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A prefabricated guiding member for use when casting concrete floors and a method of using such guiding member.

A prefabricated guiding member or casting guide (2,24,32,40,60) for use when casting concrete floors or similar casted surfaces and adapted to be permanently mounted along opposite sides of a rectangular casting field (A,B,C, Fig.9) with mutually flushing top sides (10) previous to the casting operation, the guiding member being shaped as an elongate casted member with cross section either as an inverted T (2,24,40,60) or being L-shaped (32), i.e. having a marked foot portion (14) and either an upright central web portion or an upright web portion at one side of the foot portion (32). The guiding member being at least at one outside provided with corrugated surface while the opposite outside preferably has a smoot outside which may even be almost plane. Hereby it is possible in a better manner to control the formation of shrink cracks to actually occur preferably along said smoot outside of the guiding member. By furthermore providing this smoot outside with an upper joint member it is possible entirely to eliminate the result of unavoidable setting cracks along the guiding member as the joint member after the casting operation and setting is substituted by a permanent joint of elastic material. By the casting of concrete floors the field casted first is mounted with guiding members in such a manner that corrugated outsides facing all

the sides of the field as it is found that shrink cracks mostly are seen along the last casted side of the guiding member.

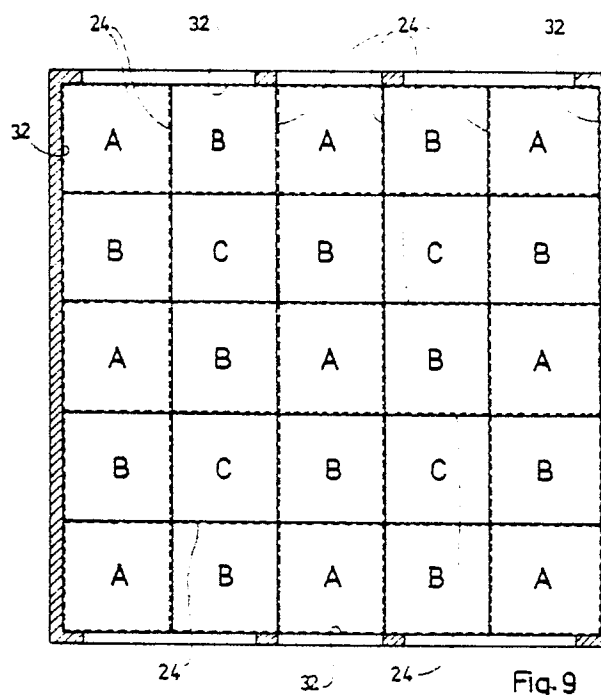


Fig. 9

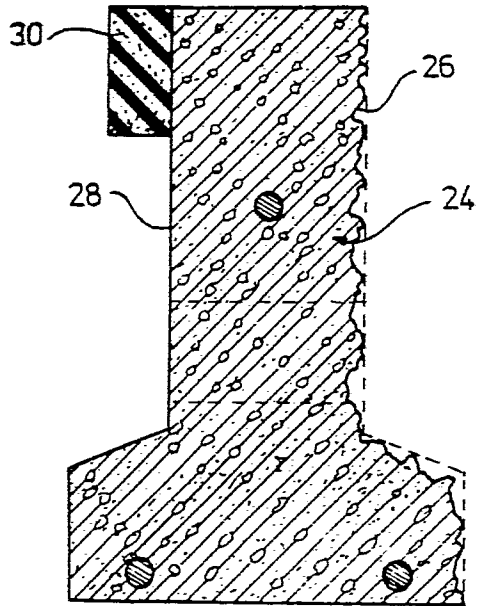


Fig.3

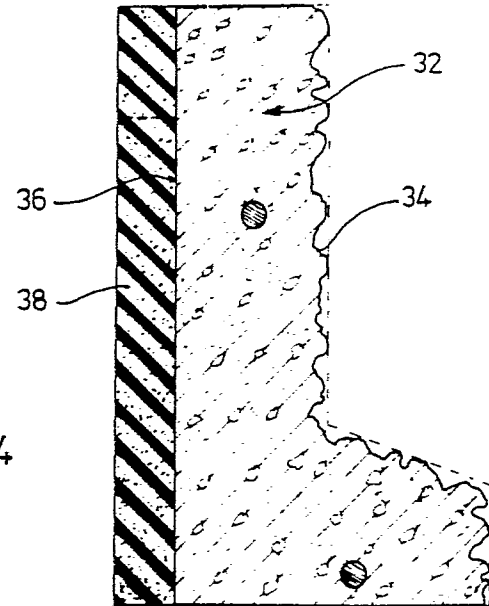


Fig.4

A prefabricated guiding member for use when casting concrete floors and a method of using such guiding member.

The present invention related to a prefabricated guiding member for use when casting concrete floors and of the type as described in the introductory part of claim 1.

In recent years considerably reliefs have taken place when production casted concrete floors or similar casted surfaces, e.g. outdoors concrete plates on roads and courtyards by the use of prefabricated guiding members or casting guides. The floor or the courtyards is divided into suitable fields by means of longitudinal guiding members being mounted on a hard base, e.g. of compressed sand, by applying concrete here and there and simultaneously an accurate levelling of the guiding members are performed. Then the casting fields formed by the guiding members as required are provided with reinforcement, e.g. in the form of prefabricated iron mesh reinforcement, before pouring in the concrete which is levelled out by means of a vibrator beam the opposite ends of which being supported on plane top side portions of the guiding members as the vibrator beam during operation is drawn slowly across the casting field which in this way can be cast with quite smooth upper surface in a single working operation.

Such a guiding member is known from the description to EP-patent specification No. 54 026. The cross section of this known guiding member has form as a lying H, i.e. with a rather broad upper support surface for said end portion of the vibrator beam and with an even broader foot portion. Furthermore this known guiding member is provided with cross holes in the web portion which by opposite sides have protruding brackets adapted to support a reinforcement if any.

However, known guiding members of the type in question including the above mentioned guiding member are defective. By way of example formation of cracks along the guiding members is one problem connected to an inexpedient cross section which complicate a good contact with the casting mixture as this in order to obtain a good result shall better contain a minimum of water, i.e. be relatively dry. Furthermore uncontrollable formation of cracks may occur along the guiding members. In fairness it should be told that some cracks can not be avoided because by way of nature the concrete shrink during the setting.

The invention has for its purpose to provide a guiding member of the type mentioned above and by means of which it in a simple manner is possible to avoid the above mentioned disadvantages.

According to the invention the guiding member is characterized in being provided with corrugated surface at least by one longitudinal side thereof. Hereby it may be obtained a considerably better connection between the guiding member and the concrete plate since a possible shrink crack due to the corrugation gets a very large surface being able to transmit very considerable displacement forces. Besides the cross section area of the proper shrink crack becomes much more close than previously known. In general a much more tight joint between the concrete plates is obtained, whereby the floor as a whole is able to be proof against larger displacement forces. Curvature of the concrete plates is minimized if any. The guiding member takes part as an integrated part of the floor.

By means of the statement of claim 2 is obtained in a particular simple manner to make an effective corrugation of the said surface of the guiding member as the exposure of the stone material of the concrete is easy to carry out in connection with the demoulding of the guiding members. By way of example the proper exposure may be carried out by means of high pressure sluicing of said side portions of the guiding member. And expediently the actual surfaces of the mould parts corresponding to the guiding member side portions which are wanted to be exposed can in advance, i.e. before the casting operation, be applied with a setting impeding agent.

By the statement of claim 3 is obtained a particular expedient configuration of the guiding member according to the invention for use between casted concrete plate members since the upright central portion of the guiding member -without upper sideways protruding portions -may result in an improved close fitting of the relative dry concrete mixture along the casting guide or the guiding member.

In connection with exceptional heavy loaded concrete floors it may be advantageously to use a guiding member according to claim 4, i.e. having corrugated surfaces by both external sides except for short upper side portions which are held smooth in order to better control the inevitable shrink cracks when an exceptional heavy concrete mixture being used.

Claim 5 states a particular expedient configuration for a guiding member for use along wall joints or for use between floor plate members which due to particular conditions shall be noise isolated, e.g. around foundations for machines, pillars and the like. Opposite to the protruding foot portion the guiding

member in this embodiment according to claim 6 is shaped with completely plane and smoot side portion which furthermore according to claim 7 may be provided with a cover of artificial resin foam or another suiteable insulation material of which an upper longitudinal portion -after the castin opartion -may be removed and substituted by a suiteable joint material, while the lower part of the cover may constitute a permanent thermal and/or sound insulation. Possibly the complete cover may be maintained for constituting a thermal and/or sound insulation.

By the statement of claim 8 is obtained a casting guide or a guiding member which is particular suited for use in connection with casting concrete floors which shall be entirely water proof since practical experiments have shown that possible formations of cracks almost always occurs along the last casted side of the guiding member. By taking care of that the corrugated side of the guiding member facing the first casted floor field, possible shrink scracks can be concentrated along the opposite smoot surface of the guiding member by the later casting of the adjoining floor fields. When the joint member subsequently is partly removed and is substituted by a permanent elastic joint material possible shrink cracks along the smoot side of the guiding member may herby be effectively eliminated.

According to claim 9 is obtained a particular guiding member for use in cases where a floor surface is wanted having exceptional large elasticity between the single floor plate members. In order to avoid shrink scracks both the corrugated longitudinal sides of the guiding member are dressed with concrete binder, whereby is obtained an extra good contact between the respective concrete plate members and the guiding members which comprises an entirely close and elastic joint between the opposite parts of the guiding member.

The invention also relates to the method of using the guiding member according to the invention -as stated in claim 10. In the following the invention is described in more detail with reference to the accompanying drawing, in which:

Fig. 1 a plane sectional view of an embodiment of the guiding member according to the invention,

Fig. 2 a plane side view of the guiding member shown in Fig.1,

Fig. 3 a plane sectional view of another embodiment of the guiding member according to the invention,

Fig. 4 a plane sectional view of a further embodiment of the guiding member according to the invention,

Fig. 5 a plane sectional view of another further embodiment of the guiding member according to the invention,

Fig. 6 a perspective part view showing by way of example a casting method by the production of the guiding member according to the invention,

Fig. 7 a perspective view of a mould end part for use with the casting method shown in Fig.6,

Fig. 8 a perspective view of the embodiment of the guiding member shown in fig. 1 and 2,

Fig. 9 shows in a plane view a casting plan to illustrate the method according to the invention, and

Fig. 10 is a plane sectional view of an alternative embodiment of the guiding member according to the invention.

In Fig.1 is shown a guiding member or casting guide 2 in almost natural size, since inpractice the guiding member is produced with hights of 80, 100 and 130 mm and with lengths of 2400 and 3900 mm. The guiding member 2 is maded with exposed sides 4 and 6, while a top portion 8 has a smoot upper surface 10 and smoot upper side edge portions 12. A broader foot portion 14 is also maded with exposed side portions 16, while an inclined upper portion 18 of the foot portion 14 normally has only rough surface. The guiding member 2 is provided with suiteable iron reinforcement 20 and provided with cross holes 22 which are seen more clearly in Fig. 2 showing the guiding member 2 just after the demoulding, i.e. before the performing of the proper exposure of the stone material of the concrete by means of high pressure sluicing. The guiding member 2 is casted of concrete with a filling materiale containing crushed granite with a stone size of some 4-8 mm. By the exposure is obtained a correspondingly rough, corrugated surface structure; but as mentioned it is particularly only the vertical side portions of the guiding member 2 which are being entirely exposed since it is not always required that the inclined upper side portions 18 of the foot portion 14 in full extent are able to meet the displacement forces during the setting of the adjoining concrete plate members.

The guiding member 24 shown in Fig. 3 is produced with a longitudinal side 26 of which the said stone material is exposed over the full hight thereof while the opposite longitudinal side 28 is produced quite smoot. The side 28 is after setting and drying provided with an upper enlongate joint member 30 being secured to the smoot surface of the side portion 28 by means of a suiteable glue. Preferably the joint member 30 consist of artificial resin foam, e.g. polystyrene, or of another suiteable joint material which after the casting operation and

the setting is adapted to remove and to substitute by a permanent joint, preferably of an elastic joint material. Alternatively the joint member 30 may be constituted by a foaming process directly against the smoot surface side 28 of the guiding member 24.

The guiding member 32 shown in Fig. 4 is also produced with a longitudinal side portion 34 being entirely exposed, while the opposite longitudinal side portion 36 is quite plane and smoot as the longitudinal side portion 36 by a subsequent operation is provided with an entirely covering joint cover 38 of artificial resin foam. The guiding member 32 may also by the casting operation be provided with the joint cover 38 by insertion of this into the mould; however, the joint cover 38 preferably is secured to the guiding member 32 after the demoulding and setting. Alternatively, the joint cover 38 may be constituted by a foaming process directly against the smoot, plane side 36 of the guiding member 32. After the casting operation and the setting of the adjoining floor surfaces an upper, longitudinal portion of the joint cover 38 may be removed, and when the joint is quite dry it may be filled with a suitable permanent joint material, while the remaining lower part of the joint cover 38 may constitute a permanent thermal and/or sound insulation between the adjoining floor surfaces or along adjoining walls or foundations etc.

The guiding member 40 shown in Fig. 5 - in principle consist of two parts constituted by two symmetric parts being interconnected by means of a central castes in joint band 42 of Neoprene-rubber. In return the guiding member 40 by opposite longitudinal sides 44 provided with corrugated, exposed surface in the entire height. By furthermore in advance to the casting operation to prepare the corrugated elongate sides 44 with a suitable concrete binder it is possible to obtain an extremely close connection with the adjoining concrete plate members so that shrink cracks can be entirely avoid along the guiding member 40 since the rubber joint 42 thereof is able to compensate for all the shrink by the setting of the adjoining concrete plate members.

By way of example Fig. 6 shows how the guiding member according to the invention can be produced on a casting plan 46 by means of loose mould parts 48 of metal plate material since the guiding members are casted in inverted position, i.e. with the foot portion turned upwards. Besides is used two mould end parts as shown in Fig. 7. The mould parts 48 are provided with lower cross braces 50 and 52 of which the outermost cross braces 52 are adapted to cooperate with L-shaped distance members 54 on the mould end parts - (Fig.7). These may furthermore be provided with holes (not shown) for supporting longitudinal re-

inforcement iron 20 in the cavity of the mould. The mould parts 48 are provided with cross holes 56 through which iron rods or tubes may be inserted in order to hold together the mould battery and for constituting the cross holes 22 of the guiding member 2 (Fig. 2). The iron rods or the tubes may be drawn out of the mould battery already short after the casting operation without the holes 22 thereby "collapse".

Fig. 9 illustrates the method of using the guiding members according to the invention in a - schematic manner by casting a larger concrete floor which is divided into 25 fields each of about 25-35 m², where the casting fields are designated with A, B and C, respectively. In order to produce a larger concrete floor of which the individual concrete plate members represented by the fields A, B and C are allowed to "work" mutually independent by means of an elastic joint between the single concrete plate members more conditions have to be taken in consideration.

The guiding members or casting guides have to be constructed with optimal quality, i.e. with a smoot surface at the joint side and with corrugated surface at the casting side (opposite to the joint side), i.e. by way of example as shown in Fig. 3 or possibly in Fig. 4. The guiding member according to the invention meets these requirements by being entirely smoot at the joint side and by having exposed, corrugated surface at the casting side, i.e. being able to slip at the joint side and to become an integrated part of the floor at the casting side. As mentioned it has been found, that shrink cracks by casting operation with standard guiding members normally occurs as a crack along the last casted side also such facts have to be considered. Consequently the casting principle shown in Fig. 9 may be used in the following manner:

The A-fields are casted on the first day as the A-fields are mounted with guiding members 24 and/or 32, where the rough exposed corrugated side faces the A-fields at all four sides thereof.

The B-fields at the earliest are casted on the second day as the B-fields are mounted with guiding members 24 and/or 32, where the exposed corrugated sides of two of the guiding members facing the B-fields, which at the other two sides are limited by smoot joint sides of the two other guiding members.

The C-fields at the earliest are casted on the third day as the C-fields are mounted with guiding members 24 of which the smoot joint side facing all four sides of the C-fields.

In Fig. 9 the smoot joint side of the guiding members are represented by a full line, while the corrugated side of the guiding members in Fig. 9 are represented by a dotted line.

Regarding a possible reinforcement of the respective floor fields shall be mentioned, that the reinforcement ought to be ended or at least to be decreased at the joints. A too heavy reinforcement through the joint may result in that shrink cracks and movements of the concrete plate members occurs in an uncontrollable manner in the proper fields. Normally the very best result is obtained if the reinforcement is ended along the guiding members, i.e. before the joint. In exceptional cases it may happen that reinforcement connection members are inserted through the guiding members.

Quite generally it is important that the concrete mixture has a low W/C relation (liter water/ kg.cement), and that the concrete after the casting operation is protected against drying up.

An alternative guiding member 60 is shown in Fig. 10, where an longitudinal side 62 is provided with longitudinal grooves or depressions 64 which may substitute the exposure of the stone material of the concrete. The depressions 64 requires corresponding longitudinal protrusions in the mould parts, if the shown guiding member 60 is not produced by a suitable extrusion operation.

Claims

1. A prefabricated guiding member or casting guide for use when casting concrete floors or similar casted surfaces and adapted to be permanently mounted along opposite sides of a casting field with mutually flushing top sides previous to the casting operation, said guiding member being provided as an elongate casted member with a cross section comprising a narrow uppermost portion and a broader lowermost foot portion as a top side respectively a bottom side of the guiding member being plane, preferably mutually parallel **characterized** in that at least one longitudinal side of the guiding member being provided with rough, corrugated surface.

2. Guiding member according to claim 1 **characterized** in that said corrugated surface of said longitudinal side is constituted by exposure of stone material contained in the casting mixture.

3. Guiding member according to claim 1 **characterized** in having a cross section being symmetrical to a vertical longitudinal symmetry plan through the member and being in general shaped as an inverted T, i.e. with a marked foot portion and a therefrom upright central portion having approximately mutually parallel outsides.

4. Guiding member according to claim 1 and 3 **characterized** in that both of said outsides with exception of narrow upper side edge portions thereof are provided with corrugated surfaces.

5. Guiding member according to claim 1 **characterized** in having a generally L-shaped cross section, i.e. with a marked foot portion protruding only to one side of an upright longitudinal web portion with approximately parallel outsides.

6. Guiding member according to claim 1 and 5 **characterized** in that one of said outsides facing the same side as said foot portion being provided with corrugated surface, while the opposite side of said web portion is provided with plane approximately smooth surface.

7. Guiding member according to claim 6 **characterized** in that said plane and smooth side is provided with a cover of artificial resin foam or of another suitable insulation material.

8. Guiding member according to claim 3 **characterized** in having one longitudinal outside provided with rough corrugated surface, while the opposite outside has in general smooth surface, and that an uppermost edge portion of said smooth surface being provided with a joint member being adapted after the casting operation and setting to be substituted by a permanent joint of an elastic material.

9. Guiding member according to claim 1 and 3 **characterized** in being provided with corrugated surfaces at both opposite outsides, and that along said symmetry plan by casting is provided a longitudinal band consisting of elastic material and constituting a prefabricated elastic joint between the respective member portions.

10. A method of using guiding members according to claims 1-8 by casting a floor surface divided into a number of rectangular casting fields A, B and C (Fig. 9) **characterized** in that the casting fields A being casted on a first day as the A-fields are mounted with guiding members of which a corrugated side surface facing all four sides of the A-fields, that the casting field B at the earliest being casted on the second day as the B-fields are mounted with guiding members of which two corrugated outsides are facing two sides of the B-fields the remaining two sides of which being faces by smooth outsides of the other two guiding members, and that the casting fields C at the earliest being casted on the third day as the C-fields are mounted with guiding members of which smooth outsides facing all four sides of the C-fields.

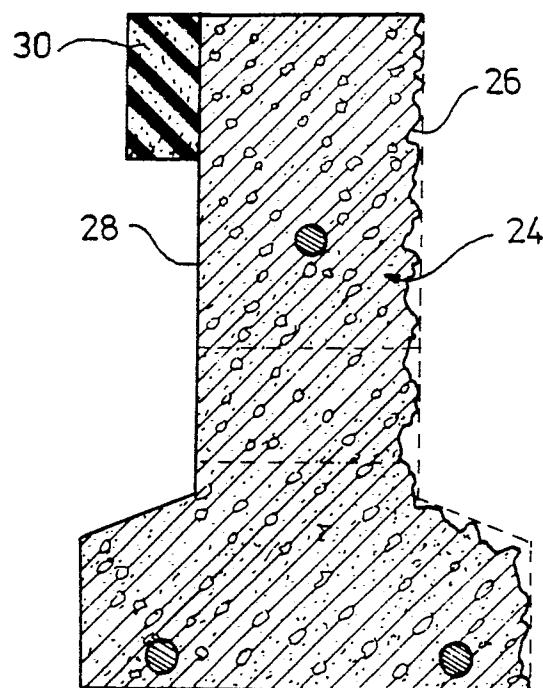
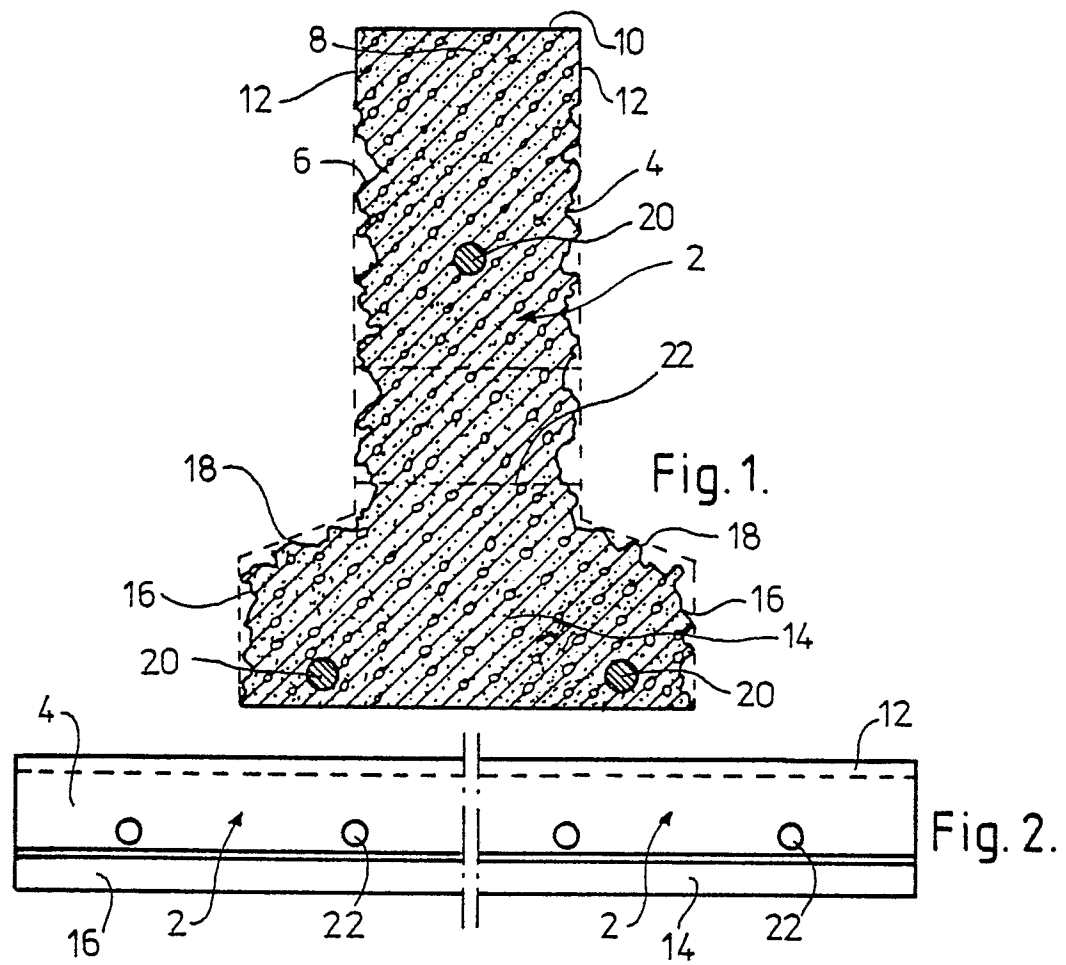
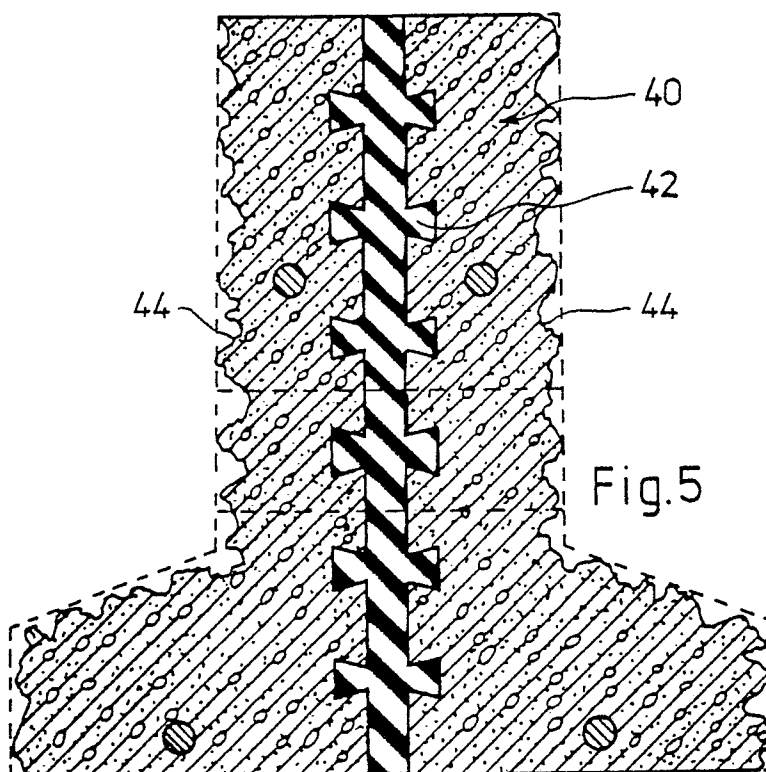
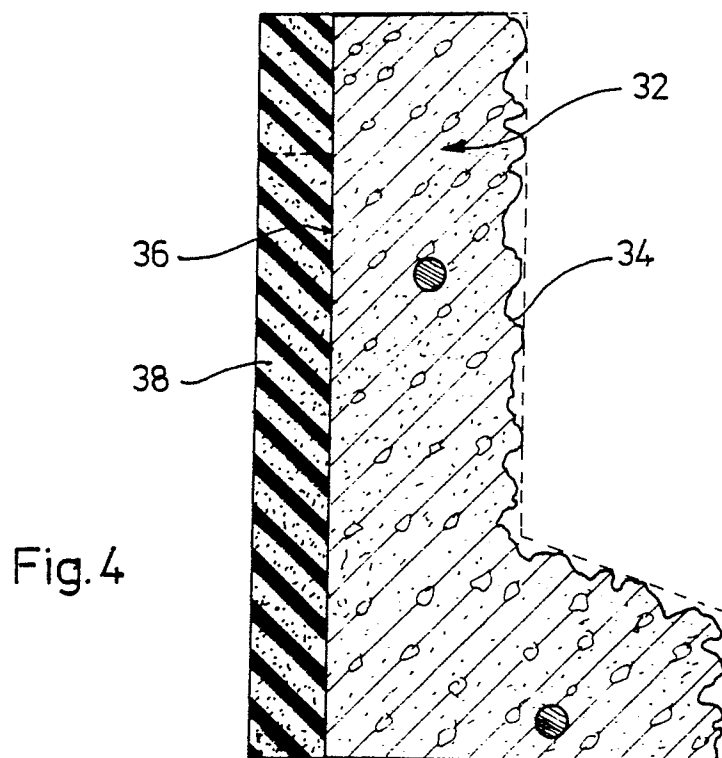


Fig.3



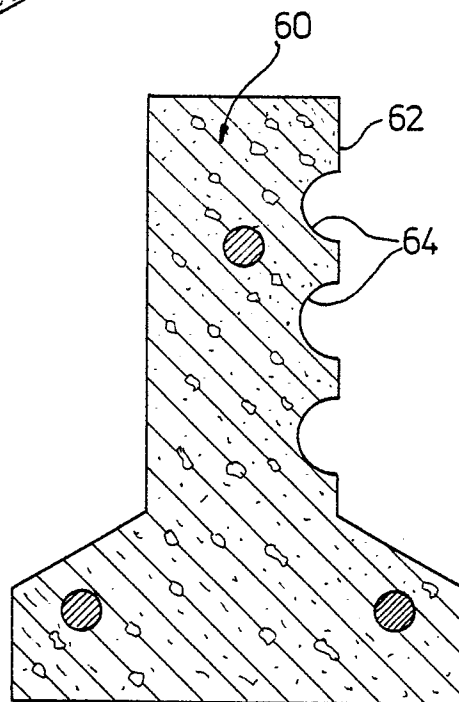
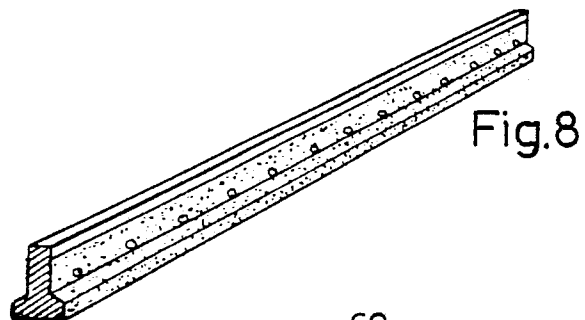
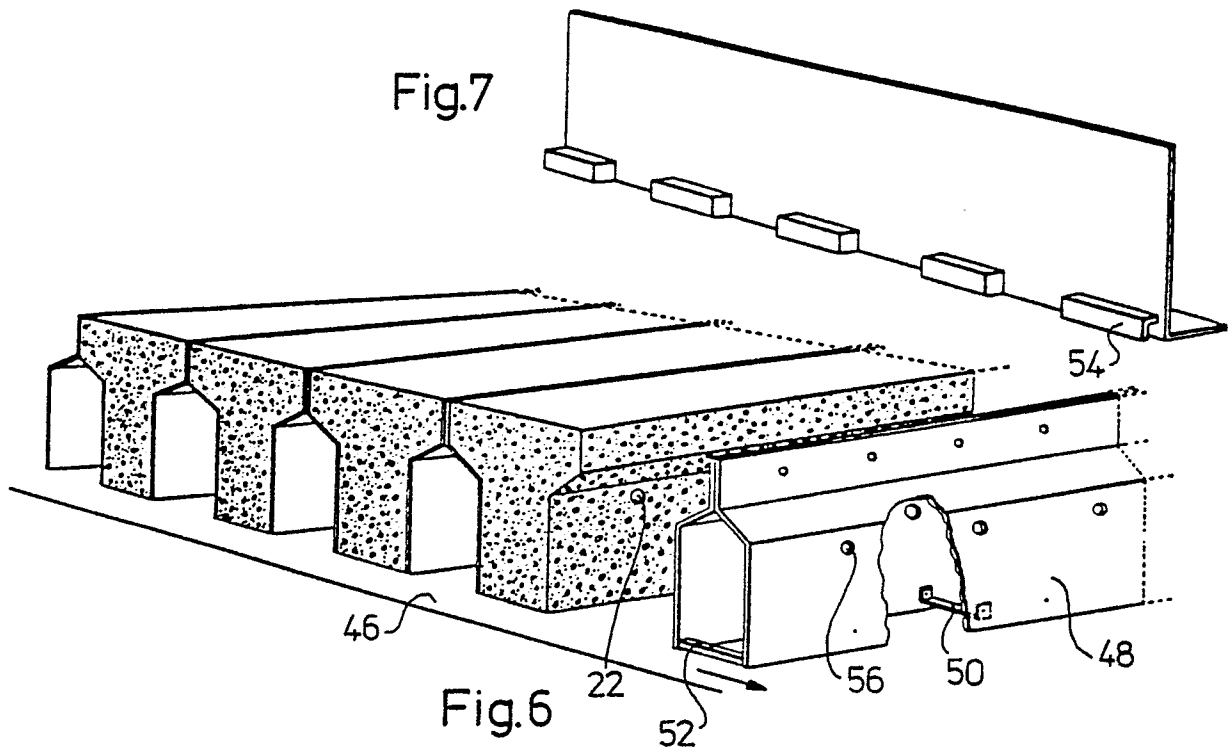


Fig.10

