Nov. 1, 1932. H. LEVINE 1,885,455

BOX OR CARTON

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Fig. 1

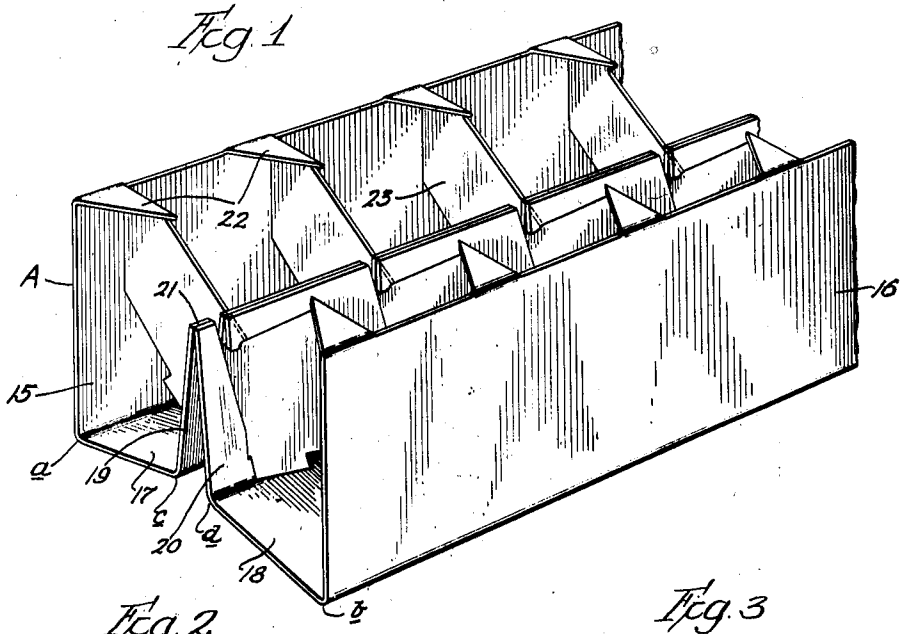


Fig. 2

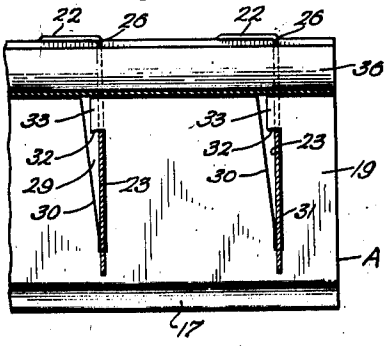


Fig. 3

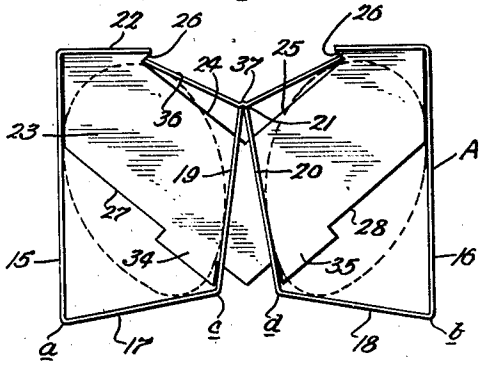
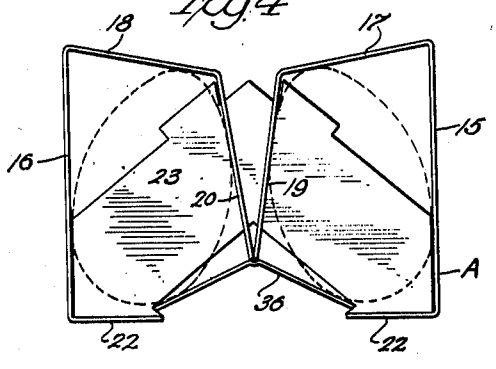


Fig. 4



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Fig. 5

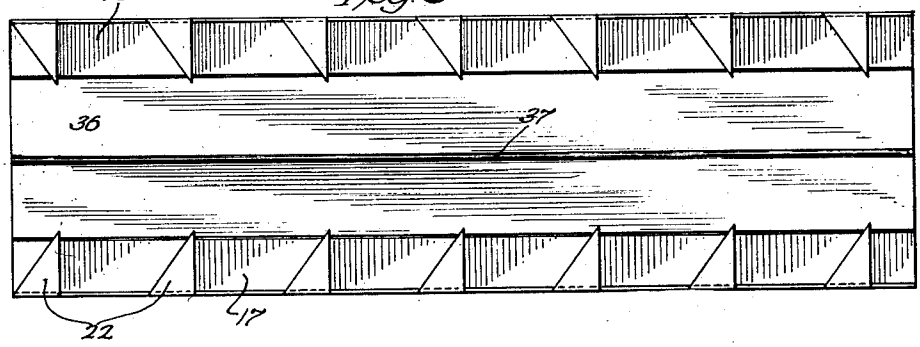


Fig. 6

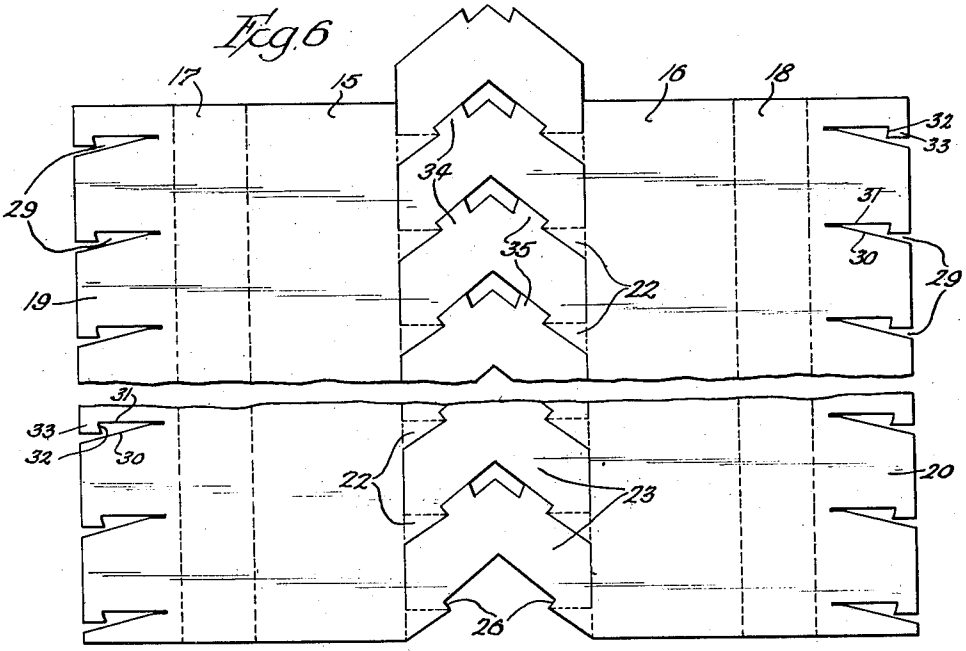


Fig. 7

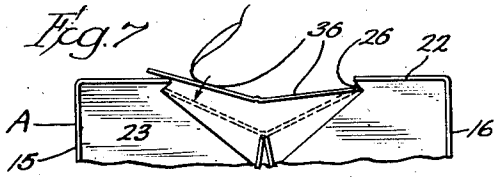
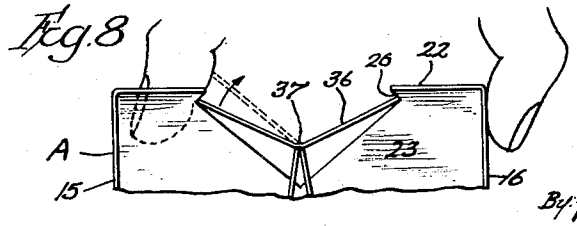


Fig. 8



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Fig. 9

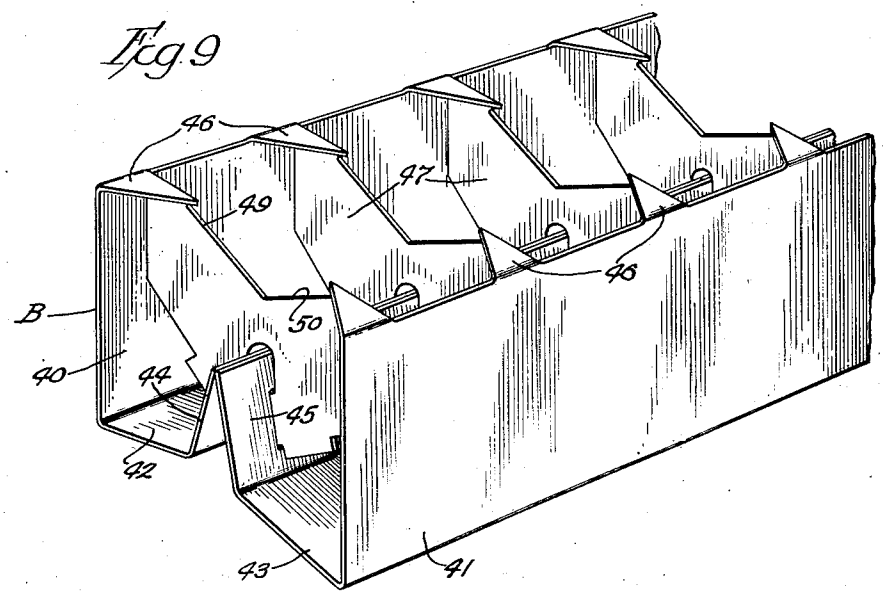


Fig. 10

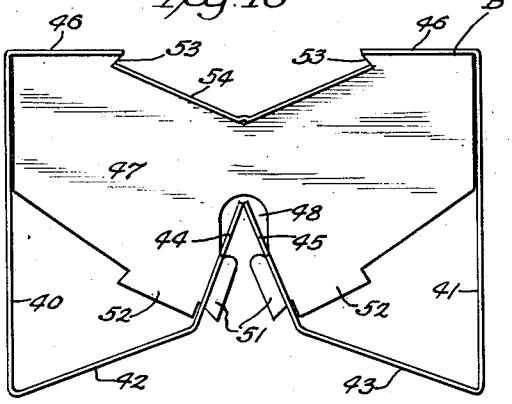


Fig. 11

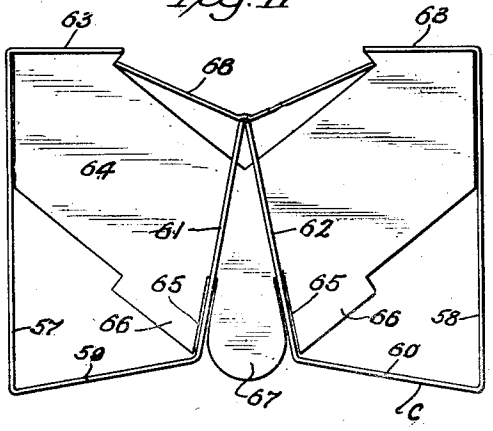
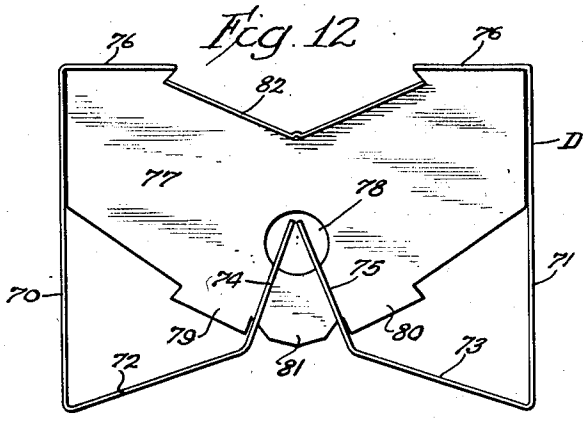


Fig. 12



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UNITED STATES PATENT OFFICE

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BOX OR CARTON

Application filed June 30, 1932. Serial No. 620,231.

This invention which relates to a box or carton is concerned with certain improvements in a one-piece container having a separable lid or closure, the box being adapted for the reception of eggs or other articles which require protection in handling. More particularly, the present improvements relate to a one-piece cellular box or carton having longitudinal and transverse walls which interlock to provide a rigid structure without any other means of securement; a box having a so-called cushion bottom which protects the contained articles from shock directed from below; a box having an open upper side constructed to receive a closure which is separable from and independent of the box; and a box having means for receiving such a closure which is arched or flexed downwardly, and so maintained under tension, the closure providing, in effect, a cushion top. These and other objects, as will hereinafter appear, are accomplished by my invention certain suggestive embodiments whereof are illustrated in the accompanying drawings in the manner following:

Figure 1 is a fragmentary perspective view of one from of my present carton in erected position;

Fig. 2 is a fragmentary longitudinal section taken centrally through the box;

Fig. 3 is an end elevation of the carton;

Fig. 4 is a view similar to Fig. 3, showing the carton inverted;

Fig. 5 is a plan view of the box;

Fig. 6 is a view of the blank from which the box is made;

Fig. 7 which is an end elevation, shows the manner in which the lid is applied to the box;

Fig. 8 is a similar view showing the manner in which the lid may be removed from the box;

Fig. 9 which is a view similar to Fig. 1, shows a box of modified construction;

Fig. 10 is an end elevation thereof; and

Figs. 11 and 12 are end elevation of boxes embodying two further modified constructions.

A box or carton of the kind with which this invention is concerned may be produced advantageously from a paper stock such as chip board having the inherent capacity of resiliency, and of bending along predetermined lines which may be produced as by a scoring operation. Such a material, which will meet all the requirements of this invention, is inexpensive and well known at the present time for the manufacture of boxes or cartons.

As shown in the drawings, Figs. 1 to 8 inclusive, the box A comprises longitudinal side walls 15 and 16 which at their bottom edges, along lines *a* and *b*, respectively, are bent through an angle somewhat greater than 90 degrees to provide a pair of bottom sections 17 and 18, respectively, each inclined upwardly toward the longitudinal center of the box. These bottom sections extend inwardly toward each other to a desired point and then execute bends at *c* and *d* to provide rib sections 19 and 20 upstanding, respectively, from the bottom sections 17 and 18. These rib sections may be spaced somewhat at their bases, as shown in the drawings, and preferably are brought together at their upper edges to provide a ridge 21 of double thickness.

Adjacent the upper edges of the longitudinal side walls are formed inwardly extending horizontal webs 22. Each web is in the general form of a right angled triangle with its base joined integrally to the associated side wall. These webs are aligned both longitudinally and transversely of the carton, one being provided for each of the transverse partitions or cross walls 23 which depend from and are integrally joined with the transverse edges of the webs. In the form which is best shown in Fig. 3, each cross wall is in the general form of a letter V with its top edge centrally depressed as by inclined edges 24 and 25 which proceed downwardly to form an angle at the longitudinal medial line of the box. The upper and outer ends of these inclined edges cut under the inner apices of the webs 22, thereby providing opposing shoulders or notches 26 which are preferably inclined toward each other in dovetail fashion. The lower edges of the cross walls are also inclined as at 27 and 28 in general conformity with the upper inclined edges 24 and

25, respectively, the angles formed by their juncture being substantially in the transverse center of the box.

For the accommodation of the cross walls and longitudinal ribs each to the other, I provide certain slots, best shown in Fig. 2. Here it will be observed that each of the ribs 19 and 20 is provided with a series of registering slots 29 each characterized by an edge 30 inclined slightly from the vertical and straightened out to proceed vertically near its bottom; and by an opposite edge 31 which proceeds upwardly in a vertical direction for jointure with a laterally extending nearly horizontal edge 32 forming part of a lug 33 which extends into the slot at its wider or adit end. Into each pair of such registering slots is received one of the cross walls 23, downturned into vertical position from the supporting webs 22. When so positioned, the lugs 33 will overlie the proximate upper edges 24 and 25 of the associated cross wall to interlock the same with the rib sections, the lower edges of the cross walls being rested at the bottoms of the slots 29. To maintain the ribs against separation at their bases, I provide upon the lower edges 27 and 28 of the cross walls lugs 34 and 35, respectively, each located adjacent the outer side of the rib and depending below the bottom of the slots 29 whereby to act as stops.

The structure thus far described may be formed from a single piece of material and, when set up with the cross walls and rib sections interlocked, is rigid and self-sustaining without any further securement of parts as by an adhesive or stapling connection. For these reasons it is extremely economical to produce. In addition, its two bottom sections which are inclined upwardly toward the center are sufficiently elevated to provide what is commonly termed a cushion carton, i. e., a box having means for supporting its contents away from a plane surface adjacent one of the box faces. The ribs which constitute the inner sides for the cells of the box may be held in spaced relation except along their top edges, permitting bowing or expansion as required to accommodate articles of varying size. The free edges of the ribs which lie uppermost in juxtaposition to form a ridge, terminate, by preference, considerably below the plane in which the several connecting webs are disposed. This is of advantage when use is made of a closure for the box of the kind which will now be described.

The lid 36, best shown in Figs. 5, 7 and 8, is rectangular in form and devoid of any slits, punchings, etc. Its opposite longitudinal edges are spaced apart somewhat further than the distance between the two sets of aligned shoulders 26 adjacent the apices of the webs. These shoulders, however, are relied upon to secure the lid in place under tension, and for this purpose the lid is desirably preformed with a bend line 37 extending centrally of its length, produced as by a scoring operation. To introduce the lid in place, one of its longer edges may first be rested against the inclined shoulders 26 along one side of the box; the lid is then pressed down by the fingers, as suggested in Fig. 7, so as to flex the lid into the space afforded by the depressed central portions of the upper edges of the cross walls. With the lid arched downwardly to a sufficient extent, the free edge may be forced over the apices of the adjacent webs into engaging relation with the associated shoulders so as to occupy the position indicated by the dotted lines in Fig. 7. Here it will be noted that the lowest part of the lid, formed by the angle which extends centrally for its length is rested, or adapted to rest, upon the ridge formed by the free edges of the rib sections. The inherent resiliency of the material composing the lid is such that it tends to return to flat condition, but this is prevented by the abutment of its opposite edges with the shoulders adjacent the webs. Accordingly the lid is maintained under tension with its two sections angularly inclined downwardly in a direction reverse to the angular bottom sections which are inclined upwardly. Not only is the lid so held under tension prevented from sliding endwise, but cushion protection is afforded to the upper ends of the eggs or other contained articles the same as is provided by the cushion bottom of the box to the lower ends of the same articles. In fact, a carton having such a cushion top and bottom may be inverted with entire safety, as suggested in Fig. 4, and be packed or handled indiscriminately with the top either up or down, the protection to the contained articles being the same under all such conditions.

It will be noted that the lid affords a closure extending lengthwise of the box through its central region. It need not extend clear to the box sides. This is of advantage not only to promote ventilation, but also to permit opposing pressures to be exerted by the fingers upon the lid sides, as suggested in Fig. 8. In this way the lid may be compressed sufficiently for the disengagement of one of its edges from the retaining shoulders. By so proceeding the lid is easily removed from the box, as occasion may require. Although the application and withdrawal of the lid involve a forcing of one of its edges past the overhanging end of the shoulders, the material is not so damaged but that these operations may be repeated several times, as necessary or desirable in the use of the box.

The features of improvement which characterize my invention may be variously embodied, as suggested by way of example in Figs. 9 to 12. Referring first to Figures 9 and 10, I have there shown a box B having longitudinal side walls 40 and 41, bottom

sections 42 and 43 and a pair of ribs 44 and 45 which together form a central longitudinal partition. From the upper edges of the side walls are extended inwardly triangular webs 46 between opposite pairs of which are supported transverse walls 47, much the same as in the construction of Figures 1 to 8. In the box now under description, however, each cross wall is centrally slotted in a vertical direction from its lower edge as at 48 to receive the two rib sections 44 and 45 which extend upwardly for a distance considerably less than the point of lowest elevation upon the top edge of the cross walls which are inclined downwardly at 49 and 50 to provide a centrally depressed portion. The rib sections which are each provided with internal slots in line with the cross walls, receive therethrough lugs 51 which project inwardly from opposite edges of the slots 48. Other lugs 52 depending from the inclined lower edges of the cross walls afford stops which abut the ribs.

Shoulders 53 formed adjacent the apices of the several webs are adapted to engage opposite edges of a lid 54 which may be of exactly the same construction as the closure previously described. The manner of application of this lid and its withdrawal from the box follows the description already given. In one respect only, viz., that the lid may be rested directly upon the upper edges of the several cross walls, instead of along a ridge formed by the upper edges of the two rib sections, is there any noticeable difference.

The construction exhibited in Fig. 11, is embodied in a box C having longitudinal side walls 57 and 58 upstanding from inclined bottom sections 59 and 60, respectively, which connect with rib sections 61 and 62, respectively, the free upper edges of which constitute a ridge. Webs 63 of triangular form extend horizontally toward each other from the upper edges of the side walls to support cross walls 64 in a manner similar to the other box constructions hereinbefore described.

The rib sections which are vertically slotted substantially the same as shown in Figs. 1 and 2 are adapted to receive in intersecting relation the cross walls certain of which are provided each with a pair of slots 65 extending inwardly from its lower edge in line with the rib sections. The cross walls depend below the ends of the several vertical slots in the ribs in the form of lugs 66 so as to constitute outer abutments which oppose movement of the ribs at their bases in the direction of the side walls of the box. Between the slots 65 is a tongue 67 which depends between the bases of the ribs to afford an inner abutment therefor. This construction provides internal and external reinforcement for the ribs adjacent their bases, the effect being to prevent undue distortion of the box bottom and sides when required to support a load. A lid 68 applicable to the box is adapted to rest upon the ridge formed by the free edges of the ribs in exactly the same manner as shown in Figs. 3, 7 and 8.

Coming now to Fig. 12, the box D there shown is provided with opposite side walls 70 and 71 connecting at their lower edges with bottom sections 72 and 73, respectively, from which upstand rib sections 74 and 75, respectively. As by means of webs 76 which are horizontally extended from the upper edges of the side walls a plurality of cross walls 77 are supported vertically within the box. In the construction under description, the ribs are provided with slots extending vertically from their upper free edges, the same as shown in Fig. 2, to receive in intersecting relation the cross walls each of which, as shown, is formed with an opening 78 in its central region for accommodating longitudinally extending locking lugs, the same as are illustrated in Fig. 2. Along the bottom edge of each cross wall are provided spaced lugs 79 and 80 forming outer abutments for the ribs and a centrally depending lug or tongue 81 which constitute an inner abutment by which to maintain the ribs against transverse shifting in response to any load that is introduced into the box. A closure 82 in the form of a lid, the same as has been described in connection with the remaining figures, may be applied, as shown.

Regardless of which form my invention may take, I provide cushion protection on the top, bottom, and inner longitudinal walls of the box. In accomplishing this, I use for the box a single piece of material which requires no extraneous securing means. The lid which is formed independently of and separable from the box remains out of the way up to the time that the box is filled, and may then be applied securely in place, expeditiously, and without any extraneous fastening means. In respect of all such features, howsoever embodied, I accordingly desire protection as defined by the claims below.

I claim:

1. A cellular box open at the top having longitudinal side walls with inwardly extending webs supporting transverse partitions whose upper edges between the webs lie below and having portions underlying the latter, and a lid formed independently of the box and separable therefrom formed to rest upon the partitions with its opposite edges disposed adjacent the inner edges of the webs, the upper edges of the partitions cooperating with the inner edges of the webs for securing the lid detachably over the open upper side of the box.

2. A cellular box open at the top having longitudinal side walls with inwardly extending webs supporting transverse partitions, a lid supported over the partitions, and notch means in said partitions adjacent the

inner ends of said webs engaging the lid edges aforesaid for securing the lid detachably over the open upper side of the box.

3. A cellular box open at the top having longitudinal side walls with inwardly extending webs supporting transverse partitions whose upper edges are centrally depressed from said webs, aligned shoulders in line with the partitions spaced inwardly from the side walls, and a lid formed independently of the box and separable therefrom engageable on opposite edges by the shoulders, the width of the lid exceeding the space between the shoulders whereby the lid is required to flex downwardly below the webs there to remain under tension affording a detachable closure for the central portion only of the open upper side of the box.

4. A cellular box open at the top having longitudinal side walls connecting with transverse partitions whose upper edges are centrally depressed, a resilient lid formed for downward flexing into the clearance provided by the centrally depressed upper edges of the partitions, and interengaging means on the lid and depressed edge portions of said partitions for maintaining the former in place while downwardly flexed over the open upper side of the box.

5. A cellular box open at the top having longitudinal side walls connecting with transverse partitions whose upper edges are centrally depressed, two sets of aligned shoulders in line with the partitions spaced inwardly from the side walls, and a resilient lid wider than the spacing between the two sets of aligned shoulders formed for downward flexing into the clearance provided by the centrally depressed upper edges of the partitions, the shoulders being engaged by the lid on its opposite longitudinal edges whereby to maintain the lid under tension with its edges spaced from the side walls of the box and its central portion transversely flexed downwardly.

6. A cellular box having two longitudinal bottom wall sections angularly positioned, side walls and connecting transverse partitions whose upper edges are centrally depressed forming an open topped structure with cushion bottom, a cushion lid having two integral longitudinal sections angularly positioned in opposed relation to the bottom wall sections and extending downwardly into the clearance provided by the centrally depressed upper edges of the partitions, and means whereby to maintain the lid under tension in such position.

7. A cellular box having connected side walls and transverse partitions, a cushion lid and cushion bottom having angularly related sections each extended inwardly toward the other, means extending between the cushion lid and bottom for mutual support, and means for detachably securing the lid under tension in place upon the box top.

8. A cellular box having connected side walls and transverse partitions, a cushion lid and cushion bottom each having angularly related sections and each extended inwardly toward the other, and means for positioning and holding the lid under tension upon the box top.

9. A cellular box having connected side walls and transverse partitions above which is a longitudinally extending ridge, a lid arched transversely and resting upon the ridge, and means engaging opposite longitudinal edges of the lid for supporting the lid in place under tension upon the ridge the upper edges of the partition lying below said lid.

10. A cellular box having connected transverse partitions, side walls, inclined bottom sections and inclined rib sections spaced apart at their bases, the rib sections being suspended from the transverse partitions and in turn suspending the higher edges of the bottom sections, and rib spacing means on the transverse partitions depending adjacent the inner and outer faces of the rib sections for securing the latter against transverse shifting movement adjacent their bases.

11. A cellular box open at the top having longitudinal side walls with inwardly extending webs supporting transverse partitions, the upper edges of said partitions being notched adjacent the inner ends of said webs and centrally depressed from said notches, and a lid having an edge engaging the notches in said partitions to be held thereby over the upper side of the box.

12. A cellular box open at the top having longitudinal side walls with inwardly extending webs supporting transverse partitions whose upper edges are centrally depressed, aligned shoulders in line with the partitions adjacent the webs, and a lid having one edge engageable by the shoulders only when the lid is arched transversely whereby the lid may be required to flex downwardly into the clearance provided by the centrally depressed upper edges of the transverse partitions there to remain under tension to afford a closure for the open upper side of the box.

HENRY LEVINE.