Jan. 17, 1950

D. J. GREILING

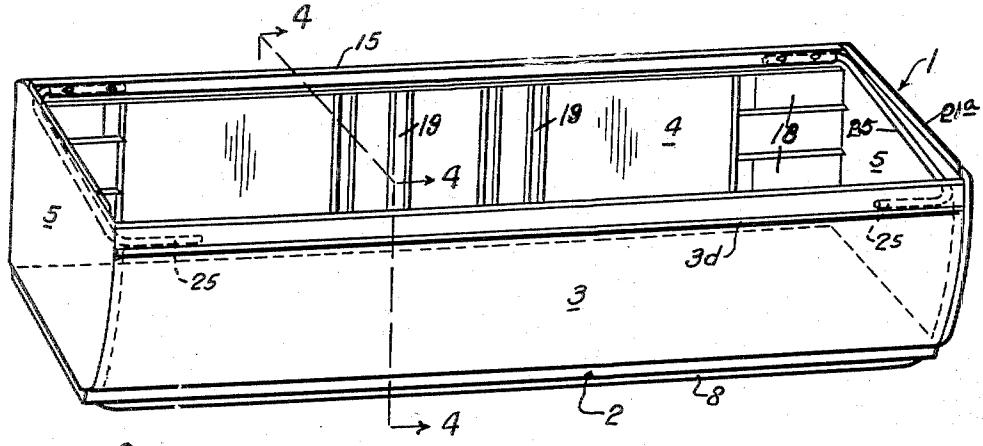
REFRIGERATED MERCHANDISE DISPLAY CASE OR THE LIKE

2,494,703

Filed April 1, 1948

2 Sheets-Sheet 1

FIG. 1.



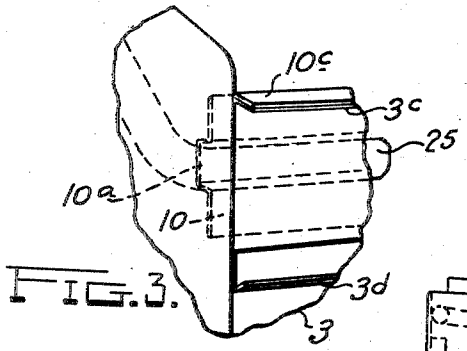


FIG. 3.

FIG. 2.

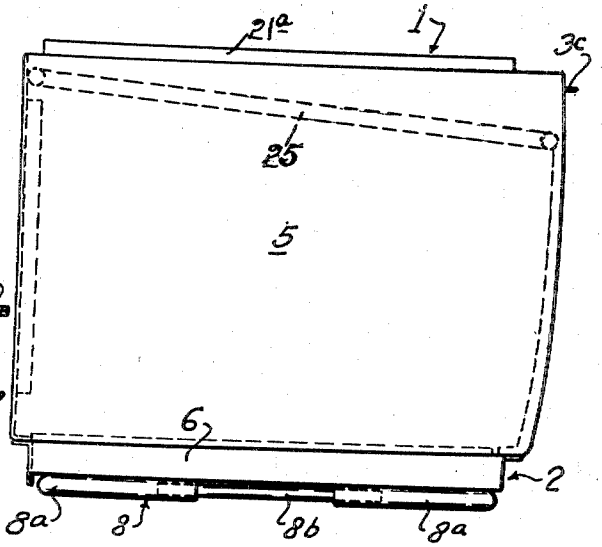
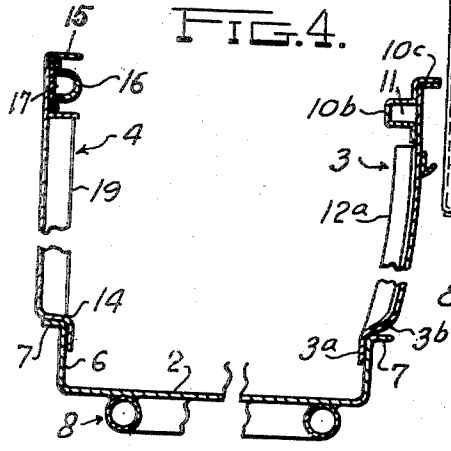


FIG. 4.



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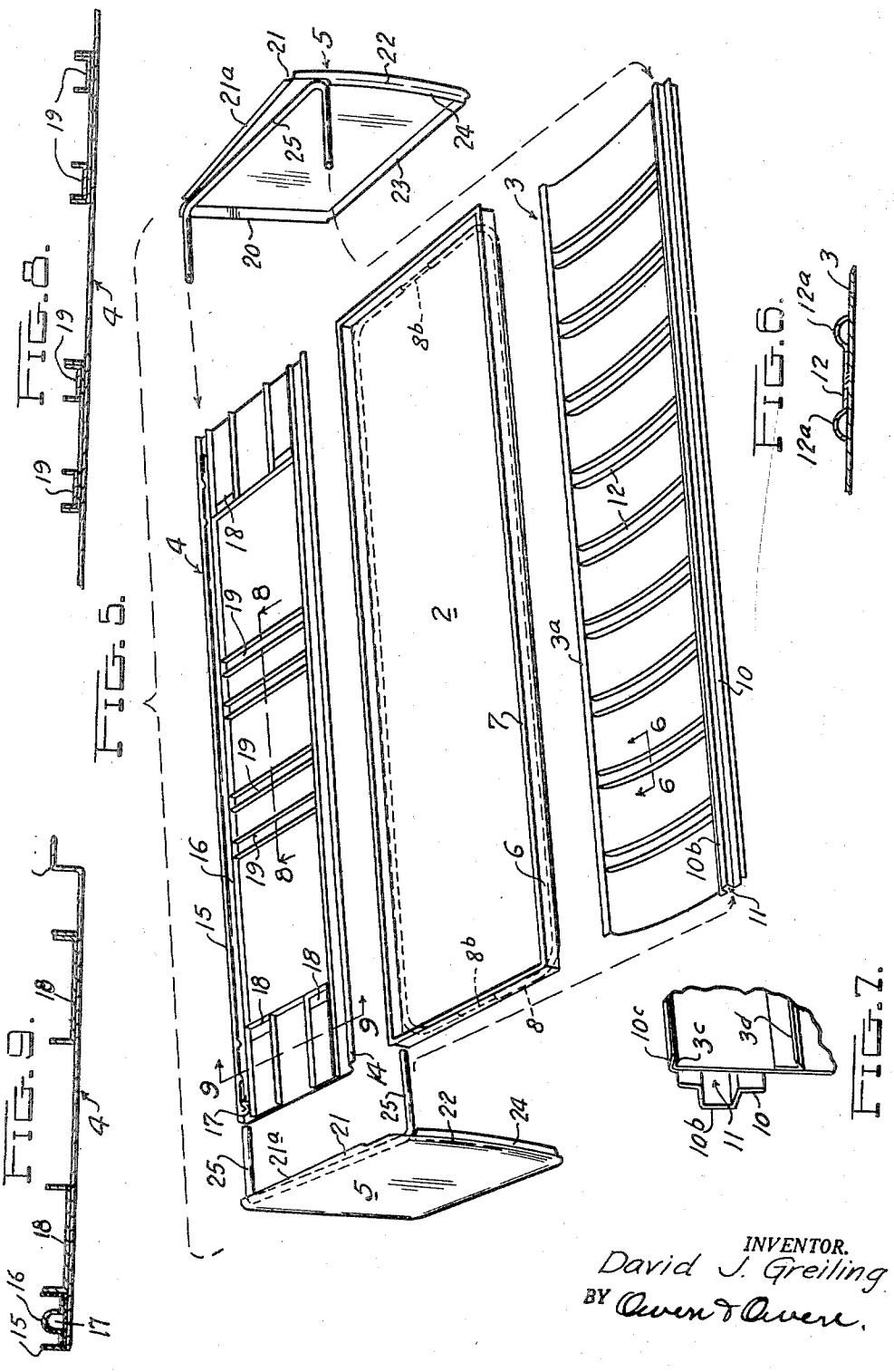
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UNITED STATES PATENT OFFICE

2,494,703

REFRIGERATED MERCHANDISE DISPLAY CASE OR THE LIKE

David J. Greiling, Kendallville, Ind., assignor to McCray Refrigerator Company, Kendallville, Ind., a corporation of Indiana

Application April 1, 1948, Serial No. 18,366

11 Claims. (Cl. 312—116)

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This invention relates to the reinforcing of sheet metal tank-like structures to resist warping and distortion under twisting strains, and applies particularly to the base structures of large refrigerated merchandise display cases.

In such cases it is customary to provide a sheet metal tank-like base structure of considerable length with a closed bottom and open top on which the superstructure of the case is mounted, and it is the object of the present invention to build and reinforce such base structure in a simple, novel and efficient manner to make it strong and rigid so as to effectively withstand the twisting and distorting strains to which subjected during handling and moving.

Other objects and advantages of the invention will be apparent from the following detailed description, and from the accompanying drawings, in which—

Fig. 1 is a top perspective view of a base structure embodying the invention; Fig. 2 is an enlarged end view thereof; Fig. 3 is an enlarged fragmentary perspective detail of one corner reinforcement; Fig. 4 is an enlarged vertical cross-section on the line 4—4 in Fig. 1, with parts broken away; Fig. 5 is an exploded view in perspective of the case; Fig. 6 is an enlarged section on the line 6—6 on the front section member of Fig. 5; Fig. 7 is an enlarged fragmentary perspective detail of an end portion of said front section and its top edge reinforcement; Fig. 8 is an enlarged longitudinal section on the line 8—8 in Fig. 5, and Fig. 9 is an enlarged cross-section on the line 9—9 in Fig. 5.

Referring to the drawings, 1 designates the hollow open-top base structure of a refrigerated merchandise display case which is of elongated rectangular form and comprises a bottom section 2, front and rear side sections 3 and 4, respectively, and the two opposed duplicate end sections 5, 5. All of these sections are firmly united preferably by electric welding.

The bottom section 2 is of pan-form, being provided entirely around its edge with an upstanding wall 6 having a surrounding outturned top edge flange 7. On the under side of this section adjacent to its edge is rigidly attached, preferably by electric welding, a foot-piece 8 preferably of endless bar-form, which serves both as a reinforcement for the bottom of the case and as a shoe or skid piece for resting on the floor or other supporting structure. This shoe-piece is an important part of the case both from the standpoint of reinforcement and to facilitate handling and moving. In moving, rollers may be

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placed under the shoe in supporting and rolling engagement therewith.

The shoe-piece 8 is composed, in the present instance, of two opposed U-shaped side sections 8^a preferably of tubular form, which have their legs aligned and connected by tie-bars 8^b that are fit at their ends in the aligned ends of the sections 8^a, and rigidly secured thereto in any suitable manner.

The front section 3 is provided along its lower edge with a flange 3^a which, when assembled with the bottom section, laps the inner side of the front edge flange 7 of such section at its inner marginal edge and is firmly secured thereto, as by electric welding. The section 3 curves outwardly rather abruptly from the flange 3^a over the outturned edge flange 7, as shown at 3^b (Fig. 4), to seat on at least the inner edge thereof, and then forms a gradual curve to the top edge of the section to impart a curved bilged appearance to the case front that also lends strength to the structure. The end edges of the front section terminate in the longitudinal plane of the section, while the top edge has an outturned horizontal flange 3^c. A mold board (not shown) is fitted between this flange and a subjacent flange 3^d secured to the front of the section.

At the top inner marginal edge of the front section 3 is secured, preferably by welding, a sheet metal reinforcing channel strip 10 which, in the present instance, is a flat strip having a longitudinally extending channel 10^a intermediate its side edges and facing the front section to provide a channel 11 therebetween that is open at both ends. These ends preferably project a short distance beyond the ends of the front section as shown in Fig. 7. The top edge of the strip 10 has an outturned flange 10^c that overlaps and is rigidly secured to the front section flange 3^c, preferably by electric welding.

The front section 3 is further reinforced against distortion by a series of vertically disposed transversely spaced ribs 12, which are welded to the inner side of the section and extend from the inner edge of the bottom flange 3^a to the lower edge of the reinforcing strip 10, or if desired they may overlap the lower flange edge of the strip. These ribs 12 are lengthwise curved to conform to the bilge form of the front section and are plain in cross-section, except that each side edge terminates in a U bead 12^a with its channel facing the section, as best shown in Fig. 6. These ribs combine with the top edge reinforcement 10 and the bilged form of the front section to pro-

vide a section that is exceptionally strong against twisting or warping.

The back section 4 is of plain sheet metal form, having at its lower edge an inwardly and downwardly extending annular flange 14 adapted to rest on the rear edge flange 7 of the base section with its downwardly extending terminal edge engaging within the upstanding edge wall of the base of such section. An inwardly facing reinforcing U-shaped channel strip 15 is secured to the inner side portion of the section 4 substantially flush with its top edge, and extends from end to end thereof. Mounted within the channel of this strip 15 is a second U-shaped reinforcing strip 16 with its legs outwardly flanged at their edges and seated against the bottom of the channel strip 15 and preferably welded thereto, as is also the strip 15 to the body sheet of the back section 4. The two strips 15 and 16 thus cooperate to form a channel or passageway 17 that is open only at its ends. The strip 16 terminates at each end slightly short of the respective end of the strip 15, as shown in Figs 1 and 5. The back section is further reinforced by horizontally extending channel sections 18 and vertically extending intermediate channel sections 19, all rigidly attached to the back section preferably by welding.

The ends 5, 5 are of duplicate construction each comprising a body sheet with its top and bottom edges substantially horizontal, its rear edge vertical and its front edge of bilge-form conforming to that of the front section 3. Each edge is inwardly flanged with the flanges 20, 21, 22 and 23, respectively, at the rear, top, front and bottom. These flanges preferably have rounded connection with the body sheet to avoid abrupt corners. The front flange 22 has its outer or free edge portion inwardly offset, as shown at 24 (Fig. 5), substantially the thickness of the metal of the front section 3, so as to permit the end edge of section 3 when slipped thereover to be substantially flush with the flange 22, as shown in Fig. 1. There is welding along these seams. The top flange 21 is shown, in the present instance, as provided at its free edge with an upstanding flange 21^a to facilitate mounting and centering the superstructure of the case on the base. Each end section has a U-shaped tie-bar 25 for the front and rear sections 3 and 4 welded or otherwise rigidly secured across its inner side adjacent to its top with the legs of such bar projecting horizontally inward in position to register with and enter the channels 11 and 17 in the upper edge reinforcements of the front and rear sections 3, 4, when the ends and sides of the case are assembled.

In assembling the several sections of the case, the front and rear sections 3 and 4 are first assembled with the end sections 5, 5. The base section 2 is then welded to this assembly with the lower edge flanges of the front, back and end sections seating on and fitting within the respective flanged edges of the base section. In assembling the end sections 5 with the front and rear sections, the reinforcing or tie-bars 25 on the end sections have their ends projected into the channels 11, 17, of the front and rear sections. These bar ends closely fit said channels and are welded or otherwise rigidly secured to their side walls to form a rigid bracing connection between the side and end sections. The lower edge flange of each end section 5 rests on the top flange of each end of the bottom section 2, while the rear edge flange 20 of the end laps the outer side of the rear section 4, and the inwardly offset portion 24 of the front edge flange 22 laps the inner side of the adjacent end of the front section 3 with its offset shoulder in stop abutment with the said end, as shown in Fig. 1. These various lapping flanges or parts are preferably secured together in rigid assembled relation by electric welding or brazing.

It is apparent that a case formed in the manner described, while of light construction, is exceptionally strong and resistant to twisting, warping and distorting strains; that the U-bars 25 at the ends and the reinforcing channel bar 10 at the front and the reinforcing double channel members 15 and 16 at the rear cooperate to form a bracing structure around the entire top portion of the case that is of an extremely rigid nature, and that the endless shoe-piece 8 forms a similar function at the bottom of the case in addition to forming a skid bar to facilitate handling and moving. It is also apparent that the various reinforcing parts of the case cooperate to resist strains and distorting force and to produce a strong and rigid structure.

I wish it understood that my invention is not limited to any specific construction, arrangement or form of the parts, as it is capable of numerous modifications and changes without departing from the spirit of the claims.

Having thus described my invention, what I claim as new, and desire to secure by United States Letters Patent, is:

1. In a case of the class described, a rectangular pan-shaped bottom section having a surrounding top edge portion with outwardly projecting flange, front and rear sections having lower edge portions engaging over and at the inner side of said bottom edge portions and rigidly attached thereto, longitudinally extending reinforcements at the inner upper edge portions of said front and rear sections rigidly attached thereto and forming channels with their ends open at the ends of said sections, opposing end sections seating on the top edge portions at the ends of said bottom section and having inwardly extending side edge flanges lapping the adjacent end edges of the side sections and rigidly attached thereto, and a U-shaped reinforcing bar rigidly attached at its loop portion to the inner side of each end section crosswise thereof and near its upper edge with its legs projecting inwardly therefrom and telescoping within and rigidly secured to the adjacent open ends of the respective channeled side reinforcements to cooperate therewith and with the bottom, side and end sections to produce a hollow case that is highly resistant to twisting and distorting strains.

2. An arrangement as called for in claim 1, wherein the reinforcement at the top inner edge of the rear section comprises an elongated U-shaped sheet metal strip having its legs outwardly flanged to seat flat against the inner side of the front section with the strip channel facing the section.

3. An arrangement as called for in claim 1, wherein the reinforcement at the inner top edge portion of the front section has a channel facing said section with the side walls of said channel outwardly flanged at their edges to seat flat against the inner side of said section and with the upper flanged side of said channel provided at its free edge with an outturned flange that engages over the top edge of the front section.

4. An arrangement as called for in claim 1, wherein the front section is outwardly flanged at its upper edge and the reinforcing channel section has an upper edge flange that engages over

and is rigidly attached to said outturned flange of the front section.

5. In a case of the class described, a rectangular pan-shaped bottom section, front and rear sections having angled flanges at their lower edges which engage over the top side edges of said bottom section and extend therein, being rigidly attached one to the other, longitudinally extending reinforcements at the upper edge portions of said front and rear sections rigidly attached thereto and forming channels with their ends open at the ends of said sections, the reinforcement on the rear section comprising an inwardly facing channel and an outwardly facing channel strip seating in said first channel and rigidly attached thereto and cooperating therewith to form the channel of such reinforcement, opposing end sections rigidly attached at their bottom, rear and front edges, respectively, to the adjacent ends of said bottom, rear and front sections, and a U-shaped reinforcing bar attached to each end section near its upper edge crosswise thereof and having its legs projecting inwardly from the end section and interengaging with and rigidly attached to the adjacent ends of respective front and rear reinforcements.

6. An arrangement as called for in claim 5, wherein the ends of said bars are telescoped within the channels of said reinforcements at the respective ends of the case and integrally connected therewith.

7. An arrangement as called for in claim 5, wherein the front section curves in bilge form outwardly and upwardly from its lower edge, together with a plurality of transversely spaced vertical reinforcing strips rigidly attached to the inner side of the front section and extending from the lower edge thereof to said top edge reinforcement.

8. In a case of the class described, a rectangular pan-shaped bottom section having a surrounding outturned top edge flange, front and rear sections having flanges at their lower edges engaged within the upstanding walls of said bottom section and seating on said outturned top edge flanges and rigidly attached thereto, opposing end sections having inturned lower edge flanges seating on and rigidly attached to the respective end edge flanges of the bottom section and having an inwardly extending rear edge flange lapping and rigidly attached to the adjacent edges of the rear section, and also having front edge flanges of inwardly stepped form to lap the respective

vertical edges of the front section at the inner sides thereof and to which they are rigidly attached and to form shoulders against which the ends of the front section abut, and reinforcing means extending entirely around the inner upper edge portion of the case and rigidly attached to the front, rear and end sections.

9. An arrangement as called for in claim 8, wherein said reinforcing means comprises longitudinally extending channeled reinforcing strips on the inner upper edge portions of the front and rear sections and U-shaped members on the inner upper edge portions of the end sections extending crosswise thereof and having their legs projecting horizontally from the end sections and having rigid telescoping engagement with the adjacent end channels of said reinforcing strips.

10. In a case of the class described having rigidly connected bottom, front and rear side sections and end sections, the bottom section being of pan-form with the other sections attached to and rising from the upper edges of its respective side and end walls, and a shoe piece of endless bar-form rigidly attached to the under side of said bottom section and extending therearound adjacent to its edges.

11. An arrangement as called for in claim 10, wherein said shoe piece comprises two tubular members attached flatwise to the under side of the bottom section along respective front and rear edges thereof with their legs at respective ends of the section extending toward each other, and bars telescoping with and rigidly connecting the ends of said leg portions to cooperate with the U-shaped members to form an endless shoe piece for the bottom section.

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