April 26, 1949. J. W. CHALMERS 2,468,543

BOX

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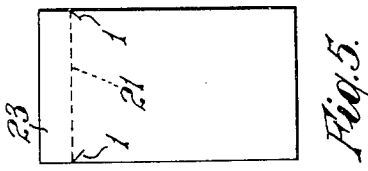


Fig. 5.

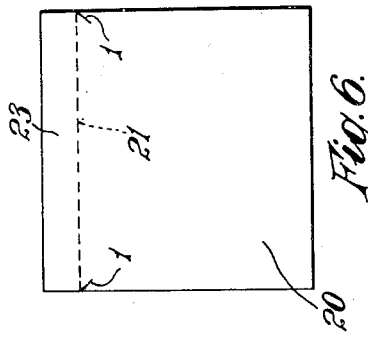


Fig. 6.

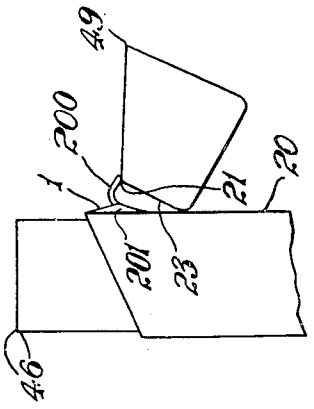


Fig. 7.

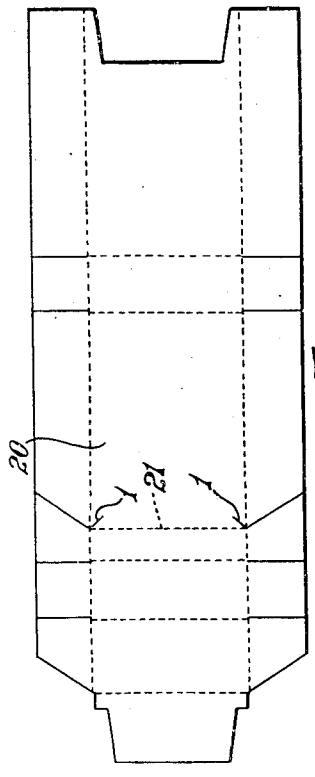


Fig. 1.

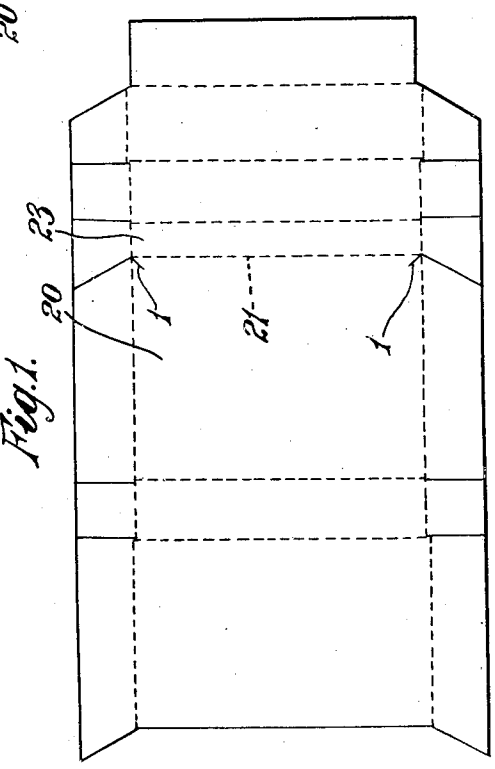


Fig. 4.

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Fig. 3.

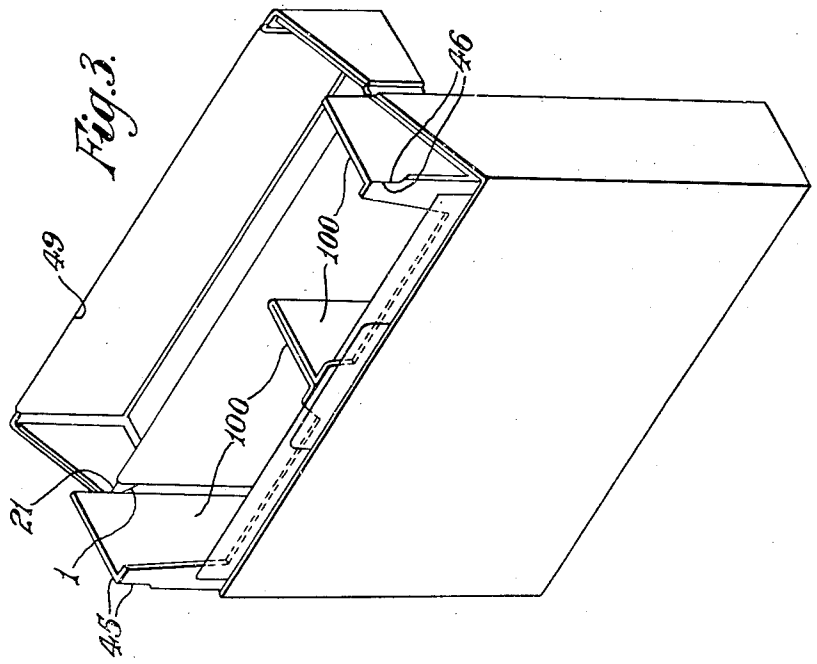
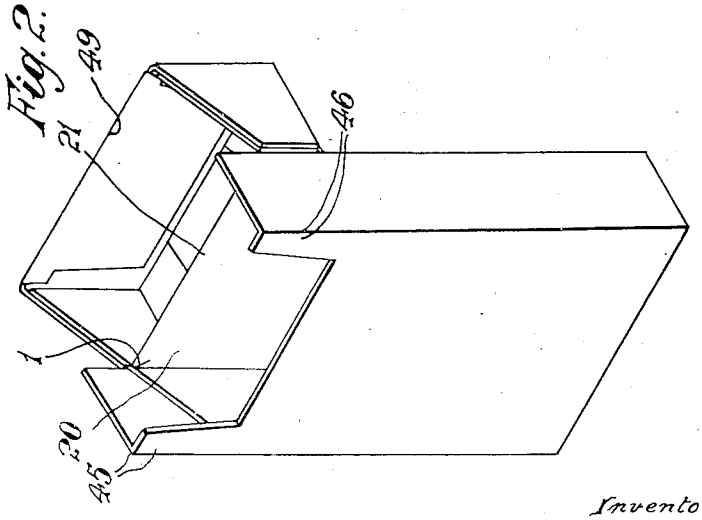


Fig. 2.



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UNITED STATES PATENT OFFICE

2,468,543

BOX

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2 Claims. (Cl. 229—16)

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This invention concerns improvements in or relating to boxes, and refers particularly to boxes made of cardboard or similar material and divided between ends thereof to form a body and a lid joined at the back of the box by a hinge. Such a box will for convenience be referred to herein and in the appended claims as "a box of the kind referred to."

In boxes of the kind referred to there is sometimes a tendency for the user of the box to swing the lid back from the body about the hinge axis rather further and more forcefully than is necessary in order to obtain access to the contents of the box, and when this is done it sometimes happens that either the lid or the body portion of the box is torn. Such tearing usually takes place at or near the hinge.

It has been proposed heretofore to provide in a box of the kind referred to a pair of slits commencing at opposite ends of the hinge and extending towards the bottom of the box, the lower ends of the slits being joined by a crease or score line which in effect constitutes a second hinge, so that the lid can be swung well back from the box, turning about both the hinge and the crease or second hinge, with little risk of tearing. It is found, however, that with the arrangement just described, before the lid can be closed the hinge must be returned to its original position. If, however, the lid has been swung about both the hinge and the crease or score line, it is necessary to manipulate the box so that the panel between the hinge and the crease or score line is first returned into the plane of the back of the box before the lid can be properly closed. This need for manipulation of the box is a disadvantage.

It is an object of the present invention to enable the lid to be swung well back from the box without tearing, while avoiding the disadvantage just described.

According to the present invention there is provided a box of the kind referred to wherein the back of the box is provided with two slits which commence at opposite ends of the hinge and extend towards the bottom of the box, that portion of the back of the box which lies between the two slits being resilient with respect to the rest of the back wall of the body portion of the box so that when the lid of the box is forced back the said part between the slits bends and when the lid is released the said part springs back towards its original position. The two slits may converge towards each other from the ends of the hinge.

A box made in accordance with the invention will now be described by way of example with reference to the accompanying drawings, which show a box similar in general construction to that disclosed in United States specification No. 2,163,828, and in which:

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Figure 1 is a plan of a blank from which a box is made.

Figure 2 is a perspective view of a box made from the blank shown in Figure 1, the lid being shown in an open position.

Figure 3 is a perspective view of a larger box, and shows the lid in an open position.

Figure 4 is a plan of a blank from which the box shown in Figure 3 is made.

Figure 5 is a rear elevation of the box shown in Figure 2, but with the lid in a closed position.

Figure 6 is a rear elevation of the box shown in Figure 3, but with the lid in a closed position.

Figure 7 is an end elevation of part of the box shown in Figure 3, showing the lid swung well back from the body portion.

Like reference numerals refer to like parts throughout the specification and drawings.

Referring to Figures 1 and 4, the blanks from which the boxes are to be made are provided with slits, in the panels **20**, commencing at opposite ends of the score line **21** and converging towards each other at an angle of about 45° to the score line **21**. When the boxes are made up the score line **21** forms the hinge about which the lid swings, and the panel **20** forms the back of the body portion of the box, while the panel **23** forms the back of the lid, as seen in Figures 5 and 6.

In order to open the box to obtain access to its contents it is necessary to push the lid back so that it swings about the hinge **21**. Each of the two boxes illustrated in Figures 2 and 3 is shown with its lid swung back until the back wall **23** of the lid is resting against the back wall **20** of the body portion of the box. It will be seen from Figures 2 and 3 that it is not necessary to move the lid any further back than this in order to open the box satisfactorily, but if the box is handled roughly or carelessly there is often a tendency for the lid to be forced back further than necessary, for example to the position in which the lid is shown in Figure 7. Due to the provision of the slits **1** it is possible to force the lid back to this position with very little risk of tearing the back wall **23** of the lid or the back wall **20** of the body portion in the vicinity of the hinge **21**, which would almost certainly occur if no such provision were made.

As shown in Figure 7, the part **200** of the back wall **20** of the body portion of the box, that is, the part lying between the slits **1**, bends or curves

backwardly from the box when the lid is pushed well back, while the part 201 of the wall 20 which lies just below the lower ends of the slits 1 also bends back slightly. Since there is no crease connecting the lower ends of the slits to form a hinge about which the part 200 or the back wall could turn in its backward movement, the part 200 is resilient with respect to the rest of the back wall 20 and so when the lid is released the parts 200 and 201 spring back towards their original position. This springing back of the resilient parts 200 and 201 carries the lid back towards its closed position.

As shown in Figures 2 and 3, each of the boxes illustrated is provided with corner portions 45, 46 over which the lid fits. When the box is closed, (the corner portions 45, 46 of the box shown in Figure 3 being part of an inner member 100 which forms part of the box) it will be seen that when the lid is moved to close the box, the free edge 49 of the lid must clear the corner portions 45, 46. It is found that in the construction being described the lid, on being released after being swung back to the position shown in Figure 7, tends to fly back so as to carry the free edge 49 of the lid over the corner portions 45, 46. But even if the lid itself does not fly back to that extent, the hinge 21 is itself, due to the resilience of the part 200, returned to its normal position so that the lid can then be turned about its hinge so as to permit the free edge 49 of the lid to clear the corner portions 45, 46. It will be appreciated that if the part 200 were made non-resilient, for example by the provision of a crease or further hinge connecting the lower ends of the slits 1, it would be necessary, when closing the box, first to move the part 200 about such crease or hinge, so as to return the hinge 21 to its proper position, before the free edge 49 of the lid could clear the corner portions.

It is found that within reasonable limits the lid of a box constructed as described above can be pushed back with considerable force and to a considerable extent without tearing, and it is also found that provided the lid is not forced back beyond these limits so as to damage the box, the further back it is moved the further it tends to return towards the closed position on being released.

In the construction illustrated the slits 1 converge towards each other from the ends of the hinge 21 at an angle of about 45° to the hinge axis, as shown in Figures 5 and 6, but the slits may, if desired, be made parallel to each other and arranged to extend vertically towards the bottom of the box from the opposite ends of the hinge 21.

What we claim as our invention and desire to secure by Letters Patent is:

1. A box of oblong rectilinear shape in cross-section made of cardboard or other like resilient material with the front and back walls of the box substantially parallel and forming the longer sides of the oblong, said box comprising a relatively deep body portion with the opening at the top thereof, the top of the body portion being arranged at different heights to facilitate access to the contents of the box, a boxlike lid whose back wall is hingedly connected to the back wall of the body portion at a position between the top and bottom of the box and corner portions at the top of the body portion, which corner portions extend for a substantial distance above the hinge axis of the lid and engage the front corners of the lid when closed to resist opening of the lid, said corner portions, together with the contents of the box, being arranged within the surfaces swept out by the leading edges of the side walls of the lid during closing of the latter, the front wall of the lid being so dimensioned that during closing of the lid the free edge of such front wall passes clear of the tops of said corner portions and of the front wall of the body portion, while the front corners of the lid when the latter is closed, extend downwardly below the hinge axis of the lid, the back wall of the body portion being provided with slits which commence at opposite ends of the hinge axis, respectively, and extend toward the bottom of the box, that portion of the back of the box which lies between the two slits and between the lower ends thereof being resilient with respect to the remainder of the back wall of the body portion.

2. A box of oblong rectilinear shape in cross-section made of cardboard or other like resilient material with the front and back walls of the box substantially parallel and forming the longer sides of the oblong, said box comprising a relatively deep receptacle with the opening at the top thereof, a boxlike lid whose back wall is hingedly connected to the back wall of the receptacle at a position between the top and bottom of the box, the receptacle and the lid being formed by folding a single blank, and an inner member fitted within the receptacle to provide corner portions which extend for a substantial distance above the hinge axis of the lid and engage the front corners of the lid when closed to resist opening of the lid, said corner portions, together with the contents of the box, being arranged within the surfaces swept out by the leading edges of the side walls of the lid during closing of the latter, the front wall of the lid being so dimensioned that during closing of the lid the free edge of such front wall passes clear of the tops of said corner portions and of the front wall of the body portion, while the front corners of the lid, when the latter is closed, extend downwardly below the hinge axis of the lid, said inner member having a part thereof disposed adjacent the front wall of the receptacle, and extending from side to side of the receptacle, a top portion of such part being cut away between the corner portions to facilitate access to the contents of the box, said back wall of the receptacle being provided with slits which commence at opposite ends of the hinge axis, respectively, and extend toward the bottom of the box, that portion of the back of the box which lies between the two slits and between the lower ends thereof being resilient with respect to the remainder of the back wall of the body portion.

JOHN WALKER CHALMERS.

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The following references are of record in the file of this patent:

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