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W. R. SLACK ET AL

2,256,928

BOX

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Fig. 1

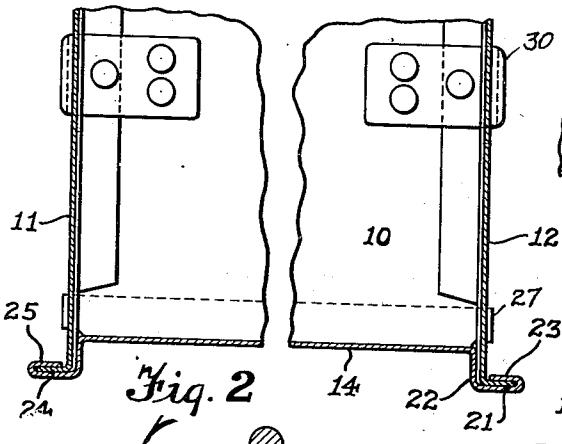
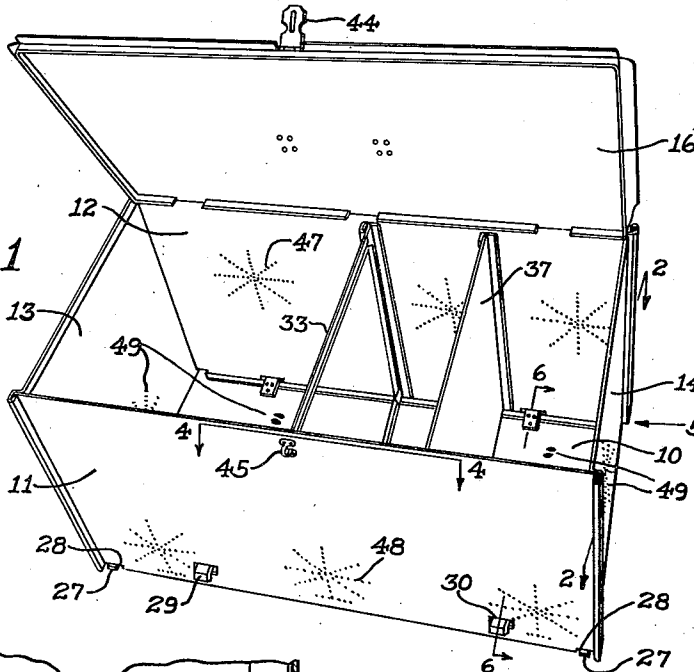


Fig. 2

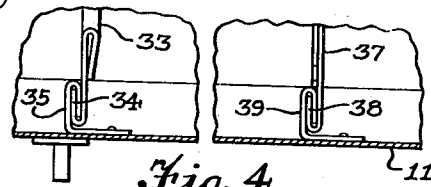


Fig. 4

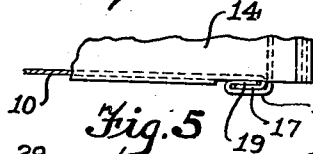


Fig. 5

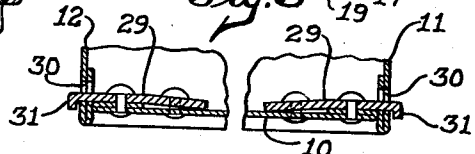


Fig. 6

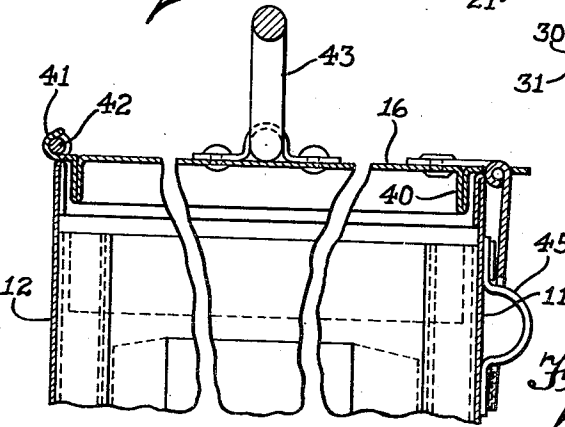


Fig. 3

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UNITED STATES PATENT OFFICE

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BOX

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3 Claims. (Cl. 43—55)

This invention relates to box construction, and more particularly to boxes that can be readily collapsed.

One object of the invention is the provision of a collapsible metal box having a bottom and sides provided with interlocking connections with one another and adapted to be readily assembled and disassembled without the use of any special tools.

Another object of the invention is the provision of a collapsible sheet metal box having side members which slidably interlock with one another, along their edges, the sides being assembled by sliding one along the other in the direction of the side edges.

Another object is the provision of a collapsible sheet metal box adjacent parts of which are connected by inwardly facing flanges of one member engaging and interlocking with flanges adjacent the edges of adjacent members, so that the two members will be held together against movement in any lateral direction.

Another object of the invention is the provision of a collapsible sheet metal box having slidably interconnected side members some of which are slidably connected to a bottom plate, some of the side members having vertically extending inwardly facing flanges interlocked with a bracing member serving to hold the side members against lateral separation.

Another object of the invention is the provision of a collapsible sheet metal box that may be used as a fisherman's live box, and which may be completely collapsed into a comparatively flat package.

Other objects and advantages of the invention will be apparent from the following description, the appended claims, and the accompanying drawing, in which a preferred embodiment of the invention has been illustrated.

In the drawing,

Fig. 1 is a perspective view of a collapsible box embodying the present invention;

Fig. 2 is a horizontal section taken through one end of the box as indicated on the line 2—2 of Fig. 1;

Fig. 3 is a transverse vertical section through the upper portion of the box showing the cover in closed position.

Fig. 4 is a horizontal section taken on the line 4—4 through the front side of the box;

Fig. 5 is a fragmentary side view of a lower corner of the box as viewed in the direction of the arrow 5 of Fig. 1; and

Fig. 6 is a vertical section through the bottom portion of the box along the line 6—6 of Fig. 1.

Referring more particularly to the drawing by reference numerals, the collapsible box, as shown in Fig. 1, is provided with a sheet metal bottom plate, and sheet metal side plates 11, 12, 13, and 14 which extend vertically from the edges of the bottom plate. A hinged cover 15, also of sheet metal, is hingedly connected to the side plate 12.

The several plates mentioned are detachably connected to one another so that they can be assembled and disassembled into a flat package without the use of tools. At opposite ends of the bottom plate 10 the latter is integrally provided with flanges that interlock with flanges extending along the lower edges of the two side plates 13 and 14. One of these interlocking connections is shown in Fig. 5, the bottom plate 10 being shown with a downwardly and inwardly turned flange 17 providing a channel facing towards the center of this plate. The lower edge of the side 14 is turned inwardly as indicated at 18 and then flanged reversely as indicated at 19, forming a channel that receives the flange 17, and providing an interlocking connection between plates 10 and 14 by sliding the plate 14 horizontally in the direction of its lower edge and thus secure these plates one to the other. At its opposite end the bottom plate 10 is correspondingly formed and interlocks in the same manner with a reverse flange that extends along the lower edge of the side plate 13.

Extending along each vertical edge of the side plates 13 and 14 is a connection flange by means of which these plates are connected to the two adjacent side plates 11 and 12, plates 11 and 12 being assembled to the other two side plates by sliding them downwardly in the direction of their vertical edges. The interlocking connection between the plate 14 and the two side plates 11 and 12 is shown in Fig. 2. As will be apparent from that figure, the plate 12 extends past the body portion of the plate 14 and is outwardly flanged as indicated at 21 and then bent so as to extend outwardly at 22 and then reversely flanged as indicated at 23. The reverse flange provides a channel facing towards the plate and receiving the flange 21 of the plate 14, the interlocking connection holding these two plates together against any lateral movement in any direction although the plates may be readily assembled or disassembled merely by relative sliding movement in a vertical direction. At its opposite end, the plate 14 is outwardly flanged as indicated at 24 and the side plate 11 is reversely flanged as shown at 25. The plate 13

has similar interlocking connections at its edges with the plates 11 and 12.

The bottom plate 10, adjacent each corner, is preferably provided with an outwardly extending lug 27, adjacent the lower opposite corners of the side plates 11 and 12, which are cut out or recessed as indicated at 28 to receive them. The lugs 27 prevent excessive downward movement of the side plates 11 and 12. The side plates 11 and 12 are interlocked with the bottom plate 10, the latter having outwardly extending arms or lugs 29 which may be riveted on the upper side of the bottom plate and which project out through slots 30 in the lower portions of the side plates 11 and 12. These slots 30 are somewhat larger, in their vertical extent, than the thickness of the lugs 29, and the lugs are preferably downwardly flanged as indicated at 31 so as to interlock with the side plates to hold them from bulging outwardly. The height of each slot 30 is large enough so that the flanged portions 31 of the lugs 29 may be entered through the slots by bulging the side plates slightly, in an outward direction, and the lugs may then be entered in the slots. After entering the lugs in the slots the side plates 11 and 12 may be pulled upwardly until the bottom of the slots engage the lower sides of the lugs. The lugs and the slots provide supporting connections from the side plates 11 and 12 and form an interlock between these side plates and the bottom plate when the parts are in their assembled position.

The side plates 11 and 12 are also interconnected to one another by means of a brace 33 in the form of a frame of sheet metal provided along each vertical edge thereof with an inwardly facing flange 34. Riveted or otherwise secured to the side plate 11 is a metal strip 35 which is flanged reversely so as to provide a vertical channel facing toward the plate 11 and forming an interlocking connection with the flange 34. A similar interlocking flange connection is provided between the plate 12 and the other side of the brace 33. The brace 33 may be applied merely by sliding it downwardly and the two opposite sides of the box are thus held against outward bulging movement.

A partition wall 37 may be provided to separate the interior of the box into a plurality of compartments. This partition wall is a sheet metal plate having reversely flanged vertical edges 38 received in flanged metal strips 39 which are riveted to the side plates 11 and 12. The partition wall is adapted to be applied or removed merely by sliding it in a vertical direction.

The cover 16 which is formed of sheet metal has its body portions, near the edges, reversely flanged as indicated at 40 to provide stiffening ribs extending along the inner sides of the several side walls 11, 13 and 14. At its rear edge, the plate 16 is integrally provided with several curved strips 41 forming hinge portions engaging hinge pins 42 each of which is welded at its opposite ends to the upper edge of the plate 12 which is suitably recessed to receive the hinge pins. The spaces between the hinge pins 42 and the upper parts of the recessed portions of the plate 12 form passages that receive the strips 41. When the cover is moved more than 180° from its closed position, thus extending back and downwardly from the plate 12, the curved strips 41 may be disengaged from the hinge pins in order to readily separate the cover from the side 12, although with the cover in its closed position or in an upwardly extending vertical position

the hinge connection prevents separation of these parts.

The cover is preferably provided with a handle 43 for carrying purposes, and with a slotted lock plate or fitting 44 which fits over a lock loop 45 on the plate 11.

The disassembly of the box is readily effected. The cover is turned rearwardly and separated from the back plate 12. The partition wall 37 and the brace member 33 are then removed merely by pulling them upwardly. The sides 11 and 12 are then forced downwardly to free the slots 30 from the downturned flanged ends of the lugs 29 and these sides are then bulged outwardly to separate the arms from the slots so that the sides can be pulled upwardly and thus separated from the sides 13 and 14. The latter are then separated from the bottom merely by sliding them horizontally or in other words in the direction of their edges. The several plates are comparatively flat, and may be stacked one upon the other to form a flat package that can be readily carried or shipped.

The box may be used for many purposes, for shipping or carrying articles, and of course the sides of the box may be made imperforate although where the box is adapted for use as a fisherman's live box, the side walls are provided with groups of perforations 47 and 48 in the side walls 12 and 11, the groups of the perforations in the side wall 12 being arranged at a somewhat higher level than the groups of perforations 48 so that a through current of water cannot readily flow in a horizontal direction across the interior of the box when the box is submerged in a current of water. Live fish in the box will not be dashed around in the box by waves or violent currents in the surrounding water. The bottom plate 10 and the side plates 13 and 14 are also provided with perforations 49 so that when the box is submerged or partly submerged in water, the fish which are in the larger compartment between the wall 37 and the side wall 13 may be kept alive. The partition 37 need not be used, but forms a convenient part to partition the interior of the box into a bait compartment and a live fish compartment.

While the form of apparatus herein described constitutes a preferred embodiment of the invention, it is to be understood that the invention is not limited to this precise form of apparatus, and that changes may be made therein without departing from the scope of the invention which is defined in the appended claims.

What is claimed is:

1. A collapsible sheet metal box comprising a bottom plate having a connection flange at each of two opposite edges thereof, a pair of opposed side plates each having a connection flange slidably interlocking with a flange of the bottom plate and having a connection flange at each of its two vertical edges, a second pair of side plates each having connection flanges slidably interlocking with flanges of the first pair of side plates, means projecting from opposite sides of said bottom plate, said second pair of side plates having openings receiving said projecting means to support the bottom plate from said second side plates.

2. A collapsible sheet metal box comprising a pair of opposed side plates having at each of its two vertical edges a vertical flange providing an inwardly facing channel, and a second pair of side plates having at each end thereof an outwardly extending flange adapted for reception

in channels of the adjacent side plates, said second pair of side plates being arranged outwardly of portions of the first-named side plates, one pair of said side plates having vertically extending flanges arranged between the vertical edges thereof and providing inwardly facing channels, and a bracing plate extending across the interior of the box and having intumed flanges slidably interlocking with said channels, and a bottom plate having a detachable connection with some of said side plates.

3. A fully collapsible sheet metal live box comprising

a bottom plate, a pair of side plates slidably interlocking with said bottom plate, a second pair of side plates each having opposed vertical flanges slidably interlocking with the first pair of side plates, a cover detachably connected to one of said side plates, two opposed side plates each having a group of small holes with the group of holes in one of said plates arranged at a different height from the group of holes in the other.

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