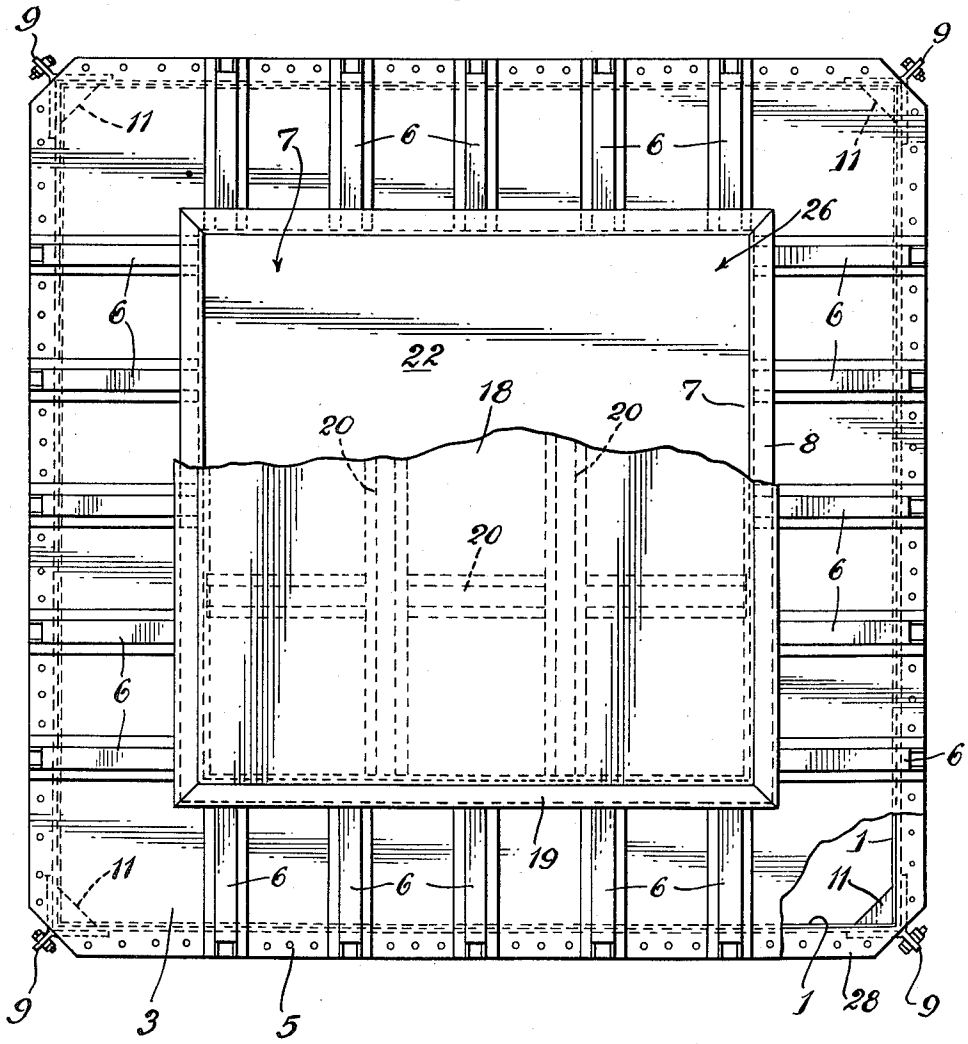
March 15, 1960 W. L. MORRISON 2,928,566

SHIPPER CONTAINER

Filed Jan. 27, 1956 7 Sheets-Sheet 1

Fig. 1



Inventor
Willard L. Morrison

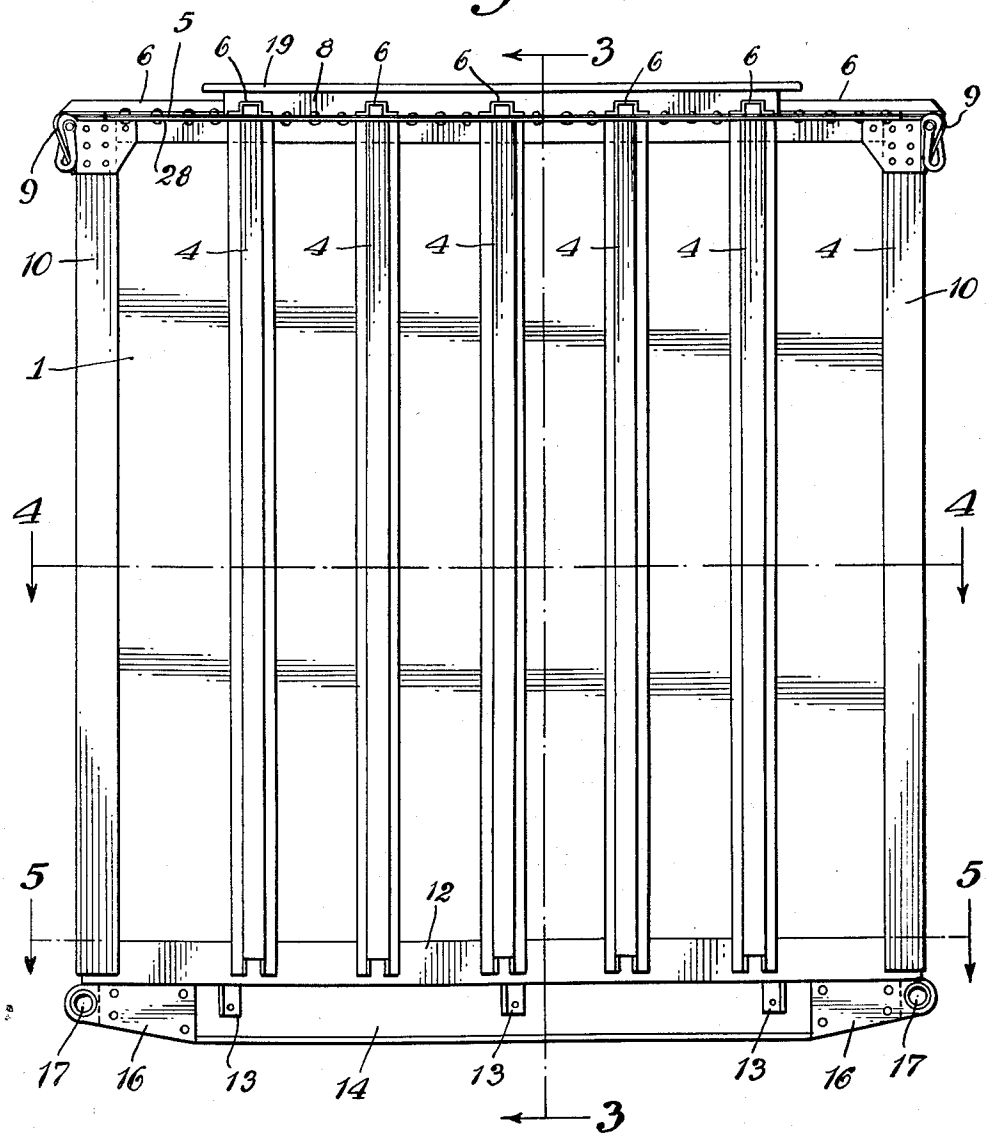
by Parker & Carter
Attorneys

March 15, 1960 W. L. MORRISON 2,928,566

SHIPPER CONTAINER

Filed Jan. 27, 1956 7 Sheets-Sheet 2

Fig. 2



Inventor
Willard L. Morrison

by Parker & Carter
Attorneys

March 15, 1960 W. L. MORRISON 2,928,566

SHIPPER CONTAINER

Filed Jan. 27, 1956 7 Sheets-Sheet 3

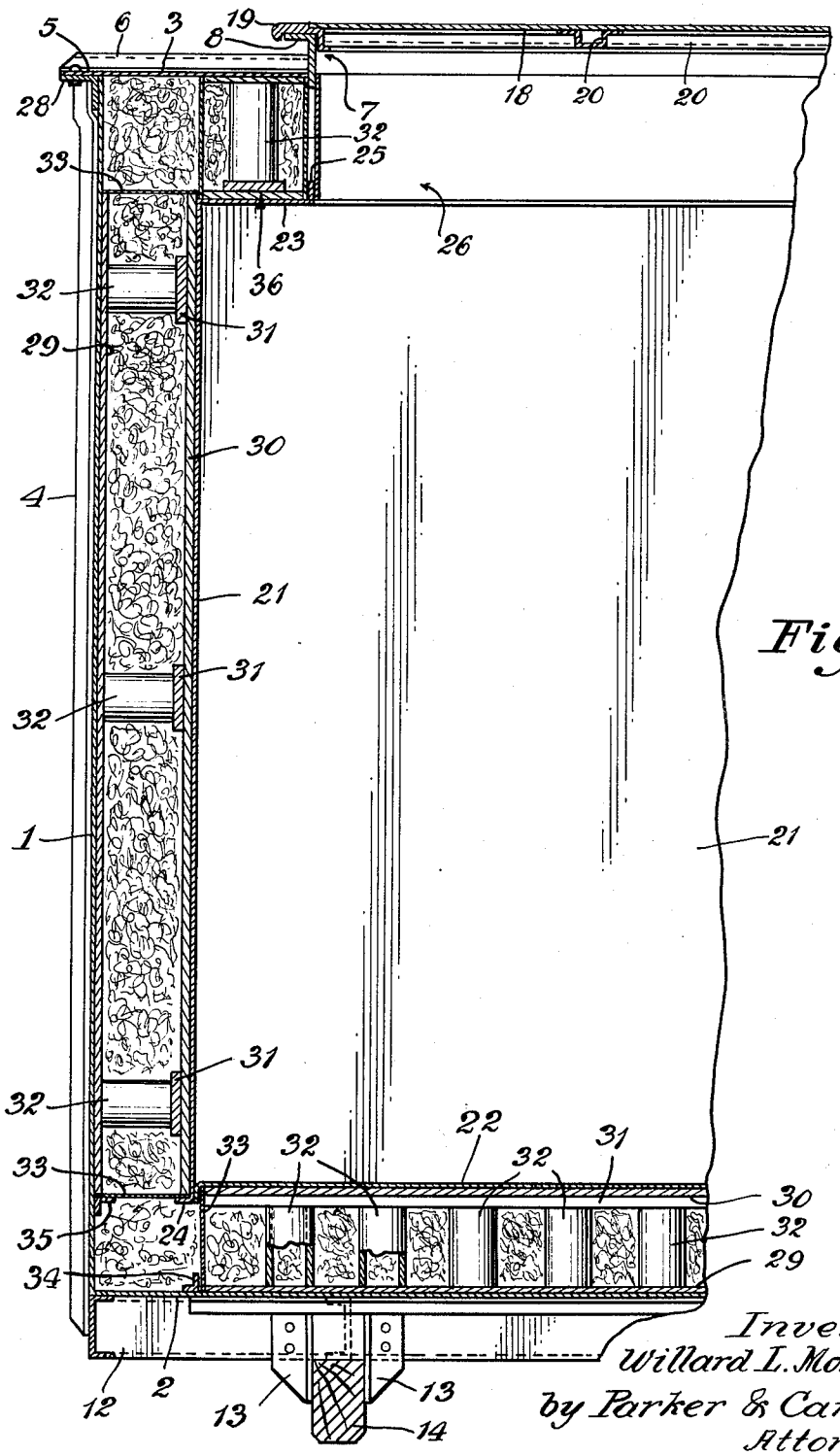


Fig. 3

Inventor
Willard L. Morrison
by Parker & Carter
Attorneys

March 15, 1960 W. L. MORRISON 2,928,566

SHIPPER CONTAINER

Filed Jan. 27, 1956 7 Sheets-Sheet 4

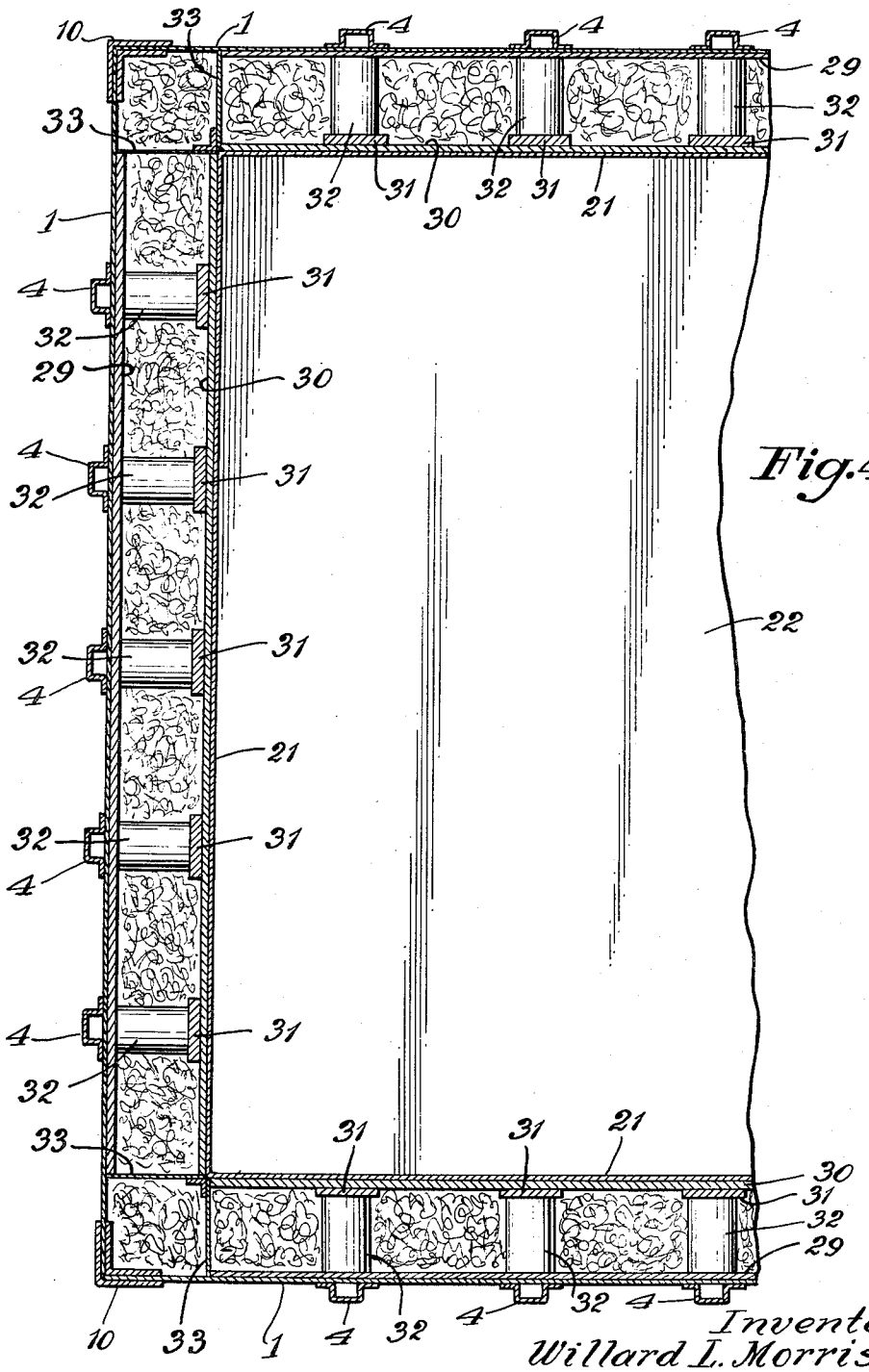


Fig. 4

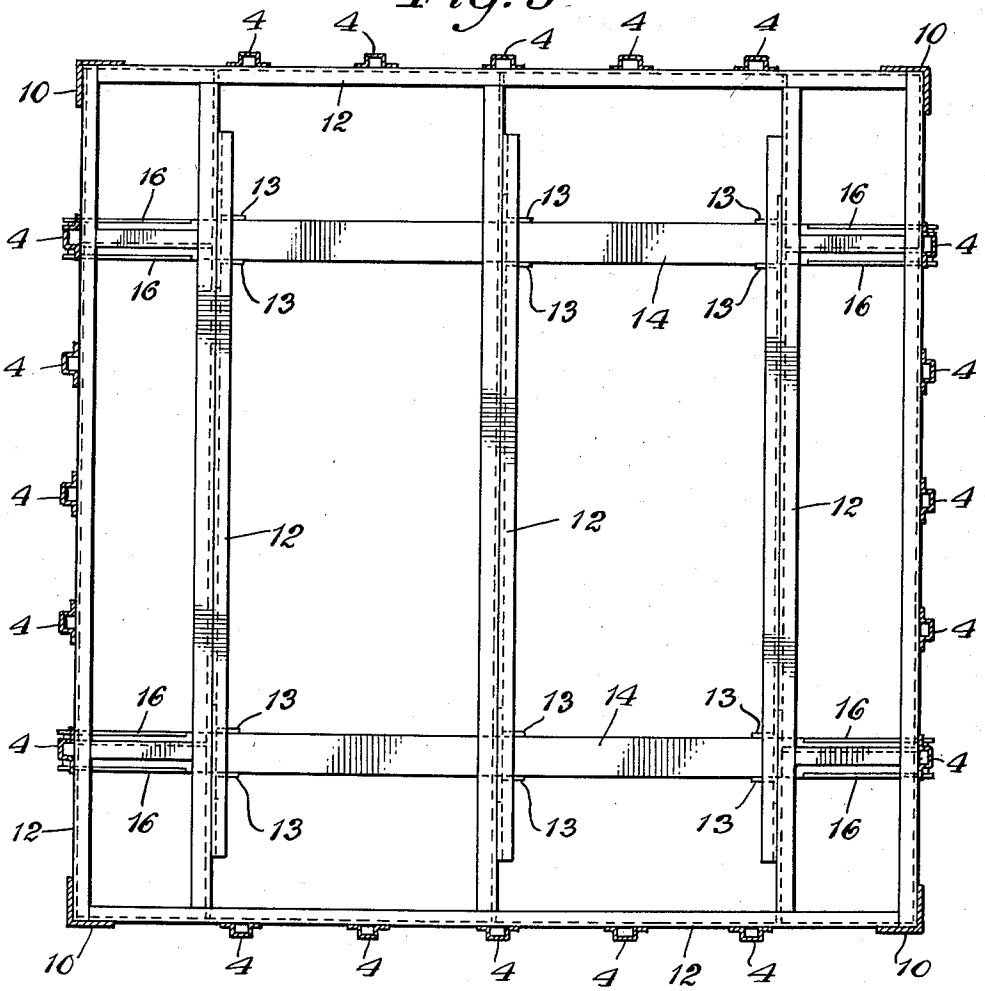
Inventor
Willard L. Morrison
by Parker & Carter
Attorneys

March 15, 1960 W. L. MORRISON 2,928,566

SHIPPER CONTAINER

Filed Jan. 27, 1956 7 Sheets-Sheet 5

Fig. 5



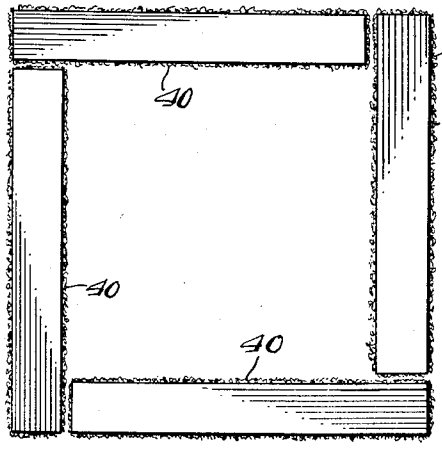


Fig. 11

Inventor
Willard L. Morrison
by Parker & Carter
Attorneys

March 15, 1960 W. L. MORRISON 2,928,566

SHIPPER CONTAINER

Filed Jan. 27, 1956 7 Sheets-Sheet 6

Fig. 6

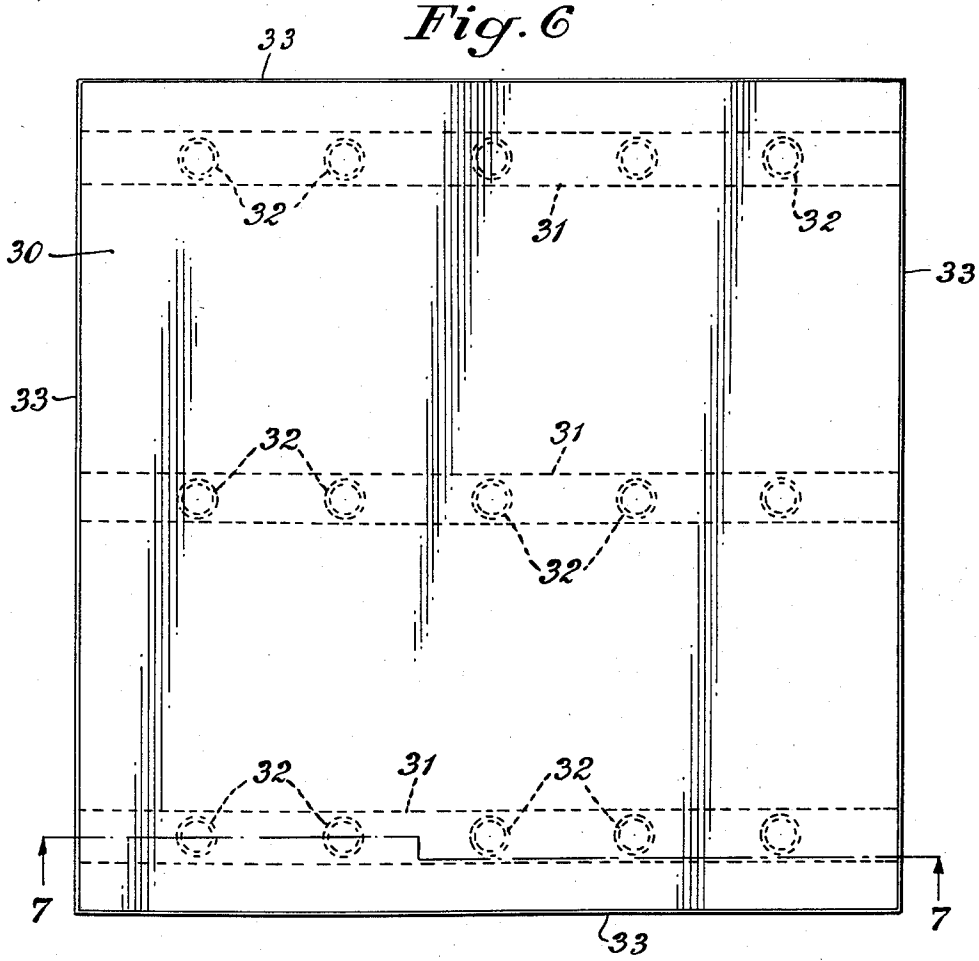


Fig. 7

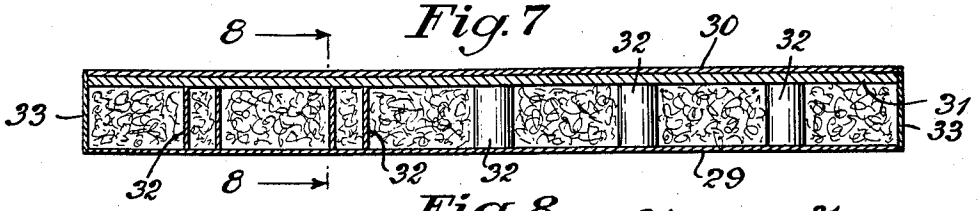
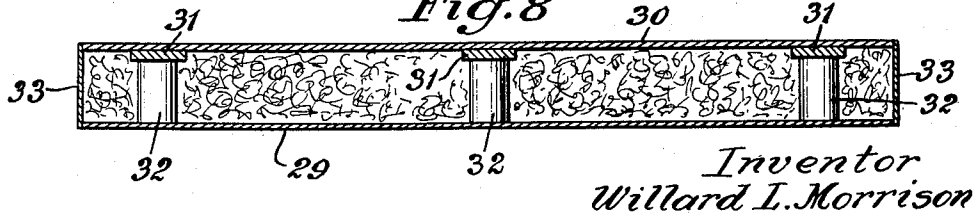


Fig. 8



Inventor
Willard L. Morrison

by Parker & Carter
Attorneys

March 15, 1960 W. L. MORRISON 2,928,566

SHIPPER CONTAINER

Filed Jan. 27, 1956 7 Sheets-Sheet 7

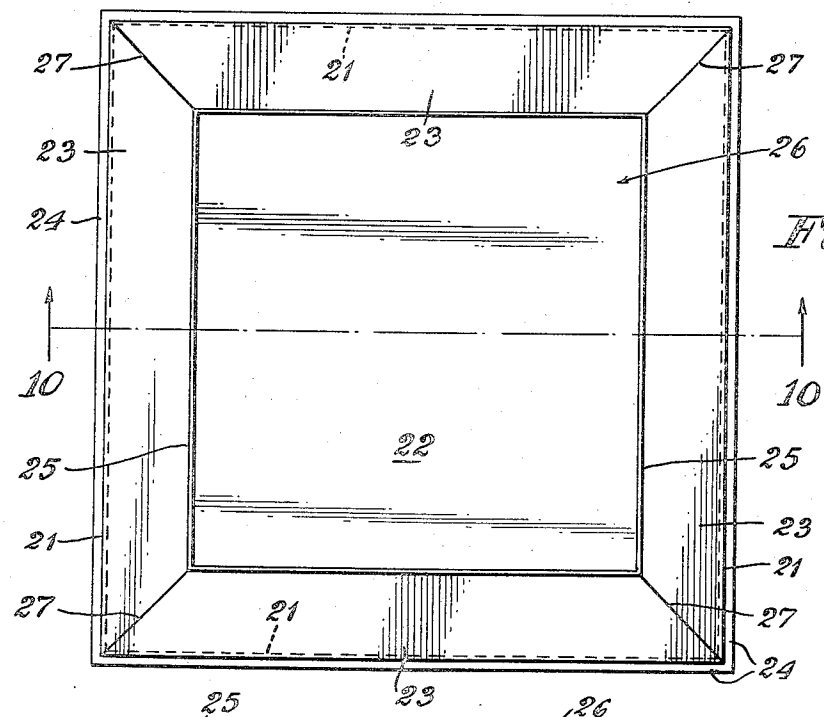


Fig. 9

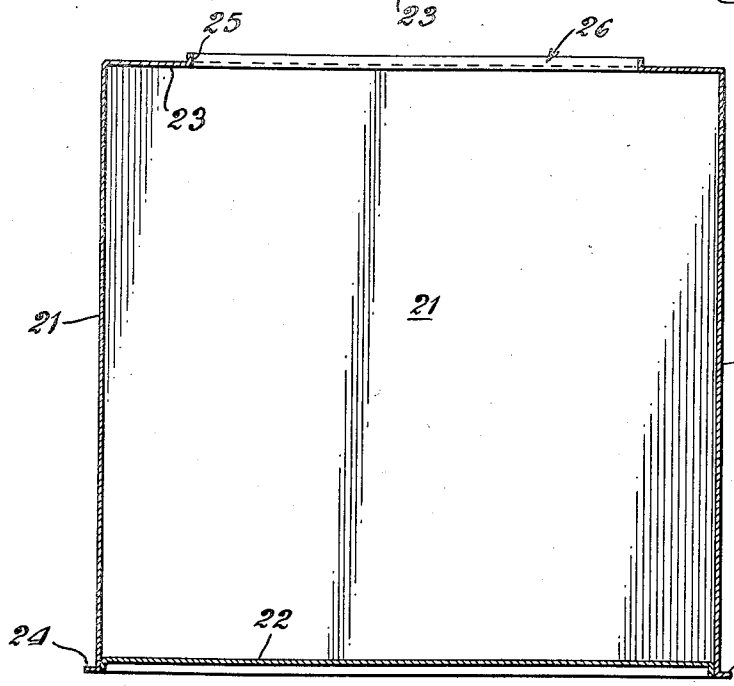


Fig. 10

Inventor
Willard L. Morrison
by Parker & Carter
Attorneys

United States Patent Office 2,928,566 Patented Mar. 15, 1960

2,928,566

SHIPPER CONTAINER

Willard L. Morrison, Lake Forest, Ill., assignor to The Union Stock Yard and Transit Company of Chicago, Chicago, Ill., a corporation of Illinois

Application January 27, 1956, Serial No. 561,817

5 Claims. (Cl. 220—9)

My invention relates to improvements in insulated containers and is especially well adapted for use in connection with shipper containers of such size and shape as to be conveniently portable or shippable for use in connection with the storage and shipment of foodstuffs and similar perishable articles which have been chilled, usually far below zero degrees F.

One object of my invention is to provide a shipper container which will be inexpensive to manufacture, durable, have high insulation value and will contain foodstuffs and the like with minimum dislocation or damage.

Other objects will appear from time to time throughout the specification and claims.

In general, the shipper container includes a rectangular housing of metal, here conveniently indicated as a cube, with a top opening whose cross sectional area is less than the cross sectional area of the storage chamber within the container, the opening being closed by a removable cover. Inside the housing is a liner positioned within the housing by a plurality of self-sustaining insulating mattresses which fill the space between the inner and outer walls of the container, provide the necessary insulation and at the same time the structural strength to maintain the liner in fixed position in the housing. By this arrangement only the insulating mattresses extend between the inner and outer walls and thus the inner and outer walls are effectively insulated. A minimum of fitting and adjustment is required because if the inner and outer container walls and the mattresses are properly sized and shaped, the mere insertion of the mattresses between the walls during assembly effectively positions the parts.

In order to minimize the necessity of close tolerances otherwise necessary to limit gas or air movement within the insulating area, the mattresses or the opposed inner and outer container walls or both will preferably be coated in whole or in part with some type of fibrous material so that clearances will be filled and fibrous material on opposed surfaces will interlock to inhibit gas movement in the clearance space between the opposed surfaces of mattresses and inner and outer walls. The mattresses themselves include insulating structural elements which space their opposed walls apart and the area between the mattress walls, about the insulating structure will be filled with a loose relatively light fibrous or fluffy or granular insulating material which does not contribute any structural strength.

My invention is illustrated more or less diagrammatically in the accompanying drawings, wherein

Figure 1 is a top plan view of the shipper container showing cover partially broken away;

Figure 2 is a side elevation of the shipper container showing the cover in place;

Figure 3 is a section on an enlarged scale along the line 3—3 of Figure 2;

Figure 4 is a part section on an enlarged scale along the line 4—4 of Figure 2;

Figure 5 is a section along the line 5—5 of Figure 2;

Figure 6 is a side elevation of an insulating mattress;

Figure 7 is a section along the line 7—7 of Figure 6;

Figure 8 is a section along the line 8—8 of Figure 7;

Figure 9 is a plan view of the inner container;

Figure 10 is a section along the line 10—10 of Figure 9;

Figure 11 is a diagrammatic plan view of a slightly different arrangement of the insulating mattresses.

Like parts are indicated by like characters throughout the specification and drawings.

The outer container comprises four side walls **1**, a bottom wall **2** and a centrally apertured top wall **3**. The side walls **1** are reinforced by vertically spaced channels **4** which extend generally from top to slightly below the bottom of the side walls. The top wall **3** projects slightly beyond the side walls **1** and the resultant overhang **5** masks the open upper ends of the channels **4**. The top wall **3** is also reinforced by a plurality of channels **6** which extend outwardly to the outer edge of the overhang **5**, are in register with the channels **4**, and terminate at the opening **7** in the apertured top walls. The flanged reinforcing member **8** or collar against which the inner ends of the reinforcing channels **6** abut, surrounds the aperture **7**. The overhang **5** is cut away at the corners to expose the lifting lugs **9** riveted to reinforcing angles **10** at the corners of the box. Gusset plates **11** reinforce the corners where the overhang **5** is cut away.

The bottom wall **2** is reinforced by and rests on the base frame **12** shown in Figure 5. Downwardly extending from the base frame **12** are vertical angles **13** to which are attached the skids **14** which extend across between the side walls. These skids are preferably of wood reinforced at their ends by armor **16** apertured at **17**.

The aperture **7** may be closed by a generally flat cover **18** reinforced about its outer periphery by a channeled reinforcing member **19** which penetrates and abuts against the inner face of the collar **8** and overhangs the outer flange thereof. The cover is reinforced on the underside by a plurality of channels **20** which abut the member **19**, extend across the cover and interlock to stiffen the cover and resist any horizontal forces which might tend to distort the cover and the top as a result of the application of lifting slings applied to the lugs **9**. Any suitable clamps may be used to hold the cover in closing position.

21 indicates the vertical walls, **22** the bottom and **23** the apertured top wall of the inner container or liner. The lower edges of the walls **21** are flanged as at **24**. The bottom **22** is flanged so that as assembled the floor **22** is slightly above the level of the flange **24**. The top **23** is upwardly flanged as at **25** about the aperture and the aperture or filling opening **26** in the liner is in register with and generally co-extensive with the opening **7** in the outer housing. The plates forming the vertical walls **21** are dove-tailed, inwardly bent as at **27** and abut edge to edge.

The various elements including the outwardly flanged reinforcing angle member **28** which bounds the upper edges of the vertical walls **1** will preferably be assembled by welding before the insulating mattresses are installed and the same will be true with respect to the assembly of the top wall **3**.

When the bottom and four side walls of the outer housing have been completed and the inner lining is completed the two will be assembled and held in place by the insulating mattresses. The mattresses comprise parallel sheets of non heat conductive material, e.g. plywood, at **29** and **30**. The sheet **30** is reinforced by insulating wood strips **31** on its inner face and insulating spacers **32** preferably cylinders of cardboard or the like having substantial structural strength are interposed be-

tween the board 29 and the reinforcing strip 31. The spaces within the cylinders 32 and about them is filled with a suitable light insulation lacking structural strength. The edges of the mattresses will be closed by any suitable material 33, for example, heavy paper or board or canvas having low heat conductivity to hold insulating material which fills the space within the mattress.

In assembling the container, a bottom mattress, the cross sectional area and shape of which is substantially the same as that of the liner will be first placed in the bottom of the housing. The liner will then be lowered into the housing to rest upon the mattress. The mattress will interlock with the flanged bottom wall 22 and be held in position thereby. If desired, other flanges 34 on the bottom wall 2 may also position the mattress.

Then similar mattresses will be placed on the four sides of the container between the opposed walls of the housing and liner, the mattresses resting at their lower edges on the flanges 24 and on angles 35 on the inner faces of the housing walls. The open spaces thus left between the adjacent margins of the bottom and side mattresses will be filled with a similar suitable light insulating material which though lacking structural strength will be held in place by the edges of the mattresses and by the walls of the housing. Then similar top mattresses 36, the structural characteristics being generally the same but their dimensions different, will be placed about the open mouth of the liner, being held against lateral displacement by their engagement with the upper edges of the side mattresses which may extend slightly above the level 23. The open spaces between the side mattresses, the top mattresses and the housing walls will be filled similarly with a suitable insulation.

Thereafter the top will be put in place but because the insulation would be damaged by the heat of welding, the top will be riveted to the remainder of the housing as indicated at the points of intersection between the reinforcing channels 4 and 5, the riveting being through the flange 28 which is co-extensive with the overhang 5.

The mattress arrangement above referred to makes it possible for the bottom and side mattresses, assuming that the container is a cube to be all of the same dimensions and for each of the four sections of the top mattresses to be identical, though different from the side and bottom.

A slightly different mattress arrangement shown in Figure 11 makes it possible to dispense with the various mattress supporting flanges such as 34, 24 and 35. The side mattresses instead of being the same size as the opposed liner wall are greater by the distance between the liner wall and the housing wall. The bottom mattress is installed as before, the side mattresses overlap at their ends as indicated in the drawing and rest upon the floor of the housing extending up as before to the liner of the top of the liner or even perhaps clear up to contact the under face of the top wall. Thus the mattresses in interlocking position hold each other as well as the liner positively in place within the housing, and less space must be filled by the separately installed loose insulation.

The fibrous material indicated at 40 is applied by cementing or any other suitable means to the outer faces of the mattresses or the opposed walls of liner and housing as the case may be so that when assembled, these fibrous materials interlock and fill the clearance between mattresses and housing and liner walls to inhibit induction currents through any spaces left as a result of increased tolerances in manufacture.

I claim:

1. An insulating container comprising an outer metal self-supporting load resistent shell having plane top, bottom and side walls, an inner self-supporting metal liner therefor having plane top, bottom and side walls parallel to and spaced from the opposed shell walls, a plurality of self-supporting insulating mattresses interposed between the opposed shell and liner walls, substantially filling the space between the walls and furnishing the sole means to hold the shell and liner in fixed relative position, means separately associated with the walls of liner and shell for preventing lateral movement of the mattresses in the space between the opposed walls.

2. An insulating container comprising an outer metal self-supporting load resistant shell having plane top, bottom and side walls, an inner self-supporting metal liner therefor having plane top, bottom and side walls parallel to and spaced from the opposed shell walls, a plurality of self-supporting insulating mattresses interposed between the opposed shell and liner walls, substantially filling the space between the walls and furnishing the sole means to hold the shell and liner in fixed relative position, the mattresses associated with the side walls of liner and shell being equal in width to the outer dimension of the liner plus the clearance between the shell and liner walls, each mattress abutting at one end against the shell wall, at the other end against the face of an adjacent mattress where it projects beyond the liner to abut the shell wall.

3. An insulating container comprising an outer metal self-supporting load resistant shell having plane top, bottom and side walls, an inner self-supporting metal liner therefor having plane top, bottom and side walls parallel to and spaced from the opposed shell walls, a plurality of self-supporting insulating matrresses interposed between the opposed shell and liner walls, substantially filling the space between the walls and furnishing the sole means to hold the shell and liner in fixed relative position, each mattress being of the same size and shape as the liner wall with which it is in contact, a loose insulating material lacking structural strength filling the spaces left about the edges of the mattresses.

4. An insulating container comprising an outer metal self-supporting load resistant shell having plane top, bottom and side walls, an inner self-supporting metal liner therefor having plane top, bottom and side walls parallel to and spaced from the opposed shell walls, a plurality of self-supporting insulating mattresses interposed between the opposed shell and liner walls, substantially filling the space between the walls and furnishing the sole means to hold the shell and liner in fixed relative position, means separately associated with the walls of liner and shell for preventing lateral movement of the mattresses in the space between the opposed walls, each mattress being of the same size and shape as the liner wall with which it is in contact, a loose insulating material lacking structural strength filling the spaces left about the edges of the mattresses.

5. An insulating container comprising an outer metal self-supporting load resistant shell having plane top, bottom and side walls, an inner self-supporting metal liner therefor having plane top, bottom and side walls parallel to and spaced from the opposed shell walls, a plurality of self-supporting insulating mattresses interposed between the opposed shell and liner walls, substantially filling the space between the walls and furnishing the sole means to hold the shell and liner in fixed relative position, there being fibrous insulating material adhered to at least one of the opposed surfaces of mattresses and shell and liner whereby clearance between them is masked to inhibit convection currents.

References Cited in the file of this patent

UNITED STATES PATENTS

1,148,858	Reinhardt	Aug. 3, 1915
1,948,587	Macready et al.	Feb. 27, 1934
2,070,346	Woodruff	Feb. 9, 1937
2,073,990	Koch	Mar. 16, 1937
2,118,874	Williamson	May 31, 1938
2,523,145	Robinson	Sept. 19, 1950
2,579,396	Philipp	Dec. 18, 1951