

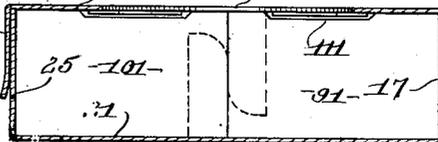
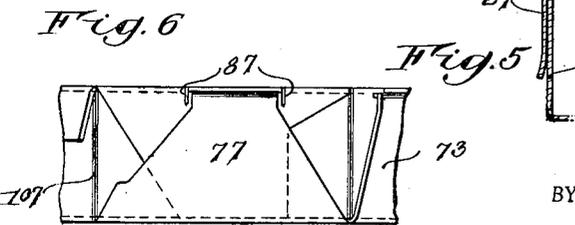
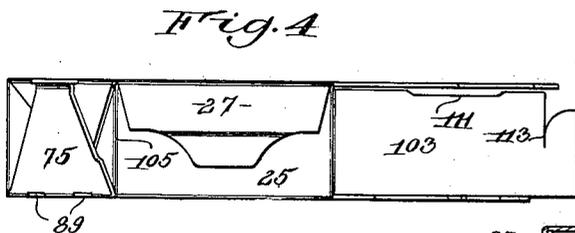
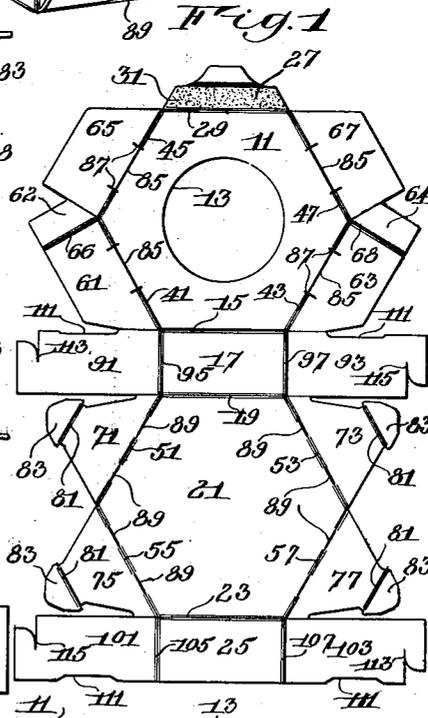
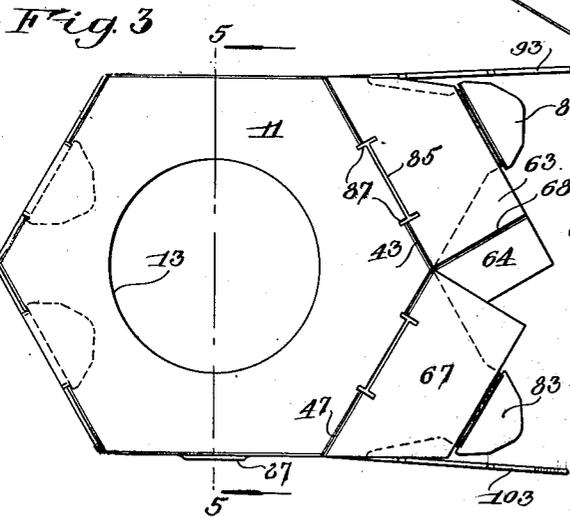
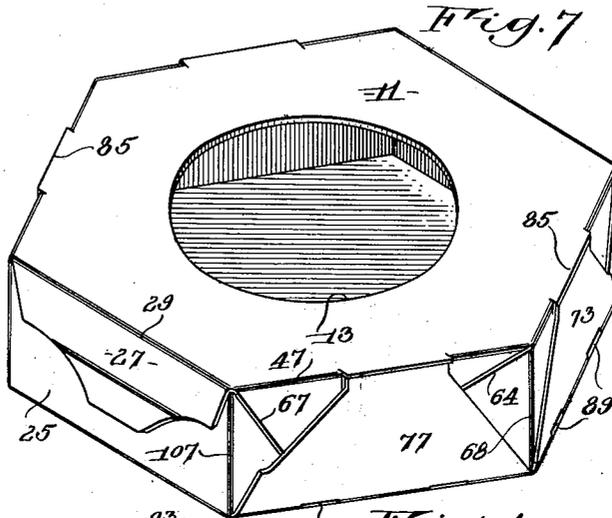
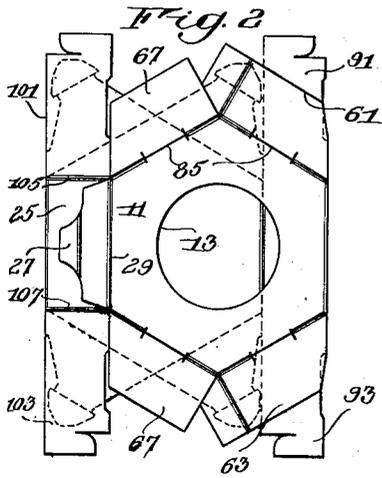
June 1, 1943.

J. P. SHEARER

2,320,665

BOX

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UNITED STATES PATENT OFFICE

2,320,665

BOX

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4 Claims. (Cl. 229-16)

The present invention relates to a box adapted to be made of paper board, cardboard, or the like.

An object of the invention is the provision of a generally improved and more satisfactory box for packing articles such as cakes, pies, or other confections.

Another object is the provision of such a box so designed and constructed that it may be shipped to the user in flat condition and may be quickly and easily erected and filled by the user and may be closed in such manner as to minimize danger of damage to the goods packed therein.

A further object is the provision of a box which, although economical of material, nevertheless is so designed as to have adequate resistance against collapse by vertical crushing or by oblique tilting or cocking, to protect the contents of the box from damage.

To these and other ends the invention resides in certain improvements and combinations of parts, all as will be hereinafter more fully described, the novel features being pointed out in the claims at the end of the specification.

This application is a continuation in part of my copending application entitled "Box structure," Serial No. 391,479, filed May 2, 1941, the box of the present application being an improvement upon the box of the earlier application.

In the drawing:

Fig. 1 is a plan of the blank from which the box is made, in its original unfolded condition;

Fig. 2 is a view of the blank upon the completion of the initial folding and gluing operation, showing the parts in the collapsed and relatively flat condition in which they are shipped to the user;

Fig. 3 is a plan of the box as partly erected by the user, with certain of the closure flaps closed to hold the box in erected condition and with other closure flaps still open for insertion of the merchandise into the box;

Fig. 4 is a side elevation of the parts shown in Fig. 3, in the same relative positions;

Fig. 5 is a cross section taken substantially on the line 5-5 of Fig. 3;

Fig. 6 is a side elevation of the erected box showing a different face from that shown in Fig. 4, and

Fig. 7 is a perspective view of the erected and closed box.

The same reference numerals throughout the several views indicate the same parts.

The preferred form of box here disclosed as an illustrative example of the invention, is of poly-

gonal shape when viewed in plan, and of such size as to receive conveniently a cake, pie, ice cream pie, or other confection. A hexagonal shape is particularly convenient for packing circular articles such as pies and cakes, but many of the features of the present invention are independent of the number of sides of the polygon and may be applied to boxes having more or less than six sides in addition to the top and bottom walls.

The box in its preferred form is made of a single piece of paperboard or cardboard of the kind commonly known as carton stock, cut and scored (as by dies) to the shape shown in Fig. 1. It comprises a hexagonal top wall 11, which may have an inspection opening 13 therein through which the contents of the box may be viewed, the top wall being hinged along one edge, by a score line 15, to one edge of the rectangular side wall panel 17, the opposite edge of which is hinged by the score line 19 to one edge of the hexagonal bottom wall 21, the opposite edge of which is hinged by the score line 23 to the rectangular side wall panel 25. A gluing flap 27 is hinged to the top 11 along the score line 29 at the edge of the top which is diametrically opposite the hinge line 15. The flap 27 is provided with adhesive 31 on part of its area, but a portion of the area near the free edge of the flap is left unglued, so that the unglued free edge may be readily grasped to pull the gluing flap away from the member to which it is glued, when it is desired to tear the box open.

The initial gluing and partial folding of the box at the box factory is accomplished by folding through 180° on the score line 23 so that the side wall panel 25 is brought downwardly onto the top surface of the bottom wall 21, and also folding through 180° on the score line 15 to bring the top wall 11 forwardly and downwardly onto the sections 17 and 21. This brings the gluing flap 27 down on the outer surface of the wall panel 25, so that the adhesive 31 affixes the sections 25 and 27 to each other. The parts when initially folded and glued in the manner above described are in the relationship illustrated in Fig. 2.

The other four edges of the top wall 11 (other than those at the score lines 15 and 29) are defined by the score lines 41, 43, 45, and 47, while the corresponding edges of the bottom wall 21 are defined by the score lines 51, 53, 55, and 57, respectively. Closure flaps 61, 63, 65, and 67 are hinged to these four edges of the top wall 11 on the score lines 41, 43, 45, and 47, respectively, and supplementary closure flaps 62 and 64 are hinged to the flaps 61 and 63, respectively, on the score lines 66 and 68, respectively.

To the edges 51, 53, 55, and 57 of the bottom wall 21 are hinged closure flaps 71, 73, 75, and 77, respectively, each of which closure flaps is of generally triangular shape, having a score line 81 near its apex, and beyond this score line a locking tab or tongue 83 somewhat wider at its base than the length of the score line 81, to provide undercut shoulders for locking engagement with the ends of slits 85 formed along parts of the lengths of the score lines 41, 43, 45, and 47, as shown. Short crosswise slits 87 preferably are formed at the ends of the slits 85, to assist in allowing the slits 85 to open slightly in order to accommodate readily the thickness of the material of the locking tabs 83, and to provide well-defined ends of the slits 85, for engagement with the undercut shoulders on the tabs 83. Slits 89 may be provided throughout parts of the lengths of the score lines 51, 53, 55, and 57, to weaken the material at these score lines so as to assist in more easy bending of the flaps 71, 73, 75, and 77 relatively to the bottom wall 21.

The above described flaps 61 to 77, inclusive, constitute an outer set of closure flaps for the side walls of the box other than those closed by the panels 17 and 25, and this outer set is preferably supplemented by an inner set of closure flaps, constituted by the flaps 91 and 93, hinged to opposite ends of the side wall 17 on the score lines 95 and 97, respectively, in conjunction with closure flaps 101 and 103 similarly hinged to opposite ends of the side wall 25 on the score lines 105 and 107, respectively. All four of these flaps 91, 93, 101, and 103 have shallow notches or cut-outs 111 throughout parts of the lengths of their upper edges (that is, their edges which will be at the top of the box when it is fully erected) in order to provide space for the locking tongues or tabs 83. Also, the flaps 91 and 103 have slits 113 near their free ends, extending downwardly from their upper edges approximately half way toward their lower edges, and the other two flaps 93 and 101 have similar slits 115 extending from their bottom edges upwardly approximately half way toward their top edges. The slits 113 and 115 on the flaps 91 and 101 are so designed as to permit these two flaps to be interhooked with each other, and the same is true of the slits 113 and 115 on the flaps 93 and 103.

Preferably the flaps 91, 93, 101, and 103 have effective lengths slightly shorter than the lengths of the sides of the polygonal top and bottom walls, so that when these flaps are properly hooked together, they do not lie flat against the inner surfaces of the flaps 61 to 77, but rather are pulled to a position somewhat inside the flaps 61 to 77, and make a rounded corner instead of an abrupt angle where the flaps 61 and 65 meet, and where the flaps 63 and 67 meet. This has the two-fold advantage, first, of providing a somewhat rounded side wall conforming more closely to a rounded article such as a pie or cake packed in the box, and second, of providing additional support for the top wall 11 at points spaced somewhat inwardly from the edges 41, 43, 45, and 47, and inwardly from the corners between such edges, thus increasing the strength of the box.

The exact shapes of the various flaps, tongues, slits, etc., are difficult to describe in words, and reference is made to the accompanying drawing for a complete understanding of such shapes and of the relationship of these parts to each other.

In use, assuming that the user has a box in the collapsed condition indicated in Fig. 2, and de-

sires to erect this box and to pack a pie, cake, etc., in it, the procedure is first to move the top wall 11 and the bottom wall 21 sideways relatively to each other until one is directly over the other. This will swing the side wall panels 17 and 25 to positions substantially perpendicular to the top and bottom walls 11 and 21, so that the top and bottom walls will then lie in parallel planes separated from each other by a distance equal to the height of the walls 17 and 25.

The foldable closure flaps on two adjacent sides of the box are then closed, to hold the box in erected position, after which the pie, cake, or other article is inserted into the box through the opening left by the still unclosed flaps on two other sides, and the latter flaps are then closed, completing the packing and closure of the box. It does not matter, of course, whether the flaps closing the edges 41, 45, 51, and 55 are first closed, leaving the flaps at the edges 43, 47, 53, and 57 open for entrance of the article to be packed, or whether a reverse procedure is followed, first closing the flaps at the edges 43, 47, 53, and 57.

If the first mentioned procedure is to be followed, then upon properly aligning the top wall 11 over the bottom wall 21 as already described, the material is bent along the score lines 95 and 105 to bring the flaps 91 and 101 into positions extending approximately along the side edges 51 and 55, respectively, and these two flaps 91 and 101 are overlapped slightly with each other and interlocked with each other by means of the slits 113 and 115, which brings these flaps slightly inside the edges 41 and 45, particularly at the corner between these edges. Then the flaps 61 and 65 are folded downwardly (bending the material 90° along the score lines 41 and 45, respectively) until the lower edges of these flaps extend approximately along the score lines 51 and 55, respectively. The material is bent approximately 60° along the score line 66 so that the small supplementary flap 62 lies against the flap 65, on either the inside or outside thereof, as may be preferred. Usually it is preferred to place the flap 62 outside of the flap 65, as it is found that this gives greater strength by preventing buckling of the flap 65 along its vertical edge, for this edge usually tends to buckle in an outward direction, rather than inwardly.

The flaps 71 and 75 are then folded upwardly (bending the material 90° along the score lines 51 and 55, respectively), and the locking tabs 83 on the flaps 71 and 75 are turned at right angles to the flaps (bending on the score lines 81) and are thrust through the slits 85, which are located at the top edges of the box. By thrusting the locking tabs 83 firmly through these slits, the undercut shoulders at the base of each locking tab will snap past the ends of the slit 85, making subsequent removal of the locking tabs difficult. The inner flaps 91 and 101 do not interfere with the locking tabs 83, because of the notches 111 which are aligned with such locking tabs. The box in this partially erected stage is in the condition illustrated in Figs. 3 and 4.

Then the article to be packed is placed in the box by a horizontal lateral movement through the opening at the edges 43 and 47, during which packing the box may rest upon a flat table or the like. Then the flaps 93 and 103 are closed in a manner similar to that above described in connection with the flaps 91 and 101, after which the flaps 63, 64, 67, 73, and 77 are closed and locked in a manner similar to that above described in

connection with the flaps 61, 62, 65, 71, and 75.

It is noted that during the final closing operation, the box may remain flat on the table or other supporting surface, because the slits 85 through which the locking tongues 83 are to be thrust are located at the top edges of the box, not at the bottom edges, and consequently these slits 85 are readily accessible without the necessity of lifting the box from its flat supporting surface as would be necessary if the locking tabs were to be received in slits at the bottom edges of the box. Thus accidental breakage or damage to the fragile contents of the box, due to handling the box during the final closing thereof, is avoided.

The top and bottom edges of the inner closure flaps 91, 93, 101, and 103 fit snugly against the top and bottom walls 11 and 21 (except where the notches 111 are cut out) and thus not only aid in strengthening the box against vertical crushing, but also assist in holding it rigid against lateral collapsing or cocking forces which might tend to move the top 11 laterally relatively to the bottom 21. The closure flaps 61, 63, 65, and 67 are also the full height of the box, the bottom edges of these closure flaps resting on the bottom wall 21, and they likewise add strength and rigidity to the box. The supplementary flaps 62 and 64 do the same, particularly in that the square bottom corners of these flaps 62 and 64 bear on the bottom wall 21 and thus help to prevent side sway or cocking of the box.

When the packed and closed box is to be opened to obtain access to the contents, the closure flaps may be opened by a reverse process, or the free edge of the gluing flap 27 may be grasped and pulled forcibly upwardly and outwardly, to tear this flap away from the wall 25 and break the adhesive seal, whereupon the entire top wall 11 may be swung upwardly about the score line 15 as a hinge, if the locking tabs 83 have previously been pulled out of the slits 85.

Merely for convenience of description, the wall 17 may be described as the rear wall and the parts 25 and 27 may be said to constitute sections of the front wall.

While one embodiment of the invention has been disclosed, it is to be understood that the inventive idea may be carried out in a number of ways. This application is therefore not to be limited to the precise details described, but is intended to cover all variations and modifications thereof falling within the scope of the appended claims.

I claim:

1. A folding box of hexagonal shape comprising paper board stock cut, scored and folded to provide opposite, top and bottom walls of hexagonal shape, a rear side wall hinged to both of said hexagonal walls at corresponding edges thereof, a front side wall hinged to said hexagonal walls at corresponding edges thereof, side closure flaps hinged to the remaining edges of a first one of said hexagonal walls with the outer edges of said flaps resting upon the opposite hexagonal wall, a slit having closed ends formed in each of said flaps at the hinge connection thereof with said first hexagonal wall, side closure flaps hinged to the remaining edges of the other of said hexagonal walls and each overlapping one of the closure flaps of said first hexagonal wall and having at its outer edge a locking tongue with a lateral width greater than the length of said slit and inserted and locked therein, and additional side flaps hinged to the lateral

edges of said front and rear side walls and extending along the remaining sides of the box and connected together in pairs inside said side closure flaps.

2. A folding box of hexagonal shape comprising paper board stock cut, scored and folded to provide opposite, top and bottom walls of hexagonal shape, a rear side wall hinged to both of said hexagonal walls at corresponding edges thereof, a front side wall hinged to said hexagonal walls at corresponding edges thereof, side closure flaps hinged to the remaining edges of a first one of said hexagonal walls with the outer edges of said flaps resting upon the opposite hexagonal wall, a slit having closed ends in each of said flaps at the hinge connection thereof with said first hexagonal wall, side closure flaps hinged to the remaining edges of the other of said hexagonal walls and each lying against the outer side of a corresponding one of the closure flaps of said first hexagonal wall and having at its outer edge a locking tongue formed with laterally extending shoulder means wider than the length of said slit and inserted and locked therein, and additional side flaps hinged to the lateral edges of said front and rear side walls and connected together in pairs extending along and inside the remaining side walls of the box, each of said additional flaps being slightly shorter than the length of the side wall along which it extends so as to lie in a curved shape spaced inwardly from the angular corners formed between the adjacent side closure flaps.

3. A folding box of hexagonal shape comprising paper board stock cut, scored and folded to provide opposite, top and bottom walls of hexagonal shape, a rear side wall hinged to both of said hexagonal walls at corresponding edges thereof, a front side wall hinged to said hexagonal walls at corresponding edges thereof, side closure flaps hinged to the remaining edges of a first one of said hexagonal walls with the outer edges of said flaps resting upon the opposite hexagonal wall, a slit formed with closed ends in each of said flaps at the hinge connection thereof with said first hexagonal wall, side closure flaps hinged to the remaining edges of the other of said hexagonal walls and each lying against the outer side of a corresponding one of the closure flaps of said first hexagonal wall and having at its outer edge a locking tongue formed with laterally extending shoulder means wider than the length of said slit and inserted and locked therein, and additional side flaps hinged to the lateral edges of said front and rear side walls and connected together in pairs extending along and inside the remaining side walls of the box, said additional flaps having lengths slightly less than the lengths of the sides of the box along which they extend so as to lie in a curved shape spaced inwardly from the angular corners formed between the adjacent side closure flaps, and said additional flaps having transversely extending slits therein for interlocking engagement with each other by relative movement in a direction normal to said top and bottom walls so that said additional flaps are maintained in interlocked engagement by said walls.

4. A folding box of hexagonal shape comprising paper board stock cut, scored and folded to provide a pair of opposite, top and bottom walls of hexagonal shape, a rear side wall hinged to both of said hexagonal walls at corresponding edges thereof, a front side wall hinged to said hexagonal walls at corresponding edges thereof, side closure flaps hinged to the remaining edges

of a first one of said hexagonal walls with the outer edges of said flaps resting upon the opposite hexagonal wall, a slit formed with closed ends in each of said flaps at the hinge connection thereof with said first hexagonal wall, one of each pair of said flaps of said first hexagonal wall having hinged to its lateral edge a supplementary flap extending laterally from said lateral edge to overlie the outer surface of the other flap of said pair, said supplementary flap having an edge resting on the other of said hexagonal walls, side closure flaps hinged to the remaining edges of

said other hexagonal wall and overlapping the side closure flaps and supplementary flaps of said first hexagonal wall and each having at its outer edge a shouldered tongue wider than the length of said slit and inserted and locked therein, and additional side flaps hinged to the lateral edges of said front and rear side walls and extending along the remaining sides of the box and connected together in pairs inside said side closure flaps and between said top and bottom walls to support the same.

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