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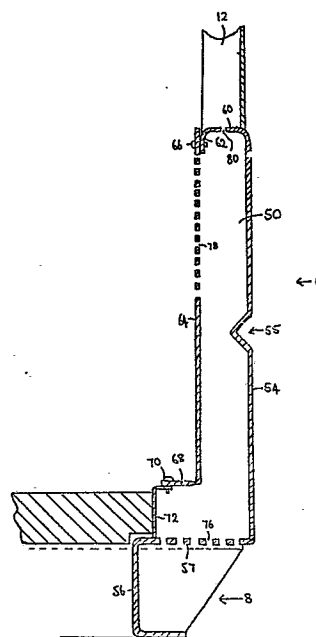
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54 **Cargo container.**

57 A cargo container comprises a wall 6 having a ventilation chamber 50. A horizontally-extending re-entrant notch 55 contributes to the stiffness of an outer wall 54 of the chamber 50 which is not substantially wider than a conventional corrugated portion 12 of the wall 6 and does not significantly effect its strength. Ventilation holes 76, 78 are displaced vertically to prevent rain or sea-spray entering the container. The holes 76 allow water to drain from the chamber 50 and holes 80 allow condensation on the inside of the container to drain into the chamber 50.

Alternatively the drainage holes are not offset and a baffle plate is fastened within the ventilation chamber.

In a preferred embodiment there are two ventilation chambers forming the uppermost and lowermost portions of the container wall.



CARGO CONTAINER

This invention relates to cargo containers and is particularly concerned with ventilated containers which comply with I.S.O. standards for internal and external dimensions.

5 According to the present invention there is provided a cargo container having a wall including at least one ventilation chamber comprising first and second chamber walls having perforated portions, and a transverse wall which is secured and sealed to an adjacent corrugated portion of the container wall, the overall
10 thickness of the chamber being not substantially greater than the thickness of the corrugated portion, the arrangement being such that there is substantially no direct horizontal path between the perforated portions of the outer and inner walls of the chamber. In such an arrangement, the transverse wall provides a stiff anchorage and reinforcement for the adjacent corrugated portion of the
15 wall and the overall wall thickness need not appreciably exceed that of a conventional dry-freight closed container. Accordingly the container can carry the same volume of cargo as the conventional container.

20 Preferably the container wall has two ventilation chambers, one at the bottom of the wall and the other at the top. The wall thus formed complies with I.S.O. standards of rigidity and the external and internal dimensions of the container also comply with I.S.O. standards.

25 An embodiment of the invention will now be described by way of example with reference to the accompanying drawings in which:-

Fig. 1 is a vertical section through an upper part of a wall of a cargo container showing an upper ventilation chamber located close to the top of the wall, and

30 Fig. 2 is a vertical section through a lower part of the wall shown in Fig. 1 showing a lower ventilation chamber close to the bottom of the wall.

The drawings show an upper ventilation chamber 10 forming part of a side wall 6 of a cargo container; the upper chamber 10 is

attached at its upper edge to a roof 14 of the container and at its lower edge to a corrugated portion 12 of the wall. The corrugated portion 12 of the wall is of the type used in the walls of conventional cargo containers and extends between the upper ventilation chamber 10 and a lower ventilation chamber 50 which is fixed to a base 8 of the container.

Referring now to Fig. 1, the upper chamber 10 is formed from a piece of sheet metal which is bent to form an outer wall 16, a roof 18 and a floor 20. Lips 22, 24 are formed at the edges of the roof 18 and floor 20 and carry an inner wall and baffle plate assembly 26 which is attached to the lips by nuts and bolts such as 28.

The assembly 26 comprises an inner wall 27 of the chamber 10 and a baffle plate 34 which extends over the whole length of the wall 27 and is attached to the inner wall 27 by rivets such as 29 passing through lips 37 of flanges 36 of the baffle plate 34. The flanges 36 are drilled with ventilation holes 38 at regular intervals along their length.

A lower portion of the outer wall 16 is perforated over its whole length as indicated at 30 and an upper portion of the inner wall 27 between the flanges 36 of the baffle plate 34 is similarly perforated as indicated at 32. The perforations 30, 32 are typically circular holes of 9.5mm diameter which are spaced in rows at 15mm distances between their centres, the holes in adjacent rows being staggered.

The wall and baffle assembly 26 may be removed from the chamber 10 for cleaning and other servicing purposes and is preferably galvanised to protect the inaccessible inner surfaces of the wall 27 and baffle plate 34.

Drainage holes 40 are drilled through the floor 20 at intervals along its length. The holes 40 are positioned at points where they communicate with the exterior of the container, that is, above troughs of the corrugated portion 12 of the wall 6 which are open to the exterior.

Fig. 2 shows the lower ventilation chamber 50 formed in a lower part of the side wall 6 of the cargo container. A piece of sheet metal is bent to form a side-rail 56 of the base 8 of the

container, a floor 57 of the lower chamber 50, an outer wall 54 and a roof 60. The upper surface of the roof 60 is welded to the corrugated portion 12 of the side wall 6 of the container. A downwardly-depending lip 62 is formed along the inner edge of the roof 60 and an inner wall 64, also bent from sheet metal, is secured to the lip 62 by rivets such as 66.

A horizontal notch 55 extends the whole length of the outer wall 54 and contributes to the stiffness of the lower chamber 50.

The inner wall 64 is formed into a flange 68 along its lower edge and is secured by rivets such as 70 to a flanged rail 72 which is welded to the floor 57.

The inner wall 64 is perforated close to its upper edge as indicated at 78. The perforations 78 are of similar size and spacing to the perforations 30, 32 of the upper ventilation chamber 10 shown in Fig.1. Holes 76 are drilled in the floor 57 of the chamber 50 and communicate with the exterior of the container. A series of holes 80 in the roof 60 communicate with the interior of the container and allow condensation from troughs of the corrugated portion 12 of the wall 6 which are open to the interior of the container to drain into the second chamber 50.

The interior of the container is ventilated as follows. Relatively cold air enters the lower ventilation chamber 50 through the holes 76, passes upwardly through the chamber 50 and into the interior of the container through the perforations 78. Hotter, more humid air from the interior escapes through the perforations 32, upwardly or downwardly around the baffle plate 34 through the holes 38 and out of the upper chamber 10 through the perforations 30.

Entry of rain or sea-spray to the container is prevented in the case of the upper chamber 10 by the baffle plate 34 and in the case of the lower chamber 50 by the perforations 78 in the inner wall 64 being located higher than the holes 76 in the floor 57 and by the perforations 76, 78 being spaced vertically by portions of the walls 54, 64 which have no perforations.

Any water which enters either chamber can drain away to the exterior of the chamber through the holes 40, 76. The lower chamber 50 also collects condensation from the interior surfaces of the container through the holes 80 and this condensation can drain away

through the holes 76.

It will be noted that in the container described above the ventilation chambers do not increase substantially the external dimensions of the container nor is the internal volume substantially reduced. Thus, the container is able to comply with I.S.O. standards for dry cargo containers as regards both internal and external dimensions.

The stiffness of the ventilation chambers and their junctions with the remainder of the sidewalls is also sufficient to not reduce the overall stiffness of the corrugated walls and thus the container described above also meets I.S.O. standards in this respect.

The container described above is particularly suitable for materials such as coffee beans which are loaded in a moist state under hot, humid conditions. The ventilation chambers allow air to circulate through the interior of the container to prevent deterioration of the cargo.

CLAIMS:-

1. A cargo container having a wall including at least one ventilation chamber comprising first and second chamber walls having perforated portions, and a transverse wall which is secured and sealed to an adjacent corrugated portion of the container wall, the overall thickness of the chamber being not substantially greater than the thickness of the corrugated portion, the arrangement being such that there is substantially no direct horizontal path between the perforated portions of the first and second walls of the chamber.

2. A container according to claim 1 including a said ventilation chamber in which the first and second chamber walls are inner and outer walls, the perforated portions of which are offset.

3. A container according to claim 2 including a said ventilation chamber having a baffle plate spaced from the outer and inner walls of the chamber,

4. A container according to claim 3 wherein both the top and bottom edges of the baffle are spaced from top and bottom walls of the ventilation chamber.

5. A container according any of the preceding claims wherein the ventilation chamber is formed in a hollow rail extending along the length of the wall.

6. A container according to any preceding claim in which the said ventilation chamber is a lowermost portion of the said container wall, the first chamber wall being an inner wall and the second chamber wall being a bottom wall.

7. A container according to any preceding claim in which a said ventilation chamber has drainage holes communicating the interior of the chamber with the exterior of the container.

8. A container according to claim 7 in which a said ventilation chamber is not an uppermost portion of the said container wall and has holes, for drainage of condensation, communicating the interior of the container with the chamber.

9. A container according to any preceding claim having a first said ventilation chamber forming an uppermost portion of the said wall of the container, the said transverse wall being a floor and the said first and second walls being inner and outer walls of the first chamber, a second said ventilation chamber forming a lowermost portion of the said wall of the chamber, the said transverse wall being a top wall and the said first and second walls being respectively inner and bottom walls of the second chamber, and the said corrugated portion being a portion of the said wall extending between the first and second chambers.

10. A container according to any preceding claim in which an outer wall of a said chamber is strengthened by an inwardly-directed notch portion extending substantially horizontally.

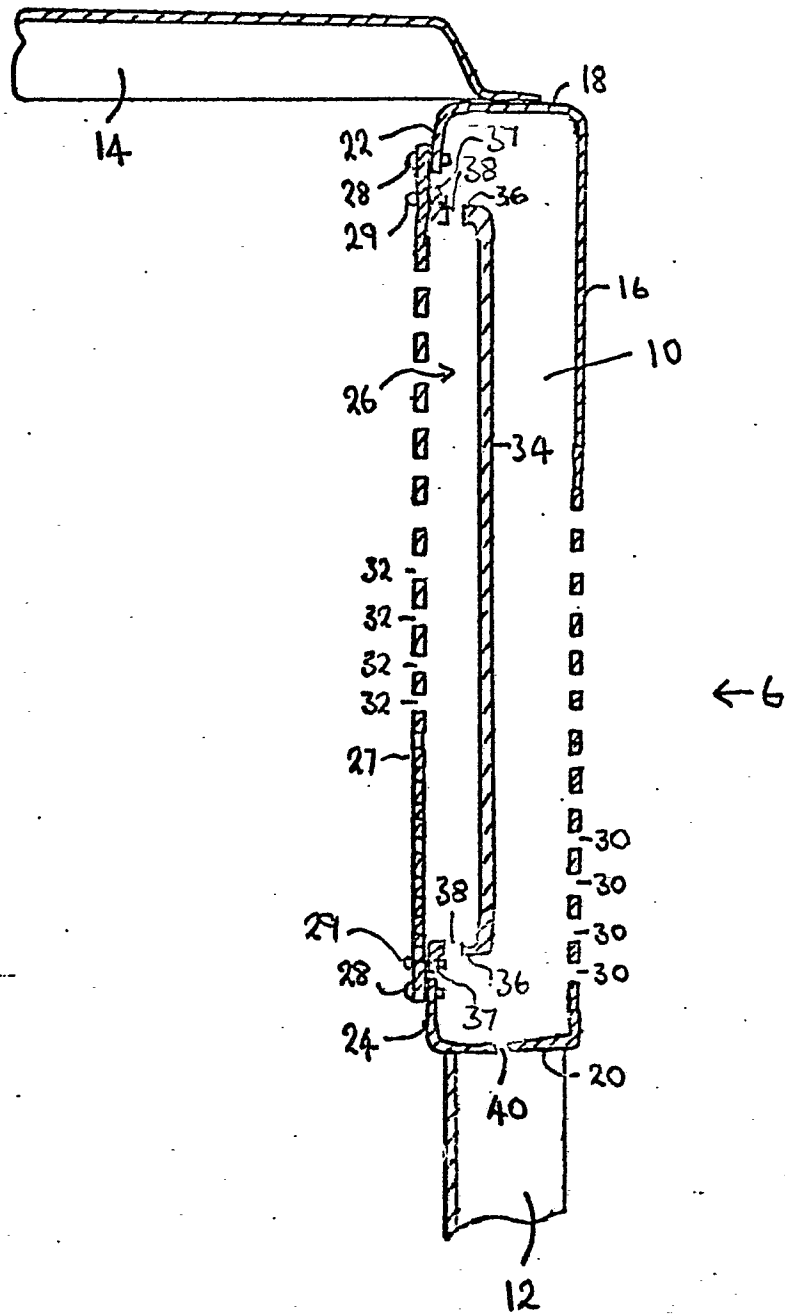


Fig. 1

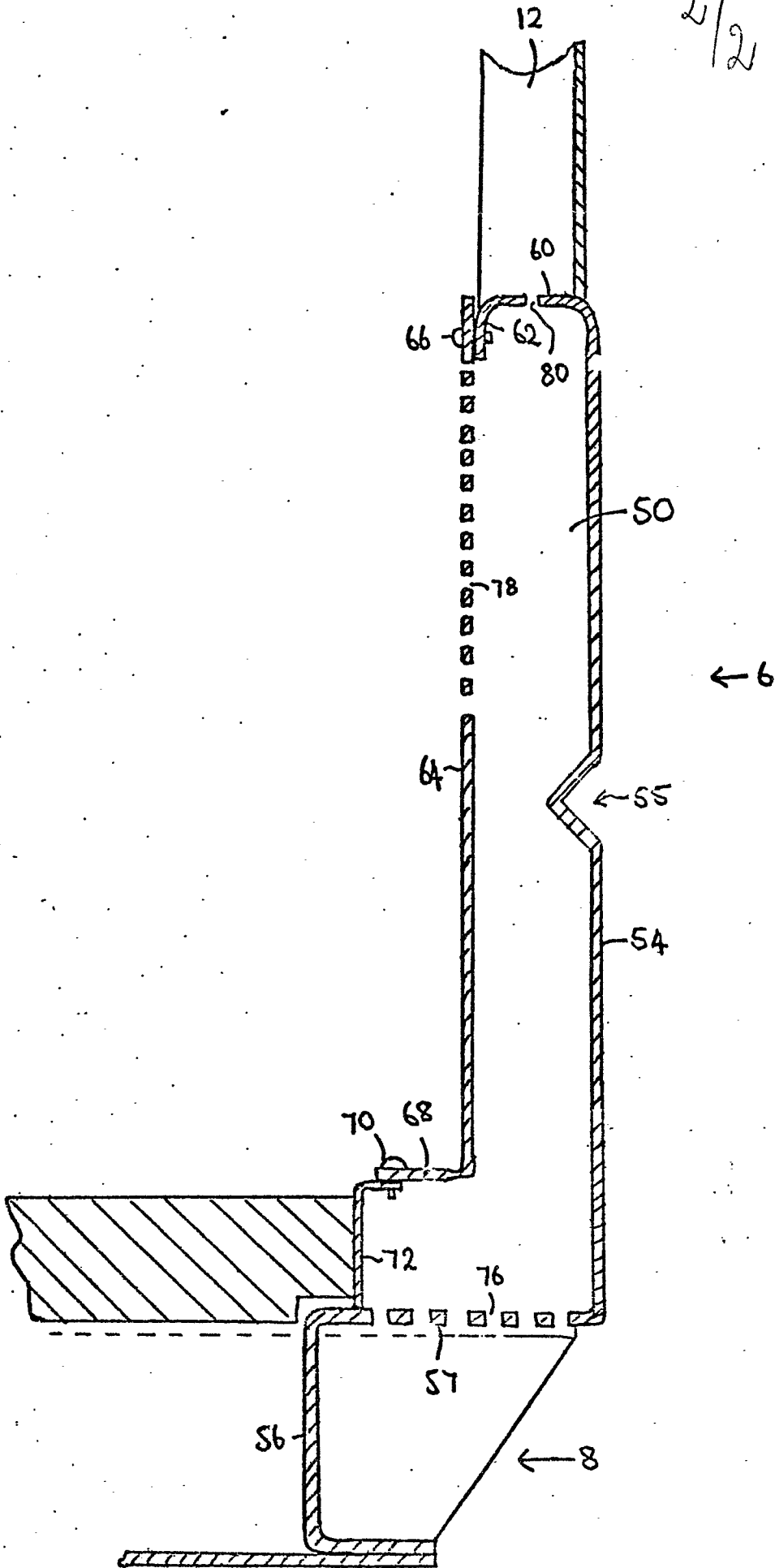


Fig. 2 -



European Patent
Office

EUROPEAN SEARCH REPORT

0040993

Application number

EP 81 30 2358

DOCUMENTS CONSIDERED TO BE RELEVANT			CLASSIFICATION OF THE APPLICATION (Int. Cl.)
Category	Citation of document with indication, where appropriate, of relevant passages	Relevant to claim	
A	<u>DE - B - 1 293 443</u> (REIMBERT)	1	B 65 D 90/02
A	<u>US - A - 2 055 339</u> (W. DALTON)	1	
A	<u>CH - A - 602 435</u> (EGLI URS)	1	
A	<u>GB - A - 201 310</u> (C.H. LOOP)	1	

			TECHNICAL FIELDS SEARCHED (Int. Cl.)
			B 65 D F 24 F B 60 P
			CATEGORY OF CITED DOCUMENTS
			X: particularly relevant A: technological background O: non-written disclosure P: intermediate document T: theory or principle underlying the invention E: conflicting application D: document cited in the application L: citation for other reasons
			&: member of the same patent family, corresponding document
The present search has been drawn up for all claims			
Place of search	Date of completion of the search	Examiner	
The Hague	10-08-1981	VAN ROLLEGHEM	