

Dec. 21, 1943.

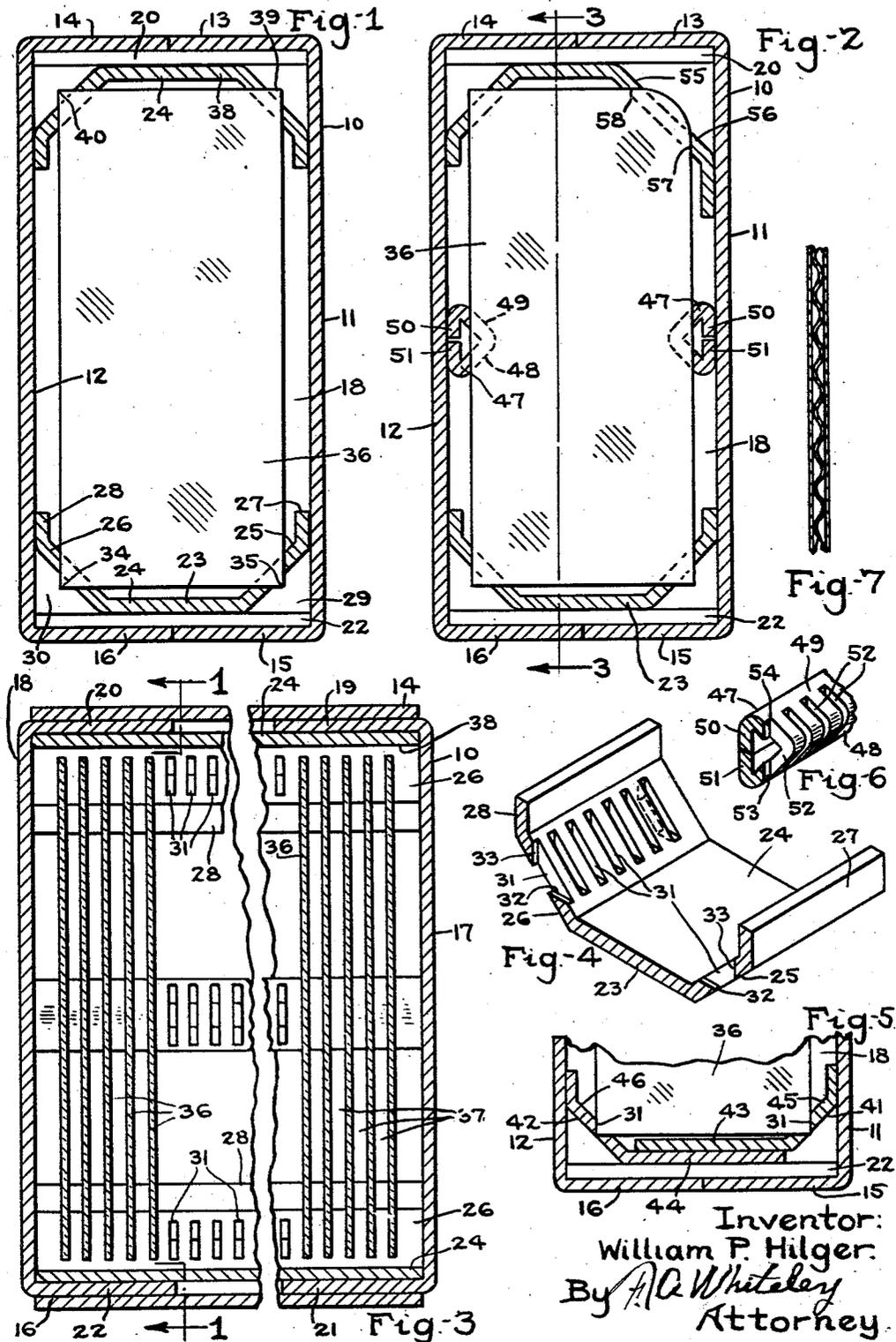
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2,337,468

SHIPPING CONTAINER FOR BREAKABLE SHEETS

Filed Oct. 2, 1940

2 Sheets-Sheet 1



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2 Sheets-Sheet 2

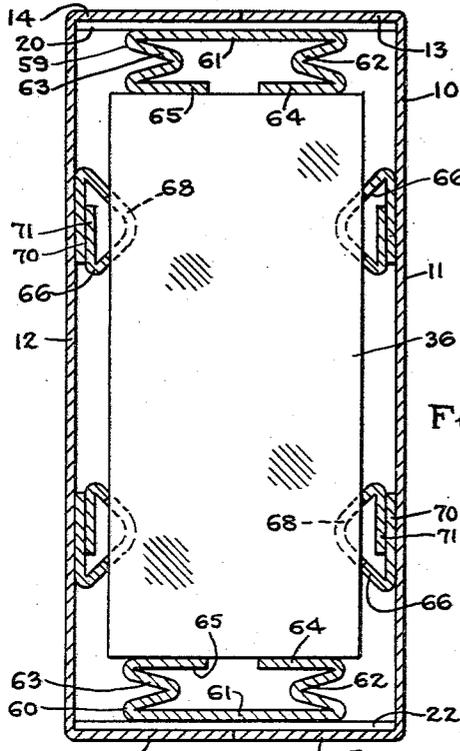


Fig-8

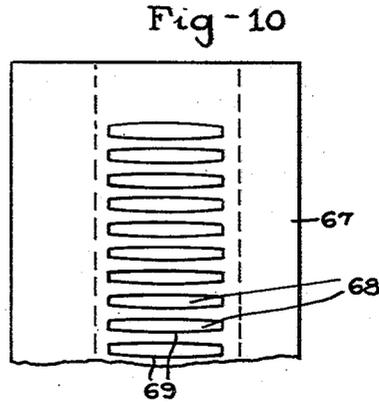


Fig-10

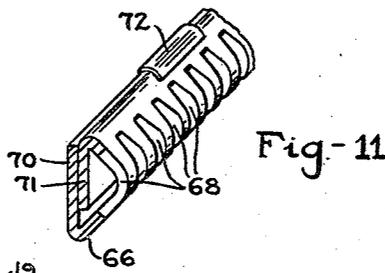


Fig-11

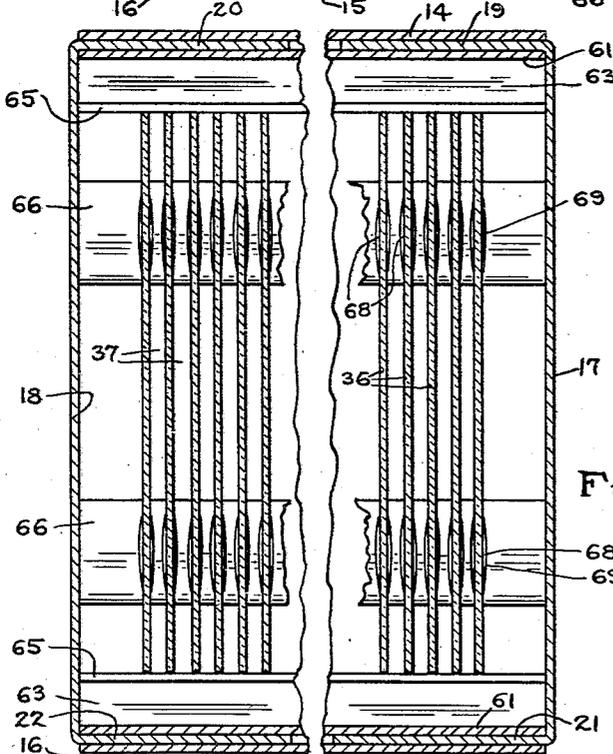


Fig-9

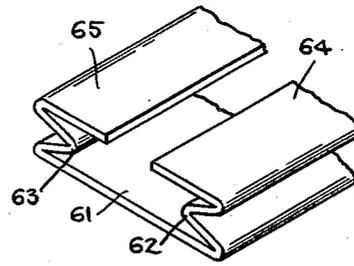


Fig-12

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UNITED STATES PATENT OFFICE

2,337,468

SHIPPING CONTAINER FOR BREAKABLE SHEETS

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5 Claims. (Cl. 206-62)

My invention relates to shipping containers for breakable sheets such as glass sheets, frost shields, sleet shields and the like, and has for its object to provide a special type of shipping container with means therein adapted to hold the sheets spaced from all walls of the container itself and spaced from one another and protected against any possible injury in handling.

It is a principal object of my invention therefore to provide a carton of usual construction made of folding board in a well known way, and to provide within the ends, members engageable with the ends of the sheets and holding them spaced from the ends of the carton and protecting them from shock by dropping or throwing the said carton about, in combination with special holder members secured to the side walls of the carton and engageable with the edges of the sheets for holding said sheets spaced from one another and spaced from the side walls of the cartons.

It is an object of my invention in carrying it out in one form to provide a bottom filler piece having angle pieces across the corners of glass or breakable sheets and hold them spaced from the walls of the carton, and, further to provide top spacer strips formed with slots in a similar manner which may be applied to the upper corners of the glass sheets after the same have been assembled, so the carton then can be closed in the usual way and the sheets are held for shipping so as to be protected in the handling of the cartons.

There are instances in which one or more of the corners of the glass or breakable sheets are rounded and it is a further object of my invention to provide the filler strips with suitable angularly disposed walls and openings to receive said rounded corners.

It is a further object of my invention to apply to the sides of the carton in which the filler strips are packed certain special holder members having ribs triangular in cross section extending into the carton with slots formed in said ribs for receiving the edges of the sheets.

It is a further object of my invention to provide aforesaid holder strips with slots which are wider at the apex of the ribs than at the ends whereby the glass sheets may readily be slipped into said slots.

It is a further object of my invention in one of its forms to provide end filler pieces formed of means contacting the ends of the sheets or plates with a spring action tending to hold the sheets and plates balanced between said spring acting

filler pieces in combination with the aforesaid side members for holding the sheets spaced from one another and spaced from the side walls of the container.

The full objects and advantages of my invention appear in connection with the detailed description thereof, and the novel features by which the hereinbefore detailed advantageous results sought are obtained, are particularly pointed out in the claims, it being understood that details of construction may be varied without departing from the spirit of the invention as described and claimed.

In the drawings illustrating an application of my invention in one form:

Fig. 1 is a sectional elevation view through a container showing my improvements applied thereto and the position of a glass sheet therein, the figure being taken on line 1-1 of Fig. 3.

Fig. 2 is a similar sectional elevation view showing the manner of taking care of a rounded corner to a glass sheet and supports at the center.

Fig. 3 is a sectional elevation view taken on line 3-3 of Fig. 2.

Fig. 4 is a perspective part sectional view of one of the filler pieces.

Fig. 5 is a fragmentary view showing a modified form of a filler piece.

Fig. 6 is a fragmentary perspective view of one of the central filler pieces.

Fig. 7 is a sectional view of the type of material employed.

Fig. 8 is a sectional view in the plane of the sheets of a modified form of my invention wherein the sheets are retained in position by the balanced action of opposing spring members, shown specifically as accordion plaited cardboard sheets.

Fig. 9 is a sectional view transverse to the plane of the sheets of the modified form shown in Fig. 8.

Fig. 10 is a plan view of a cardboard strip from which the side holders are formed showing how the openings are punched from that strip with their wider portions at the center.

Fig. 11 is a perspective view of a portion of one of the holder pieces in its finished condition.

Fig. 12 is a perspective view of a portion of the spring-like end filler pieces.

As shown, a container 10 of usual construction has side walls 11 and 12 provided with top side flaps 13 and 14 and bottom side flaps 15 and 16, and has end walls 17 and 18 provided with top end flaps 19 and 20 and bottom end flaps 21 and 22, all to be assembled in the form of a closed container in a well known way.

Within the container 10 when opened at the top in a usual manner is positioned a filler piece 23 in the form shown in Fig. 1 and on an enlarged scale in Fig. 4. This filler piece comprises a base member 24 which engages the bottom wall of the container formed by the inturned flaps 21 and 22. The filler piece includes angularly connected portions 25 and 26 and extension portions 27 and 28. The extension pieces 27 and 28 engage the side walls 11 and 12 of the container and the angularly disposed portions 25 and 26 bridge across the corners of the containers from the bottom wall to a side wall so as to leave triangular spaces 29 and 30 along the corners of the container. Through the angular portions 25 and 26 a series of slots 31 are formed of the cross sectional form clearly shown in Fig. 4, wherein the end walls 32 and 33 of said slots are angularly disposed with respect to the planes of the portions 25 and 26 so that said end walls 32 and 33 extend at right angles to each other and are adapted to receive the corners 34 and 35 of a glass plate 36 such as a windshield, frost shield or other thin breakable plate made of material such as glass.

After the filler has been positioned in the bottom as above described the sheets of glass such as windshields, frost shields and the like are positioned, as clearly shown in Figs. 1 and 3, wherein the several sheets are held spaced, as indicated at 37 on Fig. 3, with their bottom corners 34 and 35 held in the slots 31 and the edges of the glass plates engaging the end walls 32 and 33 of said slots. Thereafter a top filler piece 38, identical with the filler piece 23 and having the same wall and angular portions and slots as the filler piece 23, is applied to the upper portions of the sheets 36 so that the upper corners 39 and 40 thereof project through the slots 31 of the upper filler piece 38.

The upper flaps 19, 20 are then folded to engage the wall 24 of upper filler plate 38 and the top end flaps 13 and 14 are closed and sealed and the container is ready for shipping with each of the plates held spaced from each other and spaced from the walls of the container.

The arrangement is such, with the edges of the several plates 36 engaging the end walls 32 and 33 of the slots 31, that not only are the glass plates as a whole, and their corners particularly, protected, but the glass itself greatly aids in rendering the entire container more rigid and better adapted to resist any kind of strain or shock.

The same result can be obtained by using top and bottom filler pieces of the type shown in Fig. 5, wherein two filler pieces 41 and 42 are employed. The pieces 41 and 42 have bottom portions 43 and 44, which, as shown, are adapted to overlie each other as shown in Fig. 5. The angularly disposed piece 45 of the piece 41 will be somewhat longer than the angularly disposed part 46 of the piece 42, and the slots in 45 will be deeper than the slots in 46, so that as heretofore described the end walls of the slots will extend at right angles to each other and the sheets 36 will be held with their edges engaging said end walls. Obviously this arrangement can be reversed for the upper assemblage of pieces 41 and 42, and when the glass sheets are positioned they will be held in substantially the same manner as in the construction of Fig. 1.

For very long sheets of glass such as sometimes are found in windshields, frost shields and the like it may be desirable to additionally reinforce the carton at its center and give lateral support to the center of the glass sheets, and this is ac-

complished by introducing supplementary filler pieces 47 as shown in Figs. 2 and 6. These supplementary filler pieces are triangular in cross section with side walls 48 and 49 and inturned tongues 50 and 51, as clearly shown. The supplementary filler pieces in practice will be slid down the inside of the carton engaging the edges of the glass in slots 52 which extend directly across the apexes of the triangular portions of the supplementary filler pieces and have end walls 53 and 54, Fig. 6, extending in a common plane adapted to engage the edges of the plates 36.

As shown in Fig. 2, where rounded corners are found on the plates the filler pieces may be modified, as indicated at 55 in Fig. 2, to make a somewhat longer diagonal portion 56 to receive the rounded corner, it being understood that the edges of these enlarged slots will be similar to edges 32 and 33 extending at right angles to each other and engaging portions of the sheet edges as indicated at 57 and 58, Fig. 2, at right angles to each other.

In the form of my invention shown in Figs. 8, 9 and 10 in place of the filler strips 23 and 24 having slots for receiving the corners of the sheets of plates, I supply top and bottom filler strips 59 and 60 each of which is identical in construction, and comprises a base member 61 and an attached portion folded at 62 and 63 so as to provide top flaps 64 and 65. The ends of the sheets 36 butt against the flaps 64 and 65 which are folded to lie in a common plane. The folds 62 and 63 made of a fairly stiff cardboard have a considerable degree of spring which causes the flaps 64 and 65 of both of the filler pieces 59 and 60 to exercise balanced pressure against the ends of the sheets 36. This holds the sheets spaced from the ends of the carton and at the same time, by means of the springing action of the filler pieces 59 and 60, provides a shock absorbing support for the respective sheet ends whereby they are held within the container and protected from any shock resulting from handling.

Holder members 66 are positioned against the sides 11 and 12 of the carton and engage the edges of the glass sheets 36 to hold them spaced from one another and from said side walls. These holder members comprising a sheet 67 of cardboard (Fig. 10) wherein a multiplicity of slots 68 have been punched, said slots being widened at the center, as indicated at 69, Fig. 10.

The sheet is folded, as clearly shown in Figs. 8 and 11, so that a base portion 70 has overlying it a second flap 71 with the slots 68 extending across the apex of the holder members. The assemblage may be secured together by adhesive tape 72 or other securing means. Inasmuch as certain of the glass sheets, such as frost shields, have applied thereto a rim of material, not shown, which might be damaged by insertion in slots 68 if the slots were narrow enough at their entrance to engage the edges of the sheet, I have found it advantageous to expand the slots 68 at the center as indicated.

In assembling the cartons containing the sheets 36 the bottom filler piece 60 is put in position and the holder members 66 are also positioned and the sheets 36 slid down through slots 68. The top filler piece 59 is then applied with the flaps 64 and 65 engaging the upper ends of the sheets 36 and the carton is then closed and is ready for shipping.

The advantages of my invention have been quite fully pointed out in connection with the forego-

ing description. These advantages arise out of the extreme simplicity and economy of construction, equal simplicity and ease of assembling the parts and the breakable plates held by the several parts, and the extraordinary protection of the plates packed in the container while being shipped, due in part to the fact that the plates themselves greatly aid in increasing the rigidity and strength of the loaded container and do it by direct edge thrust against the edges of the several plates.

I claim:

1. A shipping container comprising a box having pairs of end walls and side walls, supporting devices located at opposite end walls within the box each having a part engageable with its end wall and having other parts connected with said wall-engaging parts for engaging and supporting the end walls of breakable sheets such as glass frost shields, said engaging portions being so positioned as to hold the edge of the glass sheets spaced from the said end walls and spaced from the part of said supporting means engaging said walls, and other supporting members having portions engageable with the side walls of the box and having a series of slotted plate-engaging portions positioned to receive other edges of the several sheets and hold them spaced from one another and spaced from said side walls of the container.

2. A shipping container comprising a box, vertical strips triangular in cross-section on the inside side walls of the box with open slots across the longitudinal apices of said strips adapted to hold a multiplicity of glass sheets spaced from one another and spaced from said side walls, and members engageable with the ends of the box and with the ends of the glass sheets so as to hold said ends spaced from the ends of the box and to exercise a spring-like pressure upon opposite ends of said sheets.

3. A shipping container comprising a box,

slotted means along the sides of the box adapted to hold a multiplicity of glass sheets spaced from one another and spaced from said side walls, and members formed of cardboard and having accordion folds at their ends, said members engaging the ends of the box and adapted to engage the ends of the glass sheets so as to hold said ends spaced from the ends of the box and to exercise a spring-like pressure upon opposite ends of the sheets.

4. A shipping container comprising a box having pairs of end walls and side walls, sets of supporting devices located opposite each other along the side walls within the box each having a series of slots adapted to receive and support edges of breakable sheets such as glass frost shields to hold said sheets spaced from the sides of the box and from each other, and other means located at the opposite end walls of the box and engaging at one side said end walls and at the other side the edges of the plates with a spring pressure to restrain said sheets from moving endwise along the slots and to hold them spaced from the end walls and protected against shock.

5. A shipping container comprising a box having pairs of end walls and side walls, sets of supporting devices located opposite each other along the side walls within the box each having a series of slots adapted to receive and support edges of breakable sheets such as glass frost shields to hold said sheets spaced from the sides of the box and from each other, and spacer members formed of cardboard with the side edges thereof turned inwardly in accordion folds, said members engaging the ends of the box with their flat faces and adapted to engage the edges of the breakable sheets with a spring pressure to restrain said sheets from moving endwise along the slots and to hold them spaced from the end walls and protected against shock.

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