July 15, 1941. P. F. BOEYE 2,249,269

BOX

Filed Aug. 3, 1938 3 Sheets-Sheet 1

Fig. 1

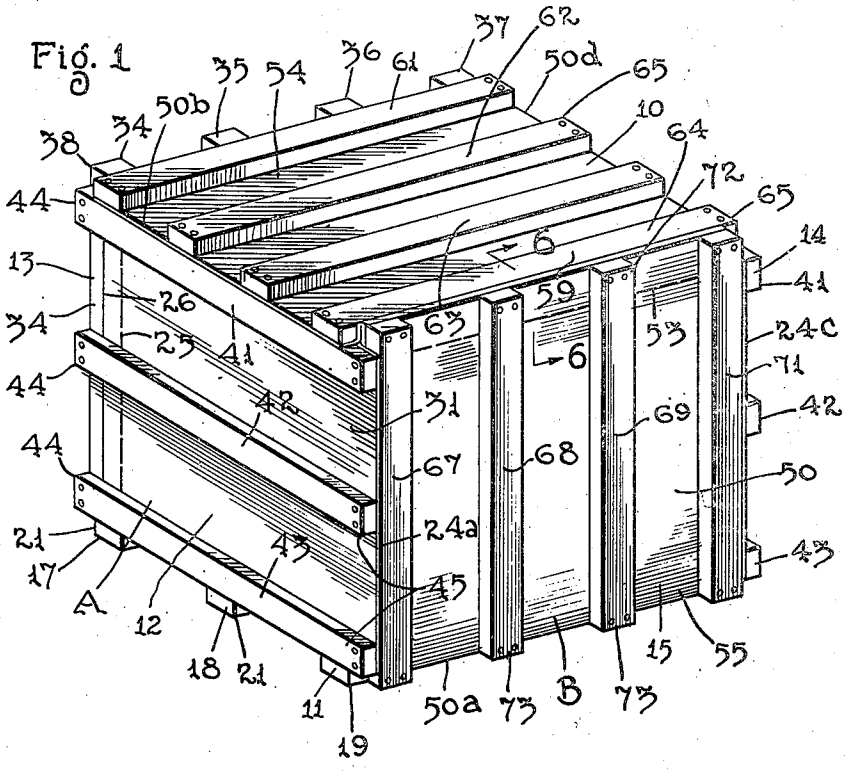
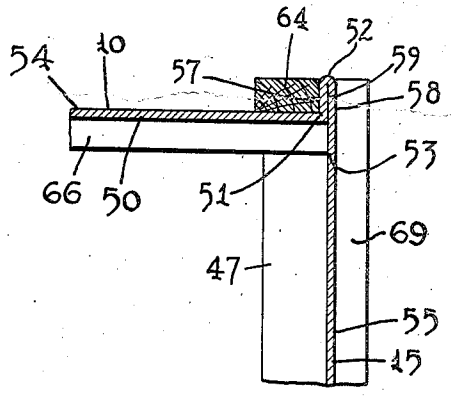


Fig. 6



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BOX

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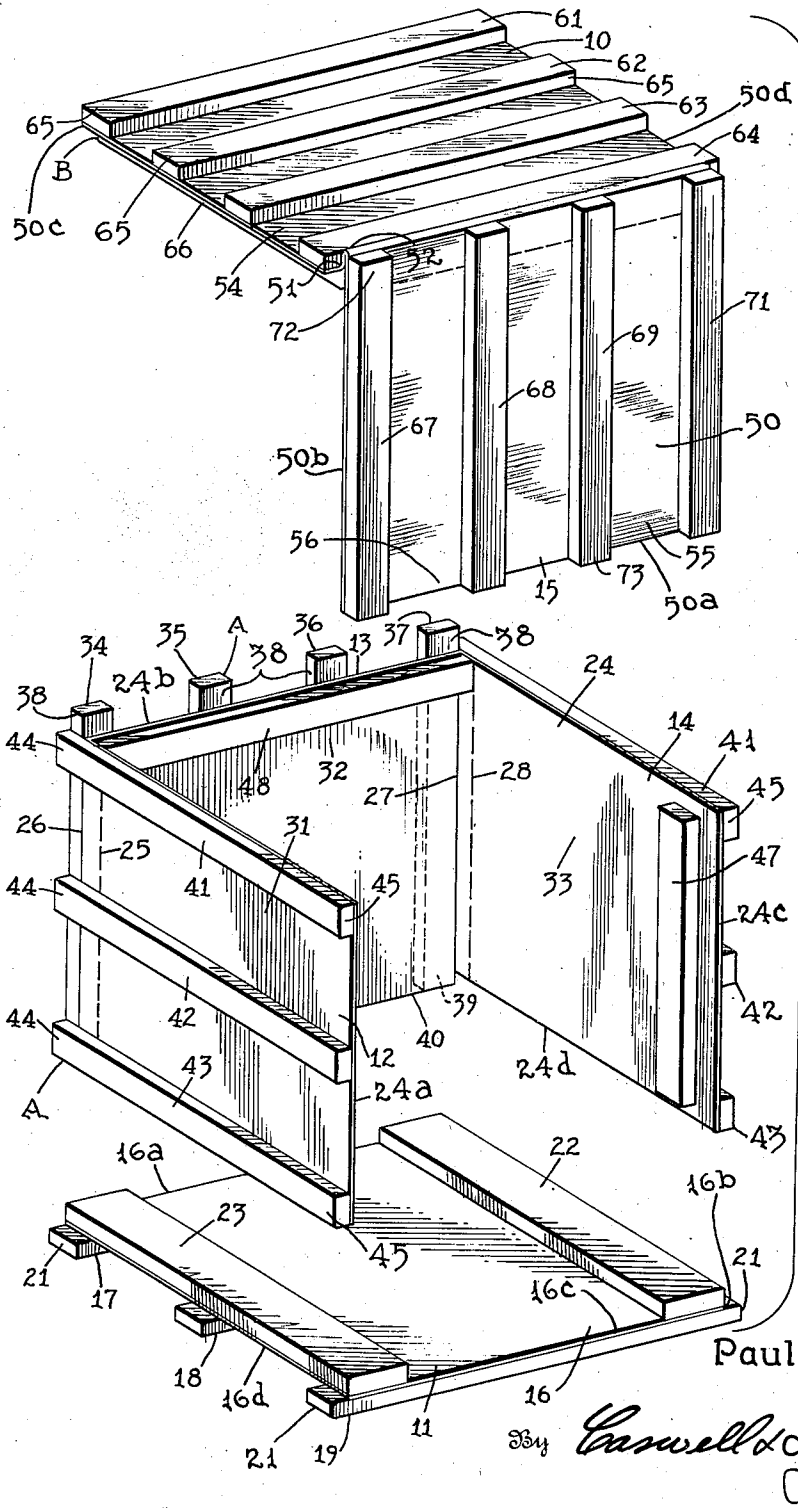


Fig. 2

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BOX

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Fig. 3

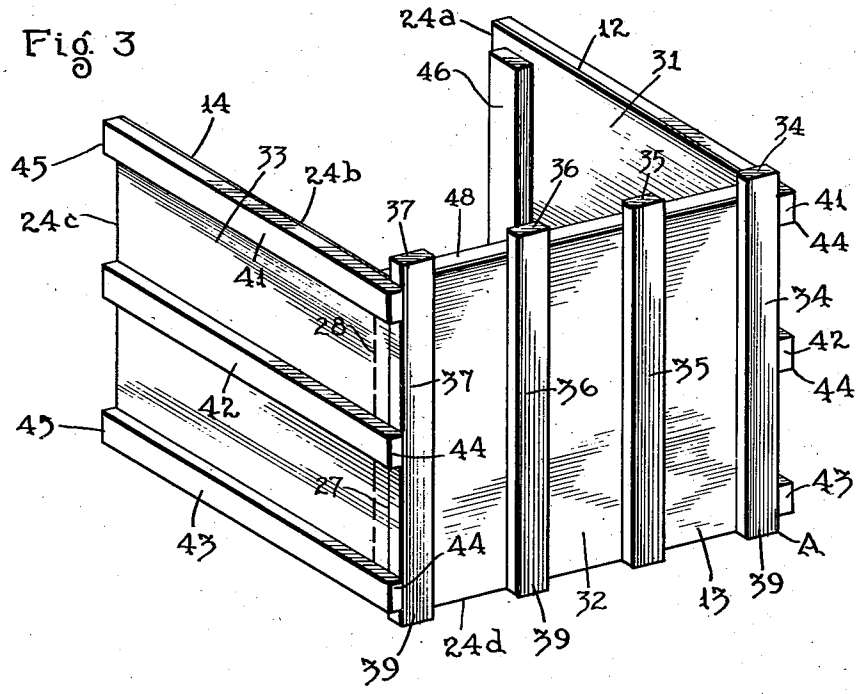


Fig. 5

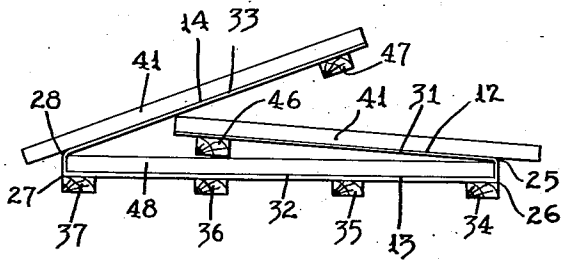
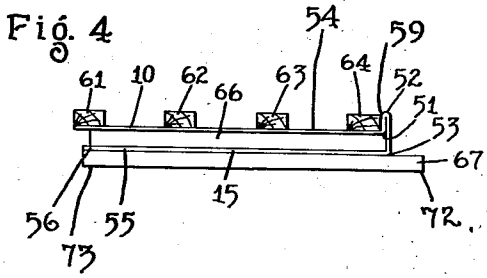


Fig. 4



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Patented July 15, 1941 2,249,269

UNITED STATES PATENT OFFICE

2,249,269

BOX

Paul F. Boeye, St. Paul, Minn., assignor to Waldorf Paper Products Company, St. Paul, Minn., a corporation of Minnesota

Application August 3, 1938, Serial No. 222,805

1 Claim. (Cl. 217—12)

My invention relates to boxes and particularly to boxes utilizing paper panels reinforced with wood or similar materials and has for an object to provide an improved construction of such type which will be light in weight, yet highly serviceable.

Another object of the invention resides in forming the walls of the box in sections, the sections being constructed in a manner to permit of easy handling and being collapsible into compact form when not desired for use.

A still further object of the invention resides in providing a box having a separate bottom and with the lateral walls arranged in two sections, the rear and the two side walls being included in one section and the front wall and top in a separate section.

An object of the invention resides in forming the top hingedly connected to the front wall section.

A feature of the invention resides in applying cleats to the various panels of the box, particularly on the exterior thereof so as to stiffen and reinforce the box and at certain localities upon the interior to provide other cleats and in forming the corners of the box so that the walls of the sections may be folded into overlying position.

A still further object of the invention resides in constructing the walls of each section from a single blank and in scoring the blank to form hinges whereby the panels of the walls may be swung into erected or collapsed position.

Another object of the invention resides in arranging the cleats on adjoining walls so that the same run in opposite directions whereby the cleats on one wall may be nailed into the marginally positioned cleats of the adjacent wall.

Another object of the invention resides in forming a gather in the blank from which the top and front walls are constructed, said gather being located between the panels of said walls and providing a hinge whereby the top may be swung open to give access into the interior of the box when desired and to permit of reclosing of the box after the same has once been used.

A still further object of the invention resides in the specific construction by means of which the lateral walls are attached to the bottom.

Other objects of the invention reside in the novel combination and arrangement of parts, and in the details of construction hereinafter illustrated and/or described.

In the drawings:

Fig. 1 is a perspective view of a box illustrating an embodiment of my invention.

Fig. 2 is a perspective view of the bottom and various sections of the box showing the same detached from one another.

Fig. 3 is a perspective view of one of the sections shown in Fig. 2 and viewed from the reverse side thereof.

Fig. 4 is a sectional view taken through the section of the box including the top and front wall and showing the walls in collapsed position.

Fig. 5 is a view similar to Fig. 4 of the section including the rear and side walls of the box.

Fig. 6 is a sectional view taken through the front and top walls of the box and showing the top in partially collapsed position.

My invention as shown in Figs. 1 and 2 comprises a top 10, a bottom 11 and four lateral walls 12, 13, 14 and 15 connected therewith. For the sake of explanation the two lateral walls 12 and 14 will be referred to as side walls and the two lateral walls 13 and 15 will be referred to as rear and front walls.

The lateral walls of the box are constructed in two sections designated by the reference characters A and B, while the bottom 11 is constructed as an individual structure. The section B includes the top wall 10 and the front wall 15, while the section A includes the side walls 12 and 14 and the rear wall 13. The walls of each section are adapted to be folded into extended position for use, as shown in Figs. 1 and 2 or the same are adapted to be folded into collapsed position, as shown in Figs. 4 and 5 in which position the walls of the sections overlie one another. The adjoining portions of the walls of each section are secured together in a manner to be subsequently referred to. These various parts will now be described in detail.

In the formation of the box paper board panels are employed which have attached to them wood cleats. These cleats may be secured to the panels by means of glue, nails, staples or by any other devices now well known in the art. For this reason the fastening means has not been shown in the drawings, although the method of attachment will readily become apparent.

The bottom 11 consists of a blank 16, constructed from paper board or the like which is of dimensions equal to the interior dimensions of the box. The edges of this blank are referred to by the reference numerals 16*a*, 16*b*, 16*c* and 16*d*. This blank has attached to it, upon the underside thereof, three cleats 17, 18 and 19 of which the cleats 17 and 19 lie along the two opposite edges 16*a* and 16*c* of the blank. The cleat 18 is disposed intermediate the cleats 17 and 19.

These cleats all have ends 21 projecting outwardly beyond the other edges 16b and 16d of the blank and which serve a purpose to be presently more fully described. On the upper surface of the blank 16 are two cleats 22 and 23 which are of a length equal to the depth of the box from front to back and which lie along the two opposite edges 16b and 16d of the blank.

The wall section A is constructed from a single blank 24 the edges of which are designated by the reference numerals 24a, 24b, 24c and 24d. This blank is scored transversely along spaced lines 25, 26, 27 and 28 which lie parallel to the edges 24a and 24c and which intersect the edges 24b and 24d. These scores divide the blank into three panels 31, 32 and 33 which form the walls 12, 13 and 14 of the box. The end portions of the blank from which the panels 31 and 33 are constructed are of a height equal to the height of the interior of the box. The intermediate portion of the blank from which the panel 32 is constructed is formed with a projection 40 which extends below the panels 31 and 32 as indicated in Fig. 2, a distance equal to the thickness of the cleats used with the invention. The distance between the scores 26 and 27 is equal to the width of the box so that the two scores 25 and 28 lie in the panels 31 and 33. These panels are of a depth greater than the depth of the interior of the box and by an amount equal to the thickness of the cleats used on the exterior of the wall 15 in section B.

Attached to the exterior of the panel 32 are four vertically extending cleats 34, 35, 36 and 37. The cleats 34 and 37 are disposed adjacent the scores 26 and 27. These cleats are longer than the height of the panel 32 providing end portions 38 which project above the edge 24b of the panel 32. The cleats 34, 35, 36 and 37 also lie flush with the edge 24d of the projection 40. Thus the lower ends 39 of these cleats extend below the lower inner confines of the box. The cleats 35 and 36 are disposed intermediate the cleats 34 and 37.

Attached to the panel 31 upon the outer surface thereof are three horizontally extending cleats 41, 42 and 43. These cleats are arranged at right angles to the cleats 34, 35, 36 and 37. The two cleats 41 and 43 are disposed with their upper and lower edges at the upper and lower edges 24b and 24d of the panel 31. These cleats are longer than the depth of the box and are formed with end portions 44 which project beyond the score 26. The other end portions 45 of said cleats lie flush with the forward vertical edge 24a of the panel 31. Inasmuch as the panel 31 is deeper than the depth of the box, the end portions 45 also project outwardly beyond the inner confines of the box. The end portions 44, when the structure is folded into erected position, as shown in Fig. 2, overlie the edges of the cleat 34.

The construction of the wall 14 is similar to that of wall 12. For this reason the description thereof will not be repeated and the same reference numerals will be used to designate the corresponding parts.

Upon the interior of the box and attached to the section A are two vertical cleats 46 and 47 which are secured to the two panels 31 and 33 and which lie parallel with the free vertical edges 24a and 24c of said panels. These cleats are disposed inwardly therefrom a distance equal to the thickness of the cleats of the front wall 15 of section B. These cleats are of a height less than the height of the panels 31 and 33 and fall short of the upper and lower marginal edges 24b and 24d of said panels for a purpose to be presently more fully described. In addition another cleat 48 is employed which extends horizontally and is attached to the panel 32 at the upper edge 24b thereof. This cleat is of a length equal to the interior dimension of the box. The scores 27 and 28 are spaced apart, and the scores 25 and 26 are also spaced apart a distance equal to the thickness of the cleat 48 so that the two walls 12 and 14 may fold along the scores 25 and 28 when it becomes desirable to collapse the box.

The section B is constructed from a blank 50 formed of paper or some similar material. The edges of this blank are designated by the reference numerals 50a, 50b, 50c and 50d. This blank is formed with three transverse scores 51, 52 and 53 parallel with the edges 50a and 50c of the blank. These scores divide the blank into panels 54 and 55 which form the top 10 and the front wall 15 of the box and also provide a flange 57 and an extension 58. The scores 51 and 52 are a distance apart equal to the thickness of one of the cleats of the box, while the scores 52 and 53 are spaced apart a distance equal to two cleats of the box. The width of the panel 55 is equal to the width of the interior of the box, while the width of the panel 54 is equal to the width of the interior of the box plus the thickness of the two cleats 41. The distance between the score 51 of panel 54 and the opposite free edge 50c of said panel is equal to the depth of the box. The panel 55 is of such height that the lowermost portion 56 thereof projects below the lowermost edges of the panels 31 and 33 in the same manner as the projection 40 of panel 32. When the box is folded into an erected position, the flange 57 and extension 58 of the blank form a gather which I have indicated in its entirety by the reference numeral 59 and which extends upwardly above the panel 54.

Attached to the upper surface of the panel 54 are cleats 61, 62, 63 and 64. The cleat 61 lies at the free edge 50c of the panel 54, which is the edge opposite the gather 59. The cleat 64 lies adjacent the flange 57 of said gather and one corner of said cleat is disposed at the score 51. The cleats 62 and 63 are disposed intermediate the cleats 61 and 64. All of the cleats 61, 62, 63 and 64 are of a length equal to the width of the panel 54. Since this panel is wider than the interior dimensions of the box, the said cleats are formed with over-hanging portions 65 which project outwardly beyond the inner confines of the box.

Upon the inner surface of the panel 54 are provided two cleats 66 which extend across the cleats 61, 62, 63 and 64 and which are disposed inwardly of the ends of said cleats. These cleats extend up to the score 51 and fall short of the free edge 50c of the panel 54 opposite said score. When the parts are in erected position the ends of these cleats abut against the panel 55.

Upon the exterior surface of the panel 55 are arranged four vertical cleats 67, 68, 69 and 71. The two cleats 67 and 71 are disposed at the vertical edges 50b and 50d of the panel 55 and have end portions 72 which project upwardly beyond the confines of the box and which extend up to the score 52 when the parts of the box are in erected position. The lower ends 73 of the cleats 67, 68, 69 and 71 lie flush with the lower edge 50a of the panel 55. Due to the fact that panel 55 extends below the inner confines of the

box, the ends 73 of said cleats also extend below the inner confines of the box.

When the boxes are constructed at the factory, the same come collapsed as shown in Figs. 4 and 5. In these figures it will be noted that the two walls 10 and 15 of the section B are folded along the score 53 so that the two cleats 66 lie upon the inner surface of the panel 55. This makes the entire structure compact and capable of stacking. In a similar manner the two walls 12 and 14 of section A are folded along the two scores 25 and 28 to lie upon the cleat 48 of wall 13. While the two sections do not lie flat, the said wall structure is nevertheless greatly compact and an appreciable saving of space is procured.

In the use of the invention the bottom 11 is first placed upon the floor and the article to be contained within the box mounted upon the two cleats 22 and 23. Where the article permits of attachment to these cleats the same is first accomplished before the lateral wall structure is brought into closing position. Section A is next erected by swinging the two walls 12 and 14 outwardly. Such swinging movement is limited by the end portions 44 of cleats 41, 42 and 43 which abut the outer edges of the cleats 34 and 37. This section is next applied around the article within the box and so arranged that the cleats 43 rest upon the projecting ends 21 of the cleats 17, 18 and 19. At that time the section is slid forwardly until the lowermost portion 40 of panel 32, and the depending portions 39 of the cleats 34, 35, 36 and 37 are positioned immediately adjacent the outermost edge of the cleat 17. The parts can now be secured together by driving nails through the cleats 43 and into the cleats 22 and 23. Also nails may be driven through the lowermost end portions 39 of cleats 34, 35, 36 and 37 and into the cleats 21, 22 and 23. The section B is now placed in position, the front wall 15 being placed across the ends of the two walls 12 and 14. The two cleats 67 and 71 extend between the projecting ends 45 of the cleats 41, 42 and 43. The entire top 10 rests upon the cleats 41 and 48 and the cleat 65 is disposed inwardly of the ends 38 of the cleats 34, 35, 36 and 37. It will be noted that the cleats 37 fall short of the upper edge 24*b* of the panels 31 and 33 to which they are attached to accommodate the cleats 66. Likewise, these cleats fall short of the lower edge 24*d* of said panels to accommodate the cleats 22. The cleats 66 fall short of the cleat 48 to cause the ends of the said cleats to butt-up against the cleat 48. After the parts have been so assembled, the various cleats may be nailed together by driving nails through the end portions of the cleats and into the juxtaposed cleats of the corresponding walls. The box has now been completely assembled. The cleats 47 and 48 are arranged at the joints between the edges of the walls and upon the interior of the box and thereby provide an exceedingly rigid and substantial construction.

When it is desired to open the box the nails can be removed from the cleats 61, 62, 63 and 64 and from the upper ends 72 of the cleats 67, 68, 69 and 71. The top 10 is then free and may be opened by swinging the same about the score 52 as a hinge. In this manner a reclosing box is provided by means of which the contents may be removed or replaced, as desired.

The advantages of my invention are manifest. An extremely simple and substantial construction is provided whereby bulky articles may be readily packed. The parts of my invention are readily foldable into compact form so that when the parts are collapsed the parts occupy a minimum amount of space. The box is completely reinforced in all directions so that maximum strength is secured. By means of the wall arrangement shown, the various sections are easy to handle and may be readily assembled. This permits of utilizing the invention with large boxes. The top may be readily reclosed for the purpose of removal and replacement of the contents of the box.

Changes in the specific form of my invention as herein disclosed, may be made within the scope of what is claimed without departing from the spirit of my invention.

Having described my invention, what I claim as new and desire to protect by Letters Patent is:

A box comprising a section including three of the lateral walls of the box, said section being constructed from sheet material formed with scores and folded transversely along the scores to divide the same into the three lateral walls of the box, said scores forming hinge connections therebetween, vertically extending cleats attached to the intermediate wall of the section, two of said cleats extending along the said scores, horizontally extending cleats attached to the outer walls of the section, one of said cleats extending along each of the upper edges of the outer walls of the section, the ends of said last named cleats overlying the edges of the outermost cleats on the intermediate wall and being adapted to be secured thereto, another section including the top and the other lateral wall of the box, said section being constructed from sheet material formed with two spaced parallel scores separating the top from the lateral wall and being folded to bring the juxtaposed portions of the sheet adjacent one score in overlying position to provide a gather projecting outwardly beyond the top, cleats extending transversely of the top, one of said cleats being disposed adjacent said gather and another of said cleats being disposed at the free edge of said top, the upper ends of the vertical cleats on the intermediate wall being secured to said last named cleat on the top, vertical cleats on said fourth lateral wall the upper ends thereof being secured to the cleat on said top adjacent the gather, and a bottom secured to said lateral walls.

PAUL F. BOEYE.