March 16, 1937. S. BERGSTEIN 2,074,160

CARTON

Filed June 11, 1934 3 Sheets-Sheet 1

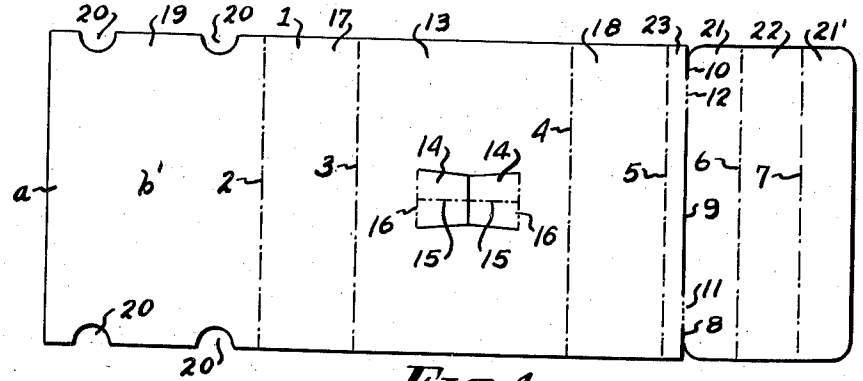


FIG. 1.

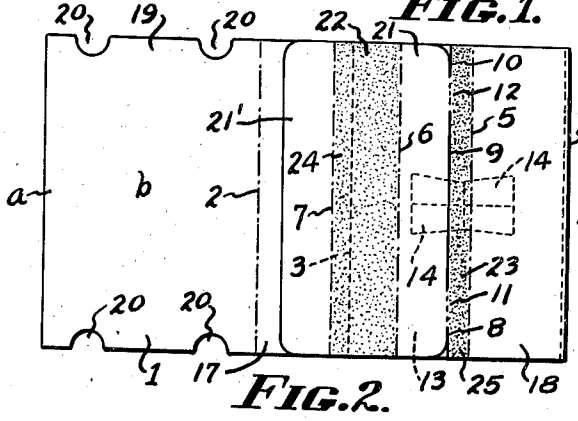


FIG. 2.

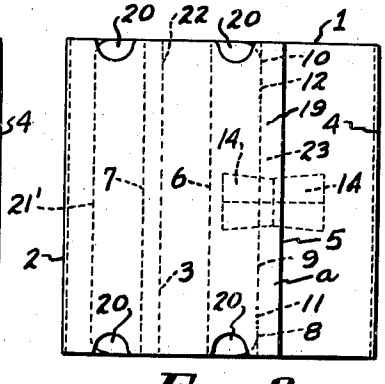


FIG. 3.

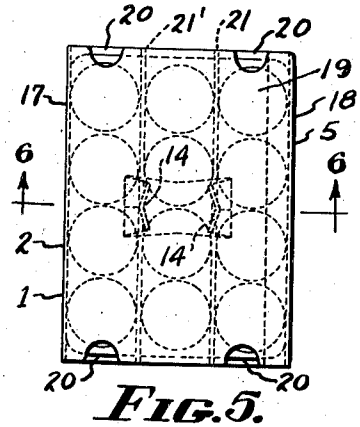


FIG. 5.

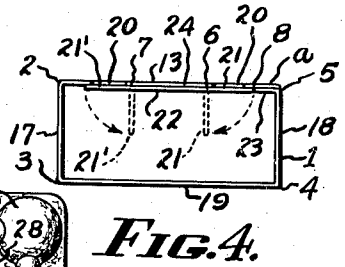


FIG. 4.

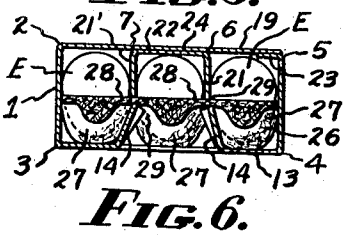


FIG. 6.

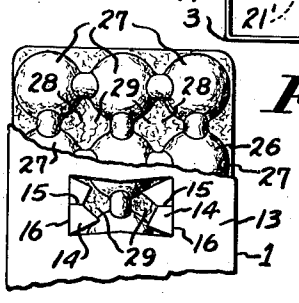


FIG. 7.

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March 16, 1937. S. BERGSTEIN 2,074,160

CARTON

Filed June 11, 1934 3 Sheets-Sheet 2

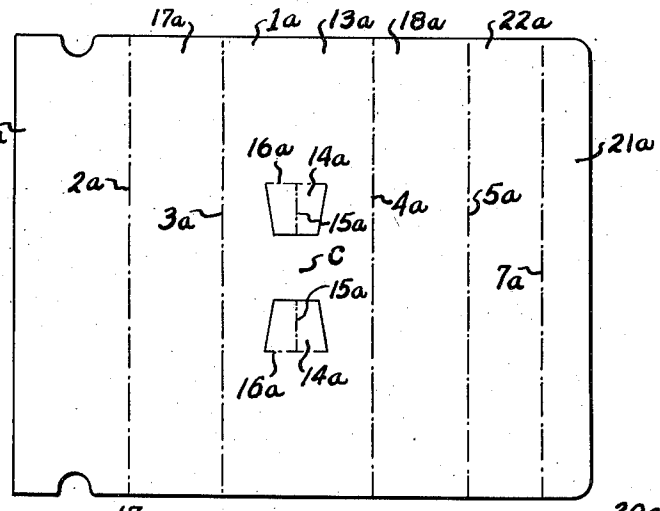


FIG. 8.

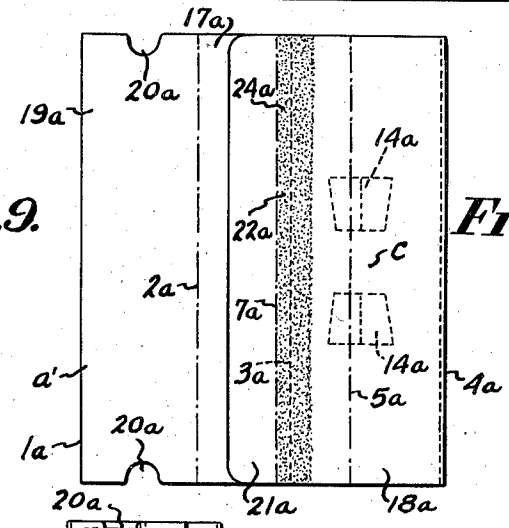


FIG. 9.

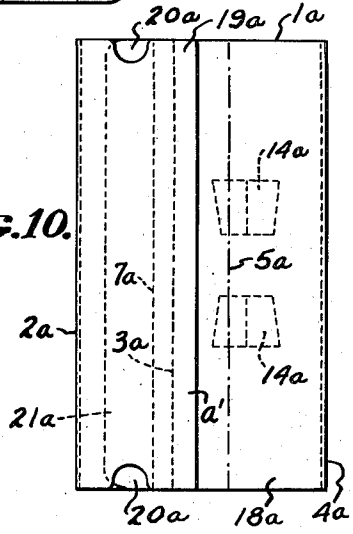


FIG. 10.

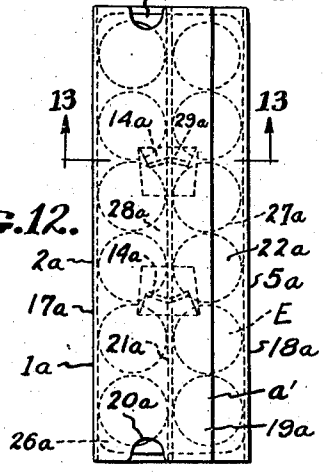


FIG. 12.

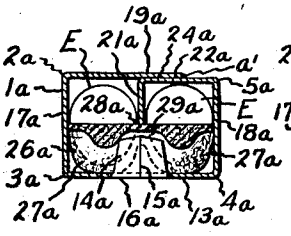


FIG. 13.

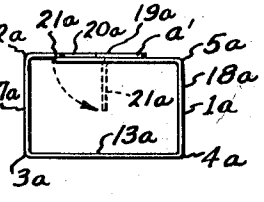


FIG. 11.

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March 16, 1937. S. BERGSTEIN 2,074,160

CARTON

Filed June 11, 1934 3 Sheets-Sheet 3

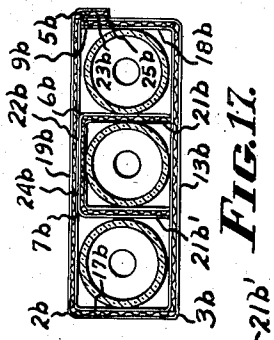


FIG. 17.

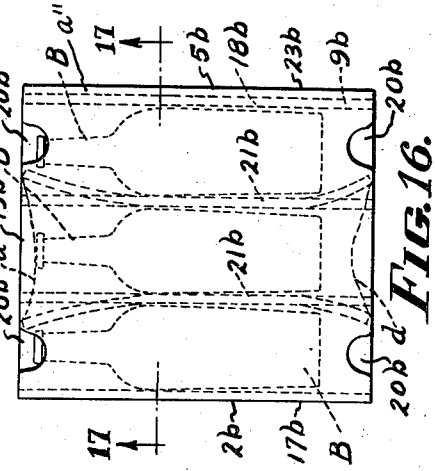


FIG. 16.

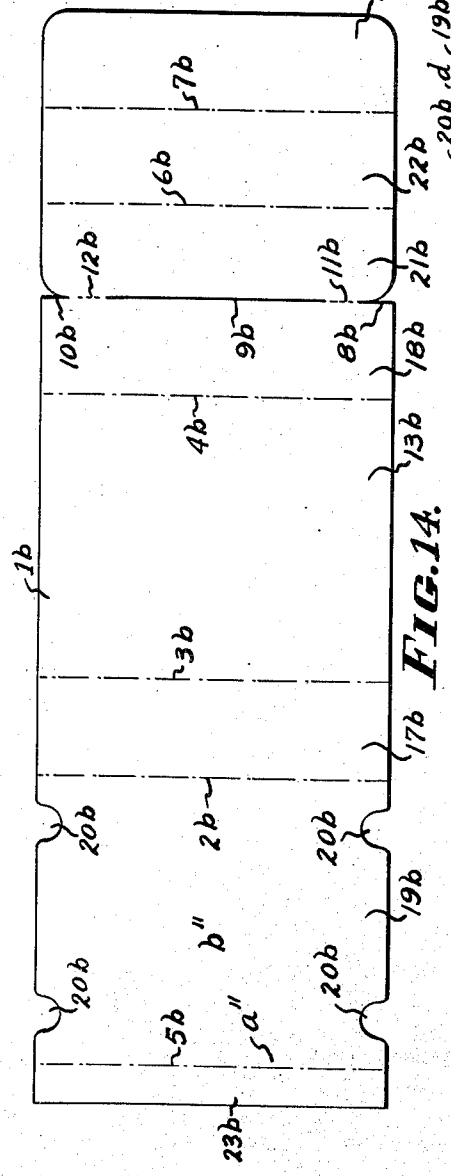


FIG. 14.

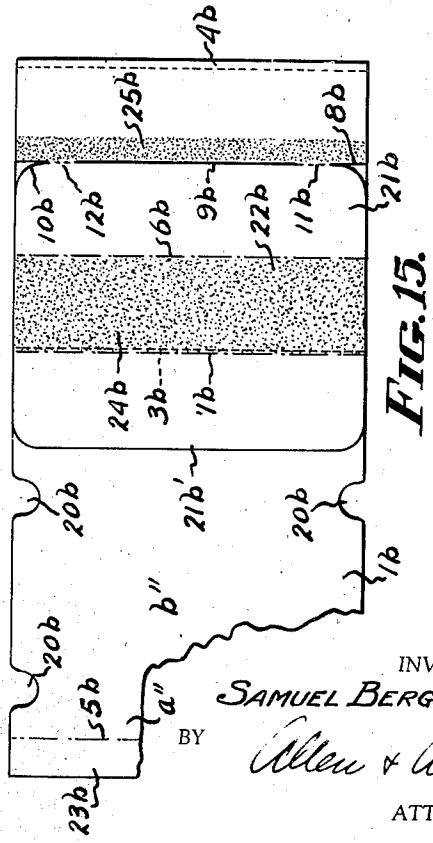


FIG. 15.

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Patented Mar. 16, 1937 2,074,160

UNITED STATES PATENT OFFICE

2,074,160

CARTON

Samuel Bergstein, Cincinnati, Ohio

Application June 11, 1934, Serial No. 730,001

16 Claims. (Cl. 229—29)

My invention relates to cartons which are made up and stored and shipped in knocked down, partially assembled condition.

One particular application of my invention illustrated herein is to cartons for packing and shipping eggs. This carton employs an inner cellular holder with cells or compartments wherein the eggs are held in rows longitudinally of the holder with an inverted channel opening at the lower side of the holder between the rows of egg compartments. It is the outer enclosure which is the particular subject of my invention; the inner compartmented egg holder not being original with me, nor a part of this invention, except as a cooperating element with the novel exterior structure.

One of the objects of my invention is to provide, in a very simple form, a knock-down outer container which may be made rapidly by machinery and will require only the simplest manipulation by the user to erect it and make it ready for the reception of the inner egg holder with the eggs.

A further object is to provide such an outer container with a partition or partitions between the rows of eggs, with the lower edge or edges of the partitions bearing on the top of the inside compartmented holder; thus providing a support for the top of the carton at a position or positions intermediate of the side walls of the carton to which the edge portions of the top are attached.

I also provide the outer container of this character with means formed on its bottom which will extend up into the inverted channel opening at the bottom of the inner egg container to prevent the inner container from sliding out through either end of the outer container. In my copending application, Serial No. 714,678, filed March 8, 1934, I disclose an inner container held in the outer container by means such as that just described.

In that disclosure, the inner holder is of the height of the interior of the outer container or carton, so that it, by a ridge between rows of eggs, provides the intermediate support of the top of the carton, and also provides a partition between rows of eggs. My present improvement makes use of an inner container which is of the same character as, but is not as high, as the one in the prior application just mentioned. These inner containers are pressed integrally of pulp; and the decreased depth greatly facilitates their formation, as well as saves a great amount of pulp. The partitions depending from the top do not contain nearly as much material as that saved by making the inner container only a fraction of the height of the interior of the outer container.

My invention is applicable to cartons which do not have inner containers such as above described, but in which the articles packed simply engage top, bottom and sides of the interior of the carton, and require one or more partitions, according to the number of articles in a series across the container, so as to separate the articles and cushion them from each other. In such a case the depending partition or partitions may be long enough to reach to the bottom of the carton. When so provided, the partitions are supported by the articles between them against lateral buckling, and so may afford effective bracing means between the top and bottom of the carton. As an example of this latter application of my improvement, I show it as a carton containing three bottles lying along the carton side by side in a series across the bottom.

My invention also includes the provision of a single piece blank so formed as to be adapted to be folded and have parts of its folds secured together by rapid continuous passage through a carton making machine, and which will pass from the machine in completed knock-down flat condition, whereby it is adapted to be set up in the form of a tube, and to have its partition or partitions folded down from its top to depend therefrom in relation to the contents of the carton as before described.

One desirable form of egg carton is one in which a dozen eggs are packed in three rows of four each. Another widely used form is one which the dozen eggs are in two rows of six each. I disclose herein an example of each of said forms, constructed according to my invention, but it will be understood that I am not limited to either form nor to the packing of any certain number of eggs in one carton.

As an example of an embodiment of my invention for packing articles other than eggs, I disclose a carton containing three bottles; but it will be understood that I am not limited to the packing of bottles; and that any article that can be conveniently packed with the use of my improved carton, either without an inner container, as when the bottles are packed, or with an inner container, either cellular for packing as the eggs are packed, or of other form according to the articles it is to contain, will be within the scope of my invention.

Objects other than those above mentioned will occur in the course of the following description,

which is illustrated in the accompanying drawings in which—

Figure 1 is a plan view of a blank cut and scored for the formation of a carton receiving three rows of eggs, for which two partitions must depend from the top of the carton

Figure 2 is a similar view of the blank with its first folding completed and with bands of adhesive applied thereto.

Figure 3 is a similar view of the completely folded blank, being the carton in its flat knock-down condition.

Figure 4 is an end view of the carton set up into tubular form before the partitions are folded down, but with this folding indicated by the dotted lines.

Figure 5 is a plan view of the carton, with its partitions folded down, and with the inner container or holder filled with eggs therein, and with the bottom retaining means folded up.

Figure 6 is a vertical cross section on the line 6—6 of Fig. 5.

Figure 7 is a partial bottom plan of the carton, with one end part broken away and omitted to show clearly a bottom plan view of the inner container or holder.

Figure 8 is a plan view corresponding to Fig. 1, but showing a blank for a carton to contain two rows of six eggs each.

Figure 9 is a plan view of the same, corresponding to Fig. 2.

Figure 10 is a plan view of the same, corresponding to Fig. 3.

Figure 11 is an end view of the set up carton, corresponding to Fig. 4.

Figure 12 is a plan view of the filled carton, corresponding to Fig. 5.

Figure 13 is a vertical cross section on the line 13—13 of Fig. 12.

Figure 14 is a plan view corresponding to Figs. 1 and 8, of a blank to be formed into a carton for holding bottles or the like.

Figure 15 is a similar view of the same with its first folding completed.

Figure 16 is a plan view of the set up carton with bottles therein.

Figure 17 is a vertical cross section on the line 17—17 of Fig. 16.

In the example of Figs. 1 to 7 inclusive, the blank 1 is of simple elongated rectangular formation with transverse scores 2, 3, 4, 5, 6, and 7. Between and parallel with the scores 5 and 7, and closer to score 5 than to score 6, are transverse cuts 8, 9, and 10; the middle one 9 being much longer than the other two, and being connected to these other two cuts 8 and 10 by short lines of perforations 11 and 12 respectively. For reasons which will later be described, these perforations are such that the two parts of the blank are almost severed, and the perforations will allow complete separation under relatively slight pressure.

The space between scores 3 and 4 is to form the bottom part 13 of the carton; and at its center it has an H-shaped cut to form two tongues 14 which are in meeting relation, and which have scores 15 in alinement from the meeting ends of the tongues to transverse scores 16 at the ends of the H-shaped cut.

The narrow portions between scores 4 and 5 are to form the side walls 17 and 18, respectively, of the carton. The end portion of the blank at the left of score 2 is to form the top 19 of the carton; and it has at each end in the opposite edges of the blank, two recesses 21, one near each corner of this top forming portion 19.

The end part of the blank at the right of the cuts 8, 9, and 10 and perforations 11 and 12 is to form the two partitions 21 and 21′ and a junction member 22, between scores 6 and 7, for these partitions 21 and 21′.

The narrow space between score 5 and the cuts 8, 9 and 10 and perforations 11 and 12 is to form a flap 23 to which the left hand edge portion *a* of the top forming member 19 is to be secured in the completed carton, while the middle junction portion 22 for the partitions 21 and 21*a* is secured along the middle area of this top forming member 19.

The blank above described is adapted to be carried along in a carton making machine, of well known construction, which first makes a fold at the score 4, turning that portion of the blank at the right of this score 4 over onto the left hand portion, as seen in Fig. 2. Then upon further travel, adhesive 24 is applied to the surface of portion 22 now lying upward and adhesive 25 is applied to the surface of narrow portion 23 now facing upward, as also seen in Fig. 2. Upon further travel the machine makes a fold at the score 2, bringing the top-forming portion 19 over onto the portions previously folded, and the folded blank is then, upon further travel, subjected to pressure so that the left hand edge portion *a* is caused to adhere to the narrow portion 23 by the adhesive 25, and the middle area *b* of the top 19 is caused to adhere to the portion 22 by the adhesive 24. The knock-down carton is now completed as seen in Fig. 3.

When the contents are inserted into this carton, it is pressed into open tubular shape as seen in Fig. 4. In bringing the carton into this shape, folds are made at scores 3 and 5, with partial unfolding at scores 2 and 4. The partitions 21 and 21′ now lie flat up against the under side of the top 13, along with the middle portion 22 and flap 23 to which they are attached.

To bring these partitions 21 and 21′ down into depending vertical positions as shown by the dotted lines in Fig. 4, all that is necessary is to support the carton by the fingers of the two hands other than the index fingers, under the ends of the carton, and press with the index fingers and thumbs in the recesses 20, down against the partitions 21 and 21′. The partition 21 will readily break loose from the flap 23 under this pressure, tearing the material at the perforations 11 and 12; so that it bends down practically as easily as does the free partition 21′. The partitions swing by folding at the scores 6 and 7.

The inner container 26 has the twelve compartments or cells 27 in three rows of four each, with web portions 28 that join the upper rims of these cells 27, so that there are two rows of these webs 28 longitudinally of the container 26. As seen in Fig. 6, this container 26 is about half as high as the interior of the outer container. It is slipped endwise into an open end of the outer container, with the eggs E in its cells 27; whereupon the bent down partitions 21 and 21′ are received between the middle row of eggs and the laterally outer rows. The outer carton is high enough interiorly to receive the eggs with very little vertical play; the middle row of eggs preferably fitting snugly under the junction strip 22 of the partitions, as seen in Fig. 6. The partitions 21 and 21′ are of such length that they will rest their lower edges snugly down on the respective

rows of web portions 28 of the top of the inner container 26, before mentioned.

The integrally formed cellular inner container 26 is amply rigid, and with this support of the partitions 21 and 21', the top and bottom 19 and 13 of the outer container are amply braced apart, so that the top 19 is especially supported in its middle portions, against impacts that would otherwise cause it to yield, with possible breakage of the eggs E. At the same time the partitions 21 and 21' depending between the eggs, form cushions between the upper parts of the eggs that extend up out of the cellular inner container 26. As previously explained, this allows this inner container to be of reduced depth, about half that of the inner container shown in connection with my invention of the prior application mentioned. The inner container thus is very much less expensive, and the partitions 21 and 21', taking the place of the omitted upper structure of inner container, add to the cost of the outer container only a very small fraction of what is saved from the inner container.

When the inner container 26 with its eggs E have been positioned as above described, the flaps 14 are bent up from the bottom 13 of the outer container into spaces 29 between the middle two transverse rows of cells 27, as best seen in Fig. 7; the flaps or tabs 14 hinging at the scores 16, and also buckling along their scores 15 until their upper ends are jammed into the spaces 29 in a retentive manner. These flaps or tabs 14 thus will prevent the inner container 26 from sliding out of the outer container accidentally. The inner container may be withdrawn to remove the eggs, by pulling out these tabs 14, or by simply pulling so forcibly on the inner container that the tabs 14 are torn or forced out of the spaces 29. After this the inner container with part of the eggs left in it will be held sufficiently by friction with the walls and partitions of the outer container, until the eggs are all used. Of course the outer container may be disrupted to get the eggs out; but the user usually prefers to preserve the carton in closing condition until the dozen eggs have all been used from it.

The most notable difference of the tabs 14 from the tabs in my prior application mentioned, is their disposition across the container instead of lengthwise of it. This is dictated by the different arrangement of egg cells 26, three rows instead of two; but the tabs disposed in this way have a somewhat better holding engagement against sides of egg cells than the longitudinally disposed tabs, so that they hold the inner container and eggs more firmly in the outer container than the longitudinally disposed tabs do. It may be said that the three-by-four egg carton is generally more substantial than the two-by-six egg carton, inherently; and this firmer bracing by the retaining tabs 14 is an added advantage of it, being permitted by the three-by-four arrangement.

My present invention is well adapted to the two-by-six egg carton, however, as shown in Figs. 8 to 13, inclusive. As only two rows of eggs are involved, of course only one partition is needed; so that the readily detachable connection to the connecting flap of the carton tube is not needed. As shown in Fig. 8, the more nearly square blank 1a has only five transverse scores 2a, 3a, 4a, 5a, and 7a, instead of six as in the first example. These define, from left to right as illustrated, a top portion 19a, side wall 17a, bottom 13a, side wall 18a, portion 22a which becomes part of the top and is the attaching portion for the partition, and, finally, this partition 21a.

The making of this carton by continuous movement through a carton machine is practically the same as that described for the first example. The blank is folded along score 4a as seen in Fig. 9; and adhesive 24a, as there shown, is applied in a band along about half the width of the attaching or junction portion 22a, to secure the left hand outer edge portion a' of the top 19a when the carton is folded into completed flat knock-down condition, as shown in Fig. 10. The top 19a has one recess 20a at each end, to admit the thumbs of the hands that hold the carton, for pressing down the one partition 21a to the position indicated by dotted lines in Fig. 11. The inner container 26a has two rows of six cells 27a each, with a row of top webs 28a joining the two rows of cells, upon which row of webs the lower edge of the partition 21a rests, with the advantages of the first example.

Also, for this two-row carton, the bottom tabs 14a extend lengthwise, and are spaced lengthwise, to enter the spaces 29a between the middle group of four cells and the outer two groups, as best seen in Figs. 12 and 13. They hinge at scores 16a, and buckle at scores 15a to crimp into the spaces, in the manner described as to the first example. The spacing of the tabs, leaving a portion c of the bottom 13a between them, is an arrangement different from that of the bottom tabs in the two-row carton of my prior application before mentioned, because the inner cellular container 26a is only about half as deep as the container in the prior disclosure. The tabs have to be at the same relative locations, but cannot be long enough to meet, and be made by an H-shaped cut as in the first example, or a somewhat similar cut in the prior disclosure. The shorter tabs, here, or in the first example, are stronger than the long tabs of my prior application mentioned.

The example of my invention, shown in Figs. 14 to 17, inclusive, as applied to the packing of bottles, is similar to the first example in that two partitions are used, and one of these is weakly attached to another portion of the carton and has to be torn loose to be folded down for use. As these partitions are required to reach entirely to the bottom of the carton, and thus, to form substantially square compartments for round or other symmetrically shaped bottles or like articles, the one partition is not attached to a connecting flap joining the top of one side wall as in the previous examples; but is attached directly to the top of the side wall. The flap to attach for completing the tubular shape of the carton is attached to the outer edge portion of the top forming portion of the blank, and laps down outside and is attached to the upper portion of the side wall to which the partition is attached. As a bottle carton, it is illustrated as being made of three-ply board of which the middle ply is corrugated; material well known for such purpose. There is of course no limitation as to the nature of material of sheet stock used for any of the cartons.

The blank 1b is shown in Fig. 14, with six scores 2b, 3b, 4b, 6b, 7b, and 5b; the last mentioned score, 5b, not being in the position of the score 5 of the first example, but being the first one to the left as shown, as the folding line for the connecting flap 23b joining the left hand edge portion a'' of the top forming portion 19b of the blank. The long and short cuts 9b and 8b and

10*b*, with intervening perforations 11*b* and 12*b* are like those of the first example, but are about midway between the scores 4*b*, at the junction of the partition portion 21*b* and side wall portion. The outer or free partition portion 21*b'* joins the attached one by the junction or attaching portion 22*b*. The top 19*b* is defined between the scores 5*b* and 2*b*; the other side wall 17*b* between scores 2*b* and 3*b*; and the bottom 13*b* between the scores 3*b* and 4*b*. The top 19*b* has the four recesses 20*b*. No bottom tabs, as the tabs 14 or 14*a* of the first two examples, are provided; although it will be understood that such tabs, or other suitable tabs may be provided in the bottom if the shape of the articles packed facilitates their use.

Fig. 15 shows the first stage of folding of the blank, with bands of adhesive 24*b* and 25*b* applied, respectively, to the junction or attaching portion 22*b* and an area of the side wall 18*b* along next to the cuts and perforations, to which is to adhere the flap portion 23*b*, as shown in the sectional view, Fig. 17, when the final folding is done to make the knock-down carton, which stage is not illustrated for this example, but will be understood from the corresponding illustration in Fig. 3, for the first example. Junction portion 22*b* adheres to the middle area *b''* of the underside of the top 19*b*; and the partitions 21*b* and 21*b'* are turned down with the thumbs and fingers inserted in the recesses 20*b*, as described for the first example. The bottles B may be slipped into the compartments defined between partitions and between partitions and side walls of the carton, as seen in Fig. 16. The bottom wall 13*b* may have the middle portions of its ends crimped up between the adjacent end portions of the partitions 21*b* and 21*b'*, as seen at *d*, *d*, Fig. 16, in dotted lines; this crimping itself preventing easy sliding of the middle bottle from the carton, and the lateral spreading of the lower corner portions of the partitions serving a like purpose for the outer two bottles. In any example, end flaps may be provided.

I have shown several modifications of my invention, but it will be understood that other variations may occur, and that I am not limited to the specifically illustrated and described examples herein; but what I claim as new and desire to secure by Letters Patent is:

1. A carton having opposite walls between which a plurality of articles are to be contained in a container also contained in the carton, which container extends only a fraction of the distance from one opposite wall to the other, said carton comprising a straight edged partition to extend between articles extending past the inner container and held against said inner container in bracing relation between the opposite wall of the carton and the surface of the inner container facing said other wall.

2. A carton having opposite walls between which a plurality of articles are to be contained in a container also contained in the carton, which container extends only a fraction of the distance from one opposite wall to the other, said carton comprising a straight edged partition attached to said other wall and extending between the articles into bracing relation against the surface of the inner container facing said other wall.

3. A carton of four walled tubular shape, comprising at least two partitions therein, foldably joined to an intermediate portion which is attached to one of the walls of the carton in an area spaced from the two walls adjoining said one of the walls, said partitions being adapted to extend toward the fourth wall, or to be folded close to the wall to which said intermediate portion is attached, said carton having its four walls foldably connected for collapse.

4. A carton of four walled tubular shape, comprising at least two partitions therein, foldably joined to an intermediate portion which is attached to one of the walls of the carton in an area spaced from the two walls adjoining said one of the walls, one of said partitions being extended along the inner side of said one wall and having its edge weakly attached to one of said adjoining walls, to be readily detached so that both partitions may be folded to extend toward the fourth wall, said carton having its four walls foldably connected for collapse when both partitions are lying along the inner side of said one wall, and being adapted to be formed by a continuous folding process from a one piece blank comprising the wall forming portions with the partition and intermediate portions weakly attached thereto as aforesaid.

5. A carton blank for making a four walled tubular carton with at least two partitions, in flat knock-down condition, comprising two weakly joined portions, one of which is to form the four walls of the carton and the other of which is to form the partitions and an intermediate portion connecting the partitions in spaced relation to each other.

6. A carton blank as set forth in claim 5, in which the portion for forming the walls also has a certain area to be folded relatively to the walls for attachment to an area of the wall forming portion remote from said certain area, to complete the wall forming structure for setting up as a tube.

7. A carton blank as set forth in claim 5, in which the portion forming the walls also has a certain area next to the weak junction of the two portions of the blank, said certain area being adapted to be folded relatively to the walls for attachment to the farther end of the wall forming portion, to complete the wall forming structure for setting up as a tube.

8. A carton blank as set forth in claim 5, in which the portion forming the walls also has a certain area at the end of the wall forming portion remote from the weak junction of the two portions of the blank, said certain area being adapted to be folded relatively to the walls for attachment to the area next to the weak junction after the blank has been folded to form a wall adjacent to said junction, to complete the wall forming structure for setting up as a tube.

9. A collapsed carton structure adapted to be set up in the form of a four walled tube, comprising portions to form the four walls and a flap connecting two of said portions, and portions to form at least two partitions and an intermediate member joining the partitions together in spaced relation, these latter mentioned portions being folded inside the wall and flap portions with said intermediate member attached to one of the wall portions and one of the partitions having an edge weakly attached to one of the first mentioned portions.

10. A carton structure as set forth in claim 9, in which the wall portion to which the intermediate member is attached has recesses in at least one of its edges, one at an end portion of each partition, to admit of contact with the partition to move it into a position of extension from said

wall toward the opposite wall after the structure is set up into tubular shape for use.

11. In combination, an outer carton of tubular shape and an inner container having a plurality of cells, slidable into and out of the tubular outer carton, and having spaces between its cells, opening toward one wall of the tubular outer carton, said wall having a tab joining it along a line substantially parallel with the direction of sliding of the inner container and extending from its junction into a space between cells of the inner container, in retentive frictional engagement with a side of said space.

12. In combination, an outer carton of tubular shape and an inner container having a plurality of cells, slidable into and out of the tubular outer carton, and having spaces between its cells, opening toward one wall of the tubular outer carton, said inner container extending only a fraction of the distance from said one wall toward the opposite wall of the carton and having abutment areas between its cells, presented toward said other wall, and a partition joined to said other wall and extending therefrom into bracing relation against said abutment areas, said one wall having tabs extending therefrom into respective spaces of the inner container, in retentive engagement with a side of each space, to oppose sliding of the inner container out of the outer carton.

13. The method of making a container having a partition therein, in flat knock-down condition, which comprises folding a blank to interlap two members across an intermediate portion, with sufficient interlap whereby one member extends under the other member a sufficient distance to present an attaching area to the underside of said one member and to leave a partition forming area on said one member adjacent said attaching area, and securing the two interlapping members together within said attaching area.

14. The method of making a container having a partition therein, in flat knock-down condition, which comprises taking a blank having a longer section and a shorter section having a weakened connection, folding the longer section along lines spaced from said weakened connection at opposite sides thereof, to bring an area thereof adjacent the weakened connection, together with said shorter section, under the opposite terminal area of the longer section, and attaching to said terminal area of said longer section an intermediate area of the shorter section and said area adjacent the weakened connection.

15. A carton of multi-walled tubular shape, having an extension on one of its walls with a weakened connection to said wall and attached, in an area spaced from said weakened connection, to the inner side of an adjacent wall, permitting its area between the attached area and the weakened connection to be torn from said one wall at said connection and turned inward across the container to form a partition.

16. A carton of multi-walled tubular shape, having an extension on one of its walls with a weakened connection to said wall, and attached, in an area spaced from said weakened connection and from its free edge, to the inner side of an adjacent wall, permitting its area between the attached area and the weakened connection to be torn from said one wall at said connection, and, together with the area between the attached area and the free edge, to be turned inward across the container to form partitions.

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