United States Patent

Russell-French

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[54] CARGO CONTAINER CONSTRUCTION

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[52] **U.S. Cl.** **220/1.5**, 220/6, 220/83

[51] **Int. Cl.** **B65d 87/00**

[58] **Field of Search** 220/83, 1.5, 84, 71, 6; 62/414, 415, 416; 52/220, 241

[56] **References Cited**

UNITED STATES PATENTS

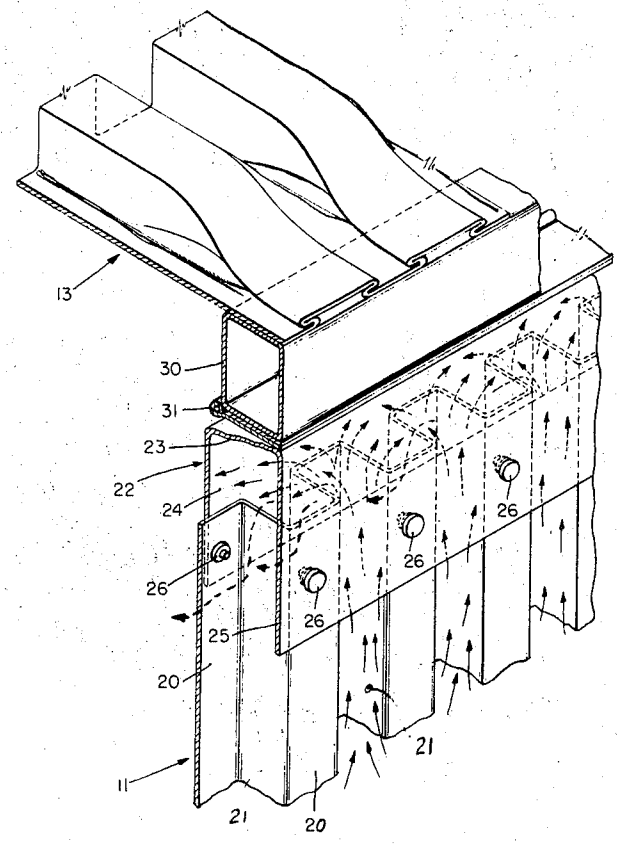
2,613,836	10/1952	Newhall et al.	220/1.5
3,456,830	7/1969	Golder	220/1.5

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[57] **ABSTRACT**

This application discloses a cargo container, especially suited for use in aircraft, which has means providing for ventilation through the walls by the basic structure of the container, specifically by a combination of corrugated wall panels and end rails therefor.

2 Claims, 2 Drawing Figures



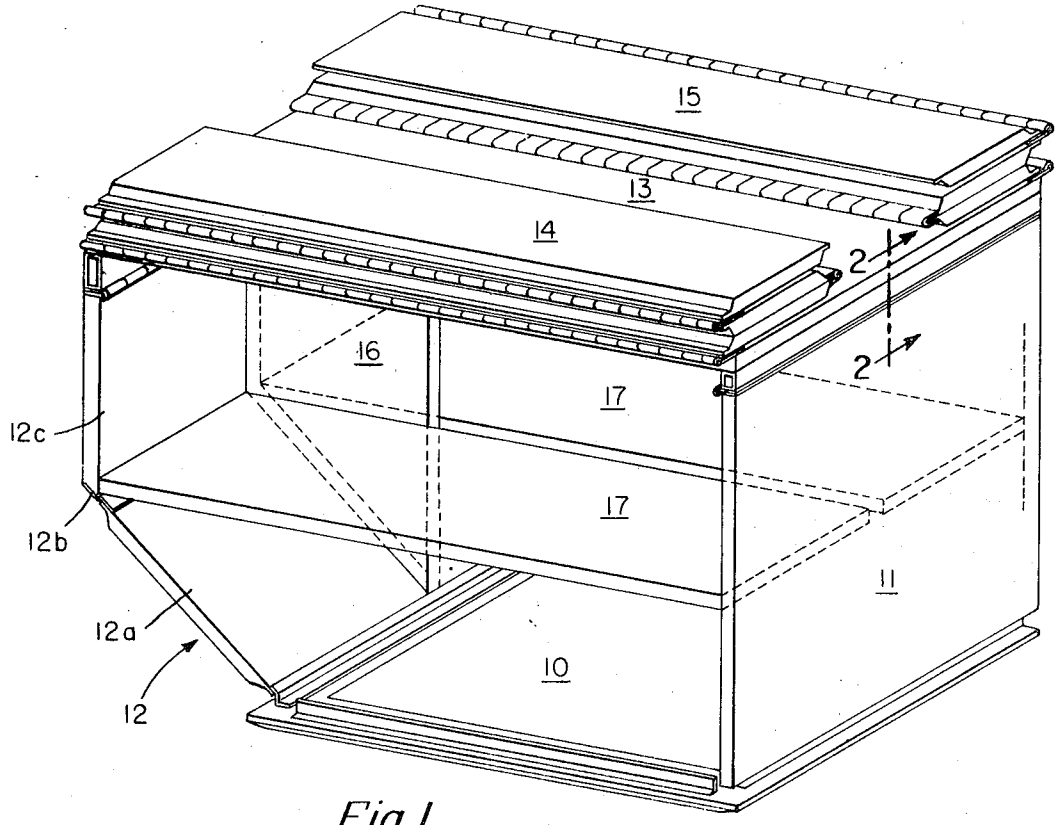


Fig. 1

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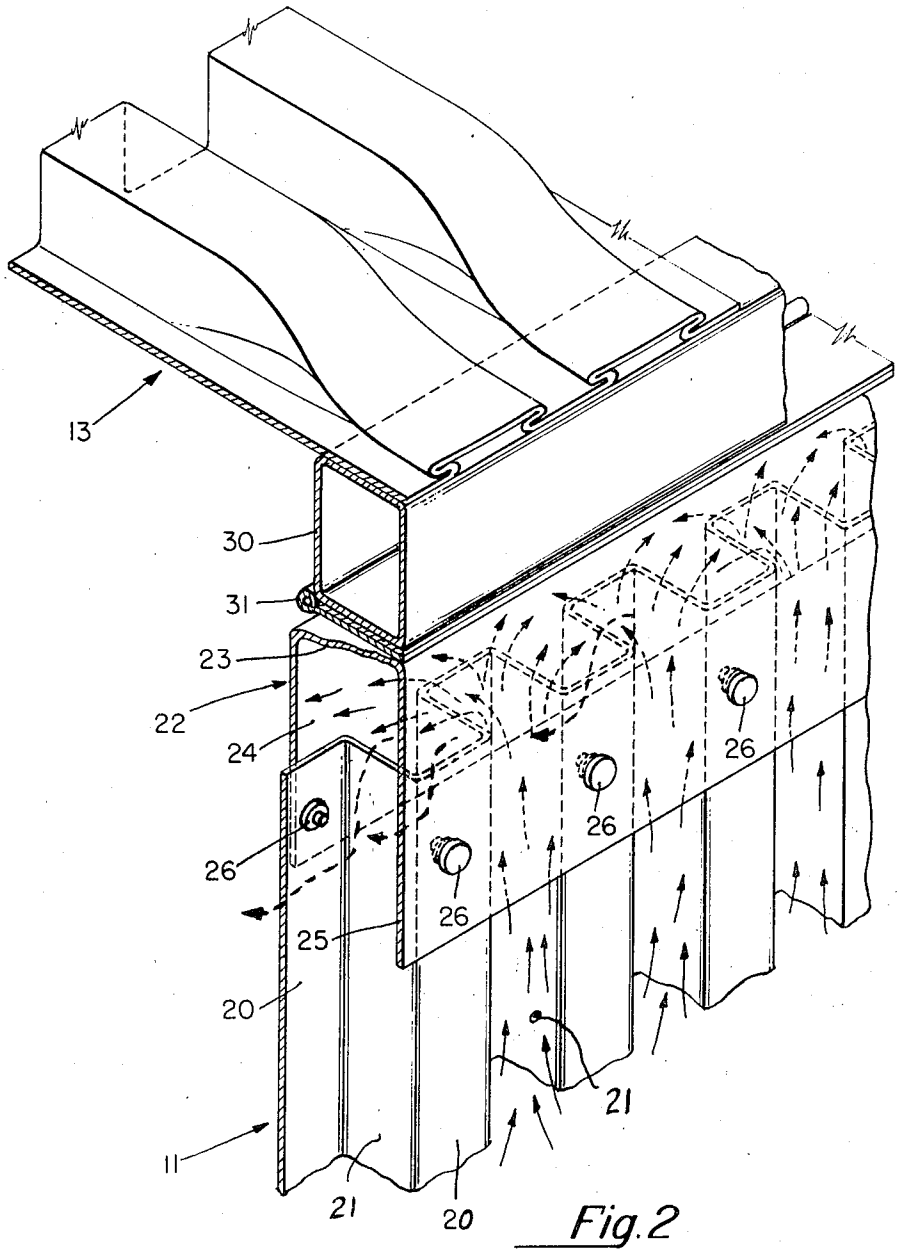


Fig. 2

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CARGO CONTAINER CONSTRUCTION

BACKGROUND OF INVENTION

There is increasing use of unit cargo containers which can readily be handled by power transfer devices at exchange or terminal points. Containers of this type are usually made weathertight to protect the goods. However, some ventilation is usually needed for various reasons, as for change of volume with temperature, change of volume or pressure with height while airborne, change of pressure with applied cooling or heating for the benefit of the goods, or for transfer of gases through the walls for decontamination to eliminate or prevent insects, small animals and the like.

Ventilation for cargo containers has usually been provided by the use of local louvers in the walls of the containers, this adding undesirable cost and weight, and besides, providing inadequately distributed passage of gases (the term including air, spray, decontaminent, etc.), in or out of the container.

SYNOPSIS OF INVENTION

The present invention provides extensive ventilation of otherwise sealed containers by a built-in structure which adds no weight or cost to the construction and may actually reduce the cost and weight while at the same time providing very wide distribution of the points of ventilation. This is accomplished by forming walls of corrugated sheet material and securing structural rigidifying and strengthening reinforcing rails over the ends of the corrugations with sufficient spacing or standoff to provide the desired gas passage around the ends of the corrugated sheets.

DESCRIPTION OF DRAWINGS

The objects, features, and advantages of the invention will be apparent from the following description of an illustrative embodiment, reference being made to the accompanying drawings thereof, wherein:

FIG. 1 is a perspective diagrammatic view of a cargo container in which the present construction is used;

FIG. 2 is an enlarged local perspective view, partially in section, in the zone 2 of FIG. 1.

DESCRIPTION OF EXEMPLARY EMBODIMENT

The container shown in FIG. 1 is of a shape adapted to fit in the cargo space of aircraft having sides sloping outward and upward from the floor. The container includes a base or floor panel **10**, an inboard end panel **11**, an outboard end panel **12** with a lower inclined panel part **12***a* hinged at **12***b* to an upper generally vertical panel part **12***c*, a top or roof panel **13**, a forward folding door panel **14**, a rear or aft folding door panel **15**, a vertical rigidifying shear panel **16**, and shelves **17**.

In FIG. 2, which shows the structure of the present invention in the region of the section line 2—2 of FIG. 1, the folding door panel appearing in FIG. 1 has been omitted for clarity.

The present construction can be incorporated at various places in the container assembly, either at the top as shown or at the bottom, but for most purposes it is sufficient to have ventilation at the top across the ends. It is shown at the top of the inboard end panel **11** where this panel is connected to the top or roof panel **13**.

The end panel **11** is formed of corrugated sheet material, such as aluminum, with the corrugations extending vertically. Preferably, the corrugations include flat plate portions **20** and connecting web portions **21** which are either square or normal to the plate portions or inclined to the plate portions.

The panel is reinforced at the lower and upper ends as by a transverse rail **22** of angular shape having a transverse web **23** and at least one side flange **24**. Preferably there is an opposite side flange **25**, giving the rail a channel shape fitting closely at its side flanges against the sides of the plate portions **20** of the corrugated sheet. The flange of the rail is secured in any convenient manner to the corrugated sheet, conveniently by blind rivets **26** as shown. Other forms of connection might be sheet metal screws, welding, adhesive, or other known means.

The roof panel **13** has a bottom spacer rail **30** which is connected to the end top rail **22**, as by a running hinge unit **31**.

The web **23** of the rail **22** is located above the ends of the corrugations of the panel sheet. This spacing or stand-off provides a space for the flow of gas along the valley of the corrugation, over the upper end and down a corrugation valley on the other side. This prevents differential pressure from existing on opposite sides of the wall such as might be otherwise created at different altitudes and temperatures, with possible wall damage; and also provides for the transfer of gas through the wall for decontamination, cooling, heating, or other desired purposes.

The gas transfer is along a very extensive length so that the effect is very rapid and complete even when there may be local obstructions which would prevent proper distribution if local louvers were provided in the wall. And since the transfer passage at each point or corrugation is indirect there is little chance of blockage even if goods are placed directly against the wall.

The formation of the ventilating structure is a part of the basic elements and construction and does not increase the weight or cost or time required to make the parts and fabricate the structure. It may actually reduce the weight, and this is an extremely important consideration for containers used in aircraft.

It has been suggested above that ventilation at the top of the panels will normally be sufficient but since it is contemplated that all walls of the container, except perhaps the floor or bottom panel, will be made of corrugated sheets with reinforcing rails, it will be seen that ventilation structure can be widely distributed in the container as desired.

When ventilation is provided at the top there is little chance of water entry if the container should be left outdoors for a time. Ventilation at the bottom will provide that there will be no place for water to be held in the assembly, adequate drainage being provided if the structure should be such as to collect water temporarily.

If there should be a problem with vermin or flying particles, as might be encountered if the containers should be stored in warehouses or outdoors, this may be overcome by placing a fine mesh screen, as of wire, directly over the ends of the corrugations during construction and having an angular part of the screen engaged with at least one flange of the rail or cap strip. When this screening is provided it will be impossible for mice, insects, flying particles or the like of any normally encountered size to pass over the ends of the corrugated sheets while still permitting free gas exchange.

While one embodiment of the invention has been described by way of illustration, it is to be understood that there may be various embodiments and modifications within the scope of the invention.

I claim:

1. A cargo container construction, comprising in combination, a wall panel formed of corrugated sheet material, and an inverted channel rail having its side flanges secured to the sides of the corrugated sheet along an end thereof, the channel rail axis being at right-angles to the longitudinal axes of the corrugations, the bight of the channel rail being spaced from said corrugated sheet end, a tubular spacer rail secured to the top of the bight of said channel rail, an edge of a roof panel secured to the top of said tubular spacer rail, the plane of said wall panel being normally orthogonal to the plane of said roof panel.

2. The cargo container construction of claim 1 wherein a running hinge unit secures said tubular spacer rail to said channel rail, to thereby permit the roof panel to pivot about the edge of the wall panel.

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