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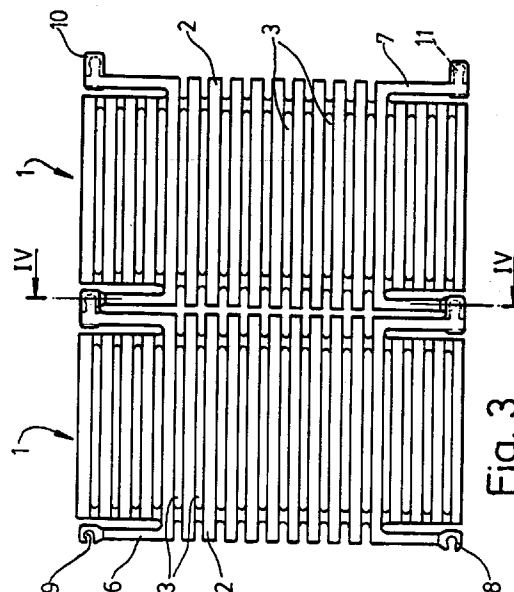
(71) Applicant : **SACOPA, S.A.**
Avda. Europa 28,
Pol. Ind. Pla de Baix
E-17800 Olot (Girona) (ES)

(72) Inventor : **Ibanez Sapina, Miguel, c/o Sacopa, S.A.**
Avda. Europa 28,
Pol. Ind. Pla de Baix
E-17800 Olot (Girona) (ES)

(74) Representative : **Pastells Teixido, Manuel**
c/o PASTELLS & ARAGONES, S.L.,
Pau Claris, 138
E-08009 Barcelona (ES)

(54) **Grating for swimming-pool overflow water drain channels.**

(57) It comprises a number of modules (1) which are juxtaposed and which are connected together. It is characterized in that each module (1) is provided on both opposed side surfaces thereof with respective pairs of resilient fingers (6, 7) with the peculiarity that the pair of fingers (7) of one side edge are provided with respective spigots (11) and the pair of fingers (6) of the other side edge are provided with respective orifices (9) in which the said spigots (11) are engaged, determining the resilient side coupling of the modules (1) forming the grating. It is contemplated that each side of the modules (1) shall have a finger (6'a, 7'a) with spigot (11) and a finger (6', 7') having an orifice (9). It is also a feature to provide the grating with a termination (14) where it is terminated with a transversally cut module (1a).



This invention relates to a grating for swimming-pool overflow water drain channels.

As is known, swimming-pools are built with a drain channel around them, which is closed with a grating allowing people to walk over them and which allows the water overflowing from the swimming-pool and generally spread by the users of the swimming-pool to pass. This water is collected by the drain channel and directed to the pertinent drain.

There are several types of grating, nevertheless most of them are formed by plastics material modules which are juxtaposed along the channel.

These modules sometimes are simply placed side by side but it is better to connect them to each other, there being several means for this purpose.

There may be mentioned among these means those formed by double metal pins which are inserted in orifices in the side edges of the modules.

The generally known systems have not properly solved the problem of the expansion of the modules in times of hot weather. Since these modules are of plastics material, they expand considerably, and since this expansion is not completely absorbed by the gaps provided for this purpose (which may not be greater than 8 mm) and because of the low resilience of said modules, they ride up against each other with the consequent drawbacks that this represents.

Another problem with the known gratings is that it is difficult to solve their correct coupling to arcuate channels, in which case the problem of the expansion is increased, since the square or rectangular modules have their side edges closer together and even touching in the inner arc of the curve.

Where double pins are used for coupling the modules forming a curve, pins with the couple of spigots in different spacings must be used, which hinders the assembly of the grating since for each coupling operation the corresponding pin has to be selected.

These and other drawbacks of the known gratings have been solved by the new grating of the present invention.

It is a feature of this grating that it is formed from modules having integral coupling means whereby no accessory is required. These coupling means are provided in highly resilient portions of the modules, with this notable resilience allowing the expansion to be easily absorbed and also the modules to be adapted to the curves.

A further advantage of the resilient coupling means of these modules is to allow an exact number thereof to be fitted along the overflow channel, without having to cut one of them as occurred up-to-date in view of the slight longitudinal resilience of the known modules.

To achieve these advantages, it has been contemplated that each module should have its coupling means on resilient fingers provided at the edges to be juxtaposed and coupled. There are two fingers for

each module side edge, those of one side having pins and those of the other side edge orifices in which said pins are inserted.

These elastic fingers have been provided in the extreme regions of the side edges of the modules and are parallel thereto, the free ends thereof being widened precisely in the location of the spigots and the orifices which are open at one side.

To obtain an even more resilient coupling allowing the arcuate inflection of the grating with a smaller radius and in either of both directions, the elastic fingers of each side edge of the modules have been provided with an orifice and a spigot alternately disposed one side and the other of the module. Furthermore, the axis of engagement between said orifices and spigots is provided in a plane intermediate the adjacent fingers of the juxtaposed modules.

A complementary support has also been contemplated as a termination where one module has to be cut because of the longitudinal dimension requirements of the grating. This termination consists of a section which is juxtaposed to the end of the cut portions of the module, which ends rest on laterally projecting supports of said section, on the surface thereof facing the end of the cut portions, the said supports coinciding with the slits separating the module portions.

Where the curvature of the grating is noticeable and the resilience of the coupling between modules is insufficient, the use of modules having a trapezoidal form with curved ends is contemplated.

These and other features will be better understood from the detailed description which follows to facilitate which there are attached five sheets of drawings in which practical embodiments given only as a non-limiting example of the scope of the invention are shown.

In the drawings:

Figure 1 is a plan view of one module of those forming the grating;

Figure 2 is a cross-section elevation view of said module on the line II-II of figure 1;

Figure 3 is a plan view of the coupling of two modules;

Figure 4 is an enlarged cross-section elevation view on the line IV-IV of figure 3;

Figure 5 is a perspective detail view of the module coupling means;

Figure 6 is a schematic plan view of the coupling of three modules in an arcuate arrangement;

Figure 7 is a plan view of the end portion of a module with a different embodiment of the coupling means between modules;

Figure 8 is a plan view of the component module of another grating embodiment;

Figure 9 is a cross-section elevation view of said module on the line II-II of figure 8;

Figure 10 is a plan view of the coupling of two

modules of figure 8;

Figure 11 is an enlarged cross-section elevation view on the line IV-IV of figure 10;

Figure 12 is a perspective view in detail of the coupling between two modules of figure 8;

Figures 13 and 14 are schematic plan views of the coupling of three modules in arcuate arrangement in different directions and the coupling of three modules in arcuate arrangement using trapezoidal modules, respectively, according to figure 8;

Figure 15 is a plan view of the termination of a grating with the end module cut;

Figure 16 is a perspective view of the termination with which the cut module ends; and

Figures 17 and 18 are cross-section views, respectively, on the line X-X of figure 15 and the line XI-XI of figure 17, of the arrangement of the termination on which the cut end of the module rests.

According to the drawings, the grating is formed by a number of plastics material rectangular modules 1 the end edges of which are shorter than the sides. These modules are formed by mutually parallel rectangular section portions 2 separated by slits 3. These portions are connected together at the ends by two lower cross-members 4 and 5 also of rectangular section, with the end portions of a lower height.

At the end portions of their opposite side edges, the modules are provided with respective pairs of elastic fingers 6 and 7 parallel to said sides edges, not extending therefrom and which are an angular extension of one of the portions 2 of the module, to be precise the portions 2' and 2".

The fingers 6 are provided at the slightly widened end 8 thereof with the laterally open orifice 9 and the fingers 7 have the end 10 thereof widened and extending outwardly from the module side edge. In said extending portion, said end is provided on the lower surface thereof with a spigot 11 having a diameter corresponding to the orifices 9 of the fingers 6.

One module is laterally connected to the adjacent module by engaging the spigots 11 of one of the them in the orifices 9 of the other module as shown in figure 3 and 4, leaving a gap between modules. Said spigots 11 are connected to the finger 7 by a wall 12 (figure 5) having a cross-section corresponding to the side opening 13 of said orifices 9, the widened portion 8 having an upper recessed portion where the widened portion 10 engages.

This coupling provides between modules a resilient joint provided by the resilience of the finger 6 and 7.

This resilience is shown in figure 6 where the modules are compressed together at one end A and expanded at the opposite end B, with the grating unit adopting an arcuate arrangement.

Figure 7 shows a variation of the elastic fingers

6' and 7', which are an angular extension of the end portions 2a.

In figure 8, the alternate fingers 6' and 7' on each side edge have the orifice 9 in the end 8 thereof and the also alternate fingers 6'a and 7'a have the end 10 widened and comprise on the lower surface thereof the spigot 11 having a diameter conforming to that of the orifices 9.

One module is connected side by side with the juxtaposed module by inserting the spigots 11 of one of them in the orifices 9 of the other module as shown in figure 10, leaving a gap between modules, such that the axis of engagement between said orifices and spigots is provided in an intermediate plane between the adjacent fingers of the juxtaposed modules. The widened portion 8 of the fingers is provided with an upper recessed portion 8' (figure 12) where their widened portion 10 engages.

This coupling provides between the modules a resilient joint provided by the resilience of the fingers 6', 6'a, 7' and 7'a.

This resilience and the arrangement of the couplings between modules allows them to be compressed at one end or extended as shown in figure 13 where the modules are compressed at points A' and are extended at points B' to adapt the grating to a sinuous channel arrangement.

If the drain channel is substantially curved, then modules 1' would be used, having a trapezoidal form in plan view with ends A'' and B'' curved.

Where the resilient compression of the coupling between modules does not allow the differences between the length of the grating and that of the drain channel to be absorbed and it is necessary to cut a part of the end module 1a crosswise, the grating is provided with a termination 14 (figure 16) consisting of a rectangular section 15 which is juxtaposed to the end of the cut portions 2''a of the module. The ends rest on supports 16 extending laterally from said section, on the surface 15' thereof facing the end of the cut portions, the said supports coinciding with the slits 3a separating the module sections. On the other side, the section 15 is provided with a recessed portion 15'' (figure 18).

The section 15 is supported on the angular section 17 attached to the stepped sides of the mouth of the drain channel C and said section is provided on the lower support edge thereof with extended recesses 18 to facilitate the flow of the water towards the channel. Likewise, the section 15 is provided on the surface 15' thereof with support walls 19 for the lower height sections 2'a contemplated in the end portions of the modules 1 and also to facilitate the passage of the water.

Claims

1.- A grating for swimming-pool overflow water drain channels, comprising a number of modules (1) which are juxtaposed and are coupled together side by side, characterized in that each module (1) is provided on both opposite side edges thereof with the formation of respective pairs of resilient fingers (6, 7), with the peculiarity that the pair of fingers (7) of one side are provided with respective spigots (11) and the pair of fingers (6) of the other side are provided with respective orifices (9) in which the said spigots (11) are engaged, determining the resilient lateral coupling of the modules (1) forming the grating.

2.- The grating for swimming-pool overflow water drain channels of claim 1, wherein the resilient fingers (6, 7) have been provided in the end portions of each module (1) and are parallel to the side edges thereof.

3.- The grating for swimming-pool overflow water drain channels of claim 1, wherein the resilient fingers (7) having a spigot (11) have the free end (10) thereof widened and extending from the side edge of the module, the spigot (11) being formed on said outstanding portion.

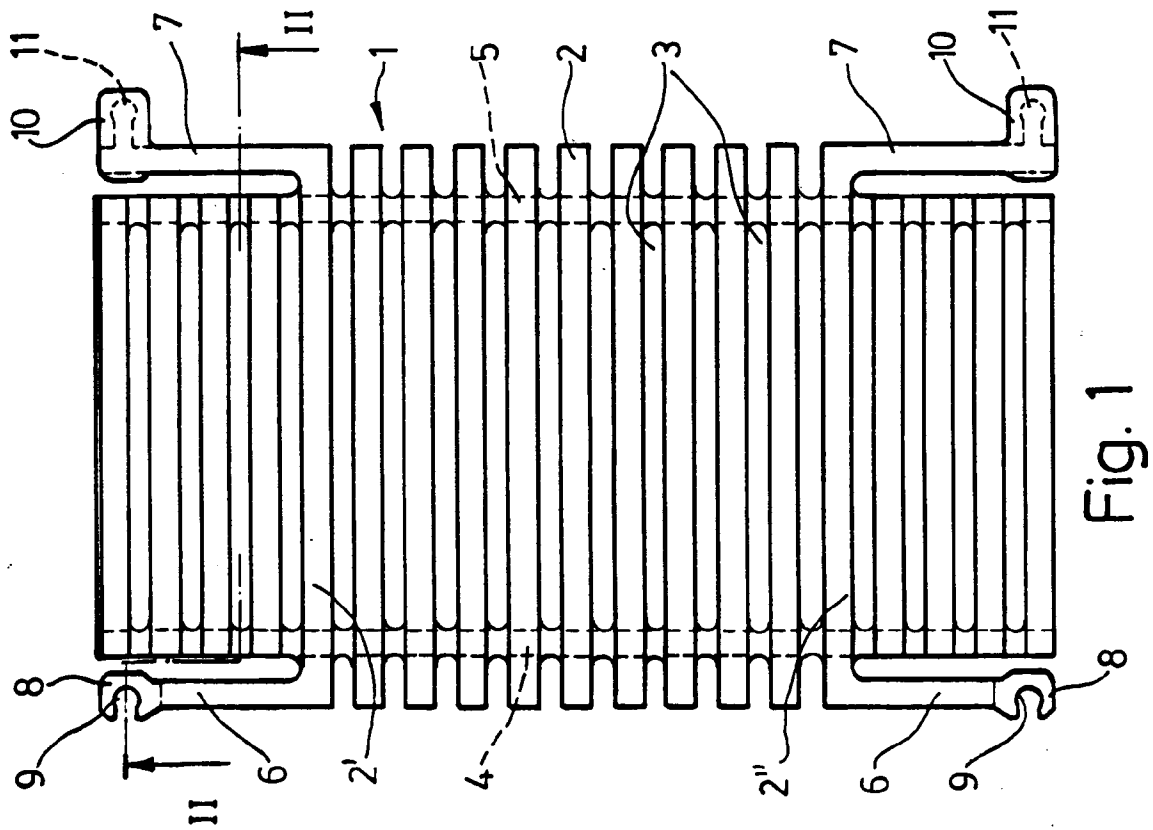
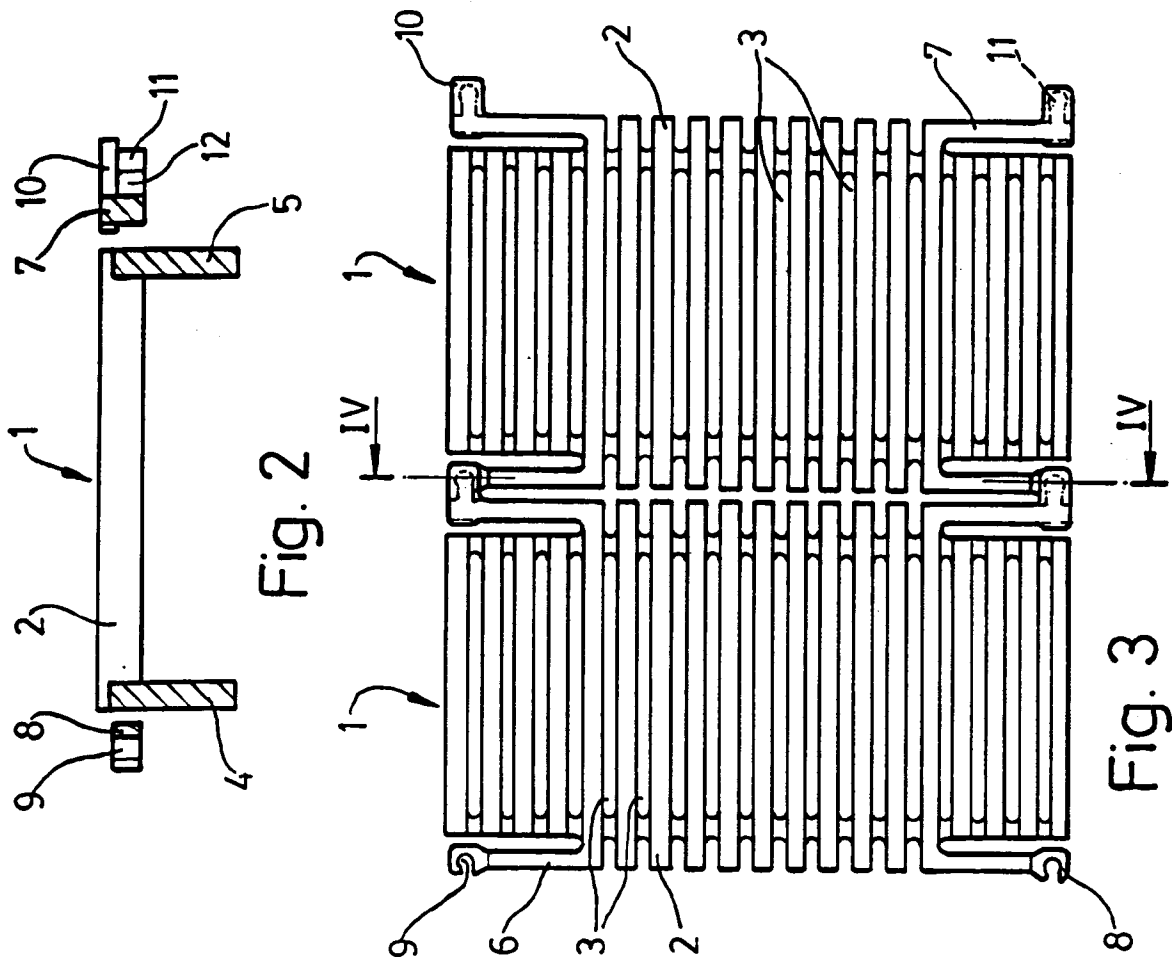
4.- The grating for swimming-pool overflow water drain channels of claim 1, wherein the resilient fingers (6) having the orifice (9) have the free edge (8) thereof slightly widened where the orifice (9) is located, said orifice being open at the side (13).

5.- The grating of claim 1, wherein each side wall of the modules (1) is provided with a finger (6'a, 7'a) having a spigot (11) and a finger (6', 7') with orifice (9), said orifice (9) and spigot (11) alternating on one side relative to those of the other side edge and so that the axis of engagement of said orifices and said spigots is provided in a plane intermediate the adjacent fingers (6', 7'a, 6'a, 7') of the juxtaposed modules (1).

6.- The grating of claim 5, wherein the modules (1') for a highly curved drain channel are provided in plan view with a trapezoidal form having curved edges.

7.- The grating of claim 5, wherein the grating is provided with a termination (14) where the grating terminates with a transversally cut module (1a), consisting of a section (15) which is juxtaposed to the end of the cut portions (2'a) of the module (1a), said ends resting on supports (16) laterally projecting from said section, on the side thereof facing the end of the cut portions (2'a), the said supports (16) coinciding with slits (3a) separating the portions (2'a) of the module (1a).

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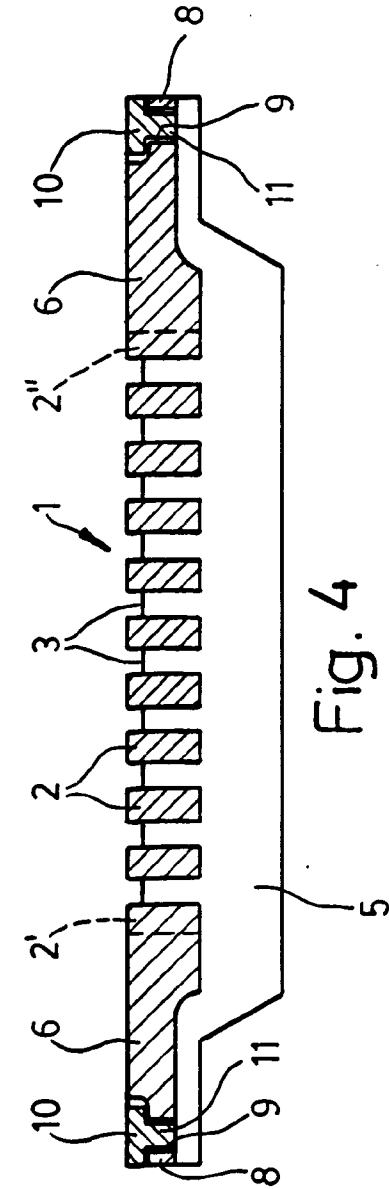


Fig. 4

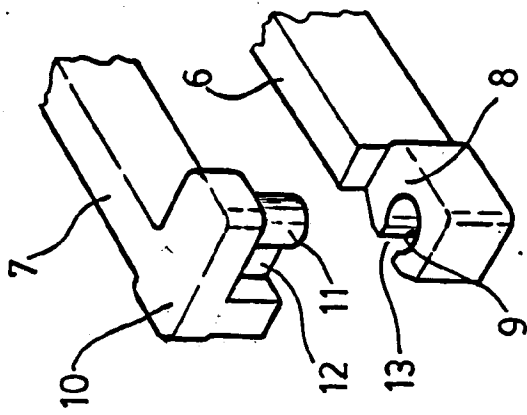


Fig. 5

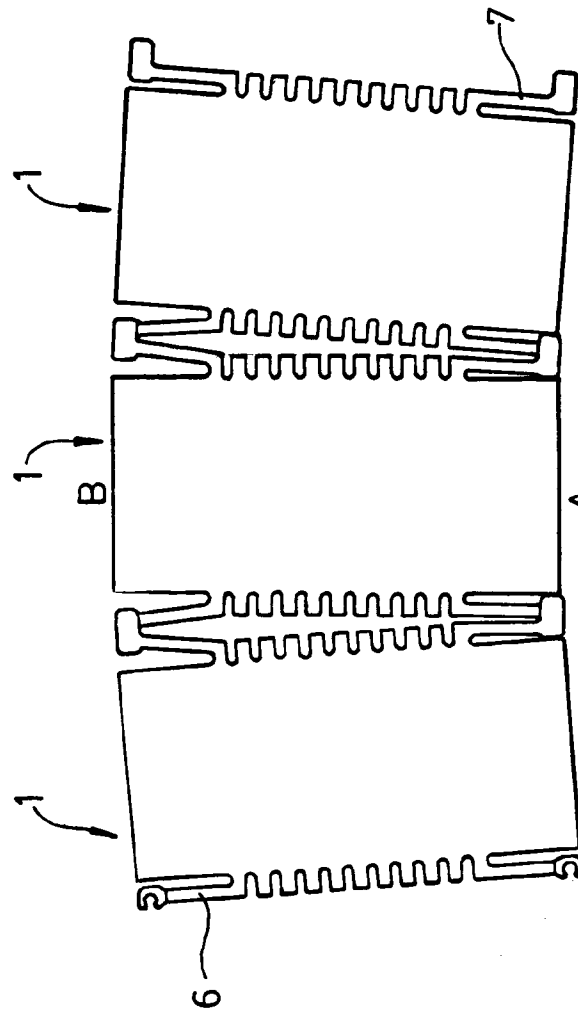


Fig. 6

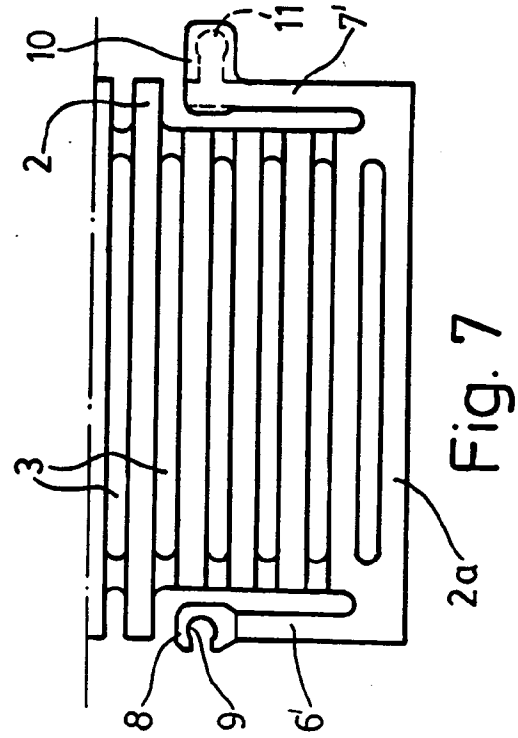
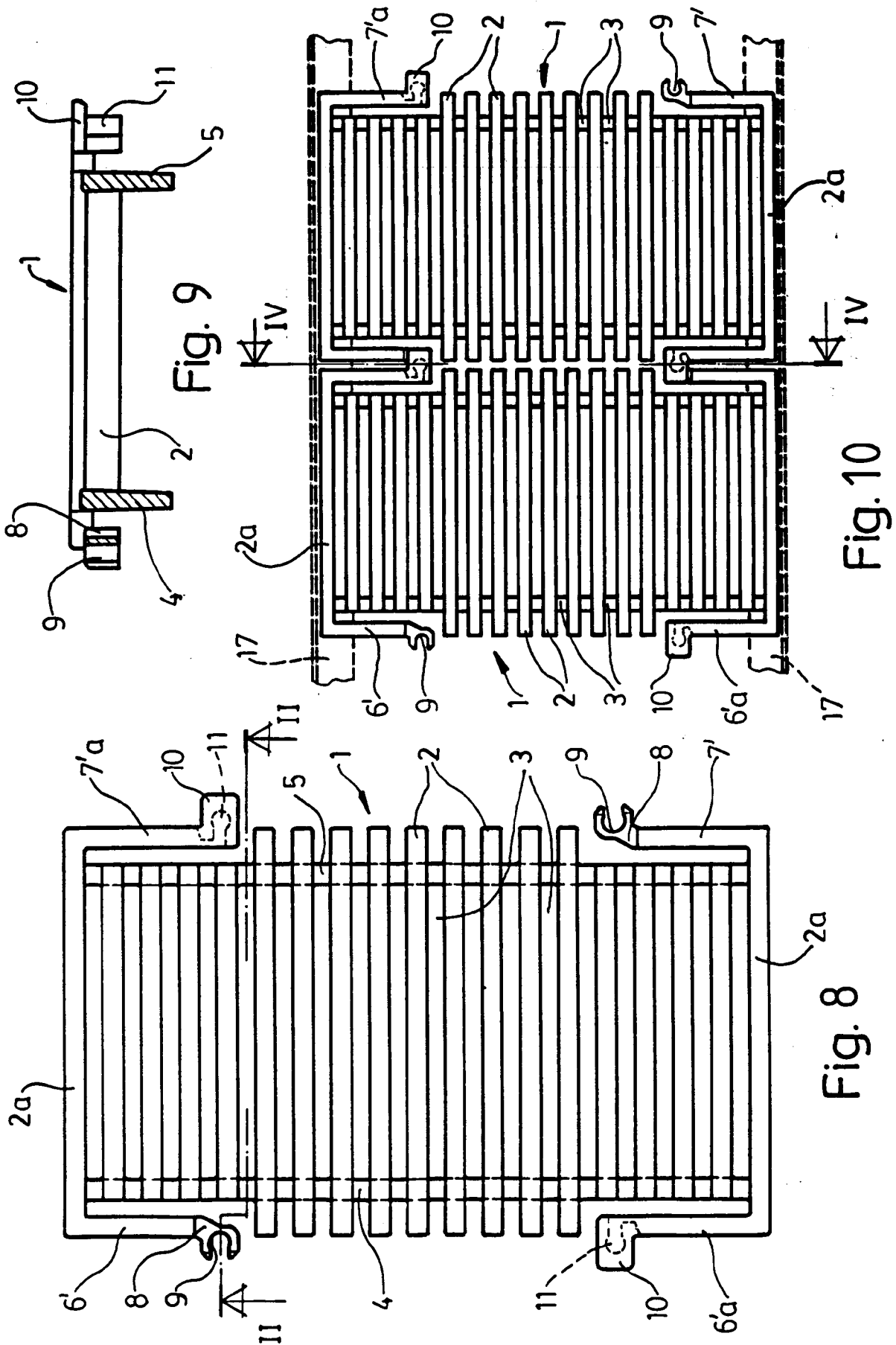


Fig. 7



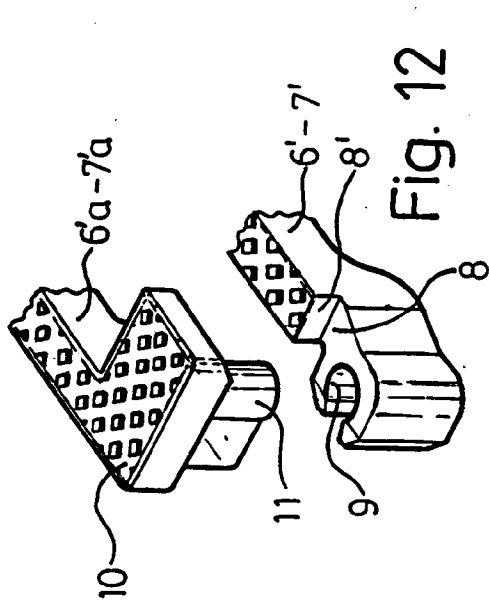


Fig. 12

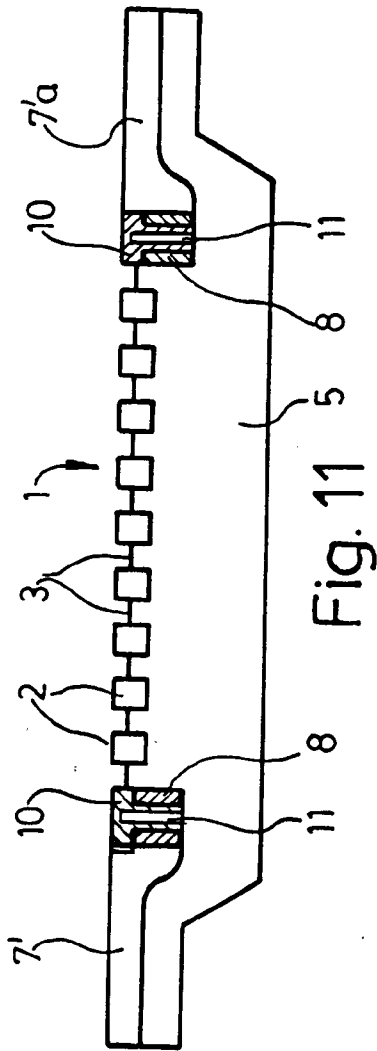


Fig. 11

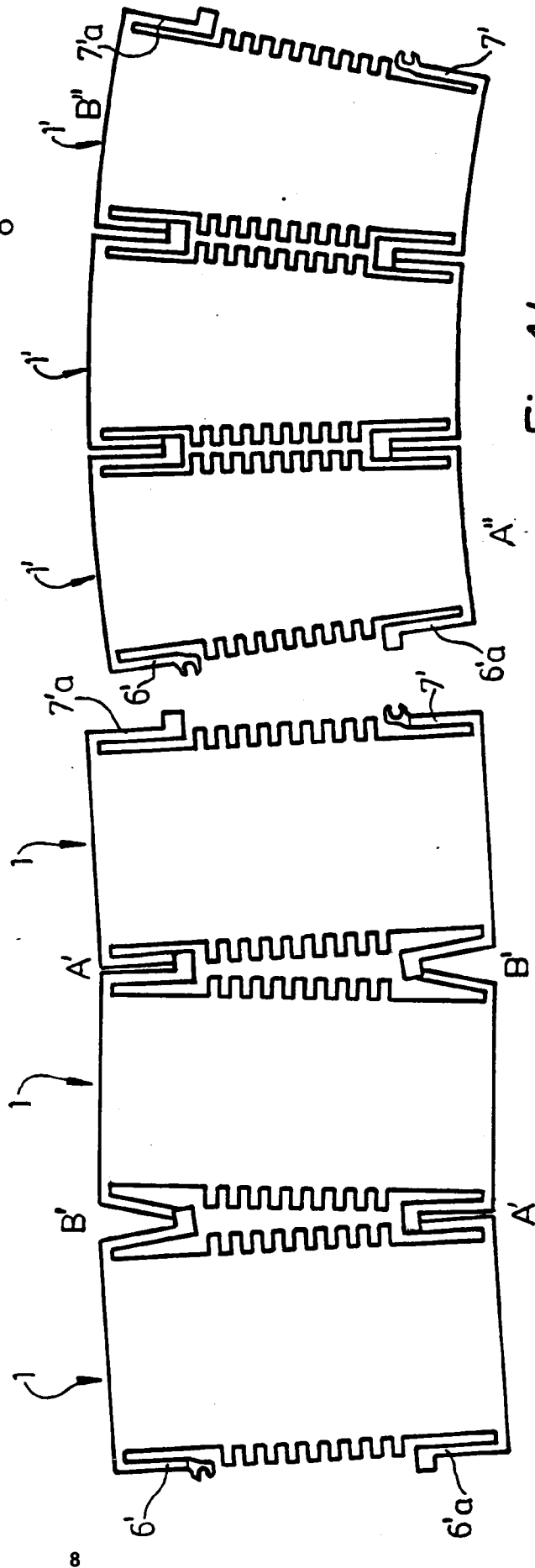
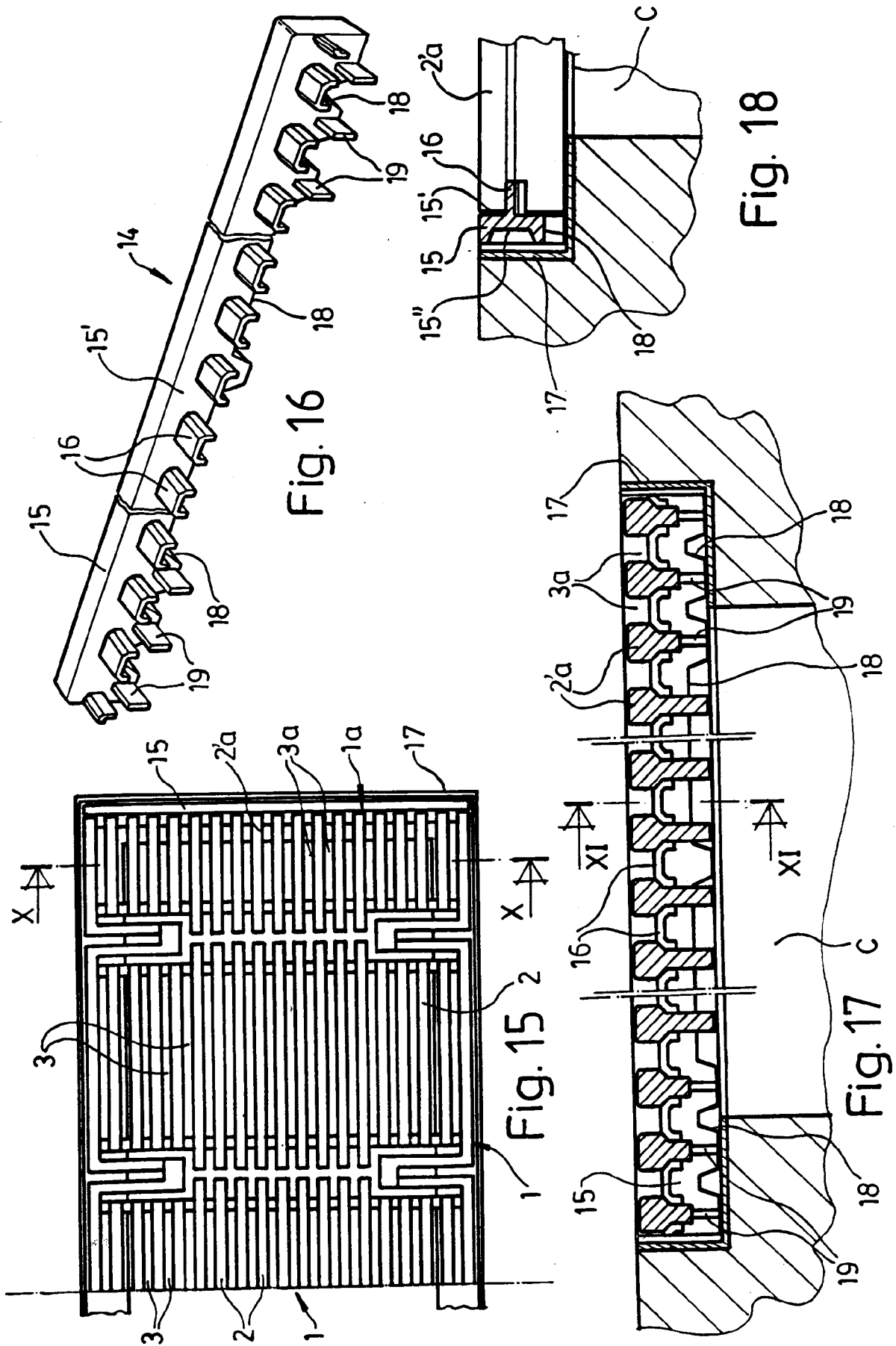


Fig. 14

Fig. 13





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EUROPEAN SEARCH REPORT

Application Number
EP 94 50 0028

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-26 02 114 (ERICH ARENS KG) * page 7, line 1 - page 8, line 22; figures 1,2 *	1	E04H4/12 E04C2/42
A	DE-A-25 43 829 (ERICH ARENS KG)		
			TECHNICAL FIELDS SEARCHED (Int.Cl.5)
			E04H E04C E04F
The present search report has been drawn up for all claims			
Place of search THE HAGUE		Date of completion of the search 19 May 1994	Examiner Porwoll, H
CATEGORY OF CITED DOCUMENTS X : particularly relevant if taken alone Y : particularly relevant if combined with another document of the same category A : technological background O : non-written disclosure P : intermediate document 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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