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EUROPEAN PATENT APPLICATION

⑳ Application number: **80200726.0**

⑤① Int. Cl.³: **E 02 D 29/14**

㉔ Date of filing: **29.07.80**

③① Priority: **30.07.79 NL 7905854**

④③ Date of publication of application:
04.02.81 Bulletin 81/5

⑥④ Designated Contracting States:
AT BE CH DE FR GB IT LI LU NL SE

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⑤④ **A cover.**

⑤⑦ The cap (1,20) grid cap or the cap portions of a cover like an inspection or water discharge well in the surface of a road or foot-path comprises at least one such slot-like opening (18, 31) extending from its periphery that when applying an external force to a peripheral portion of the one cap portion, a resilient movement from the one cap portion with respect to the other one occurs in the plane of the cover.

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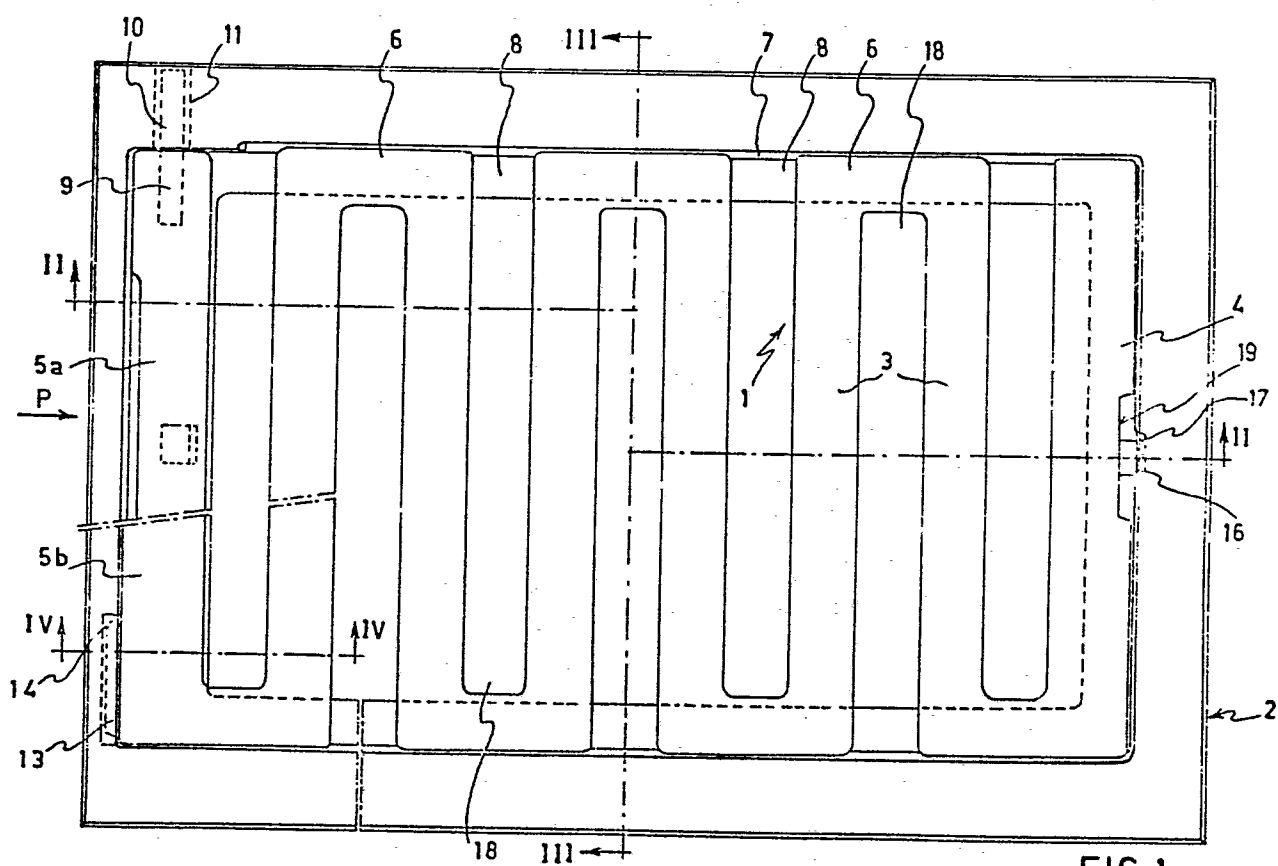


FIG.1

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A COVER.

The invention relates to a cover comprising a cap and a rim. Such a cover for instance in an inspection or water discharge well, is usually applied in the surface of a road or footpath.

5 The grid cap of the cover can, as usually at one side, be provided with pivots or one or various stay cams, whereas the cap of the cover, at one side and the peripheral portion respectively, can be provided with one or various stay cams, in order to swing the grid cap or the cap open by means of a simple
10 tool at the opposite side, or to remove same, which is necessary for cleaning the well with regular intervals.

 It appeared in practice, that an unauthorized person can simply remove such a grid cap or cap from the rim, which involves accidents for the passing traffic and additional costs
15 for the replacement of said components.

 In order to remove said objection of the known cover of the above-said type, the cap according to the invention comprises at least one slot-like opening extending from the periphery such that when applying an external force to a peripheral portion
20 of the one cap portion, a resilient movement of the one cap portion with respect to the other one occurs in the plane of the cover.

 By means of an adapted tool to be arranged in the space between the rim and the grid cap or the cap, it is possible

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with a locking cam positioned between said cap portions according to a further characteristic of the invention, at the opposite side of the cover, where the pivots or stay cams are provided at the grid cap or the cap to avoid that unauthorized persons can open or
5 completely remove said grid cap or the cap.

In an embodiment of the cover with a grid cap and rim the material is missing at one side of the grid cap at one or various ends of the slots.

In a further embodiment of the cover with a
10 grid cap and rim, according to the invention, the material is missing at two or various slots alternately at the end at one side or at the end at the opposite side of the grid.

In an other embodiment of the cover with a cap and a rim, according to the invention the material of the cap
15 is locally missing, seen in one direction extending from one side up to in the vicinity of the other side, or from the periphery up to in the vicinity of the periphery, under the formation of one or various slots.

In the above-said embodiments the slot or
20 slots obtained by the local failure of material, enables or enable such a resilient movement in the plane of the cap or grid cap and rim, between the cap or grid cap portions perpendicularly to the slot-like opening or openings, that in a further embodiment of the cover according to the invention, in which the grid cap or the
25 cap, at the side facing away from the stay cam or stay cams, or pivot shafts, is provided with a safety or locking cam or cams engaging beneath the adjacent side of the rim and with a locking recess. The safety or locking cam or cams can be released for the earlier mentioned cleaning purposes.

30 Opening or removing the grid cap or the cap by unauthorized persons without above-said tool is practically impossible.

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In order to enable above-said resilient movements of the grid cap or the cap portion, and to counteract weakening of the grid cap or the cap, as the result of the local failure of material, in a cover according to the invention, the grid cap or the cap consists
5 of a suitable material, as for instance cast iron with nodular graphite or steel. Both the materials provide the necessary resilience to the cap or the grid cap portions for releasing the safety or locking cam.

The invention will be further elucidated on
10 the basis of some embodiments of the cover shown in the drawing.

Fig. 1 is a plan view of the inlet grid as applied in the surface of roads.

Fig. 2 is a cross section over the dotted line II-II in fig. 1.

15 Fig. 3 is a cross section over the line III-III in fig. 1.

Fig. 4 is a partial cross section of the line IV-IV in fig. 1.

Fig. 5 is a view according to the arrow P
20 in fig. 1.

Fig. 6 is a plan view of a well cap, as applied in footpaths, with rectangular rim and locking cam according to the invention.

Fig. 7 is a cross section of the line
25 VII-VII in fig. 6 and

the fig. 8-10 give a plan view and cross sections respectively according to the lines IX-IX and X-X of a cap with round configuration.

According to the fig. 1-5 a cover according
30 to the invention is shown, provided with an inlet grid, generally indicated with 1 and a rim, generally indicated with 2, of rectangular embodiment, for instance for a discharge well to be

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mounted at the side of the road.

The grid 1 comprises a number of equal grid bars 3, with substantially rectangular cross section extending downwardly in flange shape increasing to the centre (vide fig. 3), whereas both the outermost grid bars 4 (vide fig. 2) and 5a, 5b respectively (vide fig. 1, 2 and 4) are somewhat different, in relation to the support thereof.

The grid bars usually rest at their ends with a frame 6 interconnecting said bars (vide fig. 2 and 3) on the support face 8 extending inwardly from the enclosure face 7 (vide fig. 2-4) of the rim 2.

The grid bar 4 at the one end of the grid (vide fig. 2) is substantially beam-like and supports over the complete length thereof on the support face, at this side of the rim 2. For clearness' sake the grid 1 is represented in the same figure of the drawing, with two various embodiments.

The grid 1, in the one embodiment, can pivotably be secured at the other end around a horizontal shaft 9 (vide fig. 1, 2, 5) to the rim 2, by means of two shaft pins 10 secured to the bar 5a of the grid end (one of which is shown), which are supported in such a broad bore 11 (vide fig. 1 and 5) of the rim, that the grid bar 5a, which is substantially beam-like at the central portion in cross section, with rounded lower side 12, with the ends thereof merging into the frame 6, can rest on the support face 8 of the rim 2. The grid 1 rests in the closed position at three sides thereof on the support face 8 of the rim.

The grid can also removably be embodied, in which case the grid bar 5b at said end of the grid 1 is provided with two laterally extending stay cams 13, only one of which being shown, which engage in a broad opposite recess 14 (vide also fig. 4) of the rim 2. The grid bar 5b can advantageously be beam-like over the entire length in cross section, with flat lower side 15, with

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which the bar 5b is supported on the support face of said portion of the rim 2.

The grid is then circumferentially supported on the support face 8 of the rim.

5 According to the invention the bar 4 is, at the other end of the grid at the central portion, provided with a laterally extending locking or safety cam 16, engaging in a recess 17 of the rim 2, so that the grid can support on the support face 8 of the rim without being hindered.

10 In order to release the grid in both the embodiments thereof, from the rim 2 when the grid is provided with stay cams 13, or to open the grid, when it is provided with pivot pins 15, the grid according to the invention is resiliently embodied in the plane thereof, in the direction perpendicularly to the grid
15 bar 5a with the pivot pins 10 or perpendicularly to the grid bar 5b with the stay cams 13, seen in the plane of the grid and in the direction perpendicularly to the other end bar 5a or 5b.

 For that reason the material at the frame 6 of the grid 1 (vide especially fig. 1 and also fig. 2-4) is missing
20 at one end of the slots 18 between the adjacent grid bars 3 at the central portion, and between the one end grid bar 4 and the adjacent grid bar 3, and between the other end grid bar 5a or 5b and the adjacent grid bar 3, alternately, so that the grid has a "sinus"-like configuration in plan view and alternately the support face
25 of the rim between the ends of adjacent grid bars can be seen from above.

 Furthermore in the vicinity above the locking or safety cam 16 (vide fig. 1 and 2) a locking recess 19 is mounted at the end grid bar 4, so that by means of a locking bar (not shown)
30 provided with a fitting insertion end, to be mounted between the rim 2 and the locking recess 19, by swinging movement of the locking

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bar in the vertical longitudinal central face under reflecting action of the grid 1, the locking or safety cam 16 can simply be brought backwards and out of engagement with the locking recess 17, after which the grid can be rotated upwardly around the shaft pins 5 10, or the grid with the stay cams 13 rotating at the end grid bar 5b, can be swung upwardly in the recess 14 and can subsequently be removed. This may be necessary for cleaning purposes of the lower structure of the cover.

Removing or opening the grid by unauthorized persons is very difficult without applying the relative adapted insertion tool.

The invention furthermore comprises a second embodiment of the cover according to the invention shown in the fig. 6 and 7, which is provided with a cap, indicated with 20 and a rim, indicated with 21, for instance of a discharge well to be 15 mounted in the surface of a footpath, at the side of a road.

The cap 20 is supported with the face 23 extending inwardly from the enclosure face 22 at the peripheral flange edge 24 on the support face 26 extending inwardly from the enclosure face 25 of the rim 21. At the side 27 of the rim 21 20 facing the road, where the generally indicated inlet 28 is provided, the cap 20 is usually provided with two stay cams 29, engaging beneath a cam 30 extending inwardly at said location from the support face 26 of the rim 21 at both sides.

25 According to the invention the material of the cap 20 is alternately missing from one cap side to the other one, extending up to in the vicinity of the peripheral edge 24 thereof (vide fig. 6), forming intersections 31, such that seen from above the cap has a "sinus"-like configuration, in which the support face 30 26 of the rim 21 can be seen each time alternately at opposite sides thereof, between adjacent cap strips 20a.

According to the invention furthermore at the

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centre of the side of the rim 21, opposite the side thereof with the cams 30 at the inwardly extending peripheral edge flange 32 of the rim 21, extending downwardly beneath the support face 26, a prolongation 33 is mounted, with a locking recess 34. At the
5 corresponding side of the cap 20, the peripheral edge 24 thereof is provided with a recess 35 (vide also fig. 6) and a downwardly extending locking or safety cam is mounted to the cap 20, which in the closure position of the cap 20 can engage in the recess 34 of above-said prolongation.

10 By means of a tool with fitting insertion end the safety cam 36 can be brought out of engagement with the locking recess 35 under spring action of the cap.

Because on the one hand cast iron with lamellar graphite is not sufficiently resilient and on the other
15 hand the local failure of material forms a weakening of the inlet grid 1, according to fig. 1, or the cap 20, according to fig. 6, for instance cast iron with nodular graphite or steel is applied for the grid or the cap.

Finally an embodiment of a cap of a cover
20 according to the invention is schematically shown in fig. 8, which cap has a round configuration seen in plan view and indicated with 20b, which, at two locations at the periphery, is provided with a stay cam 29a and a safety cam 16a, with locking recess 19a and a slot 31a.

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C L A I M S

1. A cover comprising a cap and a rim,
characterized in that the cap (1, 20) comprises at least one
slot-like opening (18, 31) extending from the periphery such that
when applying an external force to a peripheral portion of the one
5 cap portion, a resilient movement of the one cap portion with
respect to the other one occurs in the plane of the cover.

2. A cover according to claim 1, with a grid
cap as cover, characterized in that the material at the location
of the end of one or various slots is missing at one side of the
10 grid cap.

3. A cover according to claim 2,
characterized in that the material at the location of the ends of
two or various slots is alternately missing at the one or the other
slot end.

4. A cover according to claim 1, with a cap
as cover, characterized in that the material of the cap seen in one
direction is missing at one side with respect thereto and over a
portion of the periphery up to said periphery respectively, locally
under formation of one or various slots (18).

5. A cover according to claim 1, with a cap
as cover, characterized in that the material of the cap seen in one
direction, extending alternately from the one side up to in the
vicinity of the opposite side, is missing under the formation of
two or various slots.

6. A cover according to claim 2, with at one
side one or various stay cams or two pivot shafts, characterized
in that the grid cap at the side facing away from said side, at a
suitable location is provided with one or various safety cam(s)
(16) engaging beneath the adjacent side of the rim and with a
25 locking recess (17).

7. A cover according to claim 4, with at one
side one or various stay cams or pivot shafts and at the periphery

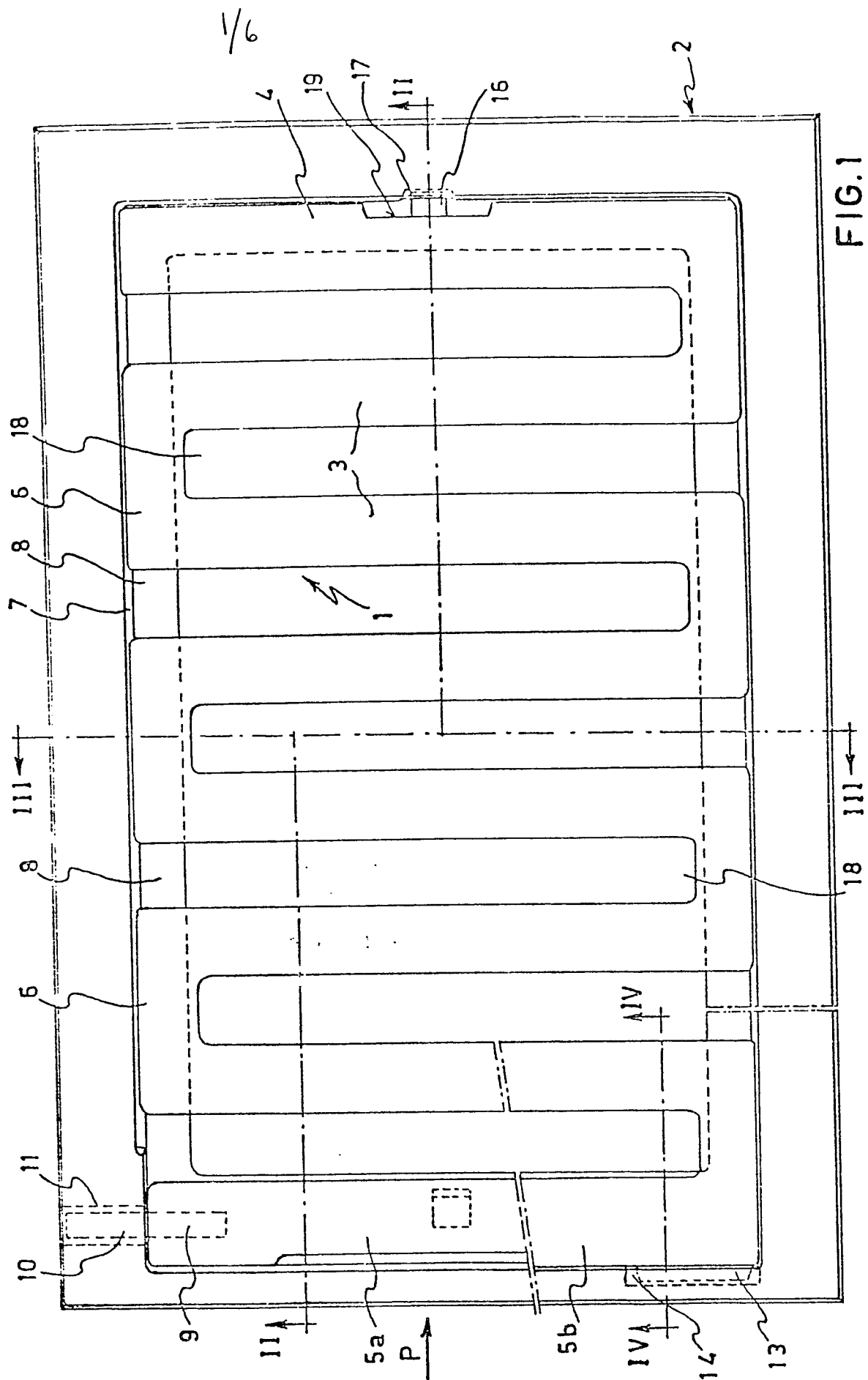
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one or more stay cams respectively, characterized in that the cap at the side facing away from said side and at the opposite peripheral portion respectively, at a suitable location is provided with one or more safety cams (36) engaging beneath the rim, and a
5 locking recess (34).

8. A cover according to one of the preceding claims 1-7, characterized in that the cap or grid cap consists of cast iron with nodular graphite or steel.

9. A cover as defined in the specification
10 and shown in the drawings.





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FIG. 2

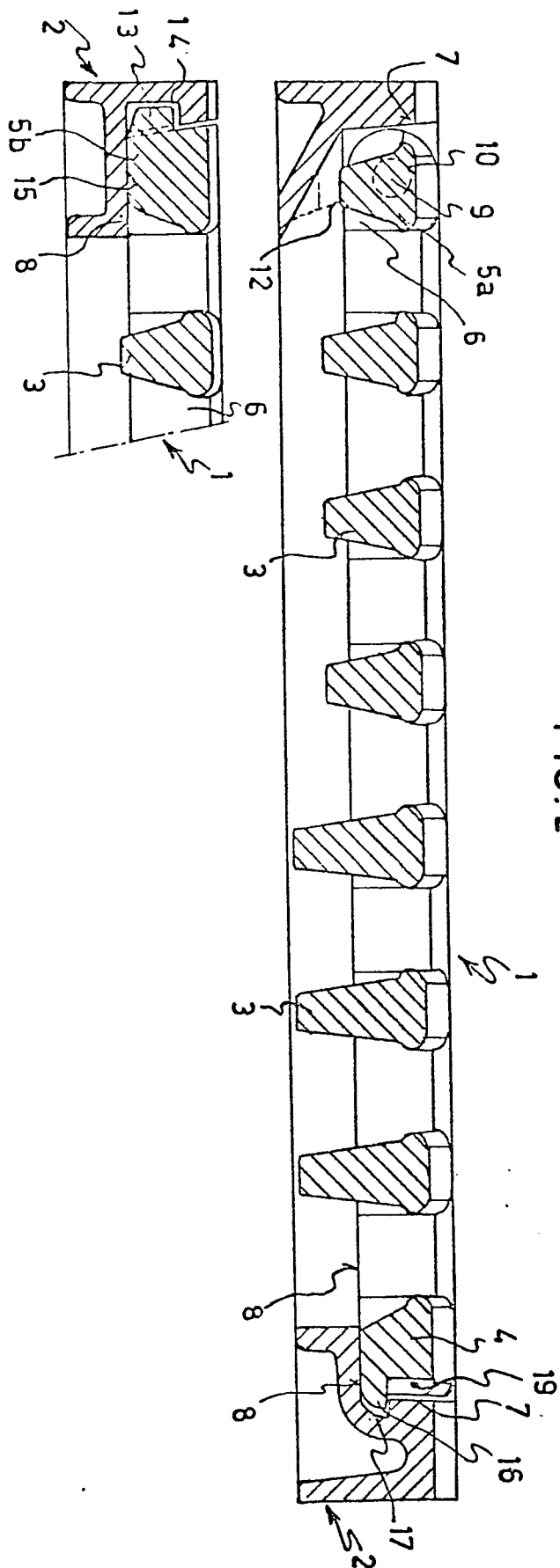


FIG. 4

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FIG. 3

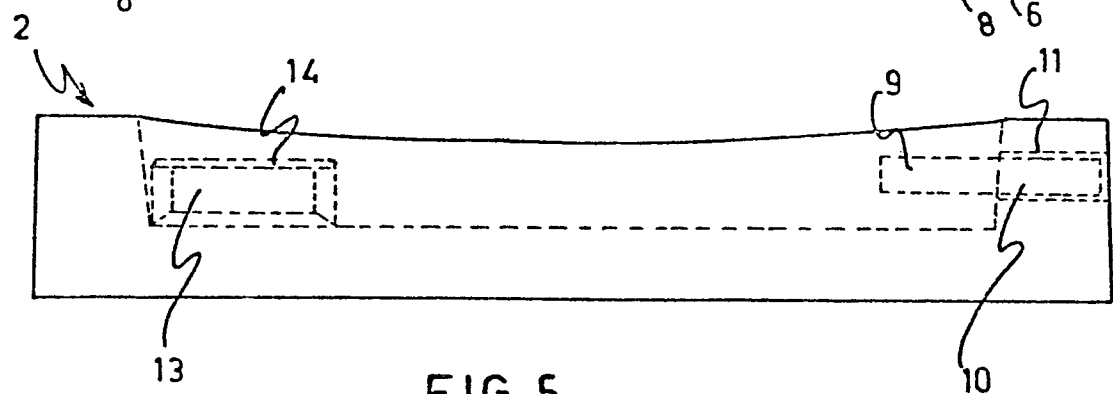
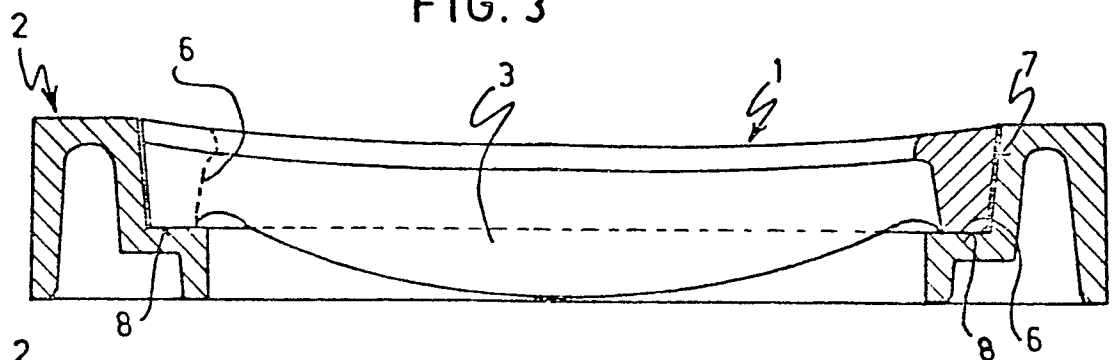


FIG. 5

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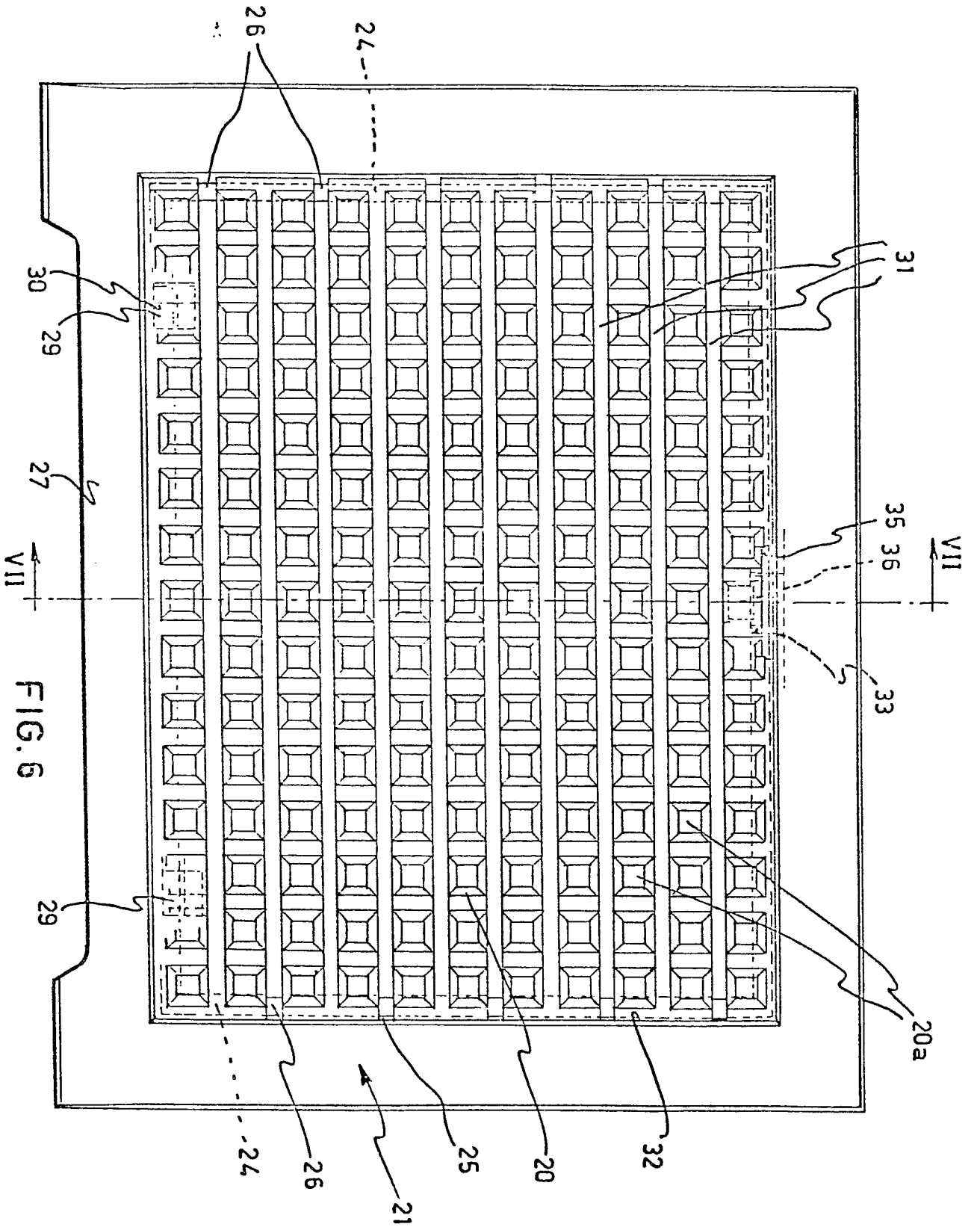
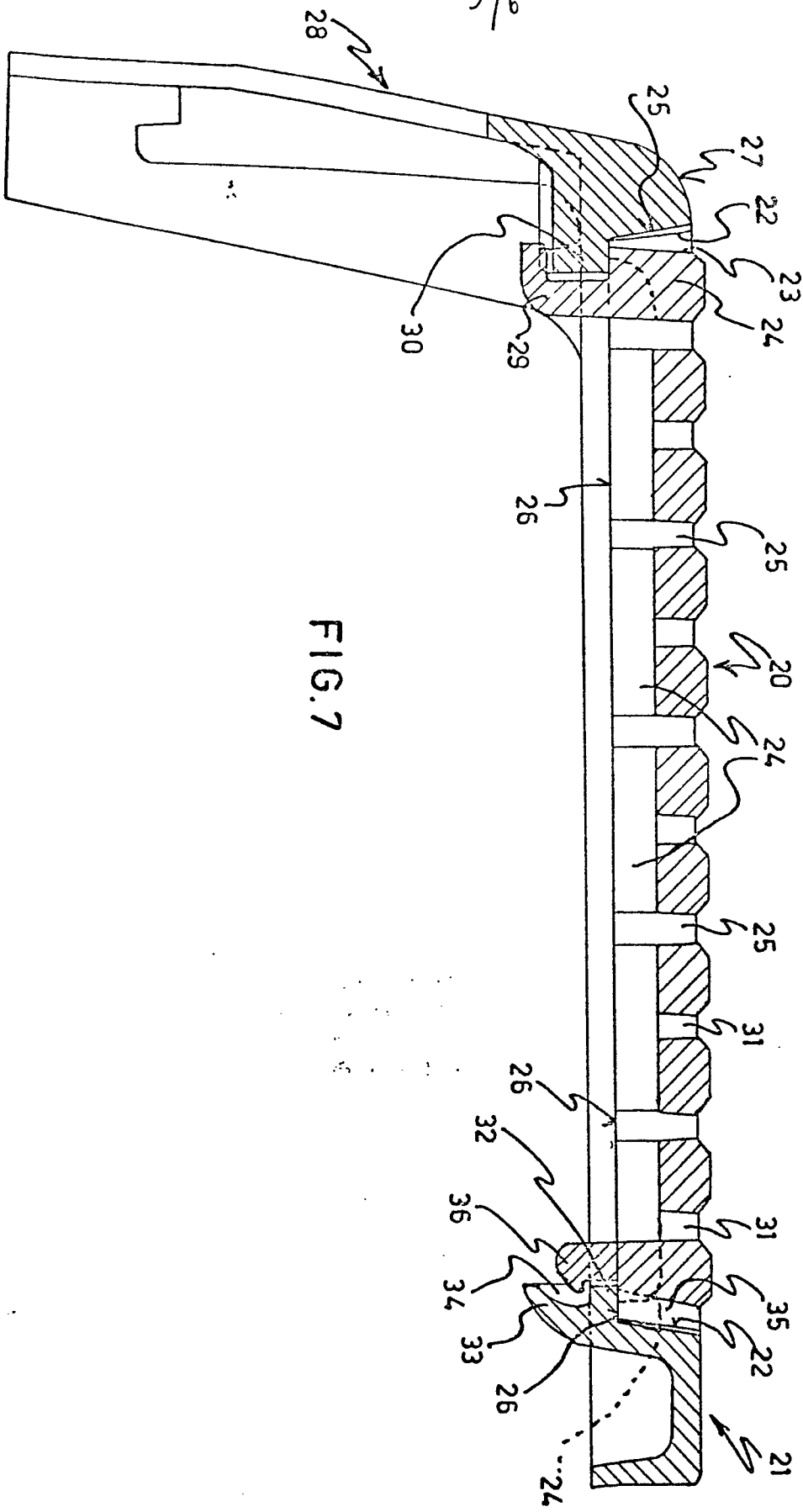


FIG. 6

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FIG. 8

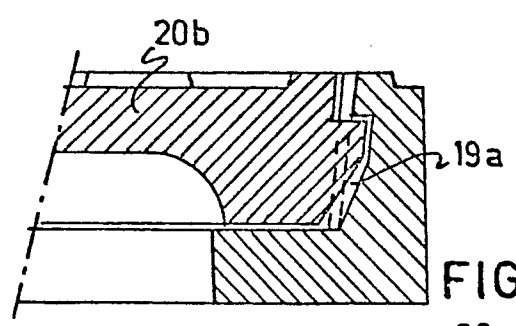
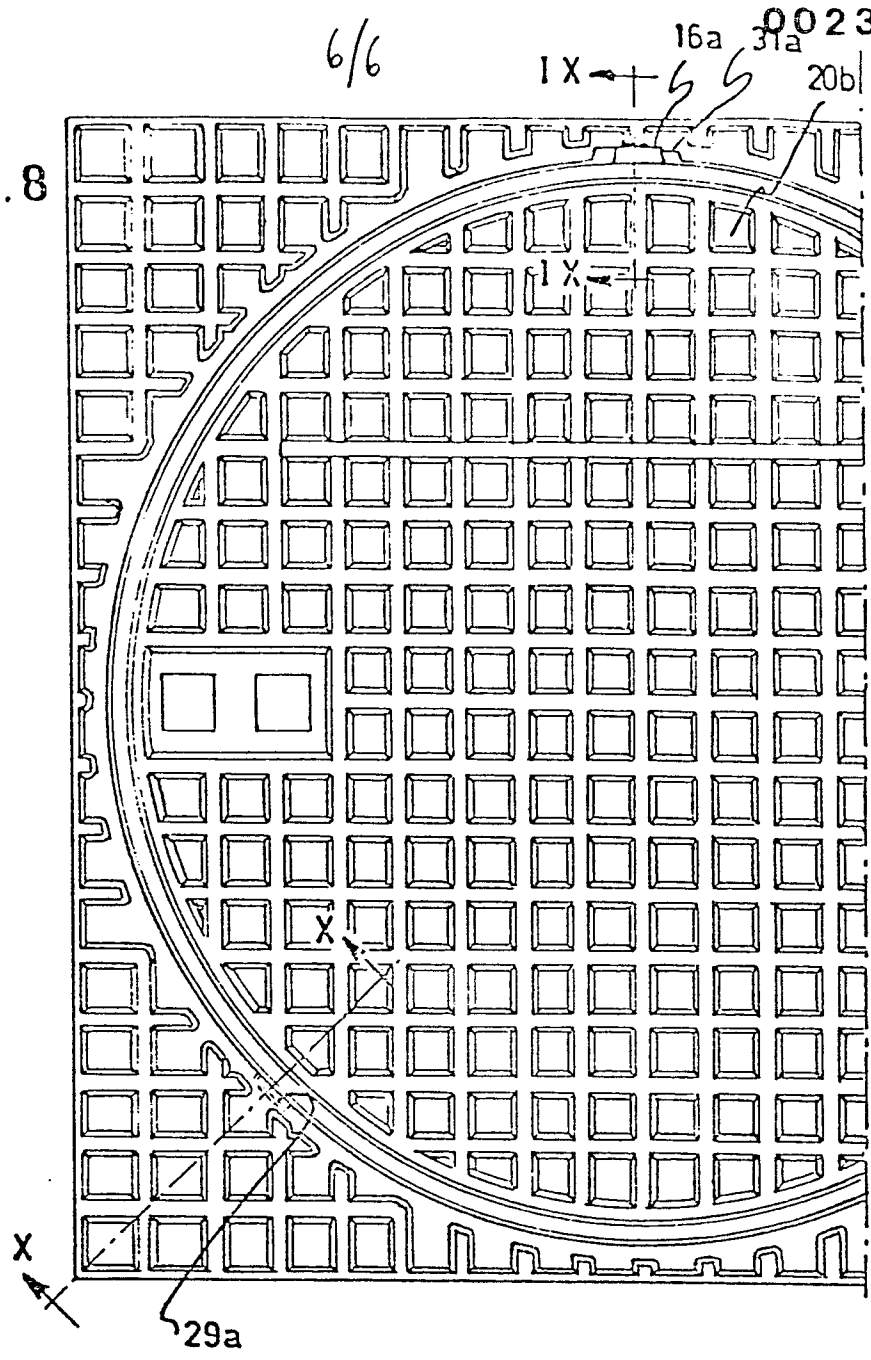


FIG. 9

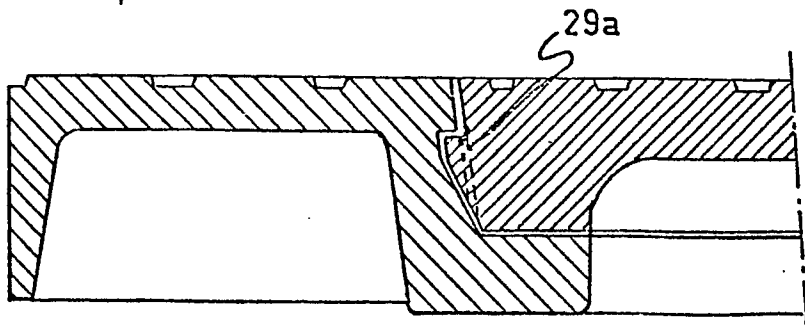


FIG. 10

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European Patent
Office

EUROPEAN SEARCH REPORT

Application number

EP 80 20 0726

DOCUMENTS CONSIDERED TO BE RELEVANT			CLASSIFICATION OF THE APPLICATION (Int. Cl. 3)
Category	Citation of document with indication, where appropriate, of relevant passages	Relevant to claim	
X	<u>US - A - 2 009 132 (GEHRIS)</u> * Page 1, left-hand column, lines 20-38; page 1, right-hand column, lines 53-55; page 2, left-hand column, line 1, lines 63-71; page 2, right-hand column, lines 4-28, 37-57, 70-75; page 3, left-hand column, lines 1,2; figures 1-5 * --	1,6,7	E 02 D 29/14
X	<u>US - A - 1 693 190 (BENEDETTI)</u> * Page 1, lines 64-108; figures 1-3 * -- <u>FR - A - 2 190 130 (RESISTARC)</u> * Page 1, lines 17-26; 20-38; page 2, lines 33-40; page 3, lines 1-7; figures 1,2 * ----	1,6,7 2,8	TECHNICAL FIELDS SEARCHED (Int. Cl. 3) E 02 D
			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
 The present search report has been drawn up for all claims			&: member of the same patent family, corresponding document
Place of search		Date of completion of the search	Examiner
The Hague		10-11-1980	RUYMBEKE