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(54) Cesspit with lock and method for locking

(57) The present invention relates to a cesspit (1) for collecting and draining rainwater, comprising:

- at least one protruding edge (11) on the front side;
- a grate (13) for allowing through rainwater to the interior of the cesspit, comprising at least one protruding edge (21), wherein the grate is locked by at least one locking pin (22) which is arranged between a protruding edge of the frame and a protruding edge of the grate.

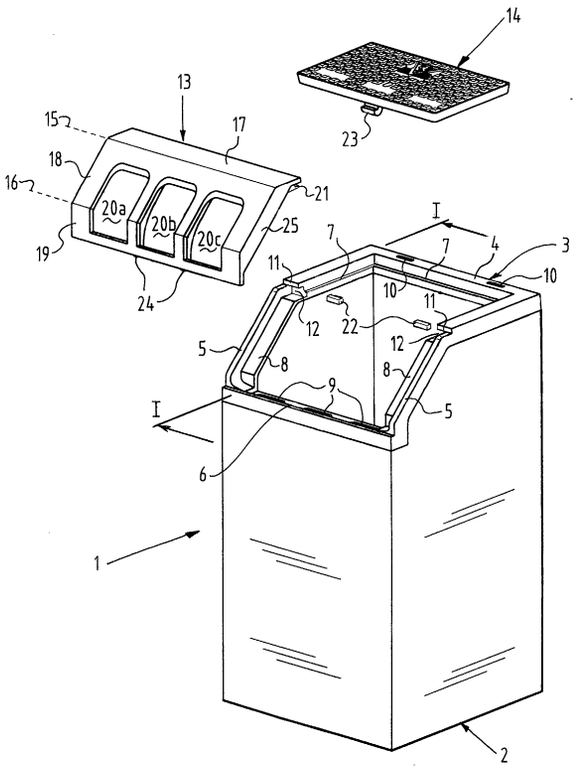

FIG. 1

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Description

[0001] The present invention relates to a cesspit for draining rainwater from a street level to a sewage system.

[0002] Such a cesspit is often covered with a grate to allow through rainwater to an interior of the cesspit and to prevent the entry of contaminants. In known embodiments, such as the Netherlands patent 1005666 of applicant, the grate is connected to a frame of the cesspit by a pin-hole connection. For such a connection a hole must be drilled through the cast iron of grate and frame which is difficult to work, and this is labour-intensive. The connection can herein only be released by breaking the pin with force, wherein the frame can also be damaged. When the cesspit is used on a public road, a very good connection is herein required between grate and frame, for instance since the grate can otherwise be removed by vandals.

[0003] The present invention attempts to obviate the above stated problems and provides a cesspit for collecting and draining rainwater, comprising:

- at least one protruding edge on the front side;
- a grate for allowing through rainwater to the interior of the cesspit, comprising at least one protruding edge, wherein the grate is locked by at least one locking pin which is arranged clamped between a protruding edge of the frame and a protruding edge of the grate.

[0004] In a first preferred embodiment the locking pin is of plastic.

[0005] In a further preferred embodiment the cesspit comprises a container, provided with a base, a peripheral wall and a drainage part, a frame which is arranged on the upper part of the container and which comprises at least one protruding edge, and a cover for at least partly closing the upper side of the container.

[0006] In a further preferred embodiment the container is of concrete and the frame is at least partly embedded into the concrete of the container.

[0007] In a further preferred embodiment the frame, the cover and the grate are of cast iron and/or plastic.

[0008] In a further preferred embodiment the locking can be released by removing at least one locking pin.

[0009] According to a second aspect of the invention, the present invention provides an assembly of a frame of a container for arranging in the ground for collecting and draining rainwater, and a cover for placing on the frame for at least partly closing an upper side of the container, and a grate for placing on the frame to allow rainwater through to the interior of the container, wherein the frame is provided with at least one cavity and the grate is provided with at least one protruding edge, wherein the grate is locked in the frame by at least one locking pin which is arranged clamped between the protruding edge of the grate and a wall of the cavity.

[0010] According to a further aspect, the present invention provides a method for securing and/or locking a grate in a cesspit by arranging at least one locking pin between a protruding edge of the cesspit and a protruding edge of the grate.

[0011] Further advantages and features will be elucidated with reference to the annexed figures, in which:

- Fig. 1 shows a perspective view of a first preferred embodiment of a cesspit according to the present invention;
- Fig. 2 shows a perspective front view of an upper part of the cesspit of fig. 1;
- Fig. 3 shows a perspective rear view of the part of fig. 2;
- Fig. 4 shows a cross-section in side view of an upper part of the cesspit of fig. 1 in a first situation of use;
- Fig. 5 shows a cross-section in side view of the upper part of a cesspit according to fig. 1 in a second situation of use;
- Fig. 6 shows a cross-section in side view of an upper part of a cesspit according to fig. 1 in a third situation of use;
- Fig. 7 shows a cross-section in side view of the upper part of the cesspit with a variant of the grate;
- Fig. 8 shows a cross-section in side view of the upper part of the cesspit with a variant of the grate;
- Fig. 9 shows a cross-section in side view of the upper part of the cesspit with a variant of the grate;
- Fig. 10 shows a cross-section in side view of the upper part of the cesspit with a variant of the grate.

[0012] Cesspit 1 shown in fig. 1 is substantially known from the Netherlands patent no. 1005666 and comprises a concrete container 2 provided with a base and four side walls, wherein in one of the side walls is arranged a connection (not further shown) for draining the rainwater collected in cesspit 1. On the upper edges of the side walls of container 2 is arranged a cast iron frame 3 which is anchored in the concrete of container 2 in a manner not further shown. The thickness of the frame is roughly the same as the thickness of the side walls of container 2. Frame 3 comprises an upper U-shaped part 4, two parts 5 running obliquely downward and a horizontal part 6 situated on the front side or street side. The U-shaped part 4 and the parts 5 running obliquely downward are provided on the inner side thereof with support edges 7 and 8 respectively. Arranged in the horizontal part 6 and in the U-shaped part 4 are slots 9 respectively 10. The U-shaped part 4 is further provided with two protruding edges 11, whereby cavities 12 are created between these protruding edges 11 and support edges 8.

[0013] Fig. 1 also shows the separate grate 13 which, together with the separate cover 14, must close the upper opening of cesspit 1. Grate 13 has a form with two bends, with bends at the position of bend lines 15 and 16 over angles 1α and 2α respectively. This form can

however differ per model depending on the kerb profile to be chosen.

[0014] The grate now has a horizontal upper edge zone 17, an obliquely running central zone 18 and a vertical lower edge zone 19. In the central zone 18 and in the lower edge zone 19 are arranged three passages 20a, 20b and 20c to allow through rainwater for draining from the street level to the interior of cesspit 1. This number can however differ per model, thus resulting in 20a, 20b, 20c, 20d, 20e and so on. Situated on the underside of the lower edge zone 19 are two protruding cams 24 which fit against the horizontal part 6 of frame 3. A protruding edge 21 is arranged on a rear side of the upper edge zone 17. If grate 13 is now arranged on frame 3, the edge 21 drops into cavities 12, whereafter grate 13 is locked in frame 3 by arranging a locking pin 22 in one or both cavities 12. After arranging of grate 13, cover 14 is arranged which is for instance of cast iron or plastic, wherein the insertion lip 23 falls against the underside of the protruding edge 21 of the grate so that cover 14 is there prevented from being raised. The side edges and the rear edge of cover 14 rest on support edge 7. If the grate and the cover are arranged on the frame, the upper surfaces of the upper edge zone 17 and of cover 14 lie in one plane with the upper surface of the U-shaped frame section 4. Side surfaces 25 then lie in one plane with and flush with the obliquely running parts 5 of the frame.

[0015] The width of grate 13 is roughly equal to the width of the front side of container 2. If cesspit 1 is now placed in a kerb in a situation of use, the upper part of the cesspit will lie flush with the paving-stones and the grate will lie flush with kerbstones. Subject to the form of the kerbstones with for instance two bends, the form of grate 13 can be chosen freely such that it corresponds with the form of the kerbstones in cross-section. That is, the side surface 25 lies flush with the side surface of the kerbstone.

[0016] Figures 2 and 3 show grate 13 in a second embodiment, wherein it is once again possible to distinguish the bend lines 15 and 16 and the horizontal upper edge zone 17, the obliquely running central zone 18 and a vertical lower edge zone 19. A rear view (fig. 3) clearly shows the protruding edge 21, which has a wider form than in known grates. Also shown are the supports 26 which provide the grate with the necessary strength. Reinforcing elements 27 (fig. 3) provide fixation by means of clamping the grate between edges 5 of frame 3 in the travel direction of traffic.

[0017] In a side view (fig. 4), a cross-section along line I-I in fig. 1, grate 13 with protrusions 24 is arranged in the lowest horizontal part 6 of frame 3. With a rotating movement the edge 21 is then carried below the protruding edge 11 into cavities 12 (fig. 5). In a preferred embodiment of the present invention the grate is locked fixedly in frame 3 by clamped arrangement of a locking pin 22 in cavities 12 between edges 21 and 11. The locking pin is for instance of plastic, but can likewise be manufactured from a metal. A plastic locking pin has the advantage that it can be made exactly fitting by driving it with force between edges 11 and 21. Such a locking pin has a length for instance in the order of 20-30 mm and a width and height in the order of 10 mm. A grate locked in such a manner in frame 3 can withstand a great force thereon, for instance up to 5000 N, so that this grate is well protected against undesired removal thereof when used on a public highway.

[0018] The locking of such a grate can be released by removing locking pin 22. This is possible for instance by arranging a screw therein, by which the locking pin can be pulled out of cavities 12. In such a manner the grate 13 can be replaced by for instance a grate of different form, as may be required when the form of the kerbstones is changed. Fig. 7-10 further show four possible variants of grates arranged on a cesspit according to the present invention.

[0019] In the above described preferred embodiment of a cesspit according to the present invention, the required labour is reduced since no holes have to be drilled through the frame and the grate for the purpose of arranging locking pins. A secure locking is obtained by arranging a locking pin between an edge of the grate and a protruding edge of the frame. Such a locking can be released by removing the locking pin, so that grates can be replaced easily and quickly, for instance by grates having a different form.

[0020] The present invention is not limited to the above described preferred embodiment thereof; the rights sought are defined by the following claims, within the scope of which many modifications can be envisaged.

Claims

1. Cesspit for collecting and draining rainwater, comprising:

   - at least one protruding edge on the front side;
   - a grate for allowing through rainwater to the interior of the cesspit, comprising at least one protruding edge, wherein the grate is locked by at least one locking pin which is arranged clamped between a protruding edge of the frame and a protruding edge of the grate.

2. Cesspit as claimed in claim 1, wherein the locking pin is of plastic.

3. Cesspit as claimed in claim 1 or 2, further comprising:

   - a container, provided with a base, peripheral walls and a drainage part;
   - a frame which is arranged on the upper part of the container and which comprises at least one

protruding edge; and

- a cover for at least partly closing the upper side of the container.

4. Cesspit as claimed in claim 1, 2 or 3, wherein the container is of concrete and the frame is at least partly embedded into the concrete of the container.

5. Cesspit as claimed in any of the claims 1-4, wherein the frame, the cover and the grate are of cast iron and/or plastic.

6. Cesspit as claimed in any of the claims 1-5, wherein the locking can be released by removing at least one locking pin.

7. Assembly of a frame, a cover for placing on the frame for at least partly closing an upper side of the assembly, and a grate for placing on the frame, wherein the frame is provided with at least one cavity and the grate is provided with at least one protruding edge, wherein the grate is locked in the frame by at least one locking pin which is clamped between the protruding edge of the grate and a wall of the cavity.

8. Assembly as claimed in claim 7, wherein the locking of the grate can be released by removing at least one locking pin.

9. Assembly as claimed in claim 7 or 8, wherein the locking pin is of plastic.

10. Assembly as claimed in any of the claims 7, 8 or 9, wherein the frame, the cover and the grate are of cast iron.

11. Method for securing and/or locking a grate in a cesspit by clampingly arranging at least one locking pin between a protruding edge of the cesspit and a protruding edge of the grate.

12. Method as claimed in claim 11, wherein the locking pin is of plastic.

13. Method for locking a grate in a cesspit substantially as claimed in any of the claims 1-6.

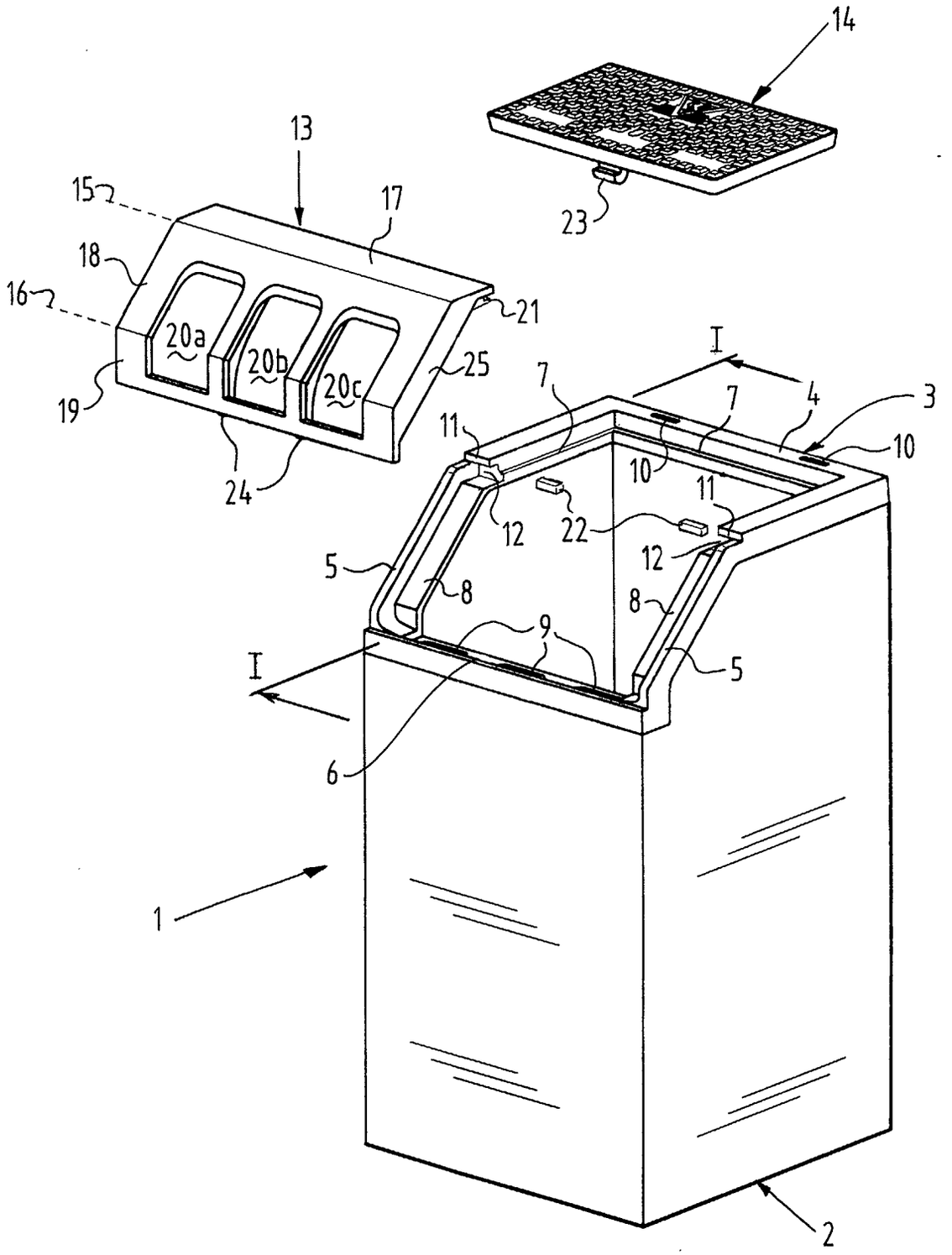

FIG. 1

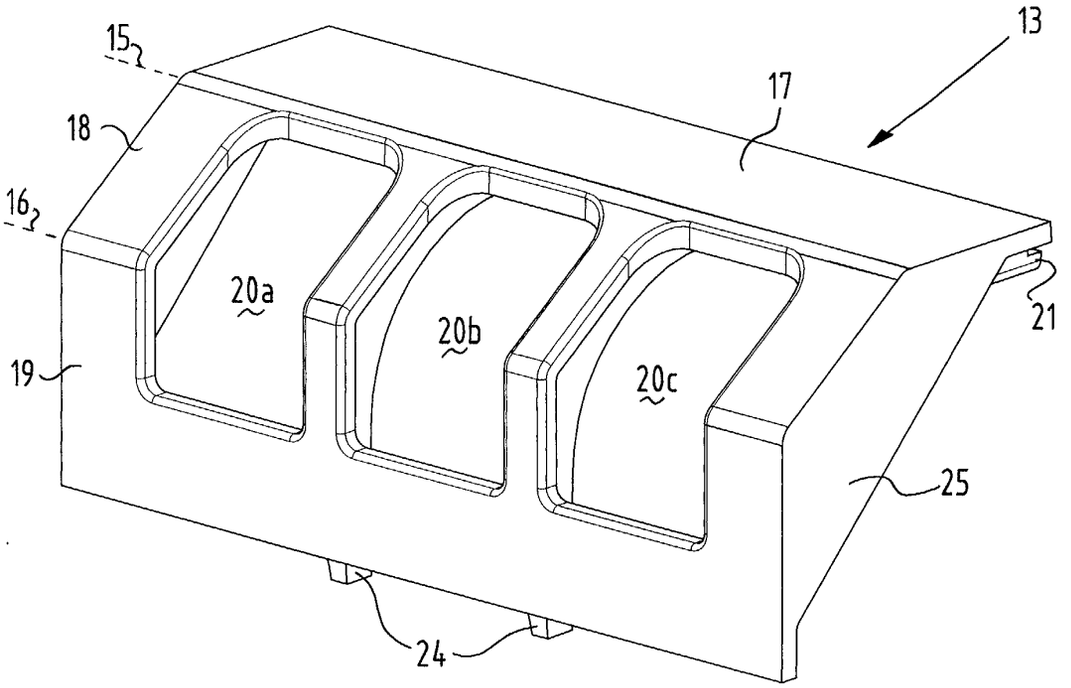

FIG. 2

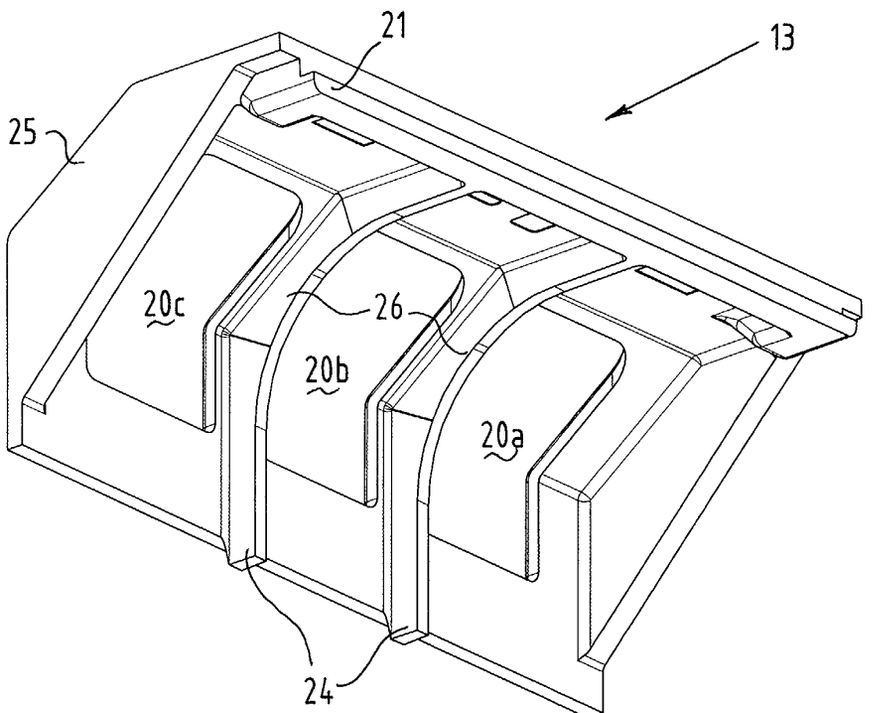

FIG. 3

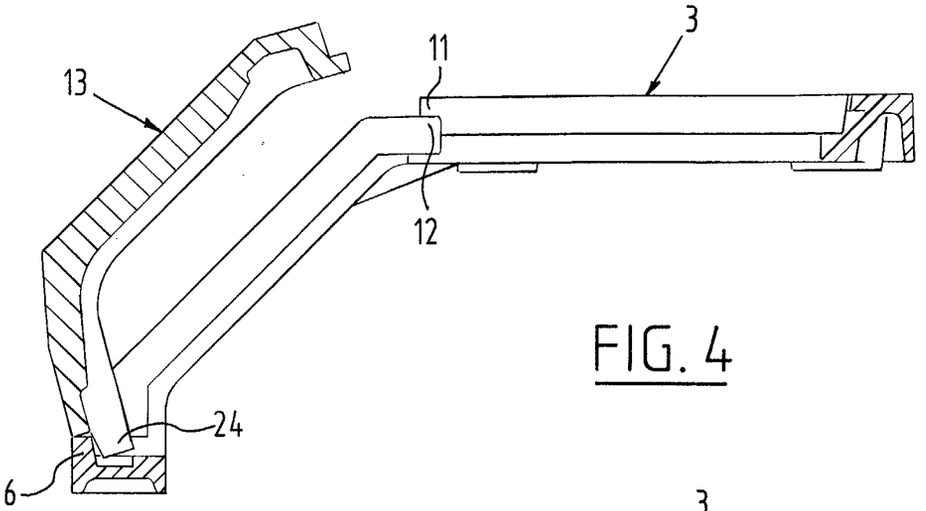

FIG. 4

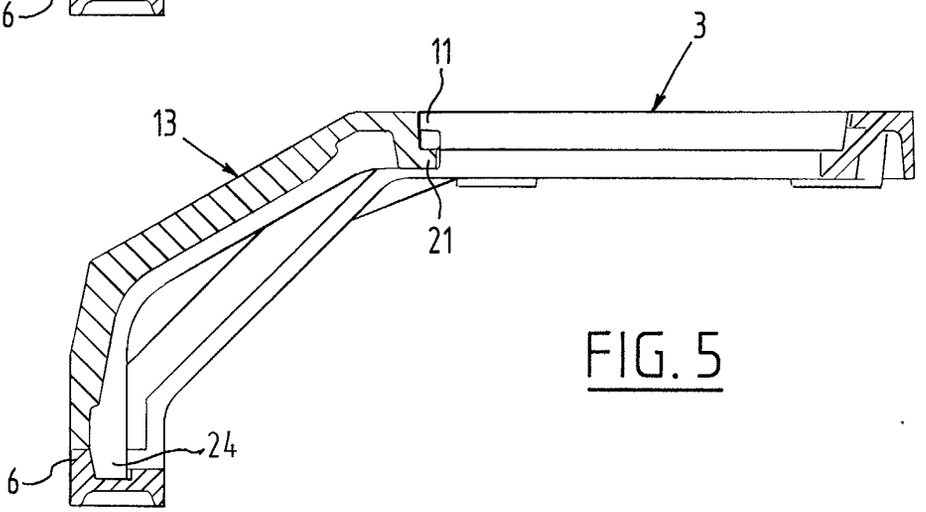

FIG. 5

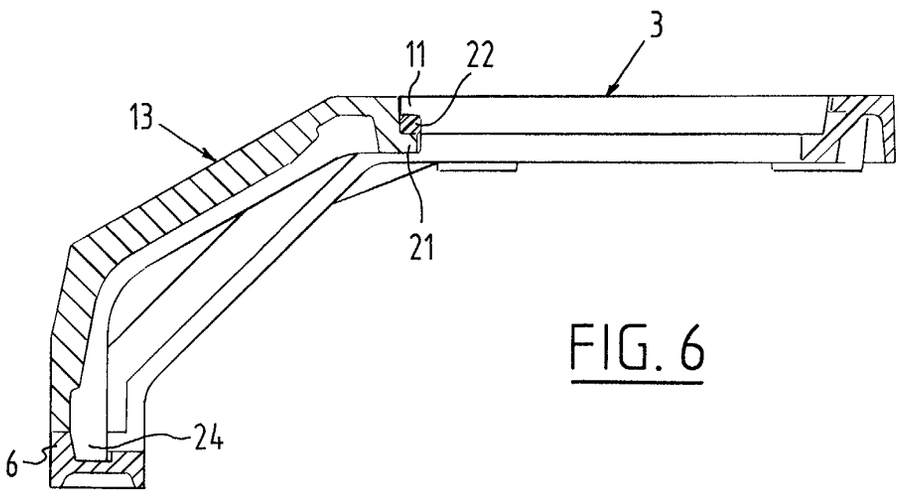

FIG. 6

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EUROPEAN SEARCH REPORT

Application Number
EP 02 07 9782

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)
Y,D	NL 1 005 666 C (TBS SOEST B.V.) 29 September 1998 (1998-09-29) * page 6, line 33 - page 9, line 26; figures *	1,3-5,7, 10,11,13	E03F5/046
Y	GB 1 230 448 A (BRICKHOUSE FOUNDRY LIMITED) 5 May 1971 (1971-05-05) * page 1, line 81 - page 2, line 20; figure *	1,3-5,7, 10,11,13	

TECHNICAL FIELDS SEARCHED (Int.Cl.7)

E03F

The present search report has been drawn up for all claims

Place of search	Date of completion of the search	Examiner
THE HAGUE	30 January 2003	Clasing, M

CATEGORY OF CITED DOCUMENTS

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