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(54) Plastic container with reinforced column.

(57) A plastic container having a bottom (4) and upright walls (1, 2) as well as hollow corner columns (3).

Reinforcing ribs (21, 23) are provided on the joining wall (20, 22) of a corner column (3). Preferably the reinforcing ribs are provided centrally between an inner-wall portion (17) and an outer-wall portion (16, 16a).

Other reinforcing ribs (24, 25) are on the inner side of outer-wall portion (16, 16a).

Reinforcing ribs (26, 27) extend perpendicular to the tangent at corner transitions (18, 19) of a corner column having a rounded inner wall (17) and rounded outer wall (19).

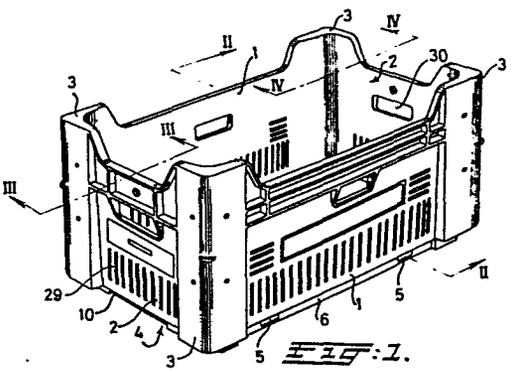

Fig. 1.

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Plastic container with reinforced column.

The invention relates to a plastic container having a bottom and upright walls as well as at least one hollow corner column and reinforcing ribs.

Such a plastic container is known in the art. In such a known plastic container, reinforcing ribs are known to be applied to upright walls and bottom parts and even to the walls of hollow corner columns. However, such reinforcing ribs are always provided in such a manner that substantially they reinforce only the wall of the plastic container and the wall of the corner column, respectively, so that they are less apt to bend under loads existing in stacked plastic containers.

A drawback of such plastic containers is that there is no proper transfer of forces from one plastic container to the other when several plastic containers are stacked upon one another, especially when, for practical reasons a clearance exists between the inner circumference on the upper side of the container and the bottom part of another plastic container which in stacking same

is received into the plastic container disposed therebelow.

The object of the invention is to provide a plastic container with a hollow corner column, in which, when stacking several containers, a much better transfer of forces from one container to the other occurs.

Said object is attained according to the invention in that over the height of a corner column there are provided reinforcing ribs, which preferably extend parallel to a wall portion of the plastic container.

Use of such reinforcing ribs ensures a very good transfer of forces between stacked plastic containers.

Very advantageously, reinforcing ribs are provided on the joining wall of a corner column.

It is recommended that the reinforcing ribs on a joining wall extend approximately in the middle between the inner-wall portion and the outer-wall portion of a corner column.

It is particularly to be recommended to provide reinforcing ribs on at least one inner side of the outer-wall portion.

Advantageously a corner column having a rounded inner-wall and a rounded outer wall carries reinforcing ribs which are substantially diametrically opposite to each other and which

extend approximately perpendicular to the tangent at the corner transitions.

The use of a plastic container with reinforcing ribs according to the invention ensures at all times, that a plastic container is properly supported by another plastic container disposed therebelow.

If, due to the clearance provided, a wall portion of a container should not rest accurately upon the corresponding walls of the plastic containers disposed therebelow, then the reinforcing ribs, and in particular reinforcing ribs on the joining wall of the corner column, will ensure proper support.

The invention will be further explained by means of an embodiment of the container according to the invention with reference to the drawing wherein:

Fig. 1 is a view of a plastic container according to the invention;

Fig. 2 is a sectional view taken on the line II/II of such a container;

Fig. 3 is a sectional view taken on the line III/III of a plastic container according to the invention;

Fig. 4 is a cross-sectional view taken on the line IV/IV; and

Fig. 5a and 5b show a portion of the stacking of two plastic containers according to the invention, 5a and 5b showing several possibilities which may occur due to the clearance

between the bottom side of a plastic container according to the invention and the inner circumference on the top side of a plastic container according to the invention.

Fig. 1 shows a container comprising two long side walls 1 and two short side walls 2 which are interconnected by means of hollow corner columns 3. The plastic container also comprises a bottom connected with the side walls 1 and 2. On the lower side of the bottom 4 there are provided two elongated hollow cases 5 which preferably end in an edge 6 provided along the periphery of the bottom 4.

The container is provided with ventilation openings 29 as well as a grip means 30.

As can be seen in Fig. 2, the walls of the elongated case converge from the two end openings towards the center, thus facilitating the removal of mold cores and without damaging the inner case walls.

As during the injection-molding process the cores for forming the case 5 are to be supported, each case 5 is provided with an opening 7. Case-reinforcing ribs 8 are provided around the case opening 7 so as to reinforce each case 5.

The cases 5 are located above the plane through the ends of a peripheral edge 6, the bottom 4 sloping from each of the cases 5 towards the peripheral-edge portions 6a parallel thereto. In suitable positions of the lower portions of the

bottom 4 there are provided bottom openings 9 for carrying off moisture and dirt, as well as for ventilating purposes.

Providing one or several recesses 10 in the peripheral edges 6 ensures that rinsing and leakage water can flow away from underneath the container when it is placed upon a floor, while in addition said openings enable ventilation to take place therethrough.

By giving a pair of opposed portions of the peripheral bottom edge 6 a greater height than another pair of edge portions and the elongated cases, there is created a slot-shaped aperture between the floor upon which the container has been placed and the container itself. It is then possible to slip a plate underneath the container through said aperture, thus affording easy conveyance of the container by means of for example a hand truck.

Fig. 3 shows the bottom view of the portion around the opening 7 of a case 5, the case-reinforcing ribs 8 being shown which are each located between at least two walls of the case. The converging character of the walls 5a and 5b of a case 5 are clearly shown as well.

In order to be able to close off the free openings 31 and 31a of an elongated case, the latter is provided with flexibly disposed plastic lips 32 en 33 having cams 34 capable of engagement with recesses 35 provided in the bottom. This enables closing off the cases.

It is furthermore possible to easily close off the case opening 7 by means of a plastic joint cap 11 which, through nipples 12, cooperates with the inner wall of a case 5.

As can be seen in Fig. 4, according to the invention, reinforcing ribs 21 and 23 are provided on the joining walls 20 and 22 of the hollow corner columns 3, said joining walls 20 and 22 interconnecting the inner-wall portion 17 to outer-wall portions 16 and 16a, respectively. Providing the reinforcing ribs 21 and 22 extending parallel to the outer-wall portions 16, 16a and approximately in the center between the outer-wall portion 16, inner wall 17 and outer wall 16a respectively, and inner wall 17 respectively, results in an optimum transfer of forces between two stacked plastic crates.

Very advantageously, there are located on the inner side of the outerwall portions 16 and 16a reinforcing ribs 24 and 25 which extend parallel to the joining walls 22 and 20, respectively.

Advantageously, the reinforcing ribs 26 and 27 are diametrically opposite each other in the corner parts 19 and 18 of a hollow corner column, respectively. Said reinforcing ribs 26 and 27 extend substantially as perpendiculars to the tangents of the corner transitions.

In Fig. 5, portions of stacked plastic containers can be seen, showing that a good transfer of forces between two stacked

crates is properly ensured.

As can be seen, a similar, good transfer of forces is also ensured in the stacked condition as shown in Fig. 5b.

Due to the clearance provided between the inner circumference 37 on the upper side of a plastic crate and the outer side of the peripheral edge 6 it may occur that the two stacked plastic containers are either in the condition as shown in Fig. 5a or in the condition as shown in Fig. 5b.

The reinforcing ribs 20 and 22 are preferably located between the outer-wall portions 16 and 16a of a corner column and the boundary 28 between the inner side of the horizontal top face of a corner column 3 and the outer face of the upright inner wall of the container, which inner wall is somewhat conical for the purpose of removing the cores.

It is observed that the reference numerals in the claims are not intended to restrict the scope thereof, but are only denoted for clarification.

Claims:

1. Plastic container having a bottom (4) and upright walls (1, 2) as well as at least one hollow corner column (3) and reinforcing ribs, characterized in that reinforcing ribs (21, 23) are provided over the height of the corner column (3).

2. Plastic container according to claim 1, characterized in that the reinforcing ribs (21, 23) are provided on a joining wall (20, 22) of a corner column (3).

3. Plastic container according to claim 1 or 2, characterized in that reinforcing ribs (21, 23) on a joining wall (20, 22) are provided approximately centrally between the inner-wall portion (17) and the outer-wall portion (16, 16a).

4. Plastic container according to claims 1 to 3, characterized in that reinforcing ribs (24, 25) are provided at least on the inner side of an outer-wall portion (16, 16a).

5. Plastic container according to any one or several of the preceding claims, characterized in that a corner column (3) having a rounded inner wall (17) and a rounded outer wall (19) carries reinforcing ribs (26, 27) which are substantially diametrically opposed to one another and which run approximately perpendicular to the tangent at the corner transitions (18) and (19) respectively.

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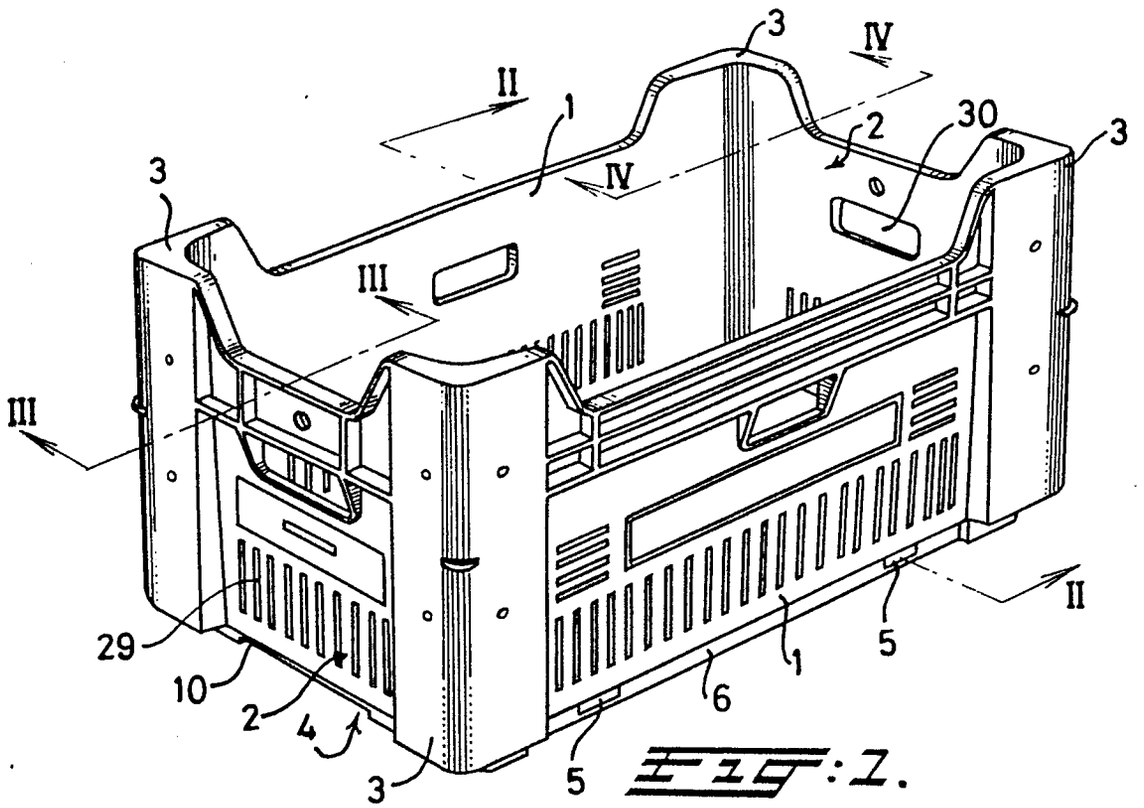

Fig: 1.

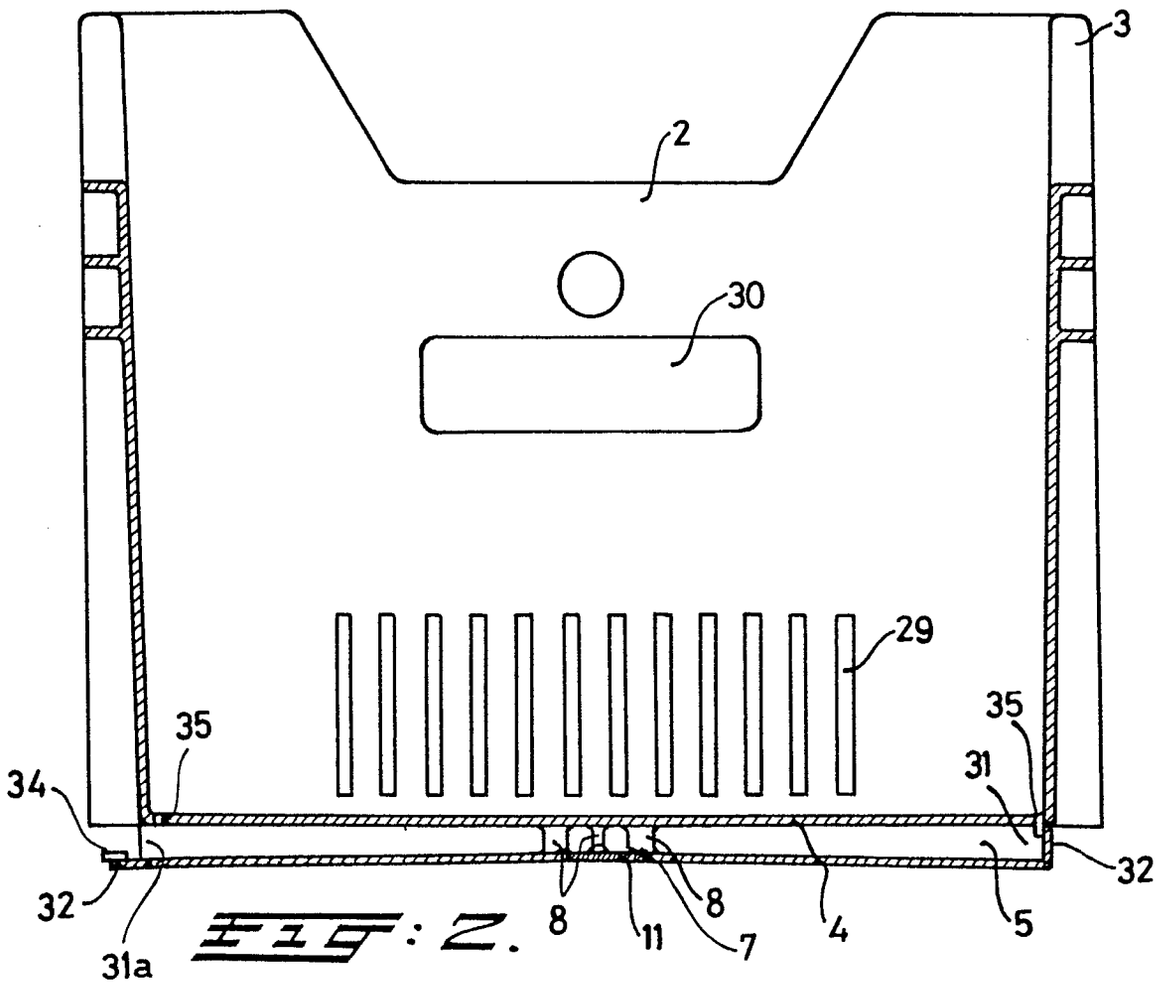

Fig: 2.

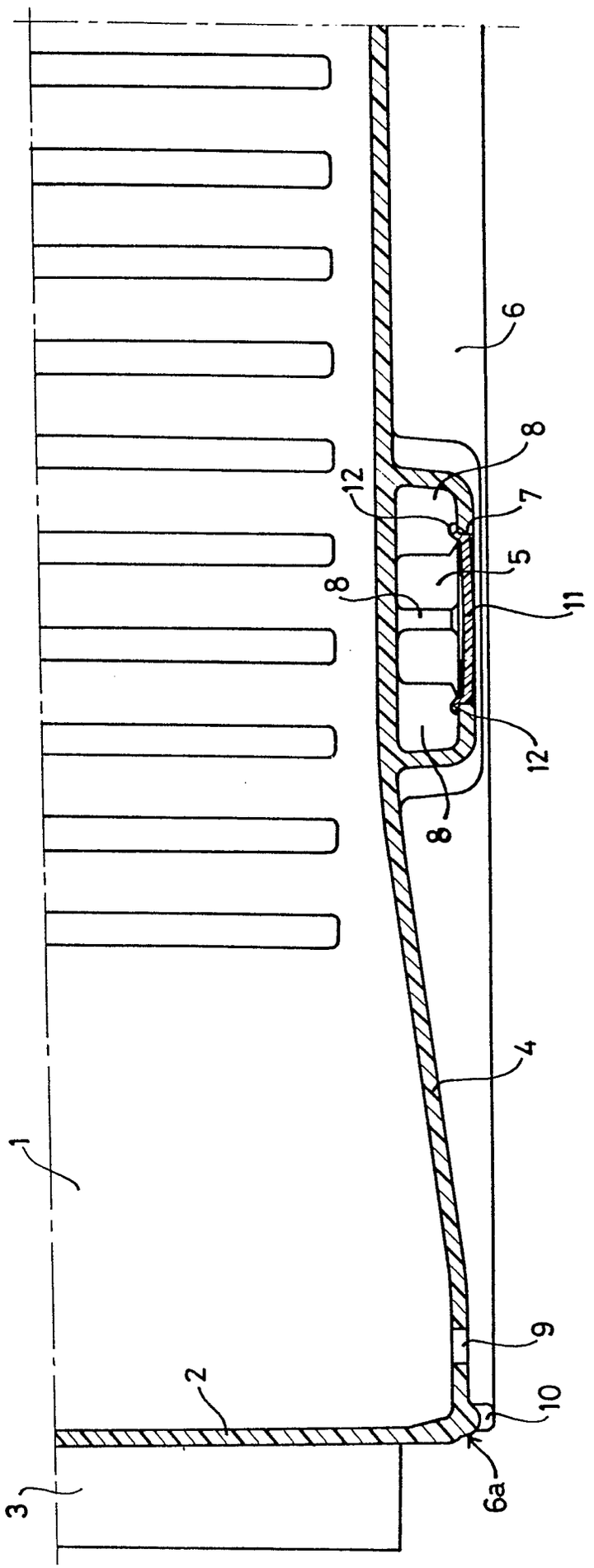

FIG. 3.

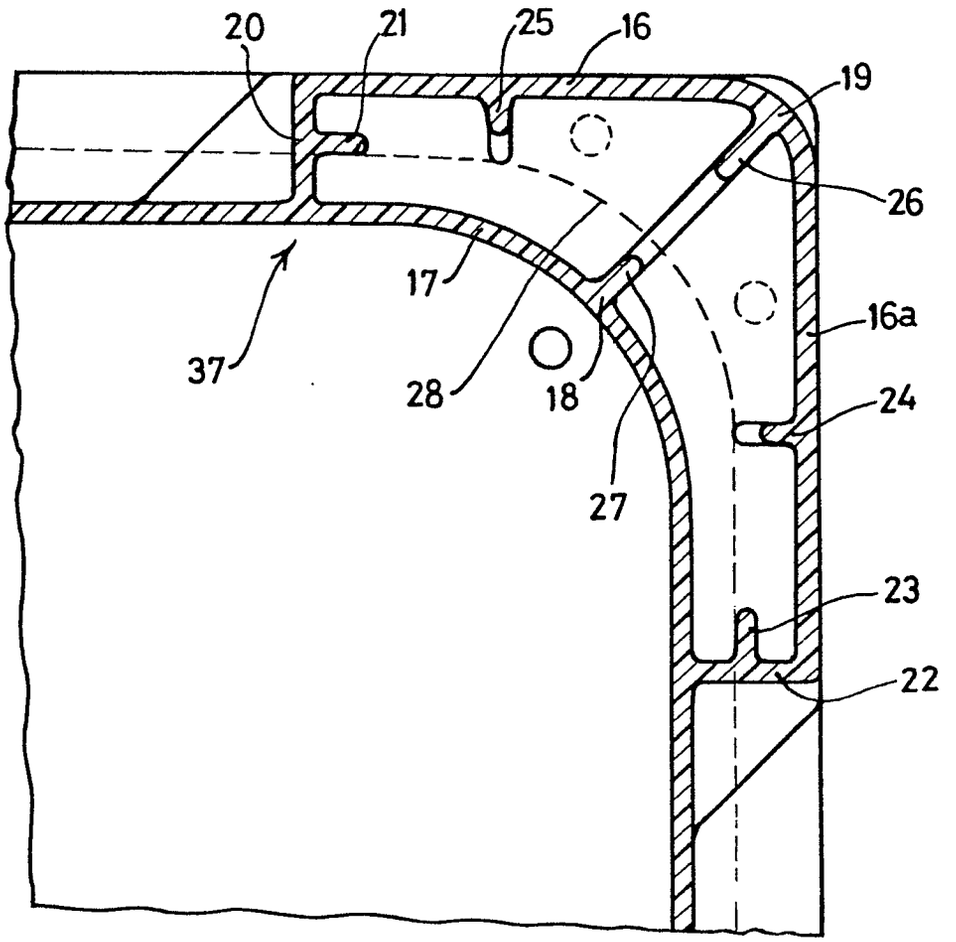

Fig: 4.

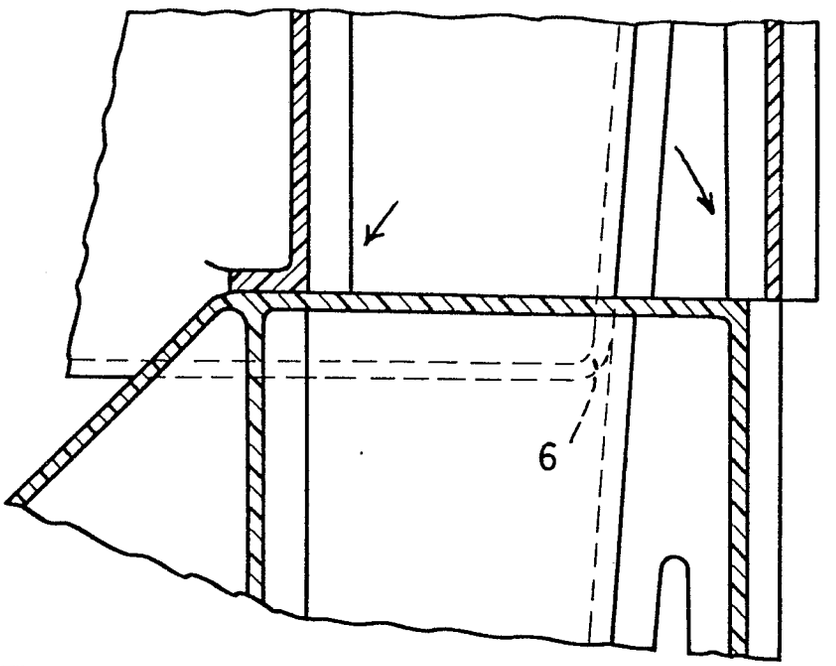

Fig: 5a.

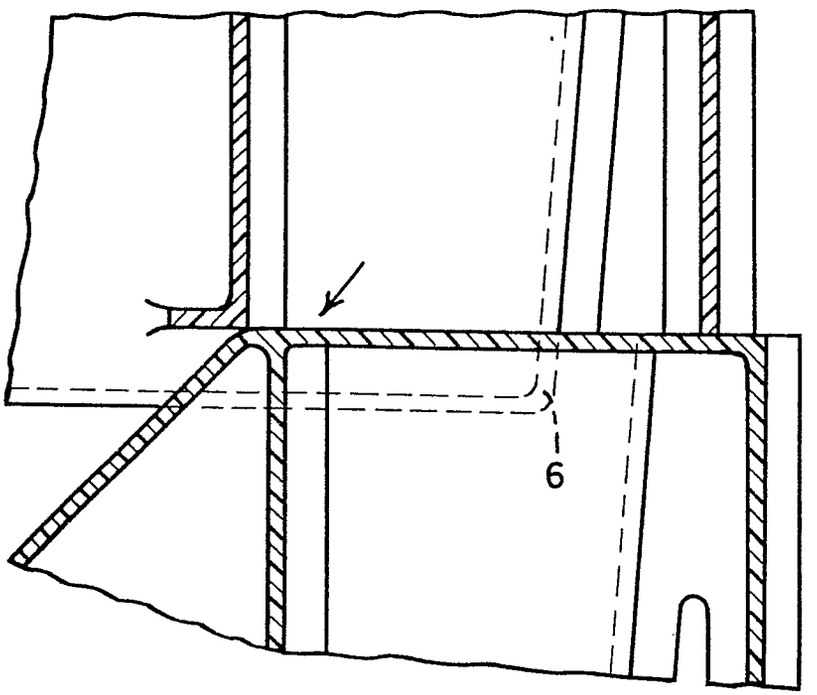

Fig: 5b.

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EUROPEAN SEARCH REPORT

Application number

EP 82 20 0769

DOCUMENTS CONSIDERED TO BE RELEVANT

Category	Citation of document with indication, where appropriate, of relevant passages	Relevant to claim	CLASSIFICATION OF THE APPLICATION (Int. Cl. ³)
X	LU-A- 72 256 (SCHOELLER) *Page 4, line 29 to page 5, line 7; page 5, line 27 to page 6, line 19; figures 1-5*	1,4,5	B 65 D 21/02
X	NL-A-7 508 126 (SCHOELLER) *Page 3, paragraph 2; figure 2* & DE - U - 7 423 282	1,4,5	

TECHNICAL FIELDS SEARCHED (Int. Cl. ³)

B 65 D

The present search report has been drawn up for all claims

Place of search	Date of completion of the search	Examiner
THE HAGUE	23-09-1982	VANTOMME M.A.

CATEGORY OF CITED DOCUMENTS

X : particularly relevant if taken alone
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A : technological background
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