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(54) Device for storing garbage

(57) The present invention relates to a device (1) for storing waste material, comprising:

- a container (2) in which waste material can be stored having on the upper side an insertion unit (3) for depositing the waste into the container;
- an outer casing of a pit (6) for arranging in the ground in which the container (2) can be placed in fitting manner;
- hoist engaging means to enable upward movement of the container (2) out of the pit (6) for the purpose of emptying thereof and to enable downward movement of the container (2) into the pit (6);
- a cover element (5) for covering the pit (6) in the downwardly moved situation, wherein the cover element (5) can be placed lying substantially flush with the ground or the pavement provided thereon.

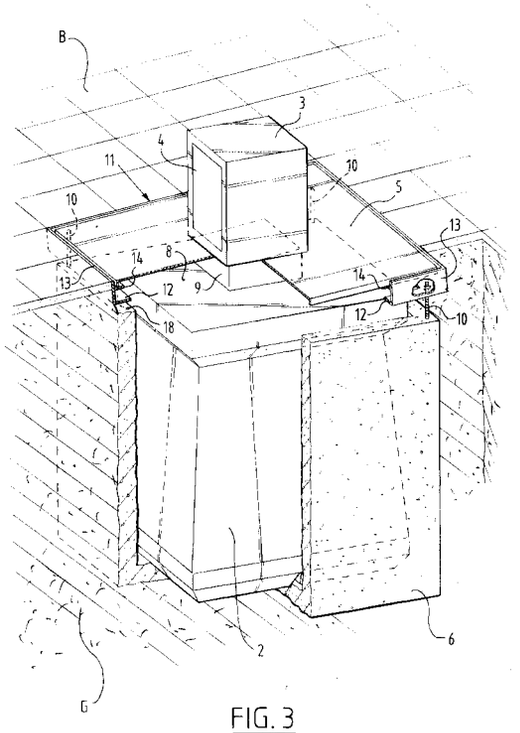


FIG. 3

EP 1 167 241 A1

Description

[0001] The present invention relates to a device for storing waste material, such as glass material, paper, bulky waste and so on.

[0002] Devices are known of a type wherein a large part of the container in which the waste is stored is placed underground, and only a column with insertion opening, also referred to as insertion unit, is still visible above the pavement or footpath. Such devices not only make the street more attractive, but also provide advantages of hygienic nature.

[0003] Systems are also known wherein a concrete pit is arranged in the ground, into which pit is placed a removable container which is provided on the upper side with an insertion unit, wherein the container can be lifted out of the pit using a crane to enable emptying thereof. Such systems also comprise a safety floor which moves upward when the container is lifted from the pit for the purpose of closing off the pit.

[0004] In order to ensure proper functioning of such systems, and particularly the safety floor, the concrete pit must be a level excavation. In practice however, the ground or the pavement arranged thereon is not always level. When the container is placed in the pit and its upper side is covered with a cover plate, this cover plate will not lie flush with the ground respectively pavement since it is placed in the pit excavated in level position. This results in an unattractive appearance of the street. Such a protruding cover plate can moreover form a safety hazard for pedestrians or other users of the pavement. A further drawback is that the drainage of rainwater is made more difficult.

[0005] In some cases the pavement in the vicinity of such a system is modified, i.e. the pavement around the cover plate is raised or lowered. Not only does the street appearance hereby remain unattractive, but the cost of such a modification of the pavement is also considerable.

[0006] It is an object of the present invention to provide a device in which the above stated drawbacks are obviated.

[0007] Provided for this purpose according to the invention is a device for storing waste material, comprising:

- a container in which waste material can be stored having on the upper side an insertion unit for depositing the waste into the container;
- an outer casing of a pit for arranging in the ground in which the container can be placed in fitting manner;
- hoist engaging means to enable upward movement of the container out of the pit for the purpose of emptying thereof and to enable downward movement of the container into the pit;
- a cover element for covering the pit in the downwardly moved situation, wherein the cover element can be placed lying substantially flush with the ground or the pavement provided thereon. According to a preferred embodiment the device comprises an edge element which can be placed in a position substantially level with the ground or the pavement provided thereon, wherein the cover element is adapted to adjust to the position of the edge element. When the container is lowered into the pit, the cover plate will at a given moment assume the position of the ground/pavement and therefore also, according to the preferred embodiment, the position of the edge element, whereby the cover element lies flush with its surroundings.

[0008] According to a preferred embodiment the cover element comprises a cover plate which is movable relative to the container with insertion unit, preferably in that the cover plate comprises an opening through which a connecting element extends between the container and the insertion unit, and in that a clearance is provided between the opening edges and the connecting element. Owing to the clearance the cover element can be moved freely relative to the container, and assume a desired position in accordance with the progression of the ground or pavement around the pit.

[0009] According to a further preferred embodiment the clearance is provided around the connecting element. The cover plate can hereby tilt in all directions over an infinite number of imaginary (horizontal) axes. This also enables rotation of the container through 90° or 180°, in the case of a container of square cross-section, without the position of the cover plate herein having to be readjusted in any way. This is for instance important when it is desirable to place the insertion opening of the insertion unit in a different direction.

[0010] In a particular preferred embodiment the device comprises adjusting means for positioning the edge element in desired position relative to the outer casing. Since the outer casing of the pit is buried firmly in the ground, the edge element can be positioned substantially independently of possible subsidence in the ground. If severe subsidence of the surrounding ground occurs, the position of the edge element, i.e. the orientation as well as the height relative to the outer casing of the pit, can be simply adjusted afterward. In addition, the adjusting means provide the possibility of modular construction of the device, wherein as many standard elements as possible are used, and the required position of the edge element (and of the cover plate) need only be set at the construction stage of the pit.

[0011] According to a particular preferred embodiment the adjusting means comprise a number of adjusting elements controllable independently of each other and provided with screw thread, each adjusting element being for the purpose of adjusting the height between the outer casing and the edge element. The adjusting means preferably comprise at least three adjusting screws provided in positions distributed evenly over the

periphery of the outer casing. If the pit is substantially rectangular in cross-section, the adjusting means comprise four adjusting screws arranged in the vicinity of each corner of the outer casing.

[0012] According to another preferred embodiment the edge element is provided with screening elements protruding beyond the upper edge of the outer casing, wherein the screening elements more preferably comprise sleeves depending from the edge element. This prevents sand and/or water being able to enter the pit even at positions where the edge element is maximally tilted relative to the outer casing of the pit.

[0013] According to another preferred embodiment the edge element comprises adjusting means for adapting the edge element to the thickness of the cover plate. A covering material on the cover plate can hereby be chosen as desired, irrespective of the thickness thereof.

[0014] Further advantages, features and details of the present invention will be elucidated in the following description of several preferred embodiments thereof. Reference is made in the description to the figures, in which:

- figure 1 shows a schematic perspective view of a device according to the invention;
- figure 2 shows the manner of placing the preferred embodiment of figure 1 in the ground;
- figure 3 shows a schematic cross-section of the preferred embodiment of figure 1, in the downwardly moved situation;
- figure 4 shows a schematic detail of a further preferred embodiment of an edge element;
- figure 5 shows a schematic detail of a further preferred embodiment of an edge element;
- figure 6 shows a schematic detail of a further preferred embodiment of an edge element; and
- figure 7 shows a schematic detail of the edge element of figure 6 suitable for a cover plate of greater thickness.

[0015] Figure 1 shows a preferred embodiment of a device 1 according to the invention. The device comprises a waste container 2 in which the waste is stored. Container 2 is shown in the figure with a rectangular cross-section, but may also take other forms depending on the application. Arranged on top of the container is an insertion unit 3 which is provided on one side with an insertion opening closable with a flap 4 for depositing waste material.

[0016] Insertion unit 3 is provided with an engaging option (not shown) to which a lifting crane can be connected so that the insertion unit with container 2 fixed thereto can be lifted in vertical direction.

[0017] In the ground is provided a recess, the walls of which are lined with a concrete outer casing 6. Concrete outer casing 6 thus forms a pit into which container 2 can be placed in the direction of arrow P_1 (P_2 and P_3 in figure 2). The side walls of container 2 are provided at the top with an inclining part 17 for positioning container 2 in the correct manner between concrete walls 6. In the lowered situation the underside of container 2 rests on the bottom of the pit.

[0018] When container 2 is lifted upward via insertion unit 3, it can be emptied. In this situation, thus when container 2 is removed from the pit, a safety floor 7 moves automatically upward which closes the pit at the top so as to prevent human or animal falling into the pit.

[0019] When container 2 with insertion unit 3 is displaced vertically downward in the direction of arrow P_1, safety floor 7 moves downward. In the lowered situation the pit is then covered at the top by a cover plate 5 placed on top of container 2. Cover plate 5 has dimensions such that the opening defined by the pit is completely closed.

[0020] Figures 2 and 3 show in more detail the placing of the container with self-adjusting cover plate. According to the invention the container 2 is connected to insertion unit 3 by means of a connecting part 9 of a rectangular, triangular or round cylindrical shape. Other shapes are however also possible. Cover plate 5 is not welded to container 2, but rests on the upper side 8 of container 2 and is freely movable relative thereto. In order to effect this, an opening is arranged in plate 5 which substantially corresponds in shape with that of cylindrical connecting part 9, with the understanding that said opening is slightly larger, i.e. that there remains some space, preferably several millimetres to several centimetres (maximum 10 cm), between the opening edges of plate 5 and connecting component 9. In the case of a rectangular opening the clearance can be provided on two opposite opening edges of the opening, although the clearance is preferably provided all round so as to enable tilting of cover plate 5 in any random direction. This also has the consequence that container 2 with insertion unit 3 placed thereon can be rotated through 90° or 180° after being lifted (and thereby also the insertion opening of insertion unit 3), without this having any adverse effect on the placement options of the container. This may be important if, for instance as a result of an order imposed on behalf of neighbourhood residents, the insertion opening of insertion unit 3 must be oriented differently. In this case the container has only to be lifted out of the pit, rotated through 90° or 180° and then moved downward again in order to bring about such a change of orientation.

[0021] In figure 3 is shown a situation in which container 2 is arranged in the pit and the pavement B as well as ground G has an inclining progression relative to the pit. The angle α between pavement B and concrete pit 6 is in practice between 0 and 30°. Larger angles are however also possible.

[0022] An edge element 11 is arranged substantially in one line with pavement B. This arrangement preferably takes place by placing the lower edge 12 of edge element 11 on top of the upper side 18 of concrete outer casing 6 by means of adjustable adjusting screws 10. In the case of a rectangular pit, four adjusting screws 10

are arranged in the vicinity of the corners of the pit, wherein edge element 11 can be tilted in all directions by rotating the adjusting screws.

[0023] Edge element 11 also comprises a standing part 13 which is provided with stop 14 for receiving the underside of cover plate 5. When container 2 with insertion unit 3 is displaced downward, the right-hand part of cover plate 5 will come to lie first on stop 13 in the shown situation. However, since cover plate 5 is freely movable owing to the presence of clearance, the plate 5 will tilt in counter-clockwise direction (arrow P_4) as container 2 is displaced further downward, until the left-hand part of plate 5 also comes to lie on stop 13. A situation hereby results in which cover plate 5 lies in one line with the inclining pavement B, despite the fact that the concrete outer casing 6 of the pit is arranged level in the ground G. A flat transition between pavement B and cover plate 5 is hereby achieved.

[0024] Figure 4 shows a further preferred embodiment of an edge element 11 according to the invention, in which a profile 12 is provided with a stop 13 which is supported by a lip 19. Cover plate 5 is provided in the shown embodiment with a support construction 24 with a tear plate 23 thereon. Support construction 24 has the function of supporting tear plate 23 since this latter must be able to bear the weight of at least one person.

[0025] In the figure is also shown that a profile 21 is arranged on the upper surface 8 of outer casing 6 of the pit via a rubber strip 22.

[0026] Figure 5 shows a further preferred embodiment in which edge element 25 is provided with a stop 26 on which the tear plate 23 of cover plates 5 can rest. Edge element 25 is also provided with an elongate sleeve 27 which has a length such that, even in a position in which a maximal space is created between the cover plates and the upper side 8 of outer casing 6, it protrudes beyond the upper side 8 of outer casing 6. This prevents water, sand or other ground material flowing into the pit, for instance in the direction of the arrow P_5 shown in figure 4. As a result of the above stated construction, provisions which are usual in practice and made specially for this purpose by a paver, can be dispensed with.

[0027] In figure 6 is shown a further preferred embodiment of an edge element 25 wherein a lip 30 is arranged with its lower part 31 on edge element 25, this such that lip 30 is height-adjustable relative to element 25. This has the purpose of adjusting the edge element to a varying thickness d of material optionally arranged on support construction 24 of cover plate 5. The situation is thus shown in figure 6 in which a granulate layer 29 of thickness d_1 is arranged on top of plate 28 on support construction 24, while in figure 7 the situation is shown in which a layer of clinkers 29 with a thickness d_2 is arranged on supporting plate 28 of support construction 24, wherein thickness d_2 is greater than thickness d_1. In order to ensure that the upper side of the clinker layer or the granulate layer lies in one line with the upper side of pavement B, lip 30 is therefore embodied such that it is adjustable relative to element 25. The above stated adjustment option enables further modular construction of the device.

[0028] The present invention is not limited to the above described preferred embodiments thereof; the rights sought are defined by the following claims, within the scope of which many modifications can be envisaged.

Claims

1. Device for storing waste material, comprising:
   - a container in which waste material can be stored having on the upper side an insertion unit for depositing the waste into the container;
   - an outer casing of a pit for arranging in the ground in which the container can be placed in fitting manner;
   - hoist engaging means to enable upward movement of the container out of the pit for the purpose of emptying thereof and to enable downward movement of the container into the pit;
   - a cover element for covering the pit in the downwardly moved situation, wherein the cover element can be placed lying substantially flush with the ground or the pavement provided thereon.

2. Device as claimed in claim 1, comprising an edge element which can be placed in a position substantially level with the ground or the pavement provided thereon, wherein the cover element is adapted to adjust to the position of the edge element.

3. Device as claimed in claim 1 or 2, wherein the cover element comprises a cover plate which is movable relative to the container with insertion unit.

4. Device as claimed in claim 1, 2 or 3, wherein the cover plate comprises an opening through which a connecting element extends between the container and the insertion unit, and wherein a clearance is provided between the opening edges and the connecting element.

5. Device as claimed in claim 4, wherein the clearance is provided around the connecting element.

6. Device as claimed in any of the foregoing claims, wherein the container and outer casing are formed such that the insertion unit can be placed in the pit in different orientations.

7. Device as claimed in any of the foregoing claims, wherein the angle of inclination of the ground sur-

face respectively pavement surface relative to the pit lies in the range of 0-30°.

8. Device as claimed in any of the foregoing claims, comprising adjusting means for positioning the edge element in desired position relative to the outer casing.

9. Device as claimed in claim 8, wherein the adjusting means comprise a number of adjusting elements controllable independently of each other and provided with screw thread, each adjusting element being for the purpose of adjusting the height between the outer casing and the edge element.

10. Device as claimed in claim 8 or 9, wherein the adjusting means comprise at least three adjusting screws provided in positions distributed evenly over the periphery of the outer casing.

11. Device as claimed in any of the claims 8-10, wherein the pit is rectangular in cross-section and comprises four adjusting screws arranged in the vicinity of each corner of the outer casing.

12. Device as claimed in any of the claims 2-11, wherein the edge element is provided with screening elements protruding beyond the upper edge of the outer casing.

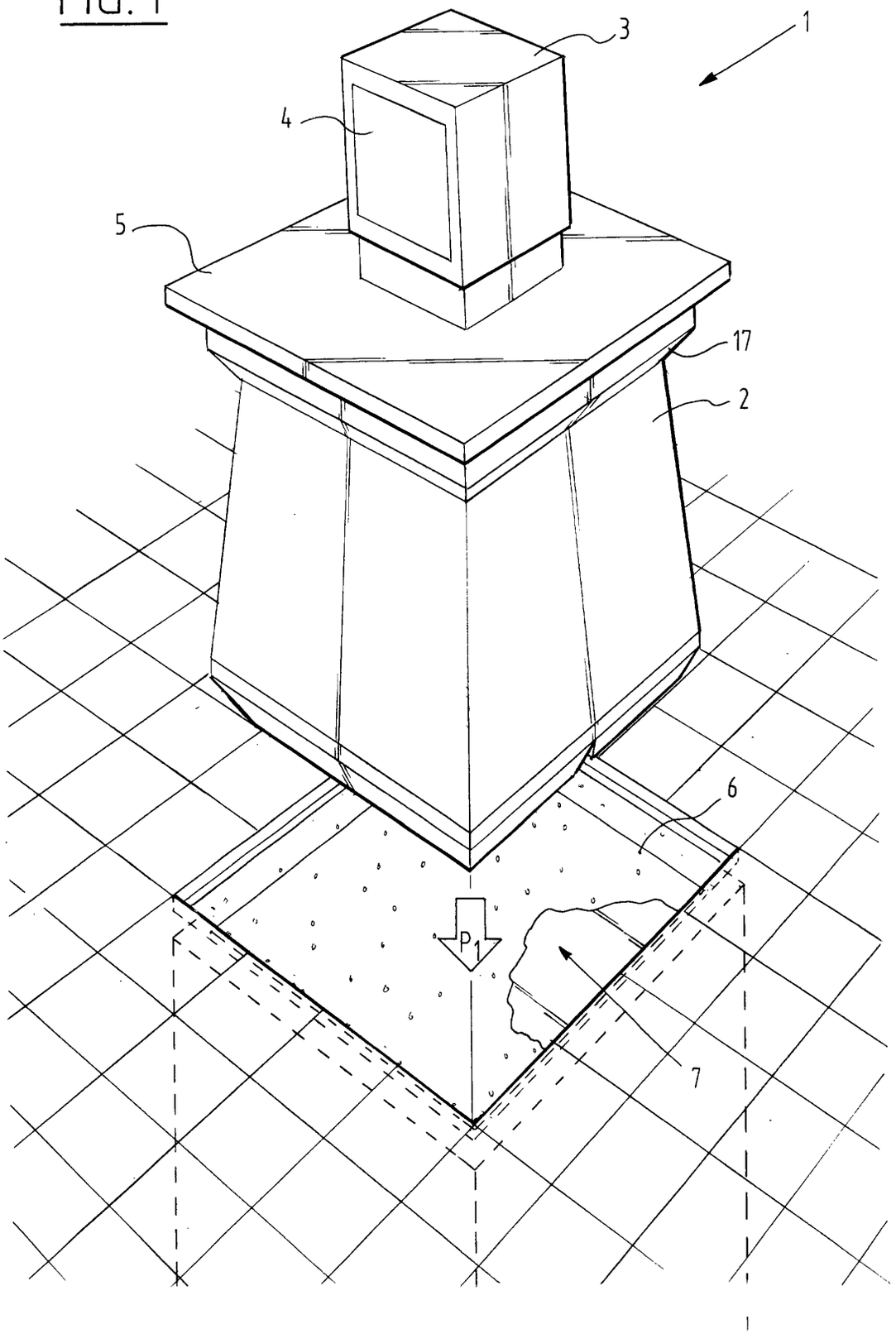
13. Device as claimed in claim 12, wherein the screening elements comprise sleeves depending from the edge element.

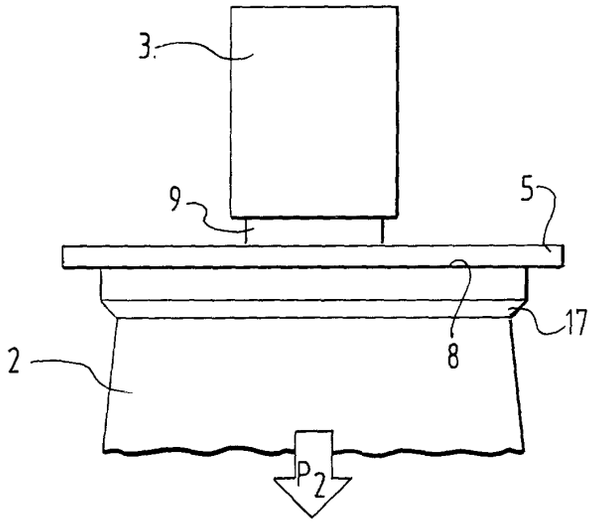
14. Device as claimed in any of the claims 2-13, wherein the edge element is provided with adjusting means for adapting the edge element to the thickness of the cover plate.

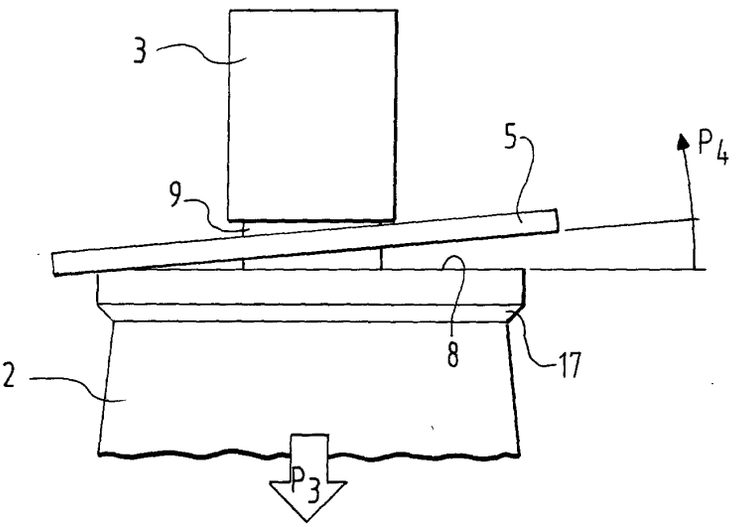
15. Edge element for application in a device as claimed in any of the claims 1-14.

16. Method for manufacturing a device as claimed in any of the claims 1-15.

FIG. 1







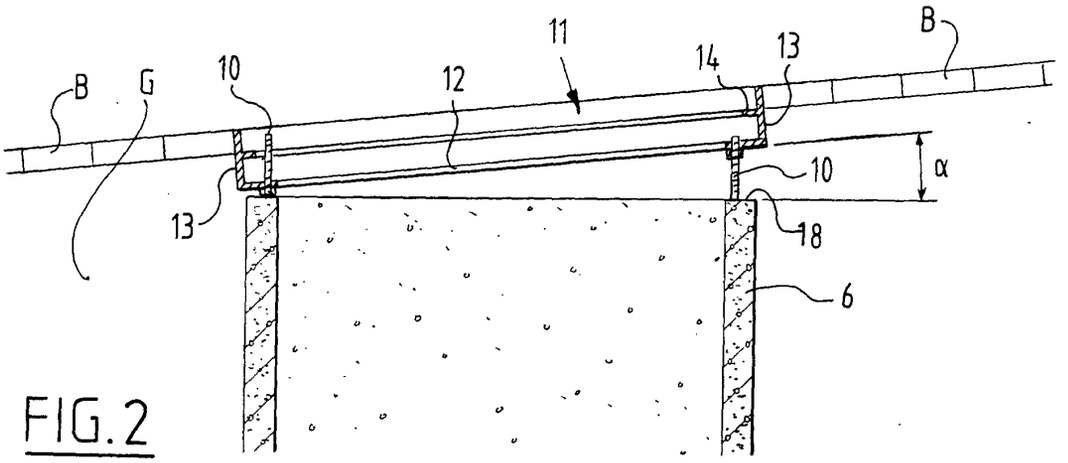


FIG.2

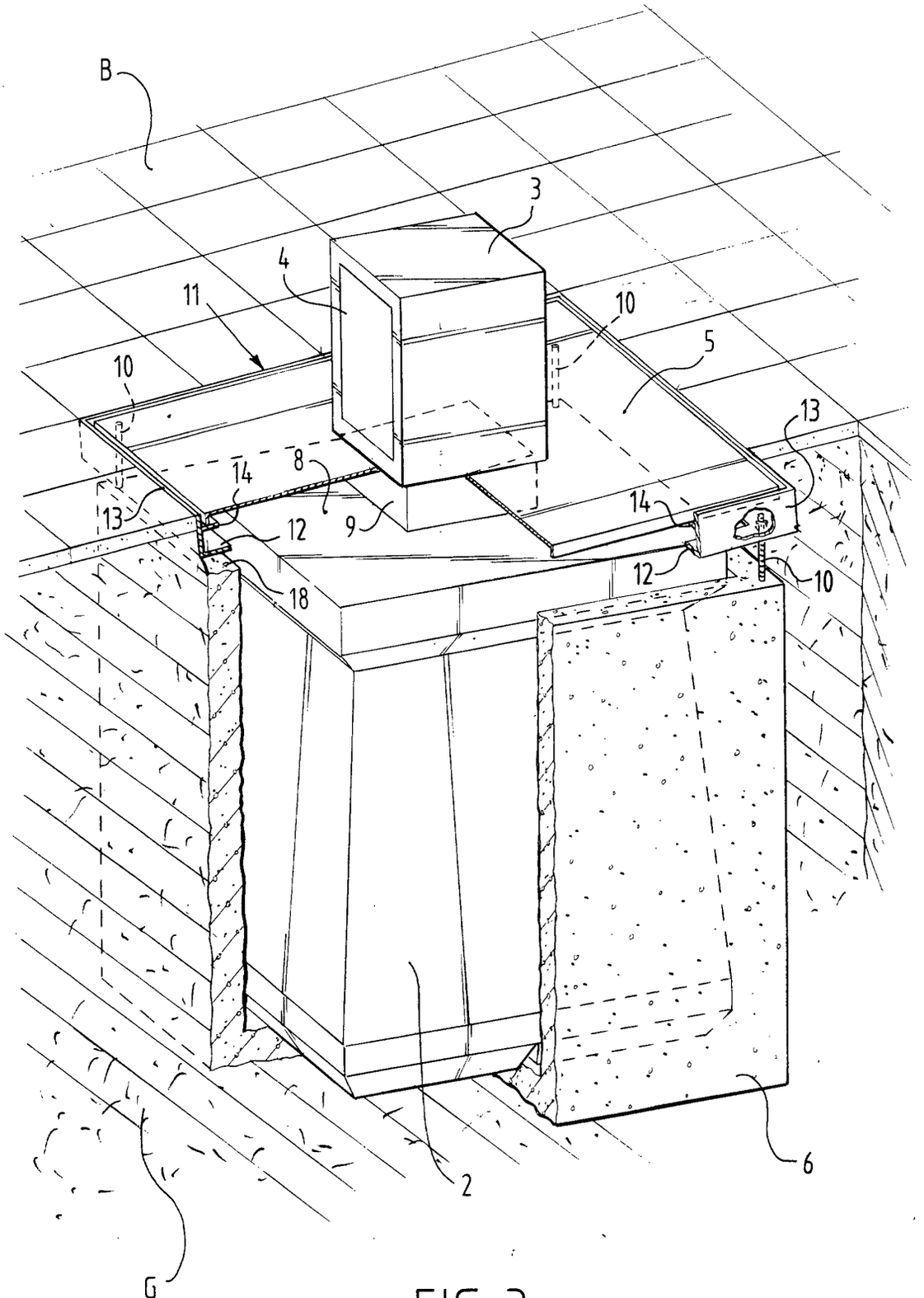


FIG. 3

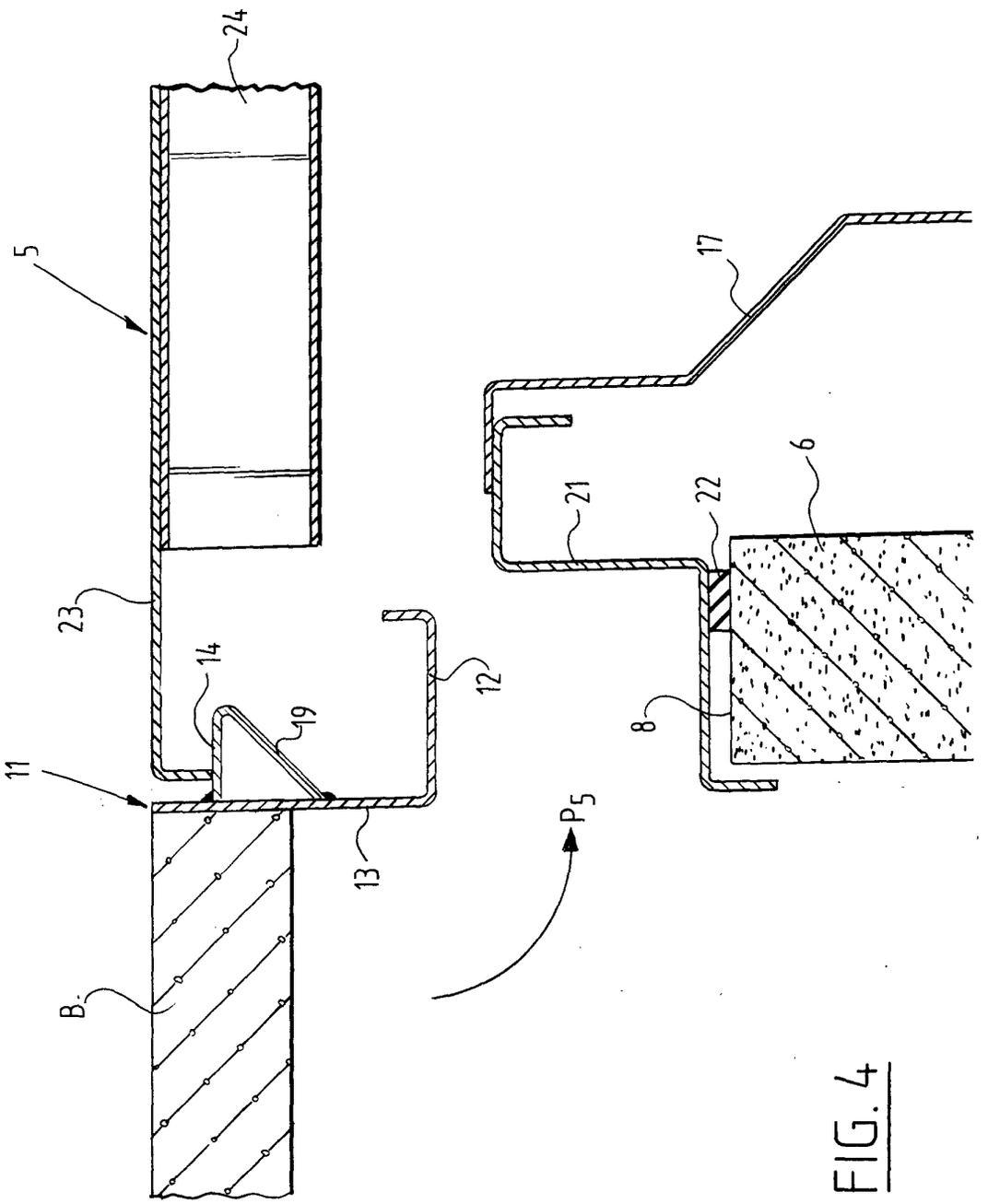


FIG. 4

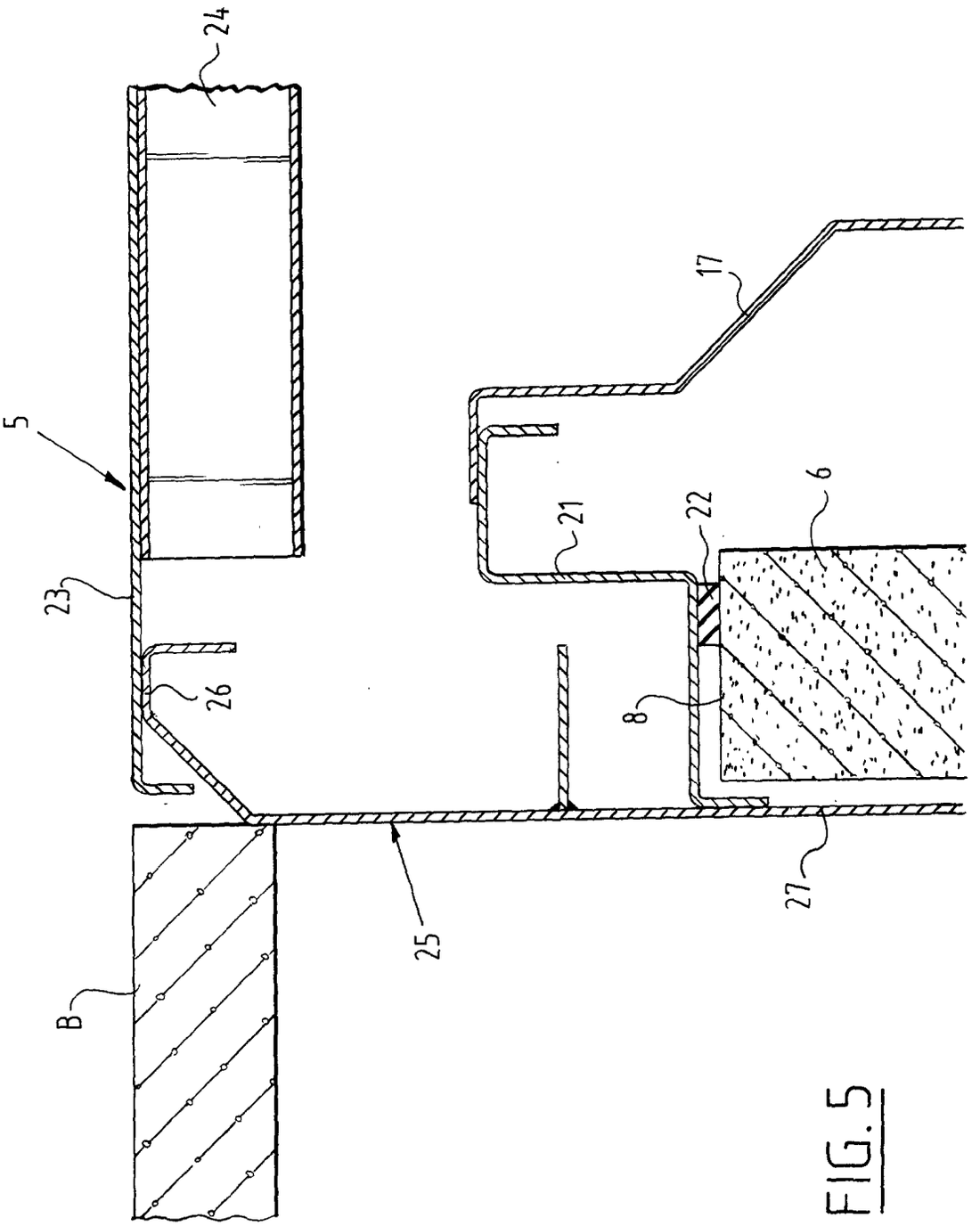


FIG. 5

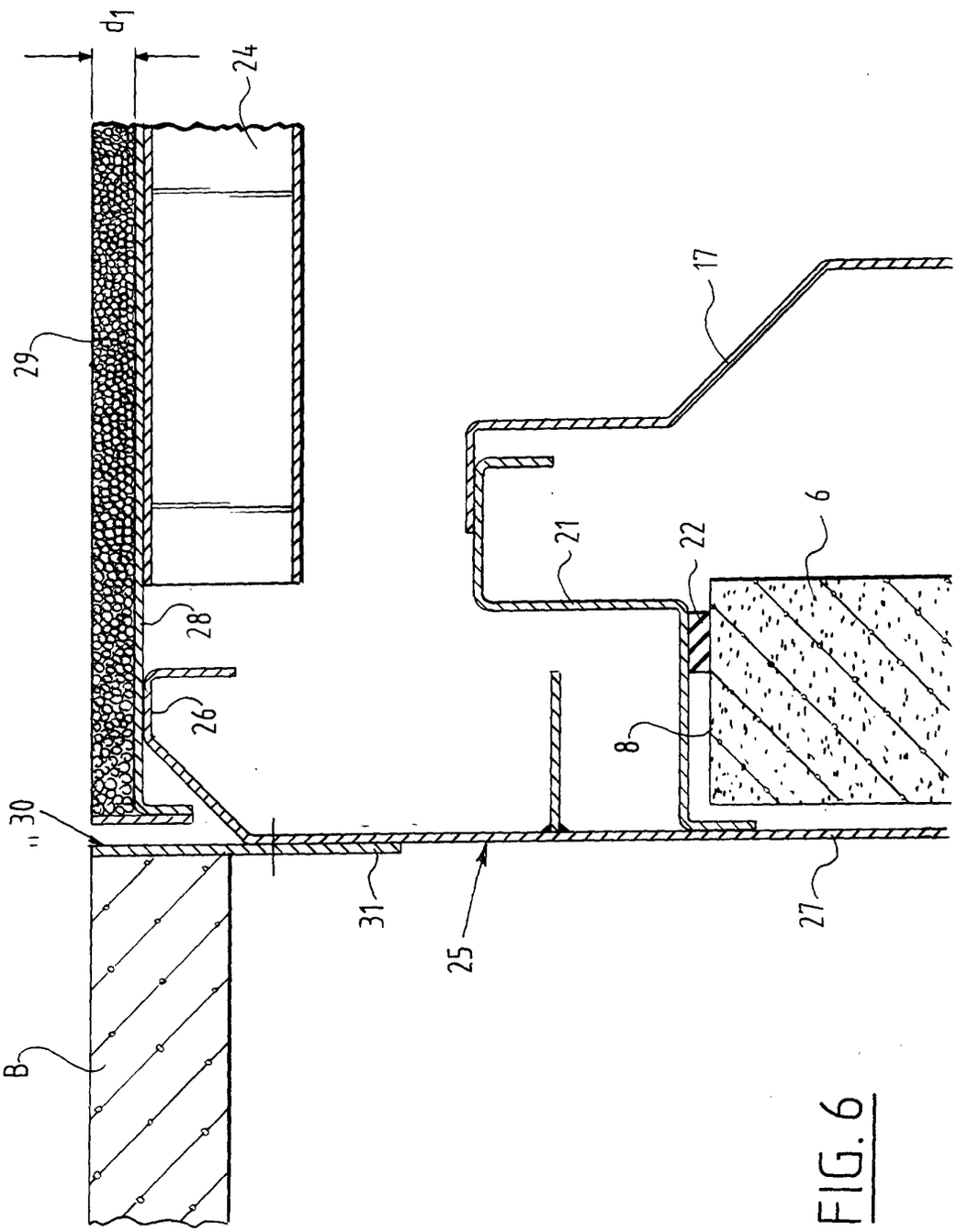


FIG. 6

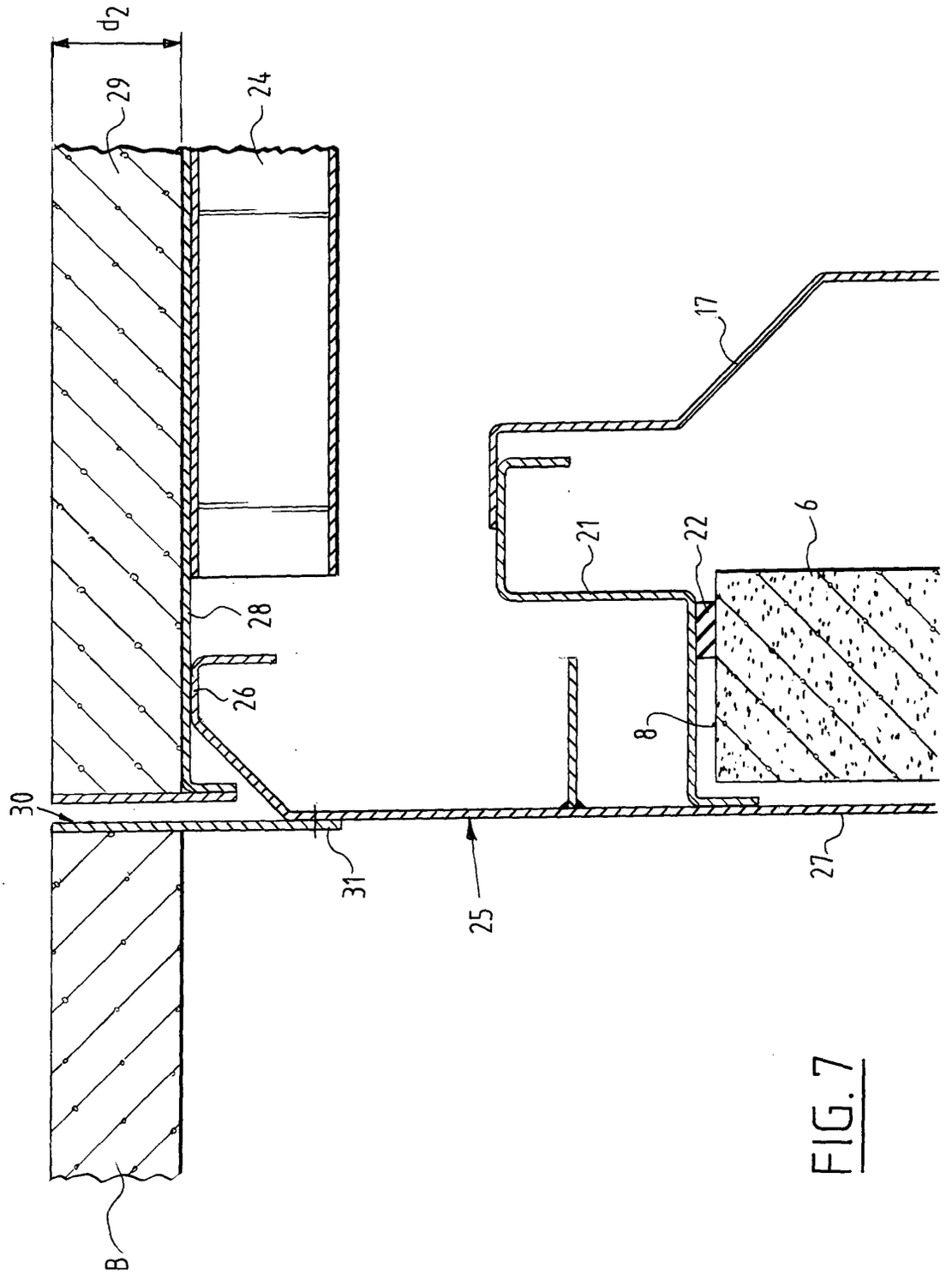


FIG. 7

European Patent Office

EUROPEAN SEARCH REPORT

Application Number
EP 01 20 2467

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.7)
X Y	EP 0 768 250 A (BAMMENS BV) 16 April 1997 (1997-04-16) * column 1, line 50 - column 2, line 26 * * figures 1,2 *	1,2,6,7, 15,16 8-11,14	B65F1/14 E02D29/14
Y	US 5 732 512 A (T. UENO ET AL.) 31 March 1998 (1998-03-31) * column 4, line 17 - line 41 * * column 5, line 55 - column 6, line 54 * * figures 1,2,6-8 *	8-11	
Y	GB 2 272 719 A (P. RUDD) 25 May 1994 (1994-05-25) * the whole document *	14	

TECHNICAL FIELDS SEARCHED (Int.Cl.7)
B65F E02D

The present search report has been drawn up for all claims

Place of search	Date of completion of the search	Examiner
THE HAGUE	5 October 2001	Smolders, R

CATEGORY OF CITED DOCUMENTS

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05-10-2001

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