at 8, as seen in Figure 2. The space from which each flap 7 has been cut leaves an opening in each of the sides 1 and 3 of the box through which the contents can be seen, but this is unobjectionable and may be useful in the case of articles which are not liable to break up or which are in cartons or other packages inside the box.

In the form of construction shown in Figures 3 and 4 the panels are again lettered 1, 2, 3 and 4 and the glueing tongue 5. Both ends of the box in this case have flanges 6 which are turned in partially to close the ends of the box. In this case the flaps are shown as being cut out from the side panels 2 and 4, two flaps being cut out from each of these panels, leaving a blank area in

the middle. The flaps 14 cut out from the panel 2 have slots in them at 16, while the flaps 15 cut out from the panel 4 have hooks or tongues for engaging in the slots in the flaps 15, as seen in Figure 4. This makes rather a stronger box because the middle of each panel from which the flaps are cut is left intact.

The box shown in Figures 5 and 6 is of a different type in that it is held together only by locking tongues and has no glued connection. The panels 1, 2 and 3 form the body of the box and the panel 4 forms the lid. All of the panels have flanges 6 at the ends and the lid has a tongue 17 along the side which can be tucked in at the front of the box when it is closed. In this case flaps 18 with double-tongued projections at their ends are cut out from the panel 3, and when the body of the box is made up, these flaps are bent back and their tongues are engaged in notches 19 cut out in the flanges 6 at the ends of the panel 1 which forms the front of the box, as seen in Figure 6. If a locking flap is required for the lid of the box, this is provided as shown at 20, the flap being turned back over the edge of the box and its hook engaging with a notch at 21 in the front 1 of the box to complete the closure, as seen in Figure 6.

The type of closures shown in Figures 5 and 6 may be applied to boxes made in two parts which fit one into the other. For example, if in Figure 5 the panel 4 with its flanges 6 and tongues 20 are omitted, the carton made from panels 1, 2 and 3 with their flanges 6 and flaps 18 would form a tray with the top open. This might be closed by fitting over it a similar tray but inverted in position, and made slightly larger in size. Each part of the box would then have its sides connected together by the locking flaps 18 as shown.

Contact points 9 are shown for each of the flaps in Figures 1 and 3 because the blanks there shown are generally glued by machinery. The flaps have no such contact points in Figures 5 and 6, because the blank there shown does not need to be glued.

Where hooked ends are shown for the flaps these may be replaced by double-tongued ends like those on the panel 3 in Figures 5 and 6, or any other form of locking projections and slots may be used.

Whether a single flap is used, as at 7 in Figures 1 and 2, or a pair of interlocking flaps as at 14 and 15 in Figures 3 and 4, is a matter of choice, depending to some extent on the relative length and depth of the complete box. In the case of a long box which is not too deep transversely it is possible to cut the material for two end flaps out of each of two opposed panels, as in Figures 3 and 4, while leaving enough of the panel in the middle to improve the strength and rigidity of the box. For shorter boxes this arrangement is generally impossible, and the alternatives of Figures 1 and 2 are used, namely a single flap cut out from each of two opposite panels of the box. On the other hand, if the box is long and narrow, as in Figures 5 and 6, two flaps to close opposite ends of a box can sometimes be cut out from one panel of the box.

It is not an essential feature of the invention that both ends of a box should be closed or secured by cut out flaps which are turned back for this purpose, and one end of the box may have another type of closure. For example, Figures 7 and 8 show a type of box which is made up by folding, and in which the bottom 25, and the

front and back panels 26 and 27 are in one piece, with inter-engaging flanges 28 and 29 forming the sides, while the top is closed by inturned flanges 30, and the securing of the box in a closed position is effected by a flap 32 cut out from the panel 27, and turned back so that its hooked end can engage in a slot at 33 in the crease of the flange 30. It is not essential that the aperture in the panel from which the flap is bent out should be left the exact shape of the flap. For example in Figure 8 the outline of the aperture left by the flap 32 may be extended as indicated in dotted lines at 34 so as to leave a more regularly shaped window in the panel 27, the hooked shape being applied to the flap by cutting away the part between the dotted line 34 and the full line in Figure 8.

Another example of a box with a different closure at one end from that at the other end is illustrated in Figures 9 and 10. Here the carton has four panels 1, 2, 3 and 4, and a glueing flap 5, while the closure flap 35 is cut out of the panel 3. The bottom of the box is closed by the well known type of closure with overlapping flaps of which one numbered 36 has locking tongues engaging in slots in another numbered 37. The top of the box has short flanges 6 on each of the panels, and is closed by the flap 35 bent back out of the panel 3 along the crease line of its flange 6 and having its end engaged in a slot at 38 in the crease line of the flange 6 of panel 1. Here, the flap is shown as having a simple tongue-shaped end, as that suffices to hold closed the top of a box of this type.

It is not generally possible or desirable to cut out flaps from all four panels of a box because two panels should generally be left whole for the usual printed matter in regard to the contents of the box, but if this is not required in any particular case, inter-engaging flaps can be cut out from opposite panels of the box, even in a box relatively short in relation to its depth. Then, for example, the two flaps from panels 1 and 3 can be bent back to interlock at one end while the two flaps from panels 2 and 4 are bent back to interlock from the opposite end. This is shown in Figure 11 where the two panels 1 and 2 have double-tongued flaps 22 formed in them, while the other panels have plain flaps 23 cut from them and slotted as at 24 for engagement by the tongues on flap 22 when bent back as shown. Again, flaps from panels 1 and 2 could provide crossing closures for one end, and flaps from panels 3 and 4 would provide crossing closures for the opposite end of the box. This is shown in Figure 12 where hooked flaps 39 and 40 cut from the panels 1 and 2 are bent back to form crossing closures at one end of the box, being hooked into notches at 41 in the crease lines of the flanges 6. Flaps cut from the other two panels similarly form crossing closures at the opposite end of the box.

Various ways of using the bent-back flaps to effect the partial closure of boxes at one or more ends can obviously be devised depending on the types of cardboard boxes and the way in which they have to be closed to retain their contents, but in all cases the flaps which are to form closures at the box ends are cut out from side panels of the box so as to be bent back along the crease lines of the end flanges of such side panels, leaving openings in the side panels when the flaps are bent back therefrom. It is believed that the examples hereinbefore described will enable the bent-back closure flaps to be applied to any type of box without further difficulty.

I claim:

1. A cardboard box consisting of four side panels with short flanges at each end adapted when bent inwardly to form a frame round the ends of the box, and flaps formed in panels of the box by cutting along three sides of each such flap, leaving the fourth side attached to the flange at one end of the panel, each said flap being bent back, the one over one end and the other over the other end of the box, and each having its free end attached by engaging in a slit in an opposing portion of the box.

2. A cardboard box consisting of four side panels with short flanges at each end adapted when bent inwardly to form a frame round the ends of the box, and flaps formed in two opposite side panels of the box by cutting along three sides of each such flap, leaving the fourth side attached to the flange at one end of the panel, each said flap being bent back, the one over one end and the other over the other end of the box, and each having its free end attached by engaging in a slit in an opposing portion of the box.

3. A cardboard box consisting of four side panels with short flanges at their ends, two opposite side panels thereof having each two flaps formed therein by cutting round three sides leaving a fourth side still attached to the flange at one end of the panel, two of such flaps attached nearest to opposite ends of the box being formed with slits, and the other two of such flaps being formed with projections adapted to engage in such slits whereby the two flaps at one end of the box, when bent back about their attached ends, can be inter-engaged over such box-end, and the two corresponding flaps at the other end of the box, when bent back about their attached ends, can be inter-engaged over that box-end.

4. A cardboard box consisting of four side panels with short flanges at their ends having flaps cut out along three of their sides in two opposite side panels of the box, leaving a fourth side of each flap attached to the flange at one end of its side panel, one of such flaps being slitted near its free end and the other being

formed near its free end with engaging projections adapted to interlock with the said slitted portion of the other flap, said flaps being adapted to be bent back about their attached sides over the end of the box, and engaged together by the engaging projections on the one entering the slitted portion of the other such flap.

5. A cardboard box having four panels each formed with flanges at its ends adapted to be folded over the ends of the box, one such panel having flaps cut in it one near each end, and left attached to the flanges at the ends of such panel, each flap having locking projections upon it near its free end adapted to engage in slits in said flanges extending from the opposite panel of the box, whereby the box ends may be held closed.

6. A cardboard box having four panels each formed with flanges at its ends adapted to be folded over the ends of the box, one such panel having flaps cut in it one near each end, and left attached to the flanges at the ends of such panel, each flap having locking projections upon it near its free end adapted to engage in slits in said flanges extending from the opposite panel of the box, whereby the box ends may be held closed, one of said side panels being adapted to form a lid of said box and being provided with a flap secured along one end to said lid panel, said flap being adapted to be bent back over the edge of said panel and engaged by its free end in a slit in an adjacent panel of the box.

7. A cardboard box consisting of four side panels, one of which is slotted and each having a fold line and a short flange at one end adapted, when bent inwardly, to form a frame round one end of the box, and a flap formed in one of the said side panels of the box by cutting along three sides of such flap leaving the fourth side attached to the short flange on the said panel near the fold-line of the said flange, the said flap being bent backwardly to form a closure over the end of the box and having its free end shaped for engagement with the slotted portion connected to the opposite side panel of the said box.

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