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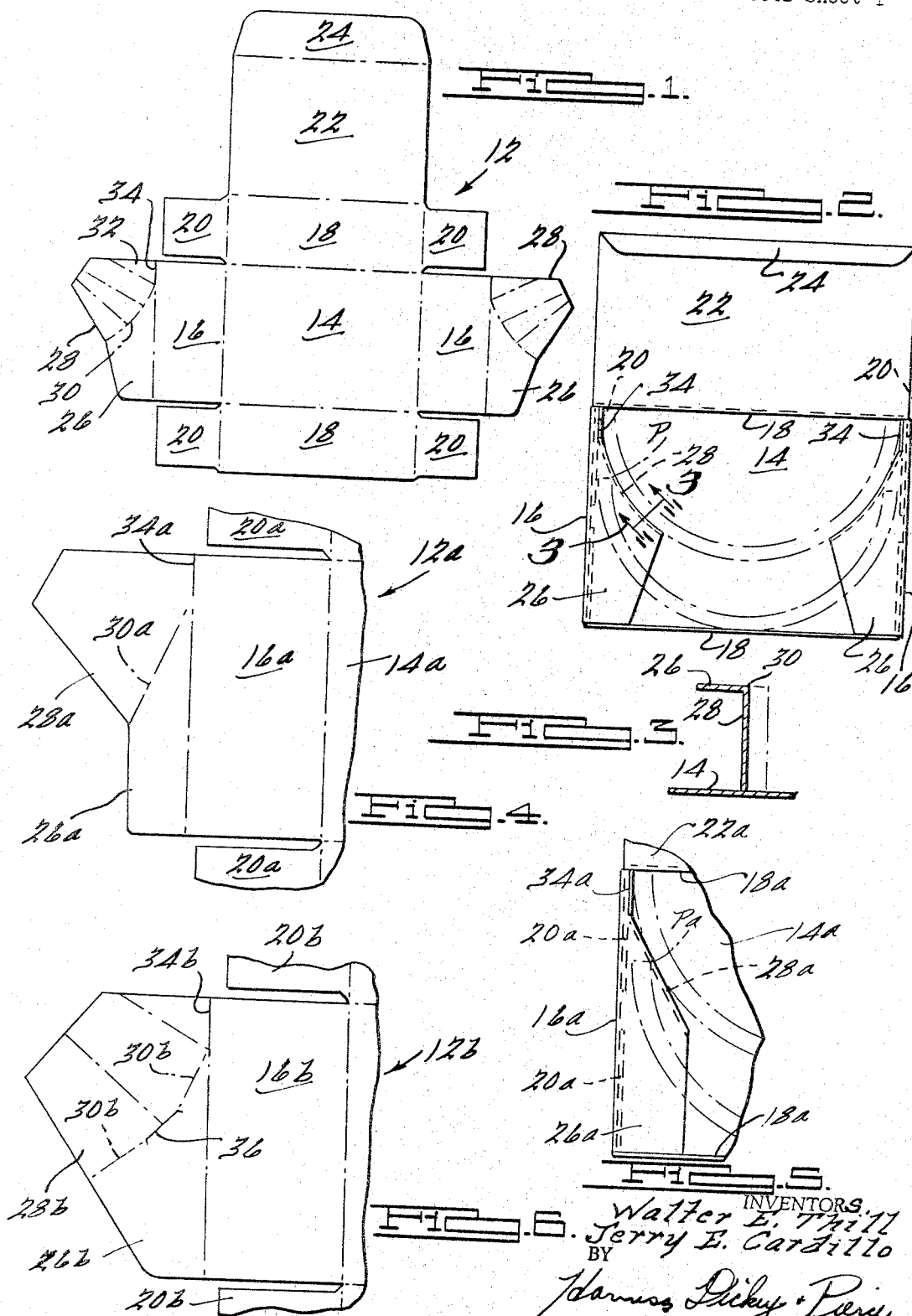
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3,337,037

BEARING PACKAGE

Filed March 10, 1965

2 Sheets-Sheet 1



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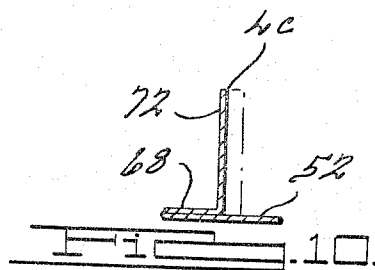
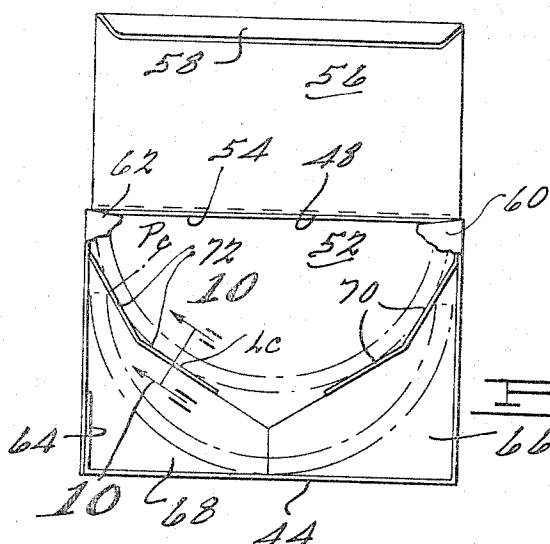
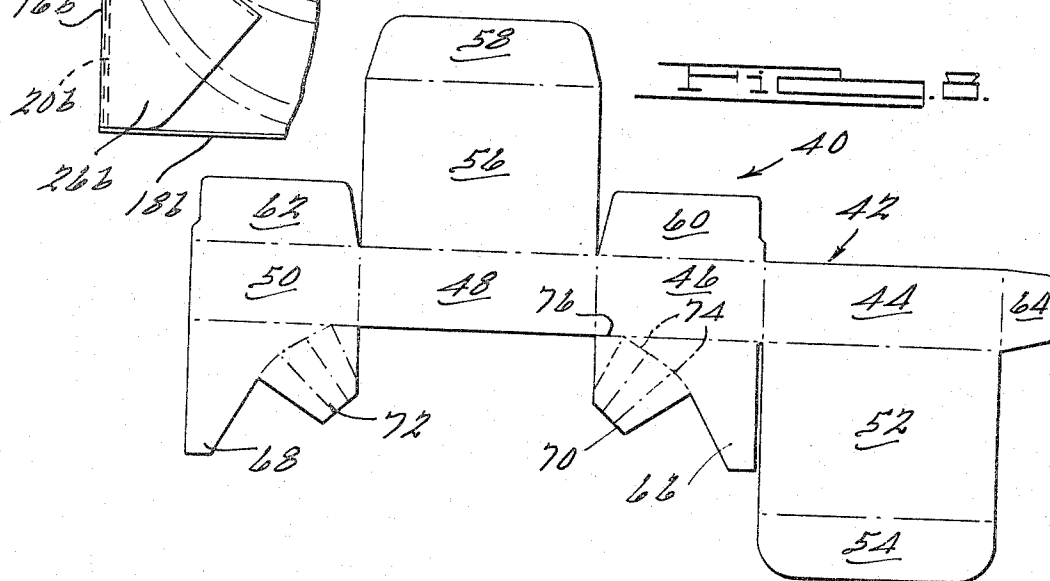
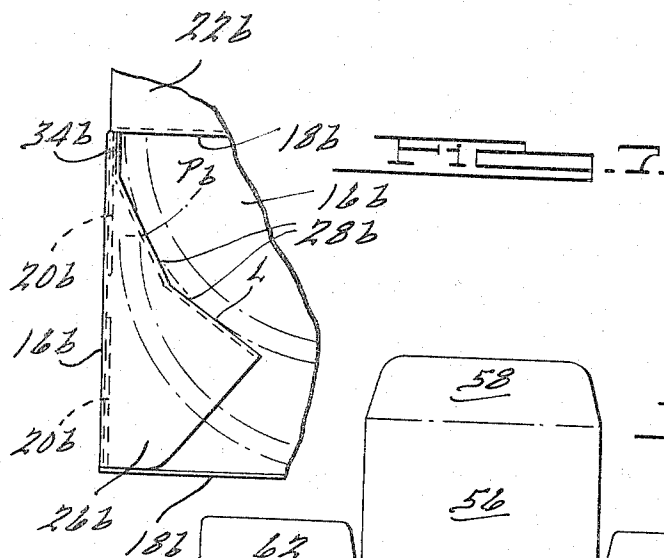
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2 Sheets-Sheet 2



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3,337,037

BEARING PACKAGE

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13 Claims. (Cl. 206-46)

This invention relates to cartons for packaging bearings and more particularly to cartons for packaging shell-type bearings.

Shell-type engine bearings are semi-cylindrical parts having a steel backing with a lining material on the inside such as babbitt. The lining material is usually soft such that any engagement of this inner surface either by the carton or the other bearing half can damage the lining thereby either lowering the market value of the bearing halves or rendering the bearing halves unuseable.

In the past these bearing halves have been packaged with their inner surfaces in confrontation such as to define a circle and a diametrically extending separator was extended therebetween. While this construction protects each inner bearing surface from contact either by its mating bearing half or from contact with the carton, the arrangement is inefficient from the packaging standpoint since it does require a relatively large carton.

In the present invention the size of the carton is substantially reduced while the bearing halves are still maintained separated from each other and the respective linings protected. Therefore, it is an object of this invention to provide a novel carton for packaging bearing halves which can be substantially smaller than the conventional carton and in which the internal surfaces of the bearing halves are protected from engagement.

It is a general object of the present invention to provide a novel carton for packaging bearing halves.

Other objects and advantages of the present invention will be apparent from the following specification, claims and drawings, wherein:

FIGURE 1 is a view of the development of a flattened carton prior to being folded and assembled;

FIG. 2 is a top elevational view to enlarged scale of the development of FIGURE 1 shown in its folded and assembled condition with a pair of bearing halves shown in phantom;

FIG. 3 is a sectional view of the carton of FIGURE 2 taken substantially along the line 3—3;

FIG. 4 is an enlarged fragmentary view of a portion of a development of a carton similar to the carton of FIGURES 1 and 2 and depicting a modified separator construction;

FIG. 5 is a fragmentary, elevational view of an assembled carton utilizing the separator construction of FIGURE 4;

FIG. 6 is a view similar to that of FIGURE 4 of a development of another further modified separator construction;

FIG. 7 is a fragmentary, elevational view of an assembled carton utilizing the separator construction of FIGURE 6;

FIG. 8 is a view of a modified development for a carton;

FIG. 9 is a top elevational view to enlarged scale of the development of FIGURE 8 shown in its folded and assembled condition with a pair of bearing halves shown in phantom; and

FIG. 10 is a sectional view of the carton of FIGURE 9 taken substantially along the line 10—10.

In FIGURES 1, 4, 6 and 8 the dot-dash lines indicate scored lines which facilitate bending therealong.

Looking now to the embodiment in FIGURES 1

through 3, the carton is generally indicated by the numeral 12 and has a bottom portion 14 and side wall portions 16 which are symmetrically disposed on opposite sides of the bottom portion 14. Portions 18 are symmetrically disposed at the front and rear of the bottom portion 14 and are the front and rear wall portions, respectively, of the carton 12. The front and rear wall portions 18 are provided with flaps 20 on opposite transverse sides thereof which are folded inwardly and are utilized to secure the front and back wall portions 18 to the side wall portions 16. Portion 22 represents the cover or top portion with a locking flap 24 at its forward end. Separating or dividing portions 26 are secured to and extend transversely from the ends of the side wall portions 16 and with the carton 12 assembled as shown in FIGURE 2, are folded along the scored lines to partially overlay one of the bearing halves (shown in phantom in FIGURE 2). The separating portion 26 is provided with a tab 28 which is fixed to the remainder of the separating portion 26 along an arcuate scored line 30. The tab 28 has a portion 32 which adjoins the end portion 16 with the connection 34 therebetween being cut to facilitate bending along the arcuate scored line 30. The arcuate scored line 30 is provided to be of a radius substantially equal to the radius of the outer surface of the bearing halves such that with the tab 28 bent downwardly in the manner as shown in FIGURE 2, the tab 28 defines an arcuate surface which matably engages the outer surface of the rearward one of the bearing halves located within the carton 12, (FIGURES 2 and 3). The tab 28 can be provided with a series of scored lines to facilitate bending. By bending the various portions inwardly along the scored lines indicated the portion 12 will assume the shape shown in FIGURE 2.

Looking to FIGURE 2 it can be seen that at the point of projected contact between the inner edge of the forward bearing half and the outer surface of the rearward bearing half, the halves are separated by the curved tab 28. It can be seen as in FIGURES 1 through 3 that with the bearing halves assembled in carton 12 as shown in FIGURE 2, no portion of the carton 12 can engage the internal surface of either of the bearing halves and note also that the two bearing halves are firmly held separated from each other whereby contact therebetween is prevented.

Several modified structures have been shown; in the description of these modifications, portions similar to portions in the embodiment of FIGURES 1-3 have been given the same numeral designation with the addition of a letter suffix.

In a modified structure shown in FIGURES 4 and 5, a different separator portion 26a is provided having a tab 28a which is connected to the remainder of the separating portion 26a by means of a straight scored line 30a. Again the connection between the tab 28a and a side wall portion 16a is cut as at 34a such that the tab 28a can be bent along the straight scored line 30a. The scored line 30a is provided such that with tab 28a bent therealong (see FIGURE 5) it is tangent to the outer surface of the rearward one of the bearing halves substantially at the point of contact Pa between the bearing halves and hence maintains the bearing halves separated from each other.

In FIGURES 6 and 7 is shown a further modification in which the tab 28b is in contact against the outer surface of the forward bearing half at two points of tangency Pb and L. Here the separating portion 26b is provided with the tab 28b which is connected to the remainder of the separating portion 26b by a pair of straight scored lines 30b which intersect each other at the juncture thereof and are separated by means of a cut 36 to facilitate bending. Again the tab 28b is separated from the side

wall portion 16b by means of a cut 34b to facilitate bending. Looking now to FIGURE 7, it can be seen that on bending the tab 28b along the scored lines 30b, the outer surface of the rearward bearing half is contacted at a point of tangency Pb by one section and at a second point of tangency L by the other section. Note that the point of tangency Pb occurs at the point of anticipated contact between the forward and rearward bearing halves. Thus the latter construction separates the forward and rearward bearing halves such as to prevent contact therebetween and also provides an arrangement whereby the inner surfaces of the bearing halves cannot be contacted by the edges or corners of the carton.

It should be noted that the cartons 12, 12a and 12b are of a design to facilitate being folded by a machine. A different structure adaptable for folding by hand is shown in FIGURES 8, 9 and 10.

Looking now to FIGURE 8 the carton is generally indicated by the numeral 40 and is shown as a development and includes an elongated strip 42 which is divided by appropriate scored lines into a front wall portion 44, which is connected to a first side wall portion 46, which in turn is connected to a rear wall portion 48, which in turn is connected to a second side wall portion 50. The bottom portion 52 is connected to extend rearwardly from the side wall portion 44 and is provided with a tab portion 54. A top portion 56 extends forwardly from the side wall portion 48 and is provided with a tab portion 58. A cover tab 60 extends forwardly from the end portion 46 while a cover tab 62 extends forwardly from the end portion 50. A connecting tab 64 extends in the opposite direction from the front wall portion 44. A separating portion 66 extends forwardly from the side wall portion 46 and a similar separating portion 68 extends forwardly from the side wall portion 50. The separating portions 66 and 68 can be provided with tabs similar to any of the tabs 28, 28a or 28b and as shown in FIGURES 8 through 10 are provided with tabs similar to the tabs 28b which have two points of tangency or contact with the outer surface of the rearward bearing half. Since the tabs 70 and 72 are similar, only tab 70 will be discussed. Tab 70 is connected to the remainder of separating portion 66 by means of a pair of intersecting scored lines 74 which are cut at their juncture. Appropriate scored lines are provided to facilitate bending and the tab portion 70 is separated from the side wall portion 44 by a cut 76.

Note that in the embodiment as shown in FIGURES 8-10, the separating portions 66 and 68 when folded are located in engagement with the bottom portion 52 and hence the tabs 70 and 72 rise upwardly from the bottom surface as shown in FIGURE 10. The tabs 70 and 72 engage the outer surface of the rearward bearing shell at two points of tangency Pc and Lc with the one point of tangency Pc being located at the anticipated point of engagement between the forward and rearward bearing halves. The connecting tab 64 is joined to side wall portion 50 and cover tabs 60 and 62 are folded inwardly over the bearing halves. Note that carton 40 can be opened either with the top or bottom portions 56 and 52, respectively.

Thus it can be seen with the embodiment of FIGURES 1, 2 and 3, the embodiment of FIGURES 4 and 5, the embodiment of FIGURES 6 and 7, and the embodiment of FIGURES 8, 9 and 10, novel structures have been provided for a carton of minimum size in which contact between bearing halves is prevented and in which engagement between the carton separating portions and the inner surfaces of any of the bearing halves is substantially precluded.

It is to be understood that the improved bearing package herein disclosed and described is presented for the purposes of explanation and illustration and is not intended to indicate limits of the invention the scope of which is defined by the following claims.

What is claimed is:

1. A carton of minimum size receiving a pair of semi-cylindrical shell bearing halves located with the external surface of one nested within the internal surface of the other, said carton comprising: a top, a bottom, a plurality of side walls, and a pair of separator portions, each of said separator portions having a tab extending generally normally to said bottom and having a portion for engaging the outer surface of the nested bearing half and the associated end of the other bearing half at substantially the same point, said tab being connected to each of said separator portions along one of its edges extending along the plane of one of the top and bottom.

2. A carton of minimum size receiving a pair of semi-cylindrical shell bearing halves located with the external surface of one nested within the internal surface of the other, said carton comprising: a top, a bottom, a plurality of side walls, and a pair of separator portions, each of said separator portions having a tab extending generally normally to said bottom and having a portion for engaging the outer surface of the nested bearing half at a plurality of points and the associated end of the other bearing half at a point substantially common with one of said plurality of points, said tab being connected to each of said separator portions along one of its edges extending along the plane of one of the top and bottom.

3. A carton of minimum size receiving a pair of semi-cylindrical shell bearing halves located with the external surface of one nested within the internal surface of the other, said carton comprising: a top, a bottom, a plurality of side walls, and a pair of separator portions, each of said separator portions having a tab extending generally normally to said bottom and having a portion for engaging the outer surface of the nested bearing half generally tangentially at two spaced points with an intermediate portion between said points located away from the outer surface of the nested bearing half and the associated end of the other bearing half at a point substantially common with one of said two points.

4. A carton of minimum size for receiving a pair of semi-cylindrical shell bearing halves located with the external surface of one nested within the internal surface of the other, said carton comprising: a top, a bottom, a plurality of side walls, and a pair of separator portions, each of said separator portions having a tab extending generally normally to said bottom and having a curved portion with an arc substantially equal to the outside diameter of the bearing halves with said portion matably engaging the outer surface of the nested bearing half and engaging the associated end of the other bearing half.

5. A carton of minimum size receiving a pair of semi-cylindrical shell bearing halves located with the external surface of one nested within the internal surface of the other, said carton comprising: a top, a bottom, a plurality of side walls, and a pair of separator portions, each of said separator portions having a tab extending generally normally to said bottom and having a straight portion for tangentially engaging the outer surface of the nested bearing half at one point and engaging the associated end of the other bearing half at substantially the same point, said tab being connected to each of said separator portions along one of its edges extending along the plane of one of the top and bottom.

6. A carton of minimum size receiving a pair of semi-cylindrical shell bearing halves located with the external surface of one nested within the internal surface of the other, said carton comprising: a top, a bottom, a plurality of side walls, and a pair of separator portions, each of said separator portions having a tab extending generally normally to said bottom and having a pair of straight portions angulated relative to each other each for tangentially engaging the outer surface of the nested bearing half at one point with one of said pair of straight portions engaging the associated end of the other bearing half at substantially said one point.

7. A carton of minimum size receiving a pair of semi-cylindrical shell bearing halves located with the external surface of one nested within the internal surface of the other, said carton comprising: a top, a bottom, a plurality of walls including a pair of side walls, and a separator portion attached to each of said side walls, said separator portion having a tab extending generally normally to said bottom and having a portion for engaging the outer surface of the nested bearing half and the associated end of the other bearing half at substantially the same point, said tab being connected to each of said separator portions along one of its edges extending along the plane of one of the top and bottom.

8. A carton of minimum size receiving a pair of semi-cylindrical shell bearing halves located with the external surface of one nested within the internal surface of the other, said carton comprising: a top, a bottom, a plurality of walls including a pair of side walls, and a separator portion attached to the top of each of said side walls and extending partially over the bearing halves, said separator portion having a tab extending downwardly generally normally to said bottom and having a portion for engaging the outer surface of the nested bearing half and the associated end of the other bearing half at substantially the same point.

9. A carton of minimum size for receiving a pair of semi-cylindrical shell bearing halves located with the external surface of one nested within the internal surface of the other, said carton comprising: a top, a bottom, a plurality of walls including a pair of side walls, and a separator portion attached to the bottom of each of said side walls and extending partially under the bearing halves, said separator portion having a tab extending upwardly generally normally to said bottom and having a portion for engaging the outer surface of the nested bearing half and the associated end of the other bearing half at substantially the same point.

10. In a carton of minimum size for receiving a pair of semi cylindrical shell bearing halves located with the external surface of one nested within the internal surface of the other, with the carton having a top portion, a bottom portion, a plurality of wall portions, including a pair of side wall portions, and a separating portion attached to the top of each of the side wall portions and extending partially over the bearing halves, the separating portion having a tab portion extending downwardly generally normally to the bottom portion and having a portion for engaging the outer surface of the nested bearing half and the associated end of the other bearing half at substantially the same point, said carton having a flat development comprising: a bottom portion, a rear wall portion connected to said bottom portion along a scored line and extending rearwardly therefrom, a front wall portion connected to said bottom portion along a scored line and extending forwardly therefrom, a top portion connected to said rear wall portion along a scored line and extending rearwardly therefrom, a pair of side wall portions connected to said bottom portion along scored lines with each extending transversely, oppositely, a transversely extending separating portion connected to said each said side and wall portion along a scored line, said separating portion having a tab portion at its rearward end connected

to the remainder of said separating portion by an angulated scored line intersecting the scored line between said separating portion and said each of said side portion with last named scored line being cut from the point of intersection to its rearward termination.

11. The carton of claim 10 with said angulated scored line defining an arc having a radius substantially equal to the radius of the outside surface of the bearing halves.

12. The carton of claim 10 with said angulated scored line being two intersecting straight line segments having a cut at their intersection.

13. In a carton of minimum size for receiving a pair of semi-cylindrical shell bearing halves located with the external surface of one nested within the internal surface of the other, with the carton having a top portion, a bottom portion, a plurality of wall portions, including a pair of side wall portions, and a separating portion attached to the top of each of the side wall portions and extending partially over the bearing halves, the separating portion having a tab portion extending downwardly generally normally to the bottom portion and having a portion for engaging the outer surface of the nested bearing half and the associated end of the other bearing half at substantially the same point, said carton having a flat development comprising: a bottom portion, a front wall portion connected to said bottom portion along a scored line and extending forwardly therefrom, a first side wall portion connected to said bottom portion along a scored line and extending transversely therefrom, a rear wall portion connected to said first side wall portion along a scored line and extending transversely therefrom, a second side wall portion connected to said rear wall portion along a scored line and extending transversely therefrom, a top portion connected to said rear wall portion along a scored line and extending forwardly therefrom, a first separating portion connected to said first side wall portion along a scored line and extending rearwardly therefrom, said first separating portion having a first tab portion connected to the remainder of said separating portion along a first angulated scored line which intersects the scored line connecting said first separating portion and said first side wall portion with said last named scored line cut transversely from the point of intersection to its termination proximate said rear wall portion, a second separating portion connected to said second side wall along a scored line and extending rearwardly therefrom, said second separating portion having a second tab portion connected to the remainder of said second separating portion along a second angulated scored line which intersects the scored line connecting said second separating portion and said second side wall portion with said last named scored line cut transversely from the point of intersection to its termination proximate said rear wall portion.

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