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(54) A container.

(57) The invention relates to a plastic container and an external support frame therefor, characterised by the container (1) comprising an outlet (5, 5') having a desired set outlet size and by a mounting (3, 4) means adjacent the outlet (5, 5') for mounting the container with the outlet size set, and by the frame (6) comprising a support plate (9) having means adapted to cooperate with the mounting means (3, 4) of the container (1) whereby to mount the container with the outlet size set.

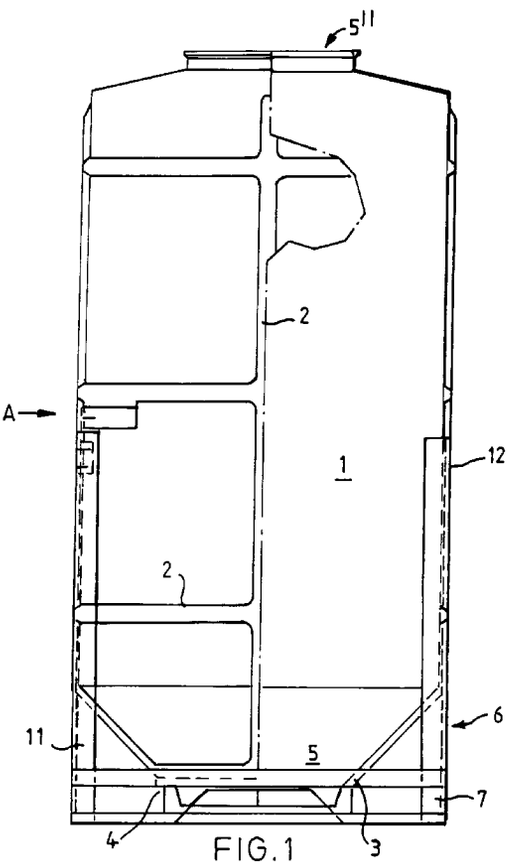

FIG.1

FIG.1A

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The invention relates to a container, particularly to a plastic moulded container and a frame therefor.

Such containers are often used to hold and transport flowable materials such as powders, particulate material, granules and the like. To fill and discharge the material the containers are mounted at a charging or discharge station. However, when being handled, transported or the like, owing to the flexibility of the plastic, the concentricity and roundness of the outlet is liable to vary, even if it is forced into a ring of a frame at a handling station. The frame itself is expensive - some 84' of welding is typically required in a standard frame.

It is accordingly an object of the invention to seek to obviate these disadvantages.

According to a first aspect of the invention there is provided a plastic moulded container, comprising an extended outlet cut off to a desired size after insertion of a template to maintain the desired set outlet size.

The template may comprise a ring or hoop. This provides for a method of providing a set configuration of outlet.

There may be mounting means adapted for mounting the container in a frame so that the outlet may be maintained in a desired configuration. This allows for transport of the container.

The means may comprise an annular ring adjacent the outlet. This can be integrally formed with the container.

There may be additional mounting means intermediate the length of the container for mounting the container in a frame. This provides for a secure mounting.

There may be impressed ribs, particularly arranged in an orthogonal array over the surface of the container. This provides for rigidity of the container, and a relatively simple moulding operation may be used to incorporate the ribs integrally with the container body during manufacture.

According to a second aspect of the invention there is provided a plastic container and an external support frame therefor, the container comprising an outlet having a desired set outlet size and a mounting means adjacent the outlet for mounting the container with the outlet size set, and the frame comprising a support plate having means adapted to cooperate with the mounting means of the container whereby to mount the container with the outlet size set.

The means of the container may comprise a support ring.

The mounting means of the container may comprise a ring integrally moulded externally of the outlet and the securing means may comprise self tapping securing means inserted through holes formed in the support plate. This provides a relatively simply and inexpensive yet sound way of securing the container in the frame with a set outlet.

The container may have additional frame mounting means intermediate its length. This provides for a secure mounting.

The intermediate means may comprise an external shoulder. This is a relatively simple construction which can be included during manufacture. It can be integrally formed.

The frame may comprise a plurality of frame parts which may be secured together by releasable securing means. This makes for a manageable frame.

There may be two frame parts each of which may comprise a plate and substantially upright legs which may be interengageable, and the plates may be adapted for cooperation with the respective mounting means of the container.

According to a third aspect of the invention there is provided a plastic container and external support frame therefor, as hereinbefore defined, whenever assembled together.

According to a fourth aspect of the invention there is provided a method of making a plastic container, comprising moulding the container with an extended outlet, inserting a template in the container at the outlet to maintain the desired configuration and physical integrity of the outlet, and then cutting off the extended outlet part to leave the desired set size outlet.

The template may be a hoop or ring which may be inserted after a moulding and curing step.

Containers and frames embodying the invention are hereinafter described, by way of example, with reference to the accompanying drawings.

Fig. 1 is a side elevational view of a container and frame according to the invention;

Fig. 1A is an enlargement at arrow 'A' in Fig. 1;

Fig. 2 is a plan view of the assembly of Fig. 1;

Fig. 3 shows a side elevational view of part of the frame of Fig. 1;

Fig. 4 is a plan view of a plate of the frame;

Fig. 4A is an enlargement of the part 'A' of Fig. 4;

Fig. 4B is a section on line "X" - "X" of Fig. 4;

Fig. 4C shows a section of a connection at the upper plate.

Fig. 5 is a side elevational view of the container; and

Fig. 5A is an enlargement of the part 'Y' of Fig. 5.

Referring to the drawings, the container 1 shown is a moulded plastic container having external ribs 2 which in the embodiment are in the form of an orthogonal configuration. The ribs 2 are integrally formed during moulding, as are external mounting means in the form of annular shoulders 3, 4.

The container 1 is moulded by forming an extended part 5' of outlet 5 (Fig 5A), and then, after moulding and curing, inserting a template in the form of a hoop or ring mandrel, which is visible from outside, to set the dimensions of the container outlet 5, and then the extended part 5' of the outlet 5, is cut off square using

a suitable tool and jig.

However, the outlet of the container can vary vertically, making it difficult to mount it accurately in a discharge station. This is overcome using a frame 6.

The frame 6 comprises a plurality of frame parts 7, 8 basically comprising a plate 9 for locating on the outlet shoulder 3 and a plate 10 for locating on the intermediate shoulder 4. The bottom (in use) plate 9 has upstanding corner legs 11 secured as by suitable means such as bolts to the frame part 7, and the upper (in use) plate 10 has legs 12 which depend therefrom and which are secured to the legs 11 by suitable means such as bolts via the angle sections 13, seating in upturned parts 14 of the plates.

In use, a mandrel is placed in the outlet 5, to maintain it in the desired set shape and configuration. The mandrel is clamped to the outlet to force it to the desired (perfectly round) outlet shape.

The tool and jig include the support plate 10 which is allowed to float, that is it is not fixed to the bottom plate 9 (as previously), rather the support plate 10 is set at a variable height which is such as to maintain the exact height of the outlet above the bottom plate 10 (if used) or the ground or other substrate if not. This provides a correct vertical height setting for the outlet 2. The inlet 5" of the container 1 (I.B.C.) can also vary horizontally, which can make it difficult to lower accurately to an outlet of a system for filling the I.B.C. with material. In the I.B.C.'s embodying the invention, the inlet 5" is set true to the horizontal axis, by jigging, the top plate 10 having been offered up to the outlet flange 3 locating back from the jig to locate the plate 10 exactly at the shoulder 4. Then brackets are slid up the legs 12 until they engage the ring or shoulder 4. The brackets are then drilled through and securing means such as self-tapping screws are inserted through the holes, which are at positions solely where the brackets engage the integral shoulders or ring 4, and tightened up to lock the container in the desired set position. The assembly is then offered up to the bottom plate 9, with its legs 7 assembled, with a spacer block set at the outlet exactly as required. The plate 7 is thus secured to the outlet ring 3 by inserting securing means such as self-tapping screws through countersunk holes in the plate 9, so locking up the outlet 5 solidly and in the desired set configuration. The legs 7 of the top 10 and bottom plates 9 are then fully secured to the top and bottom plates using suitable means such as bolts.

The mandrel can then be removed from the outlet, which remains locked up centrally and of the desired round configuration. No welding is required at all, and the whole assembly is self-jigging.

For applications where material to be held in the container may stain, or be particularly virulent, there may be a relatively stable or inert material, e.g. nylon or P.T.F.E., sleeve or liner secured in the container.

It will be understood that the top and/or bottom plate may be strengthened using impressed ribs.

It will also be understood that the combination described uses the structural integrity of the bottle to reduce the weight and cost of the frame whilst obviating expensive welding.

The container and frame assembly provides a true stable and concentric outlet.

It will therefore be understood too that a container embodying the invention includes the following important features:-

1. A container which has a consistently accurate outlet can be made;
2. Flexibility at the outlet is overcome, to provide a rigid, circular outlet.
3. The inlet size is set and controlled using the inherent flexibility of the plastic of the container.
4. The upper support plate is allowed to 'float' to achieve a constant outlet to ground or other substrate height.
5. The frame parts 7, 8 are intrinsically non-rigid but when locked together with the container, a strong rigid system with desired set inlet and outlet configurations is achieved.

Claims

1. A plastic moulded container, characterised by an extended outlet (5, 5') cut off to a desired size after insertion of a template to maintain the desired set outlet size.

2. A container according to Claim 1, characterised by the template comprising a ring or hoop.

3. A container according to Claim 1 or Claim 2, characterised by mounting means (3, 4) adapted for mounting the container in a frame (6) so that the outlet (5, 5') is maintained in a desired configuration.

4. A container according to Claim 3, characterised by the means comprising an annular ring adjacent the outlet.

5. A container according to any preceding claim, characterised by additional mounting means (4) intermediate the length of the container (1) for mounting the container in a frame.

6. A plastic container and an external support frame therefor, characterised by the container (1) comprising an outlet (5, 5') having a desired set outlet size and by a mounting means (3, 4) adjacent the outlet (5, 5') for mounting the container with the outlet size set, and by the frame (6) comprising a support plate (9) having means adapted to co-

operate with the mounting means (3, 4) of the container (1) whereby to mount the container with the outlet size set.

7. A container and frame according to Claim 6, characterised by the means (3, 4) of the container (1) comprising a support ring (3).

8. A container and frame according to Claim 7, characterised by the mounting means (3, 4) of the container (1) comprising a ring integrally moulded externally of the outlet and by the securing means comprising self tapping securing means inserted through holes formed in the support plate (9).

9. A container and frame according to any of Claims 6 to 8, characterised by the container (1) having additional frame mounting means (4) intermediate its length.

10. A container and frame according to any of Claims 6 to 9, characterised by the frame (6) comprising a plurality of frame parts (7, 8, 9) which are secured together by releasable securing means.

11. A container and frame according to Claim 10, characterised by two frame parts each comprising a plate (9, 10) and substantially upright legs (11) which are interengageable, the plates (9, 10) being adapted for cooperation with the respective mounting means of the container.

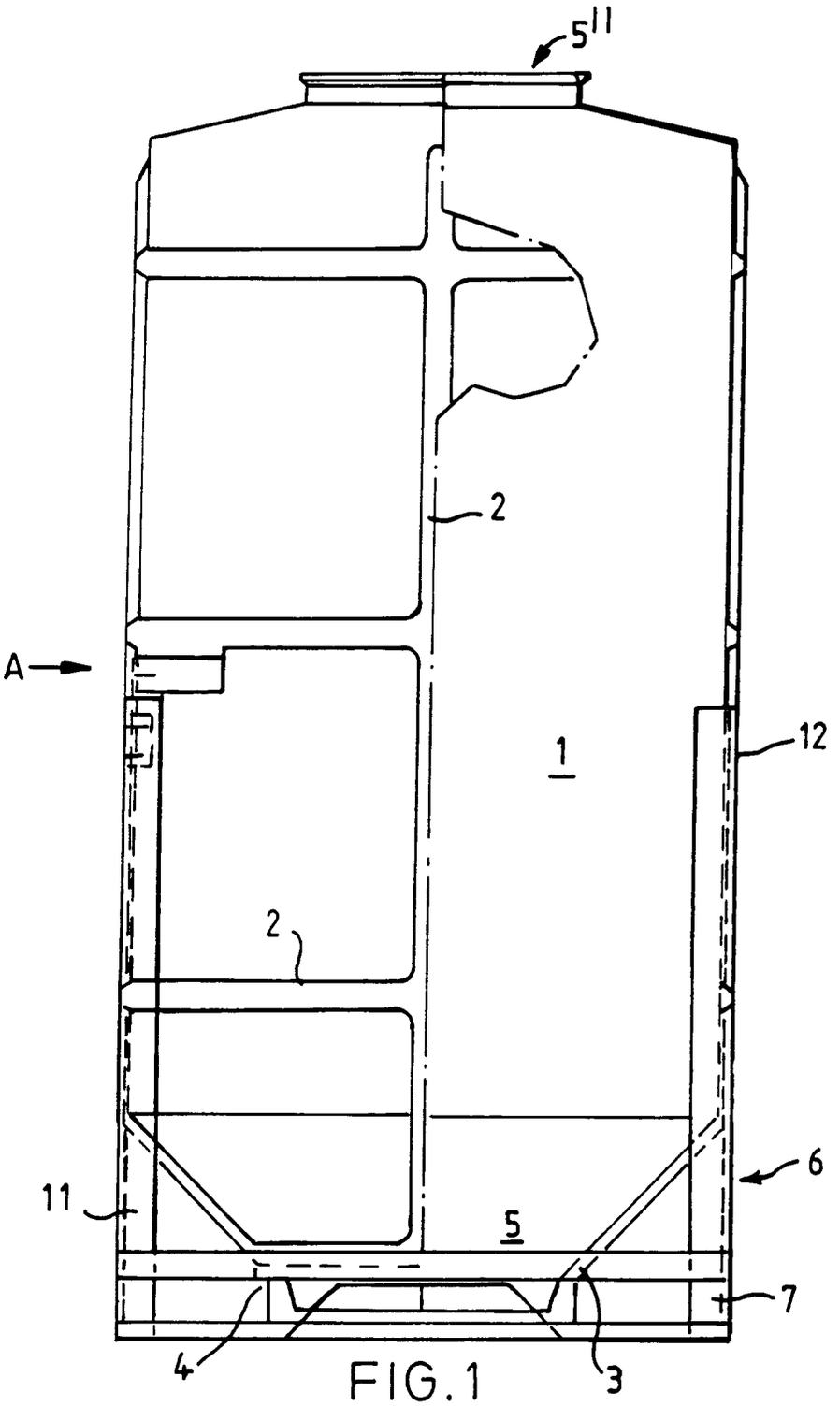

FIG.1

FIG.1A

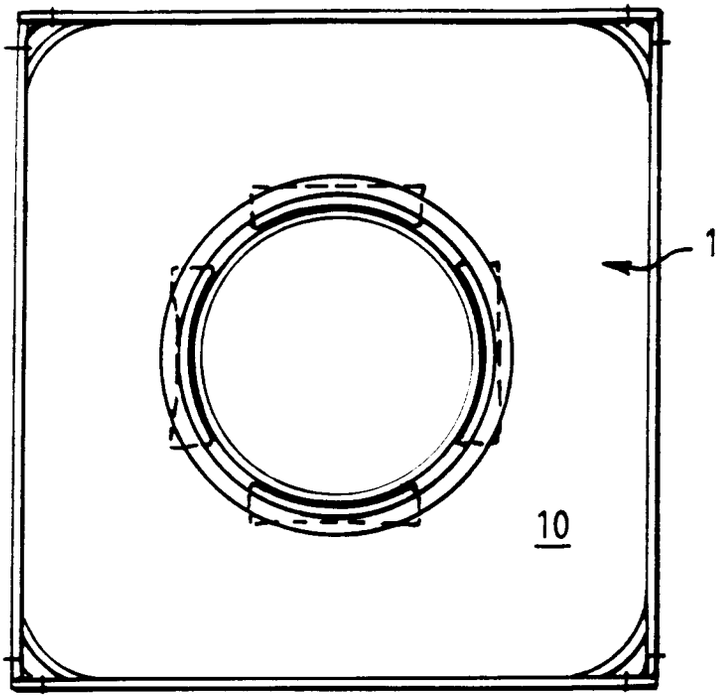

FIG. 2

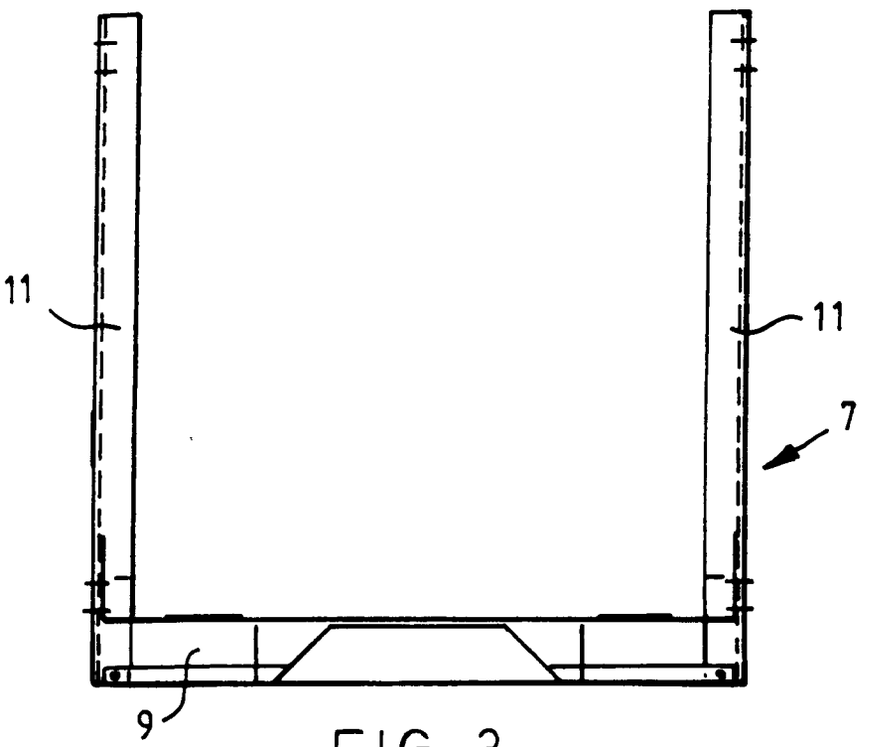

FIG. 3

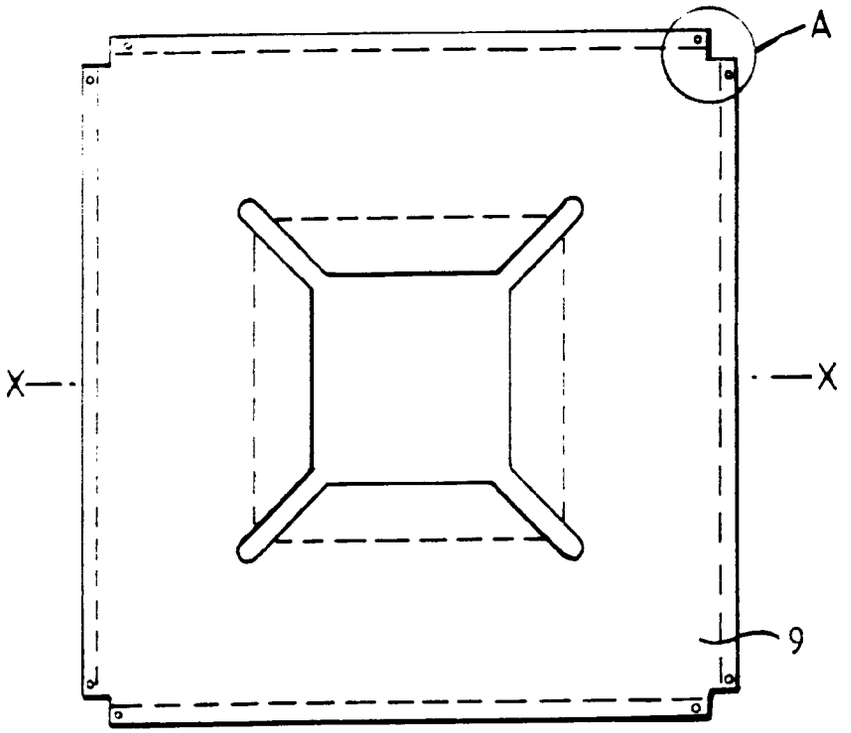

FIG.4

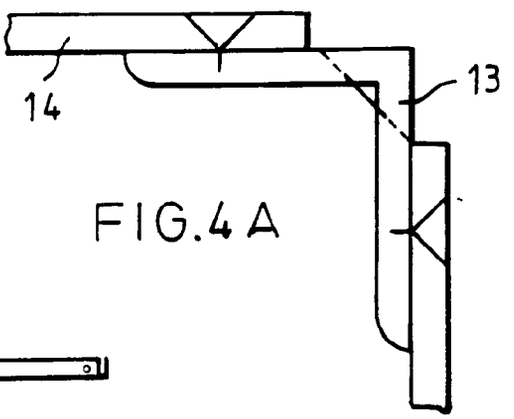

FIG.4A

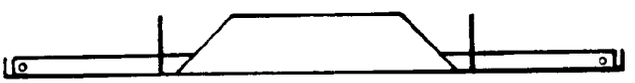

FIG.4B

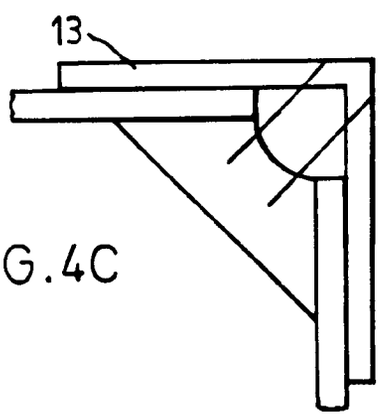

FIG.4C

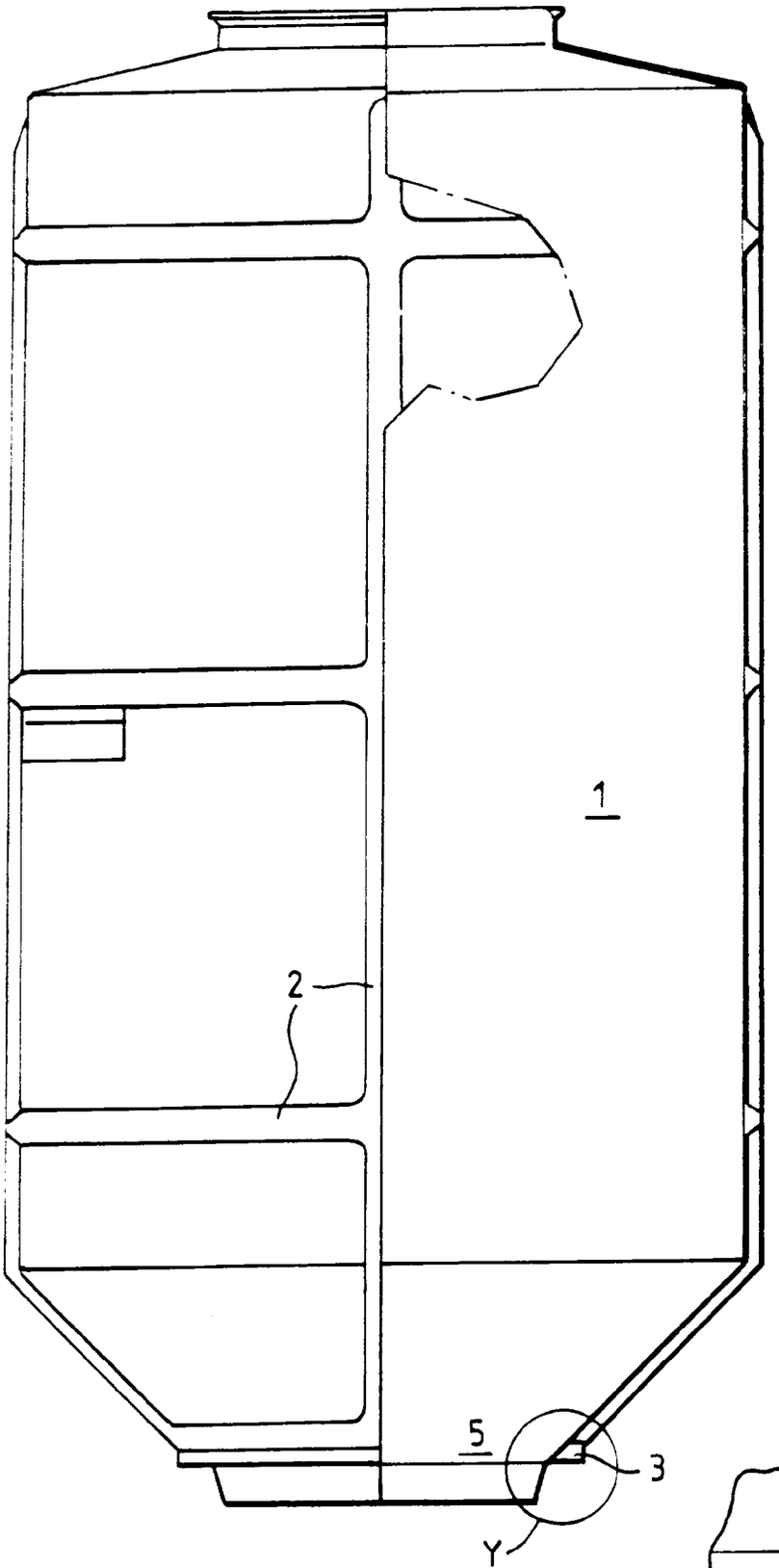

FIG.5

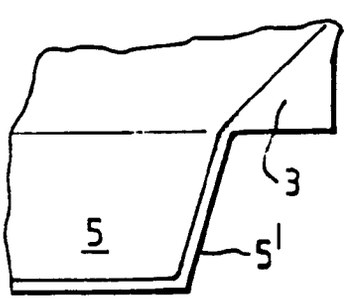

FIG.5A