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**Precision shaped masonry blocks.**

(57) Precision shaped masonry blocks, according to this invention introduce a number of blocks 4 placed one to another on base P, forming walls 1,1',1'',2,3. Blocks 4 are mutually connected by means of element 10 inserted into rabbets 41. At the joint between walls 1,1',1'',2,3 among blocks 4, the blocks 5 with opening 53 for vertical fastening zone casting are inserted, which is connected with blocks 4 by means of element 10 inserted into rabbets 51,41 of blocks 5,4. On the top of the wall of blocks 4, on the place where the massive slab with horizontal fastening zone is jointly cast in one part, connected by means of elements 10 and placed on blocks 4, the blocks 6 are faced with their extensions 61 towards the external side of the wall 1. On blocks 4 by means of element 10 inserted into rabbets 41,75,76, the blocks 7 are placed on places where horizontal fastening zone, or lintel girder are to be performed, while at the joint between two horizontal and vertical fastening zones, on blocks 4, the blocks 8 are centred by elements 10, in relation to blocks 4,5. At the joints of two external walls, e.g. 1,2 on the top, the blocks 9 are placed above opening 53 and gripped between sides 72 of neighbouring blocks 7 by means of bulge 93.

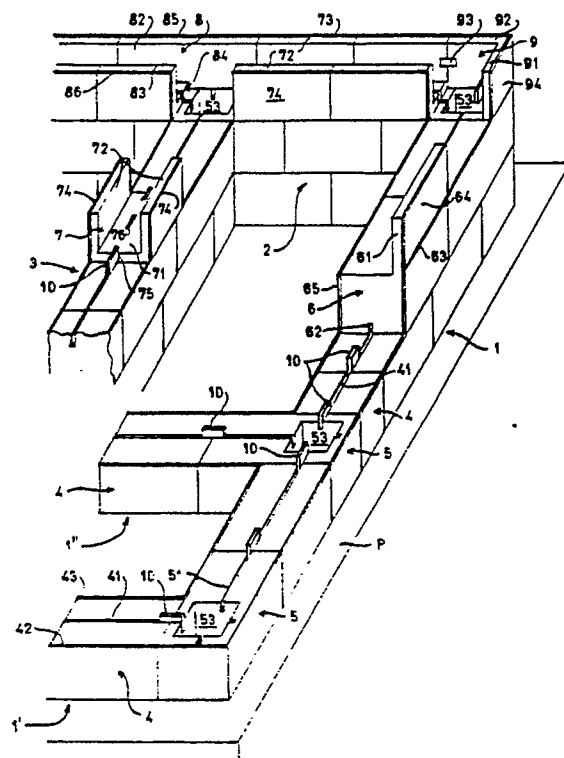


Fig 1

## PRECISION SHAPED MASONRY BLOCKS

The invention belongs to the field of civil engineering, specially to the field of blocks shaped elements or similar forms for construction parts. These elements are characterized by specially shaped parts for position stabilization. According to the IPC the invention carries denotation E 04C 1/10.

The technical problem to be resolved by this invention is how to resolve constructively the precision shaped masonry blocks in order to enable building without plumbs, strings and formworks by using specially shaped rabbets and plugs, along with enabling vertical and horizontal block centring into wall with remodelled openings for horizontal and vertical fastenings, without regard whether they are constructed separately or jointly with massive slab. Besides remodelled external and internal block surfaces should eliminate external and international wall plastering.

Standard masonry requires permanent control of horizontal and vertical wall position by using certain technical tools such as spirit-level, plumb and string. When the building is finished the plastering is performed also by using the appropriate technical tools. Standard masonry procedure requires providing energy, water, sand, lime, cement, formwork as well as great deal of qualified workforce. After checking patent and non patent documentation it is evident that inovators have ignored similar solutions of precision shaped masonry blocks.

The technical problem is succesfully resolved by using precision shaped masonry blocks, described in this patent registration. The essence of the invention is in the fact that new blocks are precision formed with very narrow dimension tolerances. Mutual position of these blocks is strictly defined by rabbets and elements which are inserted into them because of leading, i.e. the precision centering of one block to another. The advantage of these blocks is also in the fact that their surfaces, forming external or internal wall, are definitely treated. The advantage of using these blocks is elimination of standard formworks for horizontal and vertical fastening zone casting, and lintels. The advantage of the invention is in the fact that qualified workforce is not necessary, energy consumption is reduced, the need of various constructive materials (lime, cement, send, formworks, water) stock in site is eliminated, as well as the waste of these materials.

The invention is described more detailed by using the following drawings where:

Fig. 1 shows a wall made of precision shaped masonry blocks;

Fig. 2 shows the front view of a precision shaped masonry block;

Fig. 3 shows the upper view of the block shown on fig. 2;

Fig. 4 shows the axonometrical view of the block shown on fig. 2;

Fig. 5,6,7 show the centring element in various views;

Fig. 8 shows axonometrical view of the element shown on fig. 5,6,7;

Fig. 9 shows the front view of a precision shaped masonry block for vertical fastening zone forming;

Fig.10 shows the upper view of the block shown on fig. 9;

Fig.11 shows the rear view of the block shown on fig. 9;

Fig.12 shows the axonometrical view of the block shown on fig. 9;

Fig.13 shows the position of the block shown on fig. 9 at the external wall joint;

Fig.14 shows the position of the block shown on fig. 9 at two external wall joint and its position in the middle of the wall where a vertical fastening zone is to be performed;

Fig.15 shows the lateral view of the block for horizontal fastening zone performing when made together with a slab;

Fig. 16 shows the upper view of the block shown on fig. 15;

Fig. 17 shows the axonometrical view of the block shown on fig. 15;

Fig. 18 shows the lateral view of the block for horizontal fastening zone performing i.e. lintels;

Fig. 19 shows the upper view of the block shown on fig. 18;

Fig. 20 shows the axonometrical view of the block shown on fig. 18;

Fig. 21 shows the front view of the block for two horizontal and one vertical zone performing;

Fig. 22 shows the upper view of the block shown on fig. 21;

Fig. 23 shows the axonometrical view of the block shown on fig. 21;

Fig. 24 shows the position of the block shown on fig. 21 at two horizontal and two vertical fastening zone joint;

Fig. 25 shows the lateral view of the block for two horizontal and one vertical fastening zone angular joint;

Fig. 26 shows the upper view of the block shown on fig. 25;

Fig. 27 shows the axonometrical view of the block shown on fig. 25, and

Fig. 28 shows the position of the block

shown on fig. 25 at two horizontal and one vertical fastening zone angular joint.

According to the enclosed drawings it can be seen the walls 1,1',1'',2,3 are performed by using the blocks 4 placed one to another on the base P. Blocks 4 are mutually connected by means of the element 10 inserted into rabbet 41. At the joint between walls 1,1',1'',2,3 and among the blocks 4, the blocks 5 are inserted with the shaped opening 53 for vertical fastening zone casting. Blocks 4 are connected with blocks 5 by means of rabbets 41,51 in which the elements 10 are inserted. On the top of the wall, made of blocks 4 and blocks 5, the openings 53 of which are lined one above another, thus forming the vertical fastening zone space, on the place where a massive slab, jointly with horizontal fastening zone is to be performed, the blocks 6 are placed, the extensions 61 of which, faced towards the external side of wall, from the horizontal fastening zone space instead of the formwork. On the places where a horizontal fastening zone, which need not be connected to the slab is to be performed, or where a lintel is to be performed, block 7 are placed, centred to the blocks 4 by means of elements 10 inserted into rabbets 41,75,76. On the place where a joint among two horizontal and vertical fastening zone is to be performed, block 8 are placed on blocks 4 centred to blocks 4,5 by means of elements 10. At two external wall joints e.g. 1,2 the blocks 9 are placed above the openings 53, gripped between the sides 72 of neighbouring blocks 7 by means of bulge 93 made on internal faces of sides 92 of the block.

Precision shaped masonry block 4 is made of massive piece in shape of a parallelepiped with rabbets 41 cut through on upper and lower side. The lateral sides of block are made with a surface 43 for internal wall. This block can also be remodelled in a variant where both lateral sides are made with the surface 43 for internal plastered wall. This sort of a block is used for constructing internal walls.

Fig. 5-8 show the element 10 in shape of a prisme with inclined sides 101. This element is used for inserting into rabbets 41,51,52,62,75,76,84 of corresponding blocks and thus enables the precise centring of the blocks 4,5,6,7,8 one beside another or one above another. Such precise centring is performed thanks to narrow tolerances of the rabbets in relation to block dimensions.

Fig. 9-12 show the precision shaped block 5 with an opening 53 for vertical fastening zone casting. This opening 53 can be placed closer to one or the other front side of the block 5, or else on the very centre of the block, depending to the way in which the walls, which are to be connected by the vertical fastening zone casted in openings 53, are confronting. On the upper surface of the block 5

the centring rabbets 51,52 are made. The lateral sides of the block 5 are performed with remodelled face layer 54 or internal plastered layer 55. The front side 56 performed in the same way. While installing the block, as shown on fig. 13,14 it is required to take off the remodelled layer 54 or 55 from the block 5, according to the position of this block to the other blocks.

Figures 15-17 show the precision shaped masonry block 6, on which one of the lateral sides is made with an extension 21 as high as the block 6 while on the lower side of the block 6 a rabbet 62 is performed. A remodelled face treated layer 64 with a rabbet 63 in the middle, is made on the lateral side and on the extension 61 above it, as an imitation of a joint between two blocks. On the opposite lateral side, a remodelled internal plastered layer 65 is made.

Figures 18-20 show the precision shaped masonry block 7, performed with the base 71, from which the sides forming the letter "U" are extended. The rabbets 75 and the opening 76 in the middle are shaped on the base 71. There is a remodelled face layer 73 and a remodelled plastered layer 74 made on the outer faces of the sides 72.

Figures 21-23 show the precision shaped masonry block 8, on the base 81 of which the rabbets 84 are cut. The base 81 is twice as short as the blocks 4,5,6,7. There is a remodelled internal plastered layer 86 on its lateral side. On the external face of the other side 82, which is twice as long as the base 81, a face treated remodelled layer 85 is made. The use of this block in case of two horizontal and one vertical fastening zone joint is shown on fig. 24.

The figures 25-27 show a precision shaped block 9, performed with two side extensions 91,92, confronted at an angle of 90 degrees. A face remodelled layer 94 is made on the external face of sides 91,92. On the internal face of sides 91,92, the rabbets 93 are shaped. The placing of block 9 at the angular joint of two horizontal and one vertical fastening zone is shown on fig. 28.

The process of building a wall using precision shaped masonry blocks is performed in the following way: A layer on glue as long as broad as the wall is applied on the horizontal prepared base P representing the foundation of the wall. The first row of blocks 4 and blocks 5 is placed onto the applied layer, while the two neighbouring blocks are connected by inserting elements 10 into corresponding rabbets in blocks 4,5. The next row of blocks is placed onto the preceding one, with glue applied previously on it. The blocks in the next row are put onto already fixed elements 10 in the preceding row of blocks. Thus the precise centring of the rows of blocks is obtained. This procedure is

repeated up to the desired height, when the wall is finished by one of the blocks 6,7,8,9.

Precision shaped masonry blocks can be shortened, manually or by machine, to the desired dimension, without any influence on the described process of building.

Using the constructive solution of precision shaped masonry blocks according to this invention, the other relative combinations are possible, besides the ones shown on fig. 1, depending on the configuration of joints between walls or on the demands of architectural solution, without leaving the field of the invention.

## Claims

1. Precision shaped masonry blocks, designated by the fact, that a number of blocks (4) placed one to another on the base P, forming the walls (1,1',1'',2,3), that the blocks (4) are mutually connected by means of element (10) inserted into rabbets (41), that at the joint between walls (1,1',1'',2,3) and among blocks (4), the blocks (5) are inserted with opening (53) for vertical fastening zone casting, which are connected with block (4) by means of elements (10) inserted into rabbets (51,41) of the blocks (5,4), that on the top of the wall made of the blocks (4), on the place where the massive slab with horizontal fastening zone is made in one part, connected by means of elements (10), i.e. placed onto blocks (4), and block (6) with their extensions (61), faced towards the external side of wall (1), that on blocks (4) the blocks (7) are placed by means of elements (10) inserted into rabbets (41,75,76) on places where the horizontal fastening zone or lintel girders are to be performed, while at the joint between two horizontal and vertical fastening zones, the blocks (8) are placed on blocks (4), centred to blocks (4,5) by means of elements (10), while at two external wall joints e.g. (1,2) on the top, the blocks (9) are placed above the openings (53), gripped between the sides (72) of neighbouring blocks (7) by means bulge (93).

2. Precision shaped masonry blocks, according to claim 1, designated by the fact, that the block (4) is performed, while two longitudinal rabbets (41) on upper and lower surface and lateral sides are made with remodelled face layer (42) and with remodelled internal plastered layer (43).

3. Precision shaped masonry blocks, according to claim 1, designated by the fact, that the element (10) is performed in shape of a prisme with inclined sides (101).

4. Precision shaped masonry blocks, according to claim 1, designated by the fact, that the block (5) is performed with square or rectangular opening (53) placed closer to one or to the other front side

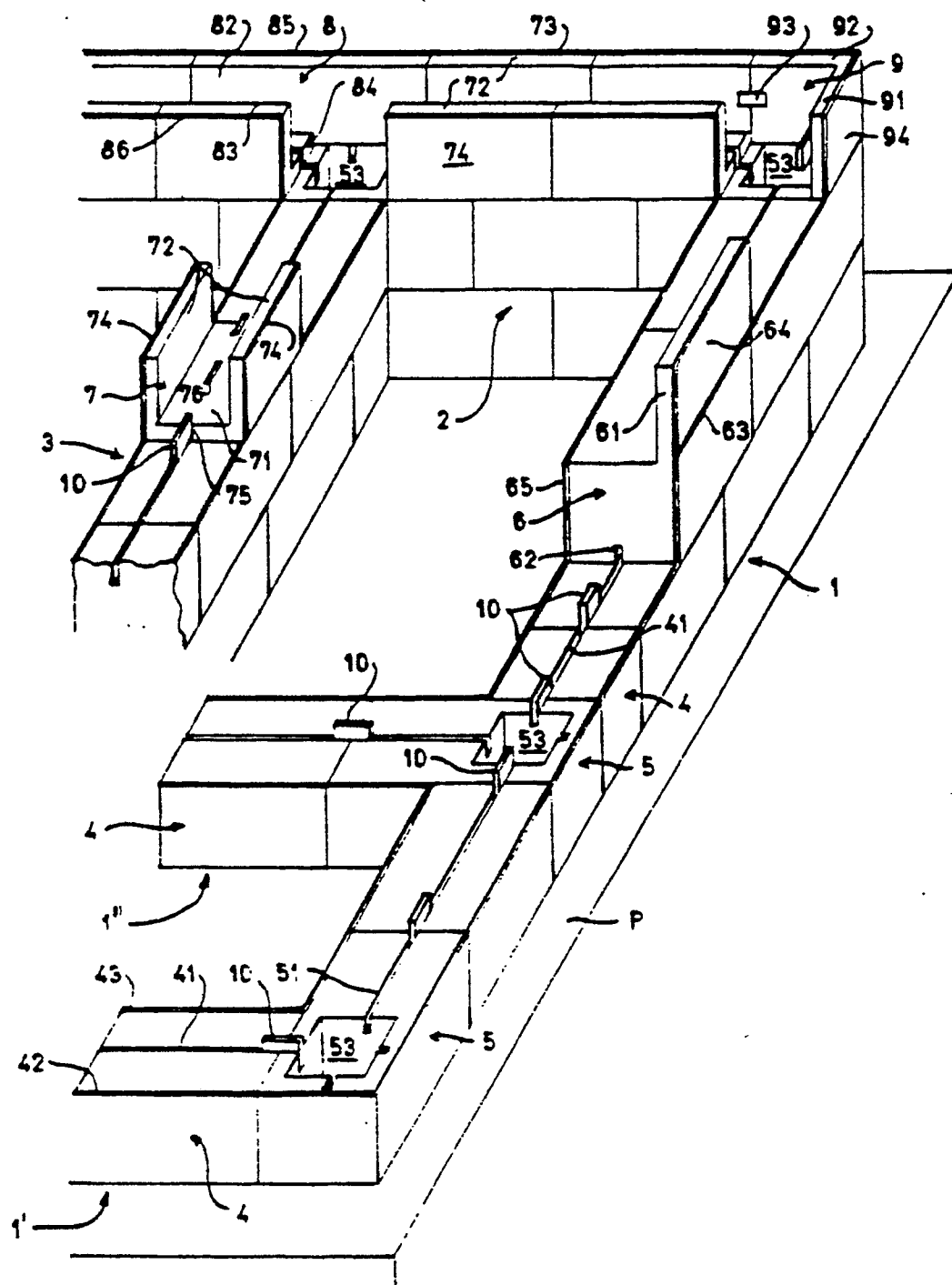
or on the very centre, that the rabbets (51,52) are performed on the upper surface of the block, while the lateral sides and one front side are made with remodelled face layer (54) and with remodelled internal plastered layer (55,56).

5. Precision shaped masonry blocks, according to claim 1, designated by the fact, that the block (6) is made with extension (61) along one lateral side, that the rabbet (62) is made on lower side of the block, while remodelled face layer (64) with rabbet (63) is made on lateral side and its extension (61) on lateral side, while remodelled internal plastered layer (65) is made on the opposite lateral side.

6. Precision shaped masonry blocks, according to the claim 1, designated by the fact, that on the base (71) of block (7), the rectangular opening (76) and two rabbets (75) are made, while the remodelled face layer (73) is performed on external faces of sides (72), and remodelled internal plastered layer (74) is also performed.

7. Precision shaped masonry blocks, according to claim 1, designated by the fact, that two rabbets (84) are performed on base (81) of the block (8), while on exterior of side (82), which is twice as long as the base (81), remodelled face layer (85) is made, while remodelled internal plastered layer (86) is made on the exterior of the side (83).

8. Precision shaped masonry blocks, according to the claim 1, designated by the fact, that remodelled face layer (94) is performed on the exterior of sides (91,92) of the block (9), while the extensions (93) are performed on the interior of sides (91,92).



**Fig 1**

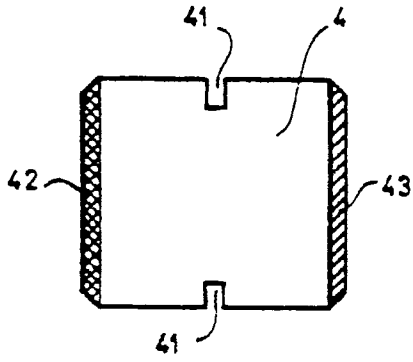


Fig. 2

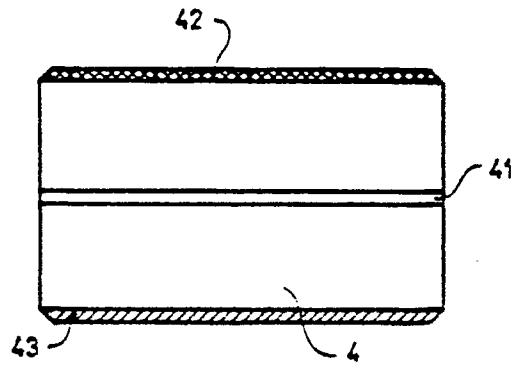


Fig. 3

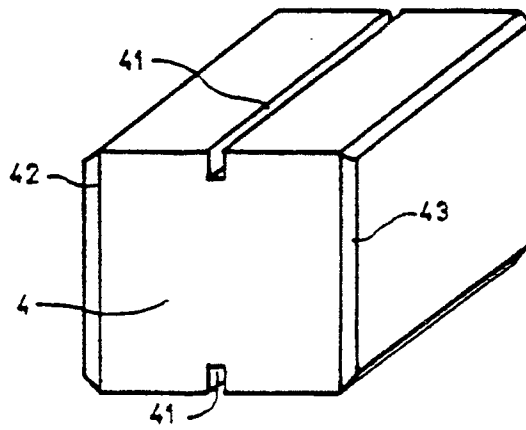


Fig. 4

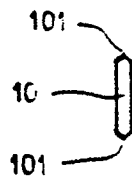


Fig. 5

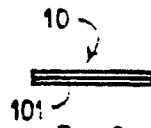


Fig. 6

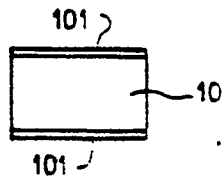


Fig. 7

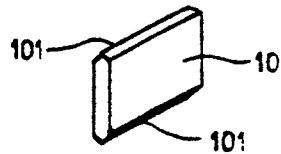


Fig. 8

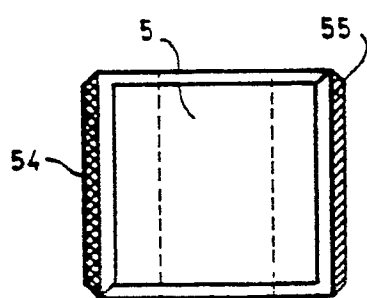


Fig. 9

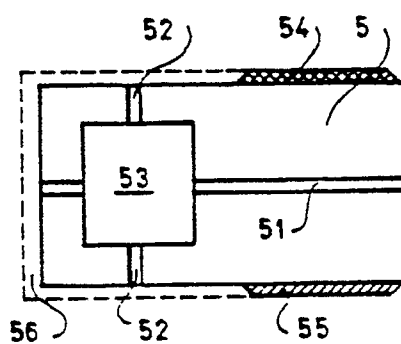


Fig. 10

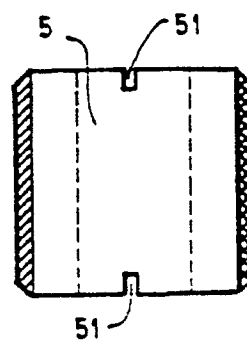


Fig. 11

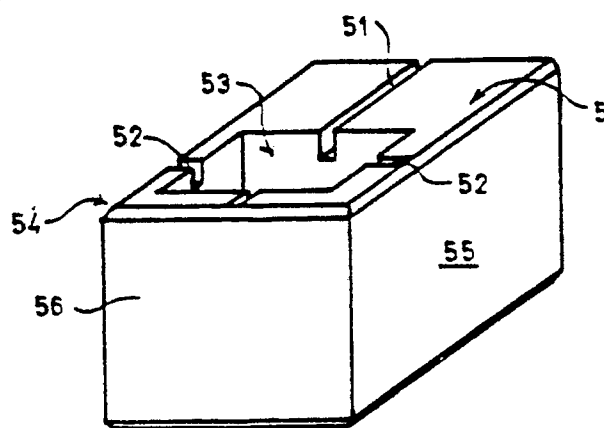


Fig. 12

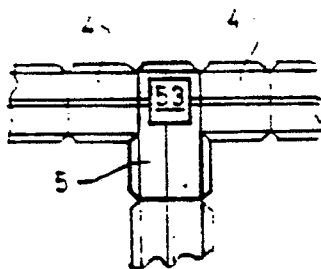


Fig. 13

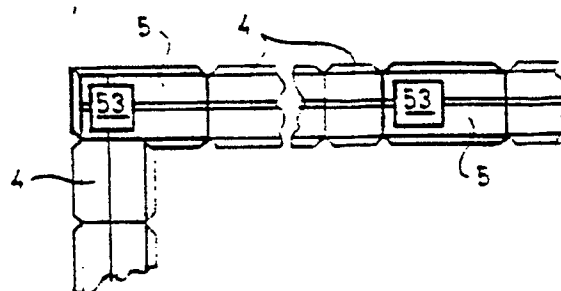


Fig. 14

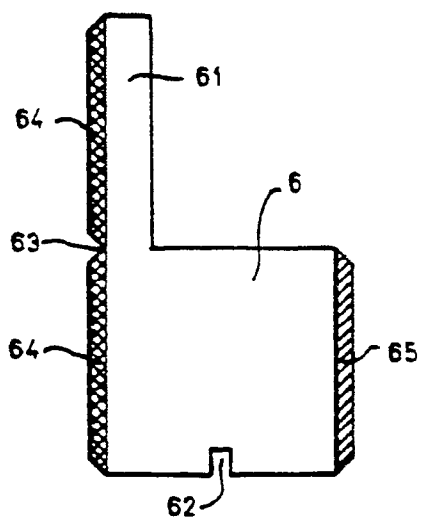


Fig. 15

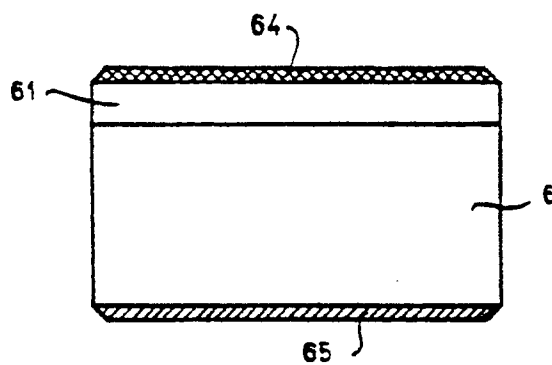


Fig. 16

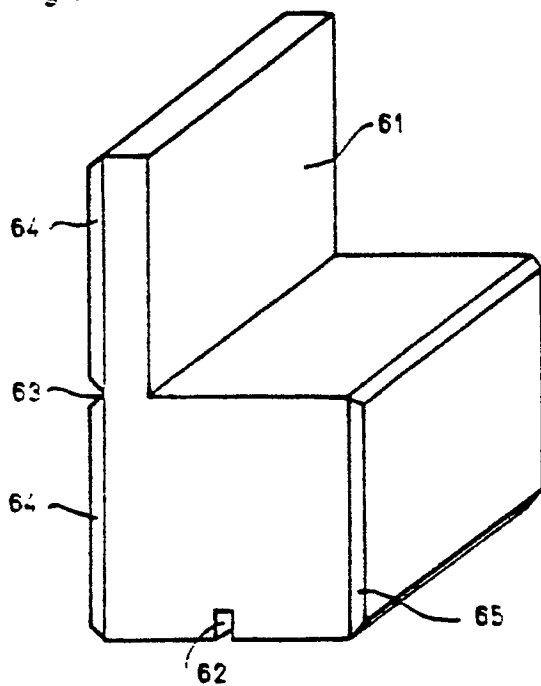


Fig. 17



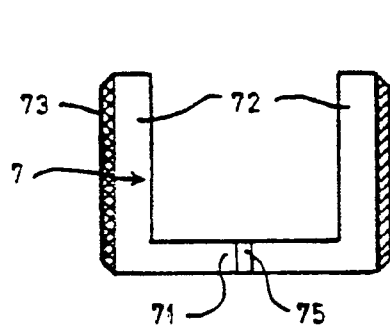


Fig. 18

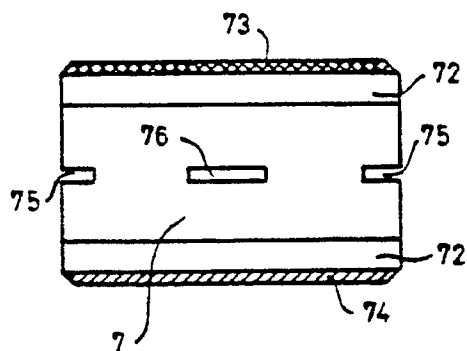


Fig. 19

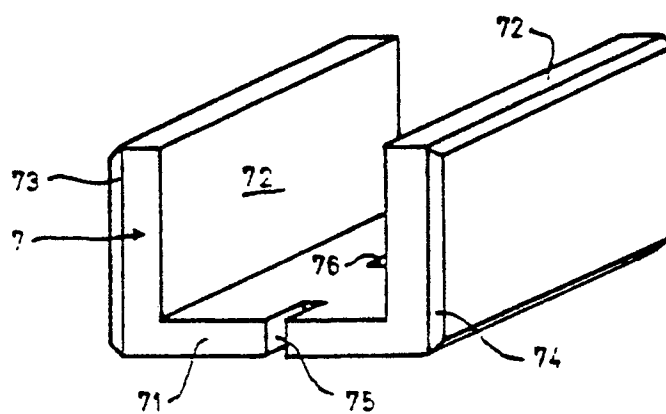


Fig. 20

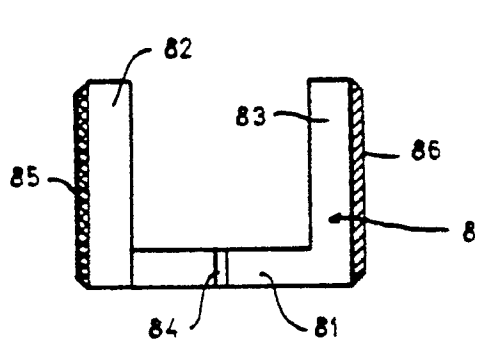


Fig. 21

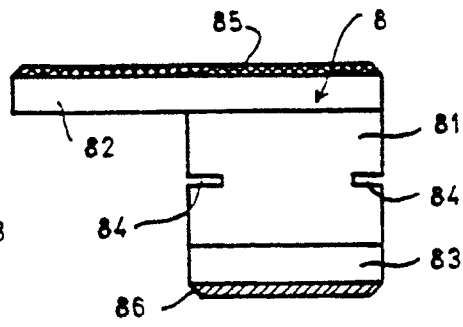


Fig. 22

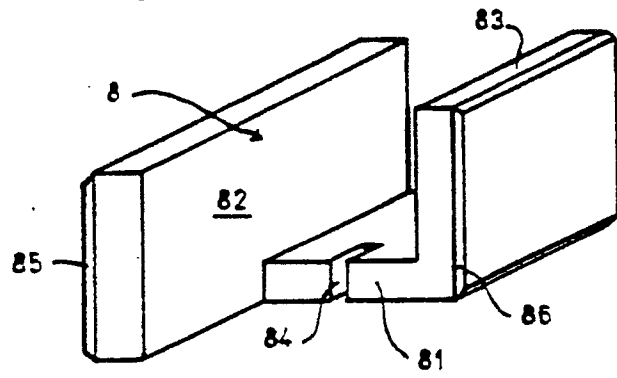


Fig. 23

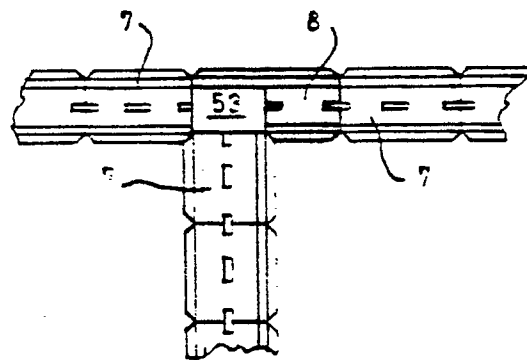


Fig. 24

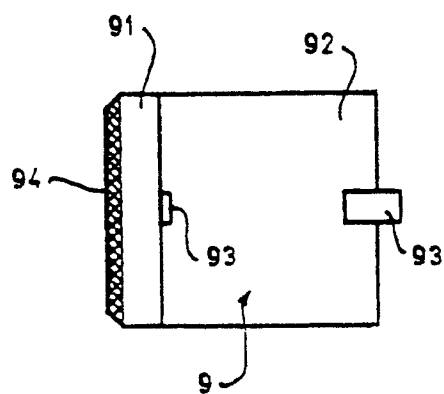


Fig. 25

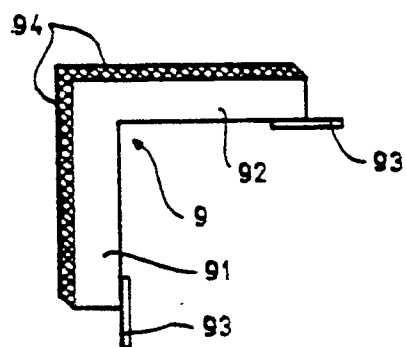


Fig. 26

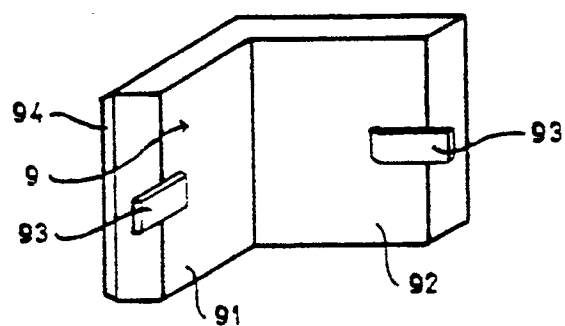


Fig. 27

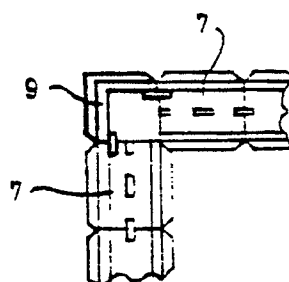


Fig. 28



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# EUROPEAN SEARCH REPORT

Application Number

EP 90 11 1532

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.5)
A	DE-A-2 739 017 (MONTANELLI) * Figures 1,4,6; page 7, lines 14-24 *	1,2	E 04 B 2/08
A	US-A-3 936 987 (CALVIN) * Figures 1,7,10; column 3, line 30 - column 4, line 2 *	1,3	
A	FR-A-2 064 533 (GLOTIN) * Figure 2 *	1,4	
A	LU-A- 82 807 (COELHO DOS SANTOS) * Figures 21,22,25,26 *	1,5,6	
A	DE-A-2 854 853 (BUREAU D'ETUDES TECHNIQUES J. HAPPEL & CIE.) * Figures 9,11 *	1,6,8	
			TECHNICAL FIELDS SEARCHED (Int. Cl.5)
			E 04 B
The present search report has been drawn up for all claims			
Place of search THE HAGUE		Date of completion of the search 18-09-1990	Examiner MYSLIWETZ W.P.
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