July 15, 1941. P. F. BOEYE 2,249,268

BOX

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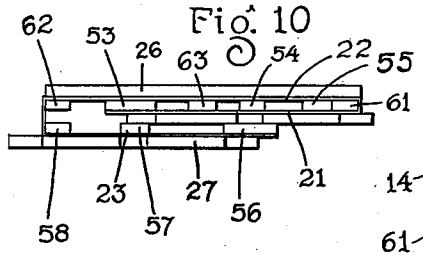


Fig. 10

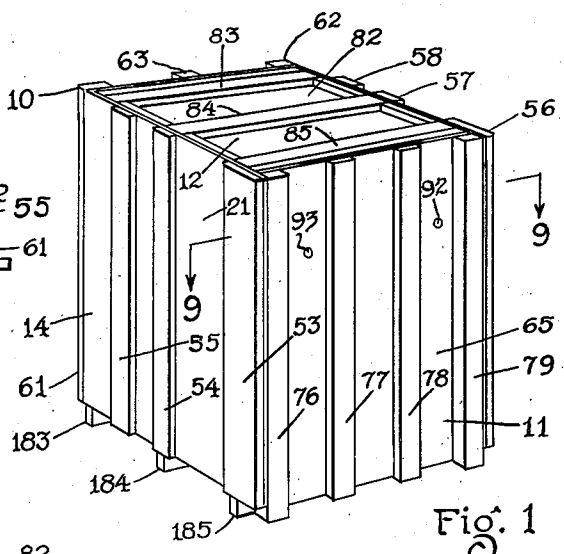


Fig. 1

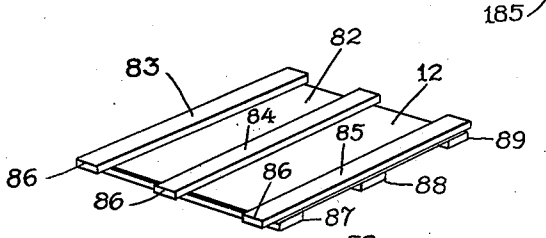
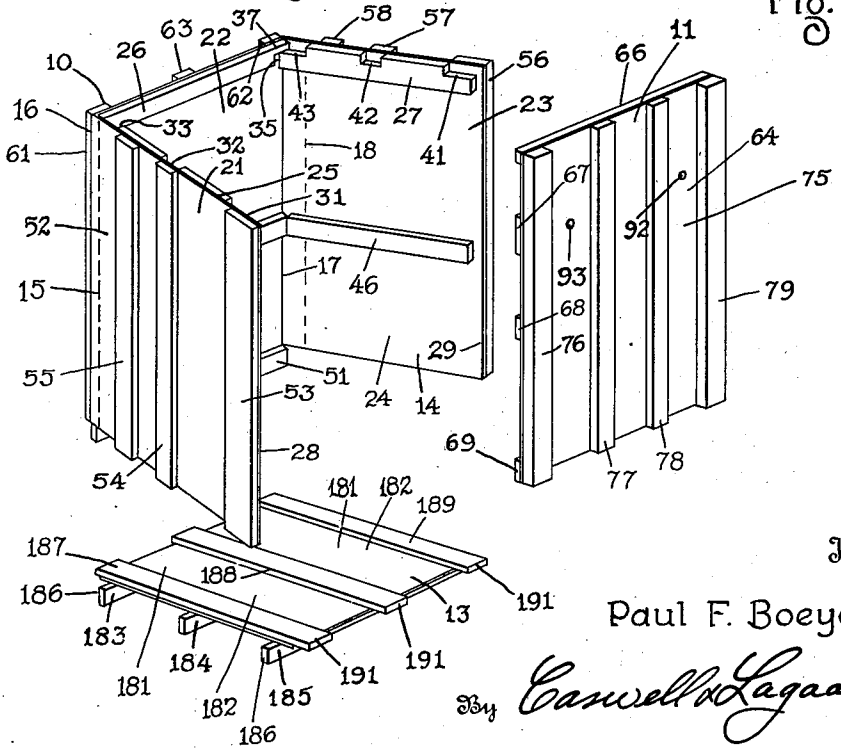


Fig. 2



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BOX

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Fig. 3

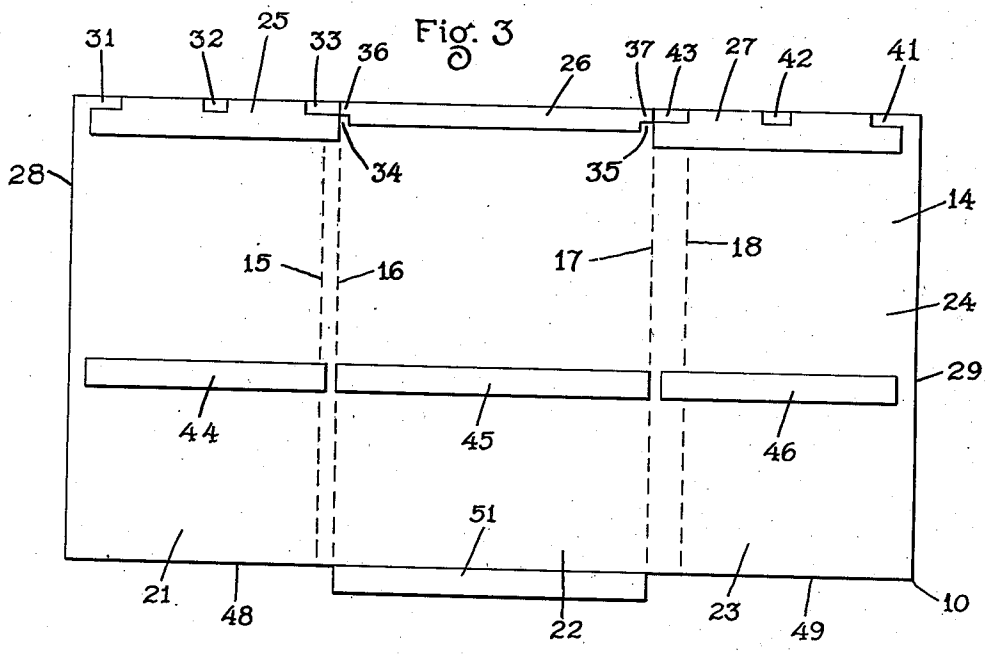
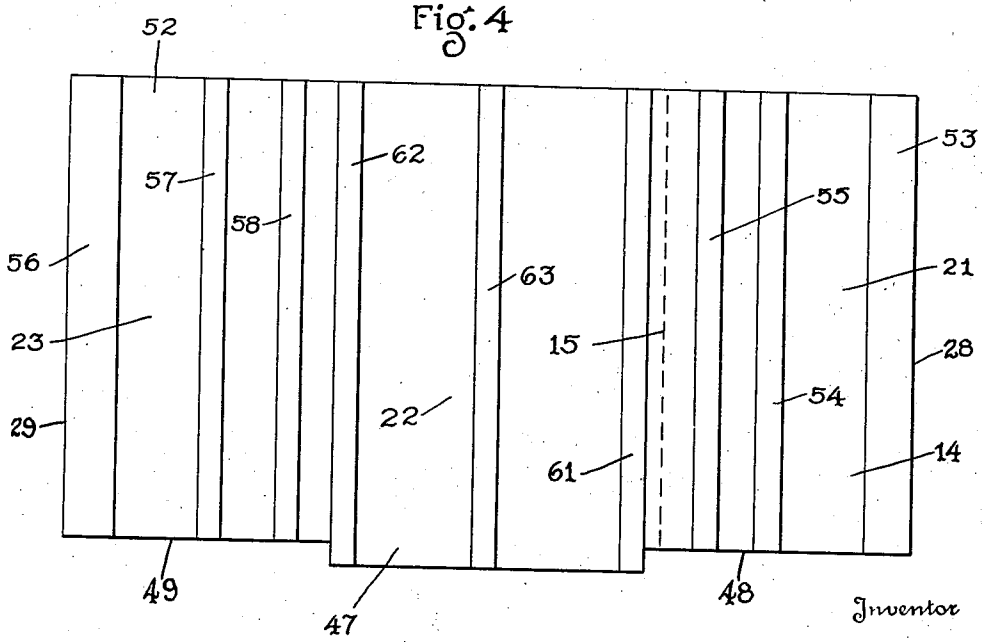


Fig. 4



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BOX

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Fig. 6

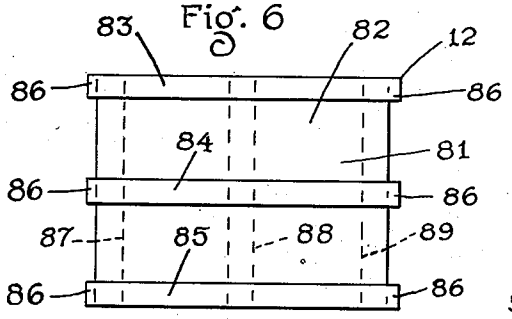


Fig. 8

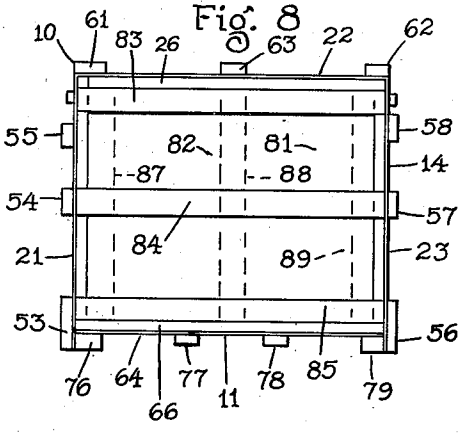


Fig. 7

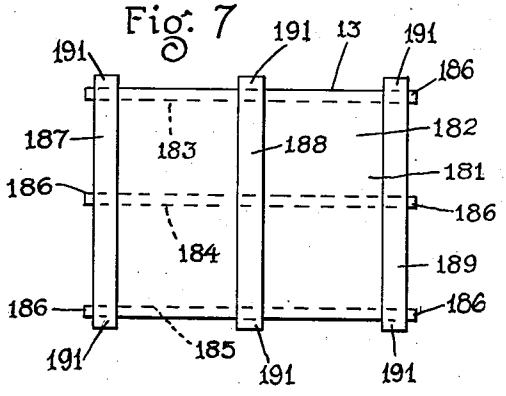


Fig. 9

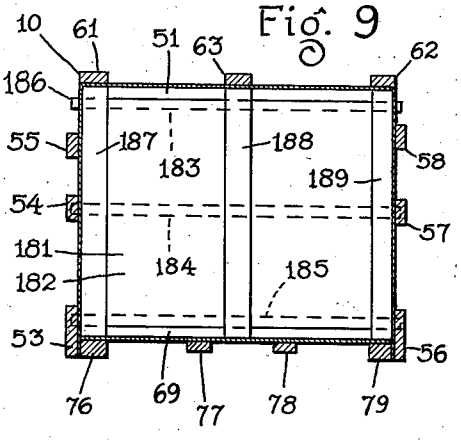
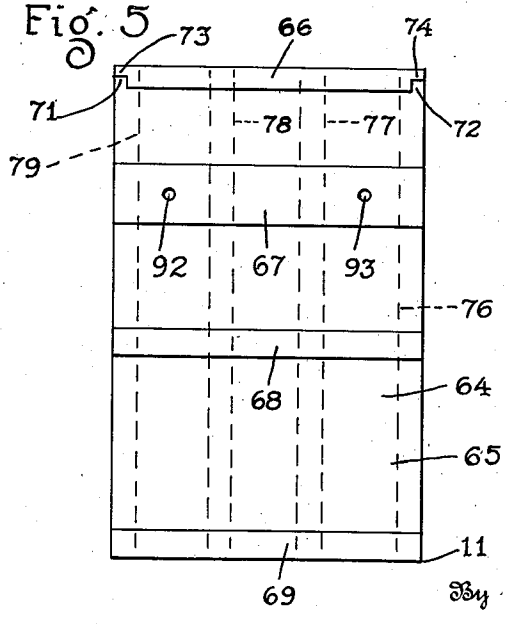


Fig. 5



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Patented July 15, 1941

2,249,268

UNITED STATES PATENT OFFICE

2,249,268

BOX

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

Application September 10, 1937, Serial No. 163,216

6 Claims. (Cl. 217—12)

My invention relates to boxes and particularly to boxes utilizing paper panels reinforced by wood cleats.

An object of the invention resides in providing a collapsible box of such nature adapted to be easily and readily erected.

Another object of the invention resides in constructing the box with a wall assembly including three of the lateral walls of the box and which are adapted to be folded one upon the other to form a compact folded structure.

A still further object of the invention resides in providing cleats upon both the inner and outer surfaces of some of the wall of the wall assembly and in so constructing the assembly that the same may be folded without interference with the cleats.

Another object of the invention resides in providing separate top and bottom walls and a separate fourth lateral wall all having cleats and in securing the lateral wall to the wall assembly in such a manner that the cleats of the assembly lie opposite the cleats of the single wall.

Another object of the invention resides in arranging the cleats of the lateral walls so that the same engage the cleats of the bottom of both on the upper and lower surfaces of same thereof so as to hold the bottom from movement either toward or from the box.

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 parts of the box disassembled from one another.

Fig. 3 is a plan view of the lateral wall assembly straightened out and showing the inner surface thereof.

Fig. 4 is a view similar to Fig. 3 of the same assembly showing the outer surface thereof.

Fig. 5 is a plan view of the fourth lateral wall of the box showing the inner surface thereof.

Fig. 6 is a plan view of the top wall of the box removed from the box.

Fig. 7 is a plan view of the bottom wall of the box removed from the box.

Fig. 8 is a plan view of the structure shown in Fig. 1.

Fig. 9 is a cross sectional plan view taken on line 9—9 of Fig. 1.

Fig. 10 is an end view of the wall assembly in folded position.

In the handling and shipment of refrigerators and large or bulky objects of similar nature it has heretofore been found very difficult to provide a box which completely covered the refrigerator and which could be quickly and easily assembled and taken apart and which would not be too expensive. The present invention provides a box which meets with all these requirements.

My invention proper, as shown in Figs. 1 and 2, comprises a lateral wall assembly 10, a front wall 11, a top wall 12 and a bottom wall 13 which will now be described in detail.

The wall assembly 10 is constructed from a blank formed from a sheet of paper board or corrugated board which is designated by the reference numeral 14 and is best shown in Figs. 3 and 4. This blank is constructed with spaced, parallel, vertical scores 15, 16, 17 and 18 which divide the sheet into three panels 21, 22 and 23 which form the rear wall and side walls of the box. Across the upper portion of the blank 14 and upon the inner surface 24 thereof are provided three wood cleats 25, 26 and 27 whose upper edges lie flush with the upper edges of the blank 14. The cleat 25 is secured to wall 21 and extends from the score 16 to within a short distance of one of the vertical edges 28 of the blank 14. This cleat is constructed with three notches 31, 32 and 33 in the uppermost portion thereof which serve a purpose to be presently described in detail. The cleat 26 is secured to wall 22 and extends between the scores 16 and 17 and is formed at its lower most portions and at the ends of the same with notches 34 and 35 which provide tongues 36 and 37 at the uppermost portion of this cleat, the purpose of which will be presently described in detail. The cleat 27 is identical with the cleat 25 and is secured to the wall 23 in identically the same manner and is constructed with notches 41, 42 and 43 which are similarly situated with respect to the notches 31, 32 and 33 of cleat 25. The two tongues 36 and 37, formed on cleat 26, are adapted to enter the notches 33 and 43 of cleats 25 and 27 and form locked corners at the uppermost portion of the box when the walls 21, 22 and 23 are folded into erected form.

At the center of blank 14 is provided three cleats 44, 45 and 46. The cleat 44 is attached to the side wall 21 and extends to within the thickness of the cleat 45 from the score 16. Cleat 45 is secured to the rear wall 22 and extends between the scores 16 and 17. Cleat 46 is similar to cleat 44 and extends to within the thickness

of the cleat 45 from the score 17. Both cleats 44 and 46 extend to within the same distance from the edges 28 and 29 of the blank 14 as the cleats 25 and 27.

The lowermost portion of the wall 22 of wall assembly 10 is provided with an extension 47 which projects below the lowermost edges 48 and 49 of the walls 21 and 23. This extension has secured to it a cleat 51 which is identical with cleat 45 and which extends from score 16 to score 17.

Upon the outer surface 52 of blank 14 are attached other cleats which will now be described. The wall 21 has secured to it at the lateral edge 28 thereof a fairly wide vertical cleat 53 and between this cleat and the score 15 two other narrow cleats 54 and 55. These cleats are all of the full height of the wall and are nailed or otherwise secured to the cleats 25 and 44. Wall 23 is constructed in identically the same manner which cleats 56, 57 and 58 which correspond to the cleats 53, 54 and 55 and which are secured to the cleats 27 and 46. The wall 22 has secured to it, adjacent to the scores 16 and 17, two vertical cleats 61 and 62 and intermediate these cleats with a cleat 63. All of these cleats are of the full height of the wall 22 and are secured to the cleats 26, 45 and 51.

The front wall 11 of the box is best shown in Fig. 5 and consists of a panel 64 constructed of sheet material of a height equal to the height of the rear wall 22 of wall assembly 10 and of a width equal to the distance between the scores 16 and 17 of blank 14. This panel has secured to the inner surface 65 of the same, four transverse cleats 66, 67, 68 and 69. The two cleats 66 and 69 are arranged at the uppermost edges of the panel 64 while the cleat 68 is arranged to lie opposite the cleats 44 and 46 of side walls 21 and 23. The upper cleat 66 is constructed with notches 71 and 72 which form at the upper portions of said cleats tongues 73 and 74. These tongues are adapted to fit into the notches 31 and 41 of cleats 25 and 27 when the parts are erected as will hereinafter be more fully described.

Upon the opposite surface 75 of the panel 64 of front wall 11 are arranged four vertical cleats 76, 77, 78 and 79. The cleats 76 and 79 lie flush with the lateral edges of the panel and extend throughout the length of the same. Cleats 77 and 78 are disposed intermediate the cleats 76 and 79 and all of these cleats are attached to the cleats 66, 67, 68 and 69. Cleats 76 and 79 are of a slightly greater thickness than the other cleats to facilitate of attachment of the wall assembly 10 thereto by means of screws or nails.

The top 12 is best shown in Fig. 6 and consists of a panel 81 of dimensions equal to the distances between the panels of the walls 21, 22, 23 and 11 when the walls of the box are erected. This panel has secured to the upper surface 82 thereof a number of transverse cleats 83, 84 and 85 of which the cleats 83 and 85 are disposed at edges of the panel. These cleats extend outwardly beyond the edges of the panels forming projections 86. Upon the under surface of the panel 81 are attached cleats 87, 88 and 89 which are nailed to the cleats 83, 84 and 85. Cleats 87, 88 and 89 lie flush with the end edges of the panels 81 and are of a length equal to the width of the panel 81. All of these parts are nailed together as with the other parts of the invention.

The bottom wall 13 of the invention is shown in Fig. 7 and is similar to the top wall 12. This wall is constructed with a panel 181 of the same dimension as panel 81 which has attached to its upper surface 182, three cleats 187, 188 and 189. This panel has also attached to its under surface three cleats 183, 184, and 185 which are arranged on edge. The cleats 187 and 189 lie flush with the edges of the panel 181. Cleats 183, 184 and 185 are formed with projections 186 similar to the projections 86 while cleats 187, 188 and 189 are constructed with projections 191 similar to the projections 186.

The method of using the invention is as follows. The bottom wall 13 is set upon the floor or other surface on which the box is to be assembled and rests upon the cleats 183, 184 and 185. The refrigerator is next placed upon the bottom wall 13 and properly positioned relative thereto. The wall assembly 10 is then folded into the form shown in Fig. 2. Upon so folding the wall assembly the tongues 36 and 37 of cleats 26 becomes received within the notches 33 and 43 of cleats 25 and 27. The folded wall assembly is next brought about the refrigerator and the cleat 51 of wall 22 forced under the projections 191 of cleats 187, 188 and 189. Walls 21 and 23 are next swung into position. Cleats 53 and 54, on the wall 21, overlie the projections 186 on the cleats 184 and 185. Similarly cleats 56 and 57 overlie the projections 186 on the cleats 184 and 185 adjacent cleat 189. The front wall 11 is next applied and cleat 69 brought under the projections 191 of cleats 187, 188 and 189 adjacent cleat 185. As the front wall 11 is moved into place the cleats 66 and 68 butt against the ends of cleats 25 and 27 and the cleats 44 and 46. At the same time the cleats 76 and 79 fall within the panels forming the walls 21 and 23 and lie directly opposite the cleats 53 and 56. Screws or nails may then be placed through the cleats 53 and 56 and secured to the cleats 76 and 79 which attaches the parts of the front wall 11 to the wall assembly 10. Cleats 63 and 56 are of extra width and cleats 76 and 79 are of extra thickness to accommodate the screws and form a rigid construction.

At the rear of each refrigerator is provided two bolts by means of which the refrigerator may be securely attached to the box in which it is shipped, which bolts are used for the purpose of holding the refrigerator out of contact with the walls of the box. Two holes 92 and 93 are formed in the cleat 67 and in the panel 64. These bolts project through the said holes and suitable washers and nuts applied to the ends of these bolts hold the refrigerator attached to the front wall 11 and away from the top wall and other lateral walls of the box.

The top wall 12 is next applied. This wall is merely dropped into position between the cleats 26 and 66 and the cleats 25 and 27. The projections 86 of the cleats 83, 84 and 85 of this wall are received within the notches 31, 32, 33, 41, 42 and 43 of the cleats 25 and 27. These projections may be nailed to the cleats with which they cooperate whereby the top wall is secured to the box.

For the purpose of facilitating folding of the wall assembly 10, the double scores 15—16 and 17—18 are utilized. The scores 15 and 16 are a distance apart substantially equal to the thickness of the cleats while the scores 17 and 18 are situated a distance apart substantially three times the thickness of the cleats. The side wall 21 may thus be folded rearwardly upon the rear wall 22 and the side wall 23 folded rearwardly

upon the outer surface of the side wall 21. The various cleats of the two walls 21 and 22 are arranged to stagger each other so as to not interfere with the folding. The relation of the folded parts is clearly shown in Fig. 10.

Although I have described my invention as used in conjunction with refrigerators it can readily be comprehended that the same may be used for packing any other article of a bulky nature such as washing machines, furniture and similar articles.

The advantages of my invention are manifest. An extremely simple and practical construction is provided by means of which bulky articles can be readily packed for shipment. I have made numerous tests with boxes constructed in accordance with my invention and find that they can stand greater abuse when loaded than other boxes now used for the purpose. The largest of my improved boxes can be readily erected by two men who work on the same side of the box and who can coordinate their movements so as to not interfere with the progress of each other. The boxes can be erected in much less time than is usually employed. My improved invention can be readily fabricated and at an extremely low cost.

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:

1. A box having a wall assembly including three of the lateral walls of the box said assembly being constructed from a sheet of material, cleats on the inside and outside of the sheet, some of said cleats being parallel with the corners between the walls of the assembly, said sheet being formed with parallel scores along one of said corners spaced apart a distance substantially equal to the thickness of the cleats adjacent said corner, said parallel cleats on the two walls adjoining said corner being staggered to cause the sheet to fold with the walls parallel to one another and spaced apart the thickness of said cleat, said sheet being formed with parallel scores along the other corner of the assembly and spaced apart a distance substantially equal to twice the thickness of the parallel cleats plus the thickness of the cleats on other side of one of the outermost walls of the assembly to accommodate folding of the adjacent outermost wall upon the other outermost wall, a fourth lateral wall a top and a bottom and means for securing said parts together at their edges.

2. A box having a wall assembly including three of the lateral walls of the box said assembly being constructed from a sheet of material, cleats on the inside and outside of the sheet, some of said cleats being parallel with the corners between the walls of the assembly, said sheet being formed with parallel scores along one of said corners spaced apart a distance substantially equal to the thickness of the cleats adjacent said corner, said parallel cleats on the two walls adjoining said corner being staggered to cause the sheet to fold with the walls parallel to one another and spaced apart the thickness of said cleats, said sheet being formed with parallel scores along the other corner of the assembly and spaced apart to accommodate folding of the adjacent outermost wall upon the other outermost wall, a fourth lateral wall, a top and a bottom and means for securing said parts together at their edges.

3. A box having a number of lateral walls, a bottom disposed within said lateral walls, said bottom having a number of cleats attached thereto certain of said cleats being attached to the upper surface thereof, said cleats being disposed in proximity to said lateral walls, a transversely extending cleat on one of said lateral walls for engagement with the bottom below one of said denoted cleats on the bottom and a longitudinally extending cleat on another wall of the box for engagement with the bottom above another of the cleats on the bottom.

4. A box comprising a number of lateral walls constructed of sheet material, a bottom disposed within said walls and constructed from sheet material, a cleat on said bottom disposed adjacent one of the edges of said sheet material, another cleat on said bottom having an extension extending beyond one of the edges of said sheet material, a transversely extending cleat disposed on the innermost surface of one of the lateral walls of the box at the lowermost portion thereof and engaging the bottom below said first named cleat and a longitudinally extending cleat upon the exterior surface of one of the walls of the box and engaging the bottom above said second named cleat.

5. A box comprising a number of lateral walls constructed of sheet material, a bottom disposed within said walls and constructed of sheet material, a number of cleats on said bottom, one of said cleats being disposed upon the upper surface thereof and extending along one of the edges thereof, a cleat on one of said lateral walls being disposed in a plane parallel with the plane of said denoted cleat on said bottom and disposed beneath said cleat to restrain movement of the bottom out of the box, and a second cleat on one of said lateral walls and disposed immediately above one of said bottom cleats for restraining movement of the bottom into the box.

6. A box having a number of lateral walls, a bottom disposed within said walls, said bottom having a number of cleats attached thereto, certain of said cleats being attached to the upper surface of said bottom, said cleats being disposed in proximity to said lateral walls, a cleat on one of said lateral walls extending horizontally and adapted to engage the under surface of one of said denoted cleats and another cleat on one of said lateral walls for engagement with the uppermost surface of one of the cleats on the bottom.

PAUL F. BOEYE.