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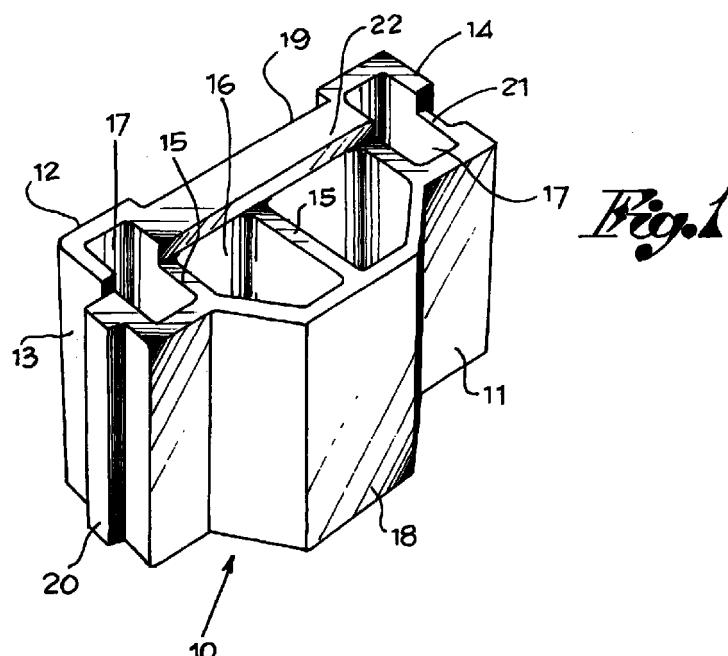
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(54) **Concrete blocks for building support walls and turfing slopes, embankments dykes and similar**

(57) This invention concerns a front block (10) and a rear block (30), both made of concrete, for building restraining walls and turfing over slopes, embankments, dykes and similar. Each block has vertical cavities to receive the filling earth, and the front block (10) has a forward projection in the middle (18) and a hollow in the

back (19) for coupling together with a rear block, or, on its base, an insert ridge (22) for coupling in depth between overlaid front blocks and/or corresponding rear blocks.



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## Description

**[0001]** This invention concerns vibratory-compressed concrete blocks for building walls, with or without the intention of turfing, such as buttressing walls, scarp walls, decorative walls, anti-erosion linings for slopes, sound-proofing barriers, boundaries and partition walls between gardens, canal linings, protective linings for river banks and similar.

**[0002]** There already exist walls built for retaining, supporting and protecting with the use of prefabricated concrete blocks, built up in rows or layers, usually in dry walls. These blocks have open-ended cavities, which are filled with earth to favour turfing and/or bring a touch of vegetation and greenery to the walling.

However, the aim of the present invention is to supply blocks, in particular a front block and a rear block, which are new and original in their shape and method of coupling, both horizontally and vertically, to simplify their assembly at the moment of laying and to ensure their stability once the structure is finished.

**[0003]** This aim is achieved by using a concrete front block that conforms to claim 1 and which is shaped for coupling, either, simply with other similar blocks, or with a rear block when the slope of the ground or other support factors require it.

**[0004]** Further details will become clear from the description that follows, made with reference to the enclosed diagrams, which are indicative but not binding, where:

Fig. 1 shows an axonometric view of the front block, up-turned with regard to its position when laid; Figs 2, 3 and 4 show the front block in Fig. 1 in horizontal cross-section (from below), from the front and from the side, respectively;

Fig. 5 shows an axonometric view of the rear block; Figs 6, 7 and 8 show the rear block in Fig. 5 in horizontal cross-section, from the front and from the side, respectively;

Fig. 9 shows a partial cross-section of several overlaid front blocks;

Fig. 10 shows a horizontal cross-section of a combination of several front and rear blocks;

Fig. 11 shows a partial cross-section of a wall made up of front and rear blocks, and

Fig. 12 shows a variation of the front block.

**[0005]** The front block 10 and the rear block 30 both consist of a concrete body.

**[0006]** The front block 10 has a front wall 11, a rear wall 12, two parallel side walls 13,14 and internal partitions 15, which define a pair of larger central cavities 16 and two smaller side cavities 17, all of them open-ended.

**[0007]** In the version shown in Figs 1-4, the front wall 11 of the front block 10 has a forward projection 18 in the middle. The rear wall 12 has a hollow 19 in its

outer face, which couples with the rear block 30. The side walls 13,14 may have, where necessary, one a vertical rib 20 and the other a vertical groove 21, of the same dimensions, for coupling the front blocks side by side in a row.

**[0008]** At its base, the front block 10 also has an insert ridge 22 along the whole length, or only part, of the back. In one variation, shown in Fig. 12, the front block 10', whilst having all the other elements in common, has a front wall 11' with a smooth surface, which may also be shaped, ribbed or patterned.

**[0009]** Meanwhile, the rear block 30 is essentially prismatic, with dimensions that generally correspond to those of the front block 10 and with cavities 31 that pass through it vertically. On its front wall, it has a forward projection 32 designed to fit the rear hollow 19 of the front block 10.

**[0010]** On its rear wall, said rear block 30 has a hollow 33 that corresponds to the front projection 32 for joining together several blocks 30 in depth, one behind another. On the parallel side walls, the rear block 30 has a series of ridges and dips 34 to couple numerous rear blocks side by side in a row.

**[0011]** Lastly, on its upper plane, the rear block 30 has a hollow 35 designed to house the insert ridge 22 of the front block 10 when various rows of front and rear blocks are superimposed one above the other.

**[0012]** Where the retaining needs of a slope or embankment, etc., permit, the front block 10 may be used on its own, without the rear block 30. In this case, various rows of front blocks 10 or 10' are coupled sideways and laid one above the other, but off-set in such a way that the insert ridges 22 of the blocks in the row above rest against the rear wall of the blocks in the row below — see Fig. 9.

**[0013]** When the slope of the land and the restraining needs require it, the front blocks 10 are used together with the rear blocks 30 — see Fig. 10. In this case, the front blocks 10 or 10' are still positioned in rows one above the other, as described above, but they are also joined to rear blocks 30, by coupling the forward projection 32 of each rear block with the hollow 19 in the back of the corresponding front block, and matching the insert ridge 22 in the base of each front block with the hollow 35 in the top of the corresponding rear block in the row below — see Fig. 11. The facade can even consist of alternate rows of 10 blocks and 10' blocks.

**[0014]** In this way, all the blocks are firmly coupled, both horizontally - lengthwise and in depth - and vertically, to give the whole structure stability. Once the cavities in the blocks are filled with earth, it is possible to create the ideal conditions for turfing over the wall itself.

## Claims

1. Concrete blocks consisting of a front block (10) and a rear block (30) for building restraining walls for slopes, embankments, dykes and similar, with or

without the intention of turfing over, where every block has vertical cavities to receive the earth filling, and where the front block (10,10') is characterised by:

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- a rear hollow (19) to couple the front block with a rear block; and
- on its base, an insert ridge (22) along at least some of the back part for coupling in depth between overlaid front blocks and/or corresponding rear blocks.

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2. Concrete blocks according to claim 1, in which the front block (10) has on one side wall a coupling rib (20) and on the other a coupling groove (21), both of which are vertical and on the same plane, for coupling blocks together side by side in rows. 15
3. Concrete blocks according to claims 1 and 2, in which the front block (10) has a forward projection in the middle. 20
4. Concrete blocks according to claims 1 and 2, in which the front block (10) has a flat, smooth or variously shaped front wall. 25
5. Concrete blocks according to claim 1, in which the rear block (30) has, at the front, a forward projection (32) intended for coupling with the rear hollow (19) of a corresponding front block (10,10') and, on the top, a hollow (35) designed to house the insert ridge (22) on the base of the front blocks when overlaying several rows of front and rear blocks. 30

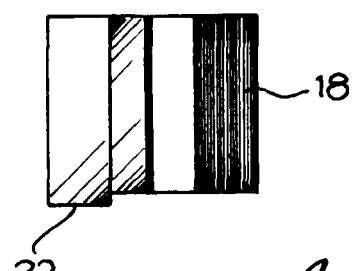
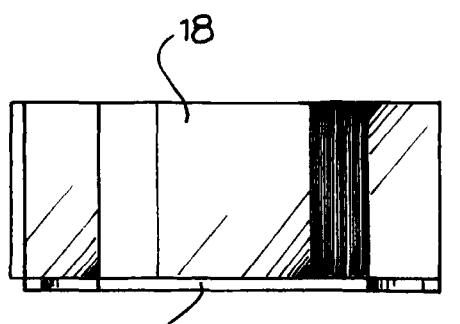
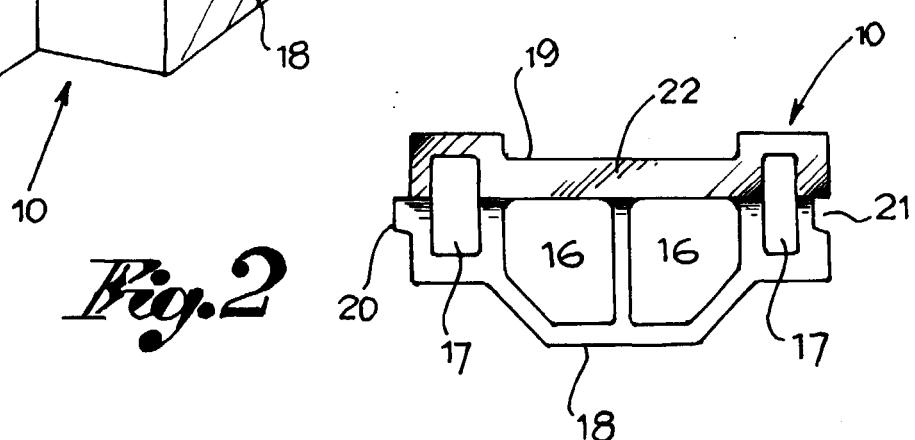
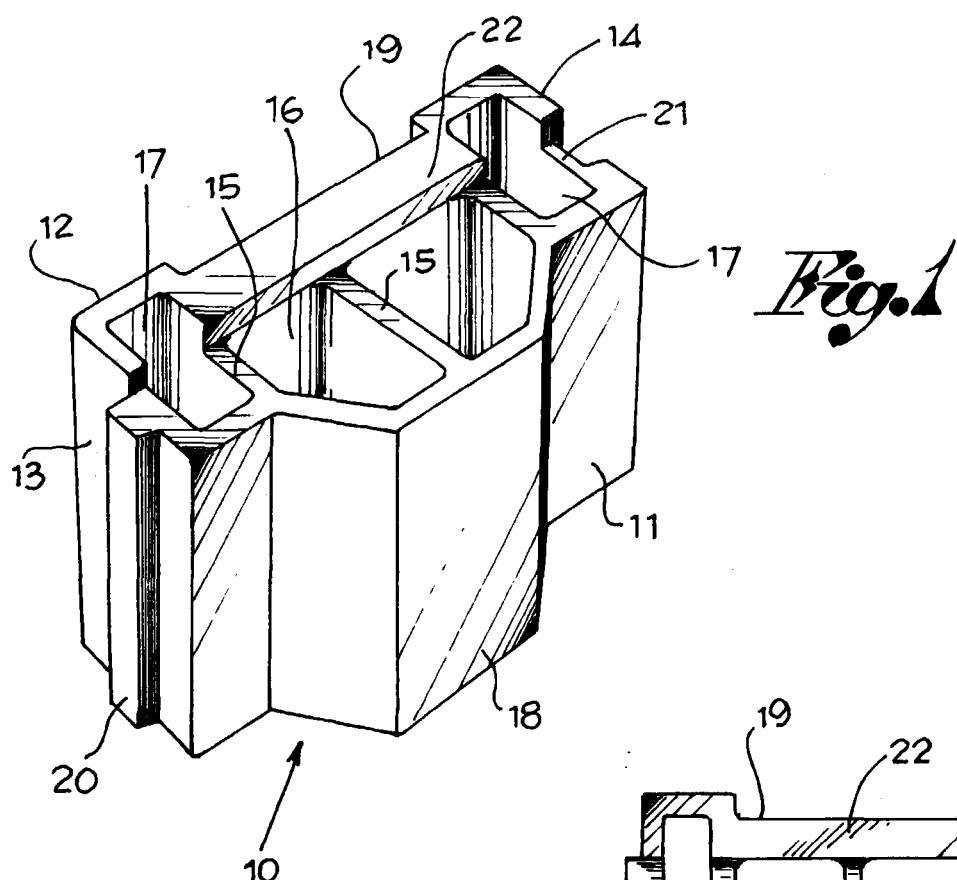
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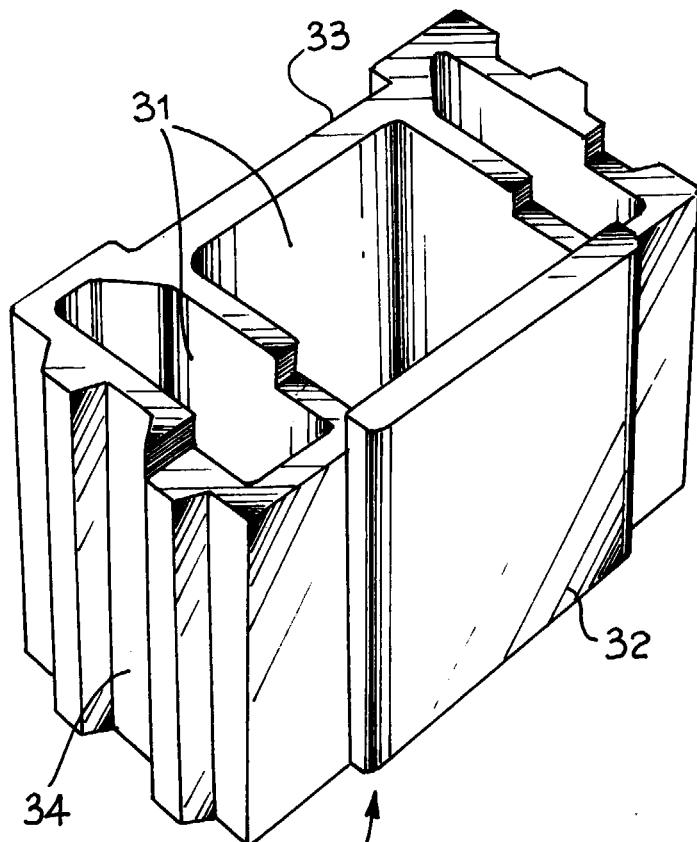
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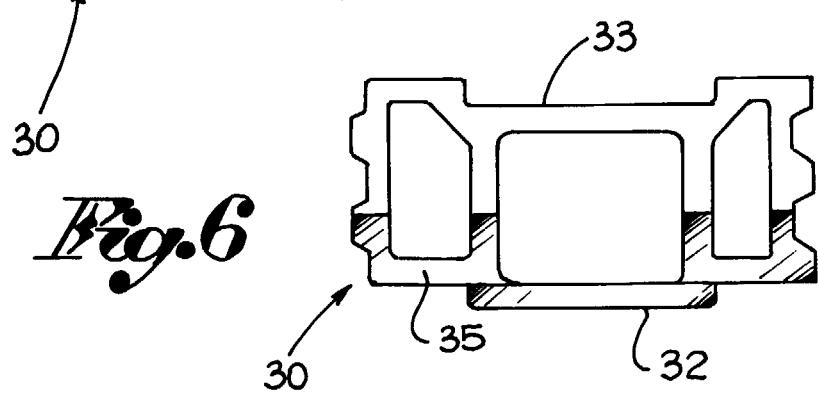
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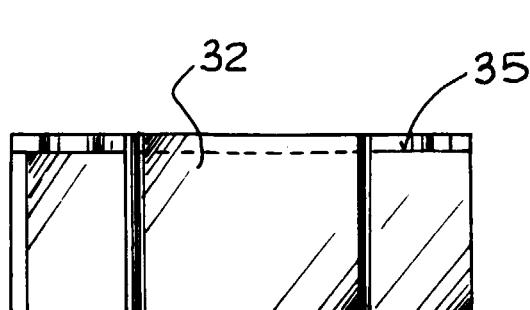




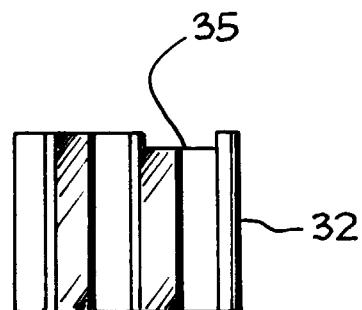
*Fig. 5*



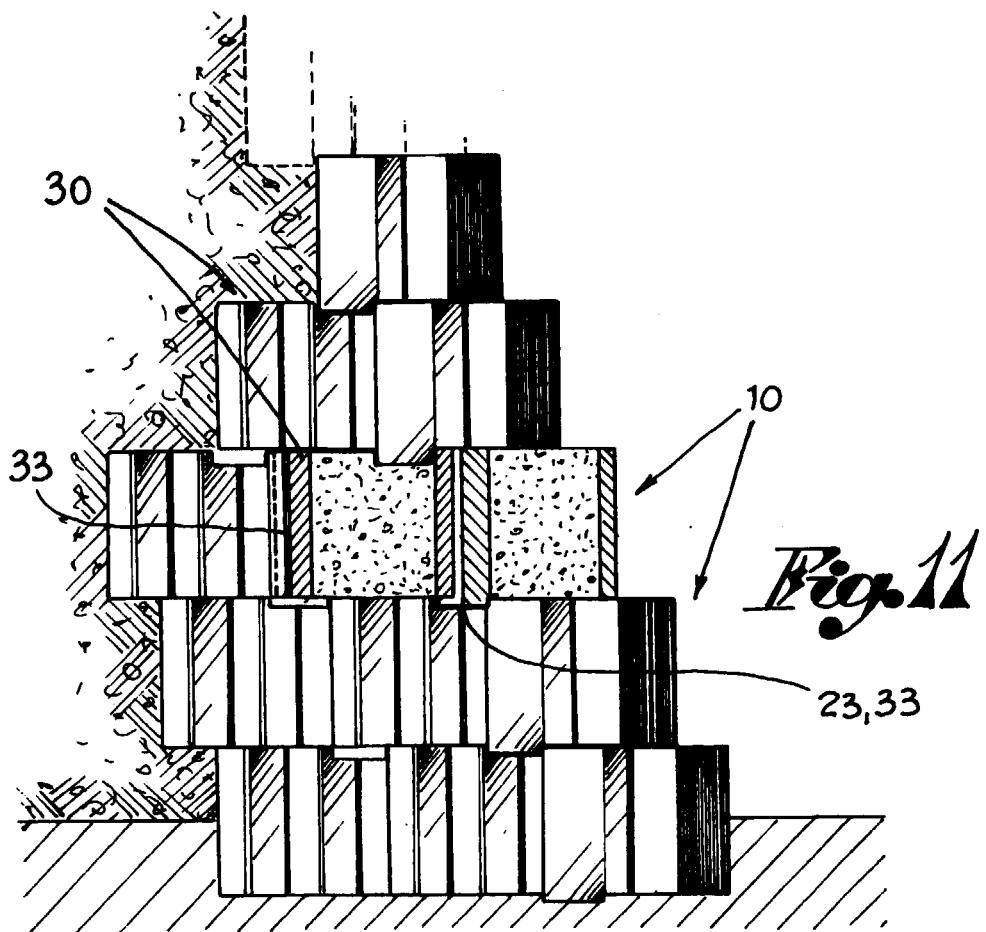
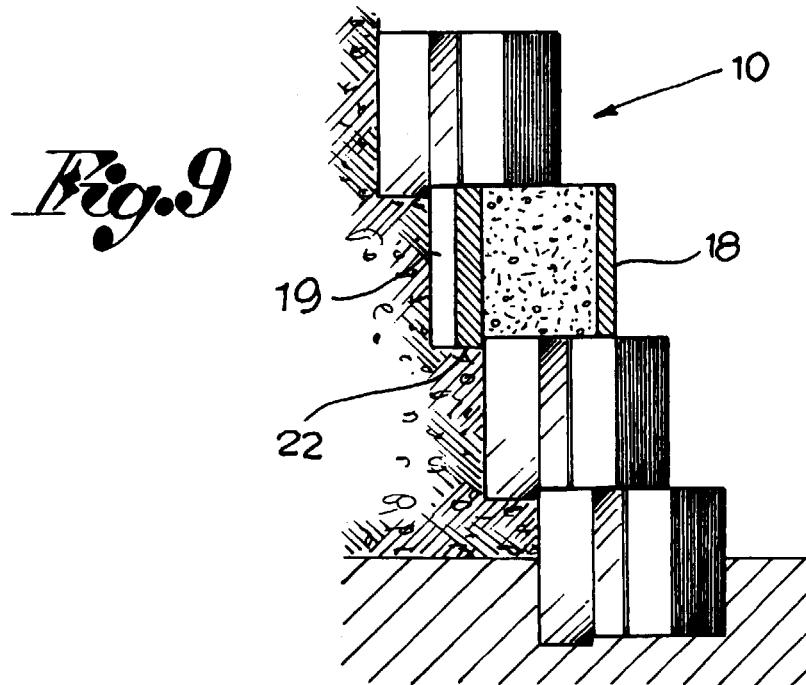
*Fig. 6*

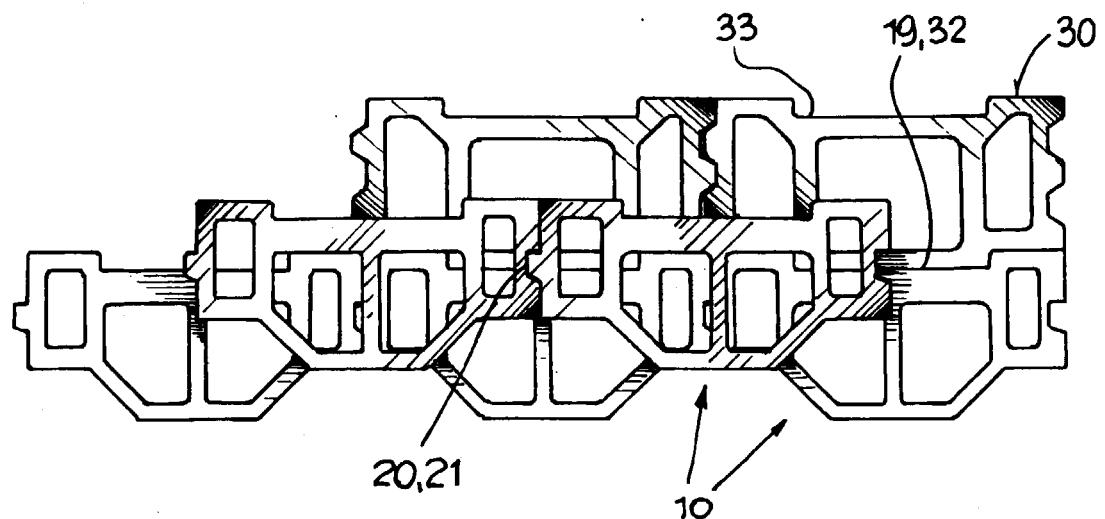


*Fig. 7*

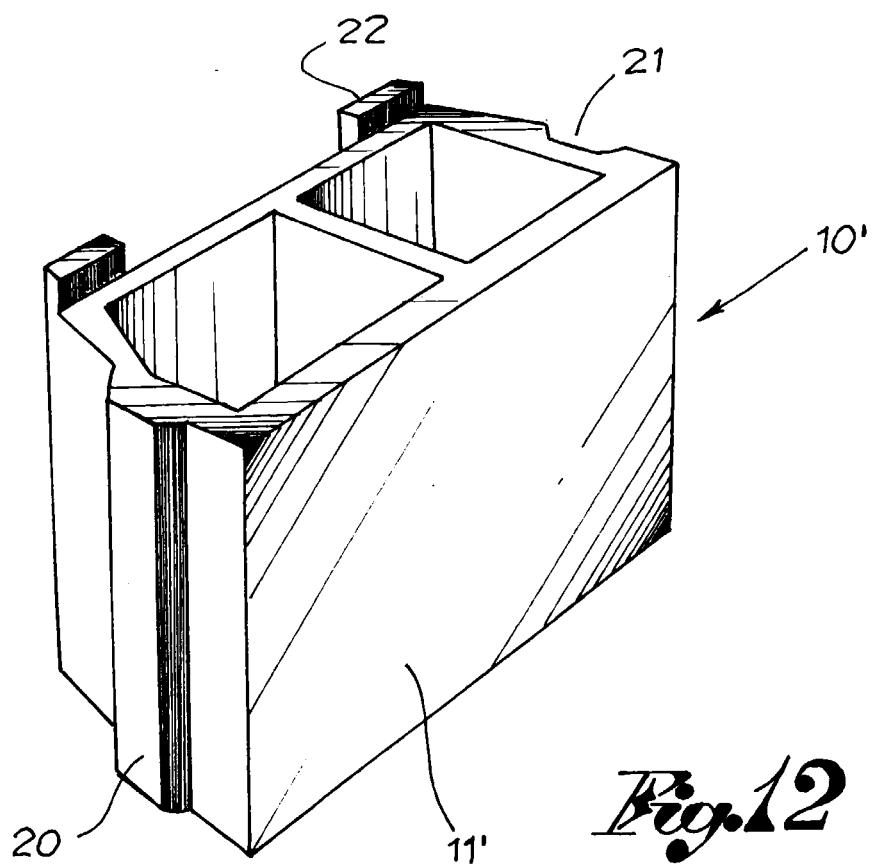


*Fig. 8*





*Fig. 10*



*Fig. 12*



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## EUROPEAN SEARCH REPORT

Application Number  
EP 00 83 0004

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.)						
A	CH 612 238 A (KALBERMATTEN OTTO ZEMENTWAREN) 13 July 1979 (1979-07-13) * the whole document *	1,3,4	E02D29/02						
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TECHNICAL FIELDS SEARCHED (Int.Cl.)									
E02D E04C									
<p>The present search report has been drawn up for all claims</p> <table border="1" style="width: 100%; border-collapse: collapse;"> <tr> <td style="width: 33%;">Place of search</td> <td style="width: 33%;">Date of completion of the search</td> <td style="width: 33%;">Examiner</td> </tr> <tr> <td>THE HAGUE</td> <td>17 April 2000</td> <td>Tellefsen, J</td> </tr> </table>				Place of search	Date of completion of the search	Examiner	THE HAGUE	17 April 2000	Tellefsen, J
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CATEGORY OF CITED DOCUMENTS		T : theory or principle underlying the invention E : earlier patent document, but published on, or after the filing date D : document cited in the application L : document cited for other reasons & : member of the same patent family, corresponding document							
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**ANNEX TO THE EUROPEAN SEARCH REPORT  
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EP 00 83 0004

This annex lists the patent family members relating to the patent documents cited in the above-mentioned European search report. The members are as contained in the European Patent Office EDP file on The European Patent Office is in no way liable for these particulars which are merely given for the purpose of information.

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