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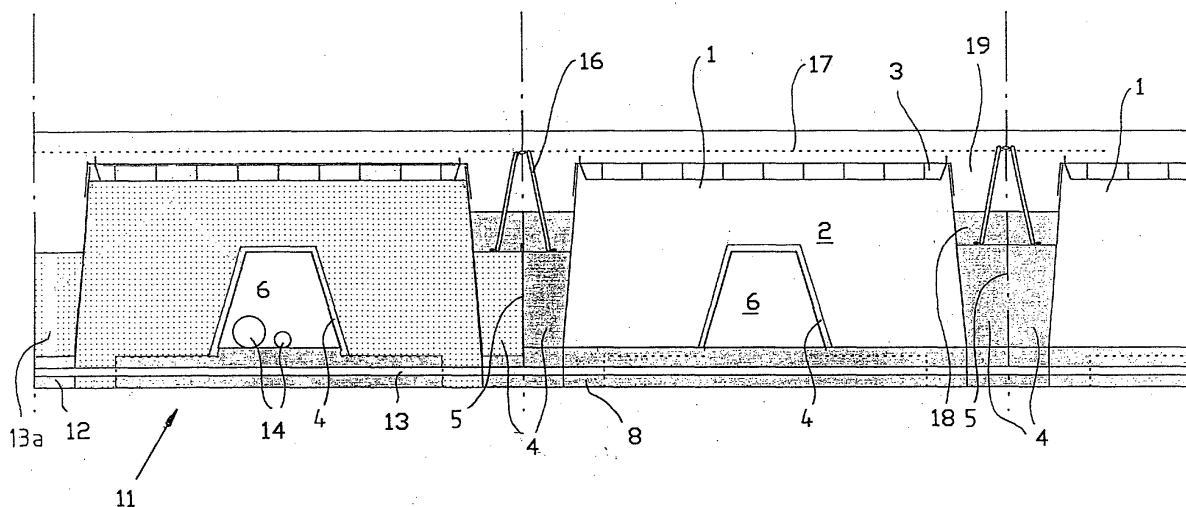
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(54) **Method for manufacturing a floor of concrete and shuttering slab for use therein**

(57) Method for manufacturing a floor slab from concrete, starting from a concrete base plate (12) having a reinforcement (13) in it, a number of boxes (1) being positioned on the base plate (12), which boxes (1) have been provided with side walls and gates (6) formed in at least two opposite side walls (2), the gate (6) at least at one of the side walls protruding from said side wall (2), preferably in the shape of a portal, a series of pairs

of boxes (1) being placed on the base plate (12) in a first direction, the gates (6) in a pair of adjacent boxes (1) being contiguous to form a gate connection between two adjacent boxes (1), a number of lattice girders (16) extending in the first direction being placed on respective series of first gate connections and the spaces between consecutive gate connections in those series being filled with concrete (19) to a level above the first gate connections in question.

FIG. 2



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## Description

**[0001]** The invention relates to a method for manufacturing a floor of concrete, using prefabricated elements. The invention furthermore relates to a prefabricated shuttering floor for said method.

**[0002]** It is known to make floors of buildings from concrete by means of a prefabricated floor slab, consisting of a base plate having a reinforcement in it, having lattice girders extending in a main direction and protruding from the upper side. In situ the floor slabs are placed on walls, beams and/or columns that have already been realised, and supported in the field by means of props. After that an upper reinforcement net is placed on the lattice girders where necessary, and subsequently the floor is final cast with concrete.

**[0003]** In order to increase the bending strength of the floor slab or shuttering slab and to limit the propping or render it superfluous, German patent application 30 45 663 suggests pressing elongated, inverted channel-shaped displacement bodies of a lightweight material, such as PS, in the concrete of the base plate that has not hardened yet, between the lattice girders. After that the channels in which the lattice girders extend are filled with concrete. The floor slab thus obtained is transported to the construction site, placed there and subsequently the upper reinforcement is arranged, after which the floor is final cast.

**[0004]** Pressing in the long displacement bodies requires quite a lot of skill. A misaligned position of the displacement bodies may occur here, as a result of which these bodies may extend to above the lattice girders and the arrangement of the upper reinforcement is made difficult. The final cast floor will furthermore only have a concrete connection between the base plate having reinforcement and the poured plate having upper reinforcement, said connection extending transverse to the channels at the location of the ends of the elongated bodies. As a result the bending strength in a direction transverse to the channels will be small.

**[0005]** It is an object of the invention to at least improve on one of these drawbacks.

**[0006]** It is a further object of the invention to provide a plate of the type mentioned in the preamble, which is lightweight yet has a high bending strength.

**[0007]** It is a further object of the invention to provide a plate of the type mentioned in the preamble in which lines can easily be incorporated in various directions.

**[0008]** A further object of the invention is to provide a plate of the type mentioned in the preamble in which lines can easily be incorporated and remain accessible and interchangeable after pouring the floor.

**[0009]** A further object of the invention is to provide a plate of the type mentioned in the preamble which is easy to manufacture and dimensionally stable.

**[0010]** It is another object of the invention to provide a method of the type mentioned in the preamble in which such a plate is used.

**[0011]** For achieving at least one of these objects the invention from one aspect provides a method for manufacturing a floor slab from concrete, starting from a concrete base plate having a reinforcement in it, a number of boxes being positioned on the base plate, which boxes have been provided with side walls and gates formed in at least two opposite side walls, the gate at least at one of the side walls protruding from said side wall, preferably in the shape of a portal, a series of pairs of boxes being placed on the base plate in a first direction, the gates in a pair of adjacent boxes being contiguous to form a gate connection between two adjacent boxes, a number of lattice girders extending in the first direction being placed on respective series of first gate connections and the spaces between consecutive gate connections in those series being filled with concrete to a level above the first gate connections in question.

**[0012]** From another aspect the invention provides a shuttering slab for floors, comprising a base plate having reinforcement and positioned thereon a series of boxes, at intermediate distances from each other, which boxes in their walls have been provided with gates, adjacent boxes being contiguous to each other with their gates, partitions being provided between boxes consecutive in a first direction, preferably by the shape of the gates themselves, for forming channels running in that direction with the box walls running in that direction, having lattice girders in those channels, which channels are filled with concrete, the lattice girders preferably lying on the gates, and preferably extending above the upper side of the boxes.

**[0013]** By using the boxes having gates forming gate connections with each other, the boxes when placed, can be placed at a known distance from each other for forming spaces to be filled with concrete, whereas the internal spaces of the boxes remain connected to each other so that lines can be passed through, the internal spaces of the gate connections and boxes remaining substantially free from concrete.

**[0014]** Preferably the boxes, in the first direction, are placed against each other to form second gate connections, at least one gate being one gate protruding from a side wall, preferably in the shape of a portal. Thus the boxes are kept at a distance from each other in two directions, so that spaces extending in transverse direction and which can be filled with concrete are also available. The second gate connections here can preferably in a second direction transverse to the first direction, form a boundary for spaces to be filled with concrete. They as it were form a partition.

**[0015]** When the second gate connections extend higher than the first gate connections the concrete, when pouring concrete for the spaces of the lattice girders, can spread in the first direction, but it is retained in the second direction. The second gate connections thus can form a barrier for separating a space extending in a first direction, adjacent to the lattice girder, from concrete. When using a matrix arrangement of the boxes

the concrete can be kept limited to the locations selected for the lattice girders.

**[0016]** Preferably the second gate connections are provided with an elevation extending above the actual gate connection, so that the first and second gate connections can be similarly shaped and a larger freedom is achieved in the placing of the boxes. Preferably the first and second gate connections are of equal height and/or cross-section.

**[0017]** In a further development of the method according to the invention use is made of boxes, the protruding gates at their edges being provided with compliant, preferably slightly outwardly inclined oriented, flanges and with these flanges being placed against the opposite gate. As a result the gates can still be kept sufficiently concrete-tight in case of misalignment in a matrix arrangement of several boxes.

**[0018]** Preferably the first and/or second gate connections are formed by two gates protruding from the side walls in question of the boxes in question, which further increases the placing possibilities.

**[0019]** In one development partitions are provided between boxes consecutive in the direction parallel to the lattice girders, for forming channels running in that direction with the box walls running in that direction, the lattice girders being provided in those channels, the channels being filled with concrete. In this way spaces extending in transverse direction are kept free which during final casting are filled with concrete and thus form a stiffening of the floor slab in transverse direction.

**[0020]** Preferably boxes are used with gates oriented in a direction parallel to the lattice girders and/or with gates oriented in a direction perpendicular to the lattice girders.

**[0021]** Using such boxes offers advantages for passing through lines. The use of boxes with gates oriented in a direction (the first direction) parallel to the channels is advantageous for passing through lines preserving the transverse reinforcement. Preferably boxes are used here having gates oriented in a (second) direction perpendicular to the channels, so that laying lines within the slab, in transverse direction is facilitated.

**[0022]** In a combination thereof the matrix of hollow boxes, connected to each other in two directions perpendicular to each other, offers a large number of possibilities for drawing lines in several directions.

**[0023]** Because the lattice girders are supported on the gates, not only material for lattice girders can be saved on (it may have a lower height per se), but it is also ensured that they extend upwards to the same extent with respect to the boxes, whichever way they have been placed.

**[0024]** It is preferred then that the lattice girders are placed in order to extend to above the boxes, so that the upper reinforcement can remain free from the boxes in a certain manner.

**[0025]** Preferably boxes having a rectangular, preferably a square, cross-section are used, to that the quan-

tity of concrete to be poured can be kept small. Moreover, when making the slab a longer time, until the placing of the lattice girders, is available for selecting the channel direction, which may be particularly advantageous in case of square plates.

**[0026]** Preferably boxes having an open bottom are used. In an advantageous manner the boxes may be provided with fastening feet or fastening lips for placing the boxes over the base plate reinforcement, free from it. The fastening feet make it possible to place the boxes prior to pouring the base plate, as a result of which the upper sides of the boxes will lie equally, as well as the lattice girders.

**[0027]** In a further development of the method according to the invention boxes are used having an upper wall, of which at least a part can be removed, which part preferably is surrounded by a circumferential weakening line. By cutting the upper wall all round according to the weakening line, the inner space of the box becomes accessible when the lines are drawn.

**[0028]** Preferably the floor slab is placed in situ and an upper reinforcement is laid at a distance above the highest plane of the boxes, after which the floor is final cast with concrete.

**[0029]** In a further development of the method according to the invention, a lid having a raised circumferential edge is placed on the upper wall -that may or may not be opened- of one or more boxes, the space within the circumferential edge being filled during final casting, the edge extending to the upper surface of concrete after final casting the floor with concrete. The space within the boxes then also remains accessible after completion of the construction, either because the upper wall was already opened or by cutting the upper wall open, as already explained.

**[0030]** Preferably the upper reinforcement is not laid then at the location of those boxes, in order to keep the accessibility when laying the lines and afterwards, after pouring the floor, optimal.

**[0031]** From a further aspect the invention provides a method for manufacturing a floor slab from concrete, starting from a concrete base plate having a reinforcement in it, a number of boxes being positioned on the base plate, which boxes have been provided with side walls and gates formed in at least two opposite side walls, adjacent boxes being contiguous with their gates to form a gate connection between those two adjacent boxes, a lid having a raised circumferential edge being placed on the upper wall -that may or may not be opened- of one or more boxes, the space within the circumferential edge being filled during final casting, the edge extending to the upper surface of concrete after final casting the floor with concrete. The space within the boxes then also remains accessible after completion of the construction, either because the upper wall was already opened or by cutting the upper wall open, as already explained.

**[0032]** In a further development the boxes are used

which have an upper wall, of which at least a part can be removed, which part preferably is surrounded by a circumferential weakening line. By cutting the upper wall all round according to the weakening line the inner space of the box becomes accessible when the lines are drawn. After that the function of the upper wall is taken over by the lid.

**[0033]** It is preferred that the lid supports on the box near a continuously circular circumferential edge of the upper wall, preferably at the location of the weakening line. In this way it is prevented that mortar penetrates the space between the lid and the upper wall (when still present) or from under the lid, into the box.

**[0034]** Preferably the floor slab is placed in the work and an upper reinforcement is laid at a distance above the highest plane of the boxes, after which the floor is final cast with concrete.

**[0035]** Preferably the upper reinforcement is not arranged at the location of boxes to be provided with a lid, in order to keep the accessibility when laying lines and afterwards, after pouring the floor, optimal.

**[0036]** The invention will be elucidated on the basis of a number of exemplary embodiments shown in the attached drawings in which:

Figure 1 shows a first exemplary embodiment of a box for incorporation in a shuttering floor according to the invention, in perspective view;

Figure 2 shows a side view in transverse direction to a shuttering floor according to the invention, in which boxes according to figure 1 have been incorporated;

Figure 3 shows a top view of the shuttering floor of figure 2;

Figure 4 shows a cross-section similar to figure 2, but then at the location of a transition between two shuttering floors according to the invention;

Figure 5 shows another exemplary embodiment of a box for incorporation in the shuttering floor according to the invention, in perspective view;

Figure 6A-C show a top view and two side views, respectively, of the box of figure 1;

Figure 6D shows a detail cross-section according to arrow VID in figure 6A;

Figure 7 shows the box of the figures 5 and 6A-D in cross-section, having lid placed on it; and

Figure 8 shows a top view of a shuttering floor built up using boxes according to the figures 5 and 6A-D.

**[0037]** The box 1 shown in figure 1 has been manu-

factured of synthetic material (although other materials, such as metal or compressed wood fibres are also possible), and has a circumferential wall 2, having four sides of equal length defining a square shape, and a lid 3 placed on the upper edge of the circumferential wall 2. The lid 3 can be taken off in order to gain access to the inside of the box 1 and has a reinforcement 21 and a circumferential edge 20 that hangs down. The lid 3 may possibly be placed inverted, as shown in figure 2, which will be further gone into.

**[0038]** At the top the circumferential wall 2 has a square cross-section which is smaller than at the bottom, so that the box has a slightly tapering shape.

**[0039]** In each side of the circumferential wall 2 a gate 6 is formed in the middle below, by means of a portal-shaped integrally formed part 4, having turned flange 5. The flange 5 is situated in a surface perpendicular to the upper surface 10 of lid 3, and also perpendicular to the -open- bottom surface of the box 1.

**[0040]** As can be seen the portals 4 are trapezium-shaped. Due to the tapering shape of the circumferential wall 2 of the box it is achieved that the boxes can be nested or stacked.

**[0041]** At the location of the corners in the circumferential wall 2 partitions 9 have been integrally formed, such that each time they extend two by two parallel to one of two opposite sides, such as side 2a and the opposite side (not shown).

**[0042]** At the location of the corners the circumferential wall is in each side furthermore provided with an integrally formed pendent foot or lip 8 that protrudes downwards from the hollow edge 7 of the circumferential wall 2.

**[0043]** In figure 2 the shuttering slab 11 is shown, comprising a concrete base plate 12, in which bottom reinforcement 13 has been incorporated which will be grid-shaped. Prior to pouring the base plate the boxes 1 have been positioned, in a regular matrix, as can be seen in figure 3. The lips 8 have been placed on the mould bottom for the base plate 12. The lips 8 are high to such an extent that the lower edge 7 of the box 1 remains free from the reinforcement 13. Alternatively the boxes can be placed after pouring the base plate when the concrete has not hardened yet.

**[0044]** The boxes 1 have been placed such that gates 6 are in line with each other, the flanges 5 of the portals 4 of adjacent boxes 1 being placed tightly against each other and meeting each other in a vertical plane.

**[0045]** Subsequently in a preferred embodiment of the shuttering slab to be made, lattice girders 16 have been placed in a parallel arrangement, the lattice girders 16 supporting on the upper sides of the portals 4. Where the lattice girders 16 have been placed, the partitions 9 on the boxes 1, that protrude just as far from the circumferential wall as the flanges 5, together with the sides of the circumferential 2 situated in between them, form boundaries of a longitudinal channel, that is final cast with concrete, in order to form longitudinal ribs 18, in

which the lattice girders 16 are embedded with a lower portion.

**[0046]** As can be seen in figure 2 the lattice girders 16 extend above the longitudinal ribs 18 and also above the lids 3 of the boxes 1.

**[0047]** The shuttering floor 11 is then ready for transportation to the work, and to be placed there on permanent and possibly temporary supports.

**[0048]** It could be opted for to incorporate lines 14, to be seen in figure 2, already beforehand in the shuttering floor, using the removable lids 3. It could also be opted for to arrange the lines 14 not until at the work. Because the gates 6 have been arranged in each side of the circumferential wall 2, a system of possible passages for lines is provided, in two directions that are perpendicular to each other. As a result a larger freedom of choice is achieved in the laying of lines.

**[0049]** Because of the longitudinal ribs 18 the shuttering slab 11 has a considerable strength against bending through, so that (temporary) propping is not necessary or only to a limited extent.

**[0050]** Finally the upper reinforcement 17 is arranged, supported on and connected to the lattice girders 16. After that concrete 19 is final cast, which concrete 19 fills the spaces between the adjacent boxes in the direction parallel to the lattice girders 16, resulting in the floor obtained behaving like one reinforced concrete plate, and a kind of longitudinal ribs in the other direction being formed as well.

**[0051]** In figure 4 the transition between two shuttering floors is shown, in which it can be seen that the transverse reinforcement rods 13 have been extended from the base plate 12 to an upwardly turned end portion 13a protruding above the abutting floor. Above both base plates 12, at the location of the transition, tie-bars or coupling brackets 25 have been placed in the work, as well as lattice girders running in longitudinal direction supporting on pairs of portals 4. By means of the end portions 13a and the brackets 25 sufficient strength is achieved in a direction transverse to the direction of the lattice girders.

**[0052]** On the right hand side in figure 4 a box 1 is shown, the lid 3 of which has been placed inverted. The circumferential edge 20 extends to in the upper surface of the final cast or finished floor. The space within the circumferential wall 2 has been poured with the concrete of the layer 19, possibly after the outer side of the edge 20 has been provided with a de-adhesion agent. As a result the lid 3 cannot only be easily removed in the shuttering floor supplied in the work for drawing lines and installation of lines, but this can also be done after completion of the floor, for inspection or making changes in the line system. It is possible here -in case of otherwise the same boxes- to use lids having edges 20 of different heights, adjusted to the thickness of the floor.

**[0053]** The boxes 1 do not only have a function in saving on weight and material for the plate, but also function as passage means for lines which remain easily acces-

sible and adjustable -possibly even after completion of the floor-, and have the function of shuttering for forming longitudinal ribs in the prefab shuttering slab 11.

**[0054]** The box 101 made of synthetic material, shown in figures 5 and further, has a substantially square horizontal cross-section having a circumferential surface 102 formed by two opposite side walls 102a and two opposite side walls 102b. The upper wall 103 is closed and comprises a circular central portion 131, surrounded by a raised edge 132, also vide the cross-section shown in figure 6D. At the location of the corner areas of the box 101 the upper wall 103 changes via curved planes into side walls 102a, 102b, which substantially are each situated in an almost vertical plane, but for reasons of nesting the boxes one in the other, run slightly upwardly inclined to the inside.

**[0055]** The two opposite side walls 102a have each been provided with a gate 106a, surrounded by a portal 104a protruding from the side wall 102a. The portal 104a has a flat upper side 110a, and two sides 110, which in horizontal cross-section have been formed V-shaped (110c) to the inside. Said V-shape forms a pilot/orienting means for lines during their insertion, for correction in alignment when adjacent boxes are not exactly aligned. At the end edge of the portal 104a a circumferential, compliant flange 105 has been formed which extends outwardly inclined.

**[0056]** The gates 106b in the two other side walls 102b that are also opposite each other are similarly shaped, so also with a portal 104b, the difference being that on top of the upper side 110b an elevation 109 has been integrally formed, both at that upper side 110b and at the actual side wall 102b. At the vertical side facing the flange 105, the elevation 109 has been provided with a protruding strip 109a, extending to near the flange 105.

**[0057]** As can be seen in figure 6B the raised circumferential edge 132 has two tops 133, 134, which in between them define a recess 135 running in circumferential direction. The tops 133, 134 may serve as guide for a cutting tool used to cut through the bottom of the recess 135, in order to thus be able to remove the central part 131 of the box 101, as already mentioned above in the discussion of the other embodiment of a box according to the invention, to facilitate installation operations.

**[0058]** After removal of the central part 131 the lid 120, shown in figure 7, can be placed on it. As can be seen in figure 7 the lid 120 may however also be placed on the upper wall of the box 101, when its central part 131 has not been removed. In both cases the lid 120 supports on the raised edge 132 in a mortar-tight manner, which edge, when the central part 131 has indeed been removed, ends at top 134.

**[0059]** The lid has been made of the same synthetic material as the box and has a step-shaped, circumferential inclined raised edge 121 and a bottom part 123 which follows the curve of the central part 131. In the middle the bottom 123 has been provided with an ele-

vation 122 suitable for engagement by the hand. The elevation 122 has been provided with a recess 124, in which a reinforcing rod can be laid, which as a result is stabilised in vertical downward direction and also in both sideward directions.

**[0060]** The boxes 101 can be placed in the manufacturing of a shuttering slab, in a manner comparable to the boxes 1 of figures 1-4. When placing the boxes 101 adjacent to each other, the flanges 105 of gates/portals 106/104 to be placed against each other are pressed against each other, the flanges 105 being slightly compliant, and an almost concrete-tight connection between both portals 104 has been realised. Because the flanges 105 stand away slightly outwardly inclined, considered from the centre of the box 101 in question, the sealing can be realised within a certain tolerance range. As a result a sealing of the internal space of the portal 104 and the boxes 101 is ensured also in case of some measure or grid deviation.

**[0061]** After the wanted number of boxes 101 has been placed, the lattice girders 116 can be placed, which takes place on the upper side 110a of the portals 104a. Subsequently the spaces 118 are poured with concrete, until the concrete reaches the upper side of the elevations 109. Because of the elevation 109 and the integrally formed strips 109a it is prevented that the concrete, in the drawing seen to the right and to the left, can flow away, so that the space 118 situated there, if so desired, can be kept free from concrete in the shuttering slab. The portals 104b, with elevations 109b, here function as partitions, comparable to the partitions 8 in the embodiment of the figures 1-4.

**[0062]** The sideward spaces 118a shown in the drawings, which in comparison to the arrangement according to the figures 1-4 are extra, can increase the bending strength of the shuttering slab.

## Claims

1. Method for manufacturing a floor slab from concrete, starting from a concrete base plate having a reinforcement in it, a number of boxes being positioned on the base plate, which boxes have been provided with side walls and gates formed in at least two opposite side walls, the gate at least at one of the side walls protruding from said side wall, preferably in the shape of a portal, a series of pairs of boxes being placed on the base plate in a first direction, the gates in a pair of adjacent boxes being contiguous to form a gate connection between two adjacent boxes, a number of lattice girders extending in the first direction being placed on respective series of first gate connections and the spaces between consecutive gate connections in those series being filled with concrete to a level above the first gate connections in question.
2. Method according to claim 1, the boxes in the first being placed against each other to form second gate connections, at least one gate being a gate protruding from a side wall, preferably in the shape of a portal.
3. Method according to claim 2, the concrete being retained in a direction transverse to the direction of the lattice girders by the second gate connections forming a partition.
4. Method according to claim 3, the second gate connections extending to a higher level than the first gate connections.
5. Method according to claim 4, the second gate connections being provided with an elevation extending above the actual gate connection, and the first and second gate connections preferably forming gates of equal height and/or cross-section.
6. Method according to any one of the preceding claims, the protruding gates at their edges being provided with compliant, preferably slightly outwardly inclined oriented, flanges and with these flanges being placed against the opposite gate.
7. Method according to any one of the preceding claims, the first and/or second gate connections being formed by two gates protruding from the side walls of the boxes in question.
8. Method according to claim 1 or 2, partitions being provided between boxes consecutive in the first direction, for forming channels running in that direction with the box walls running in that direction, the lattice girders being provided in those channels, the channels being filled with concrete.
9. Method according to any one of the preceding claims, boxes being used with gates oriented in a direction parallel to the lattice girders and/or with gates oriented in a direction perpendicular to the lattice girders.
10. Method according to any one of the preceding claims, the lattice girders being placed in order to extend to above the boxes.
11. Method according to any one of the preceding claims, boxes having a rectangular, preferably square, cross-section being used.
12. Method according to any one of the preceding claims, boxes having an open bottom being used.
13. Method according to any one of the preceding claims, the boxes having fastening feet for placing

the boxes over the reinforcement, free from it.

14. Method according to any one of the preceding claims, boxes being used having an upper wall, of which at least a part can be removed, which part preferably is surrounded by a circumferential weakening line. 5
15. Method according to any one of the preceding claims, the floor slab being placed in the work and an upper reinforcement being laid at a distance above the highest plane of the boxes, after which the floor is final cast with concrete. 10
16. Method according to any one of the preceding claims, a lid having a raised circumferential edge being placed on the upper wall -that may or may not be opened- of one or more boxes, the space within the circumferential edge being filled during final casting, the edge extending to the upper surface of concrete. 15 20
17. Method according to any one of the preceding claims, lines being passed through the gates and the boxes. 25
18. Method according to any one of the preceding claims, tie-bars or coupling brackets being arranged at the location of a connection of edges of two floors which edges are parallel to the lattice girders, which tie-bars/coupling brackets are included in the final cast concrete mass together with possibly provided turned ends of the transverse reinforcement in the base plate, which turned ends extend to above the adjacent base plate. 30 35
19. Shuttering slab for floors, comprising a base plate having reinforcement and positioned thereon a series of boxes, at intermediate distances from each other, which boxes in their walls have been provided with gates, adjacent boxes being contiguous to each other with their gates, partitions being provided between boxes consecutive in a first direction, preferably by the shape of the gates themselves, for forming channels running in that direction with the box walls running in that direction, having lattice girders in those channels, which channels are filled with concrete, the lattice girders preferably lying on the gates, and extending above the upper side of the boxes. 40 45 50
20. Box suitable and intended as box for carrying out the method according to any one of the claims 1-18, or as box for a shuttering slab according to claim 19. 55

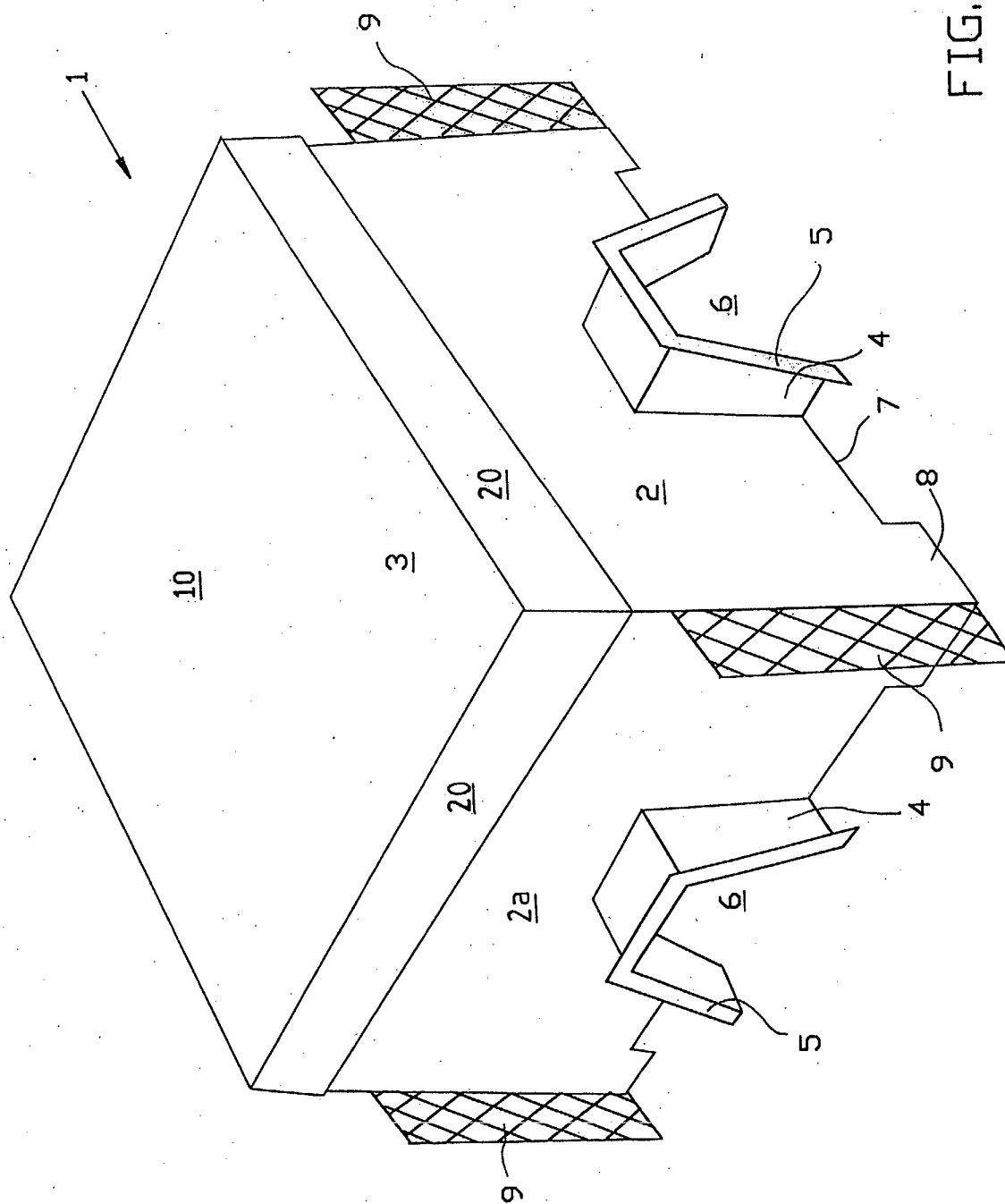
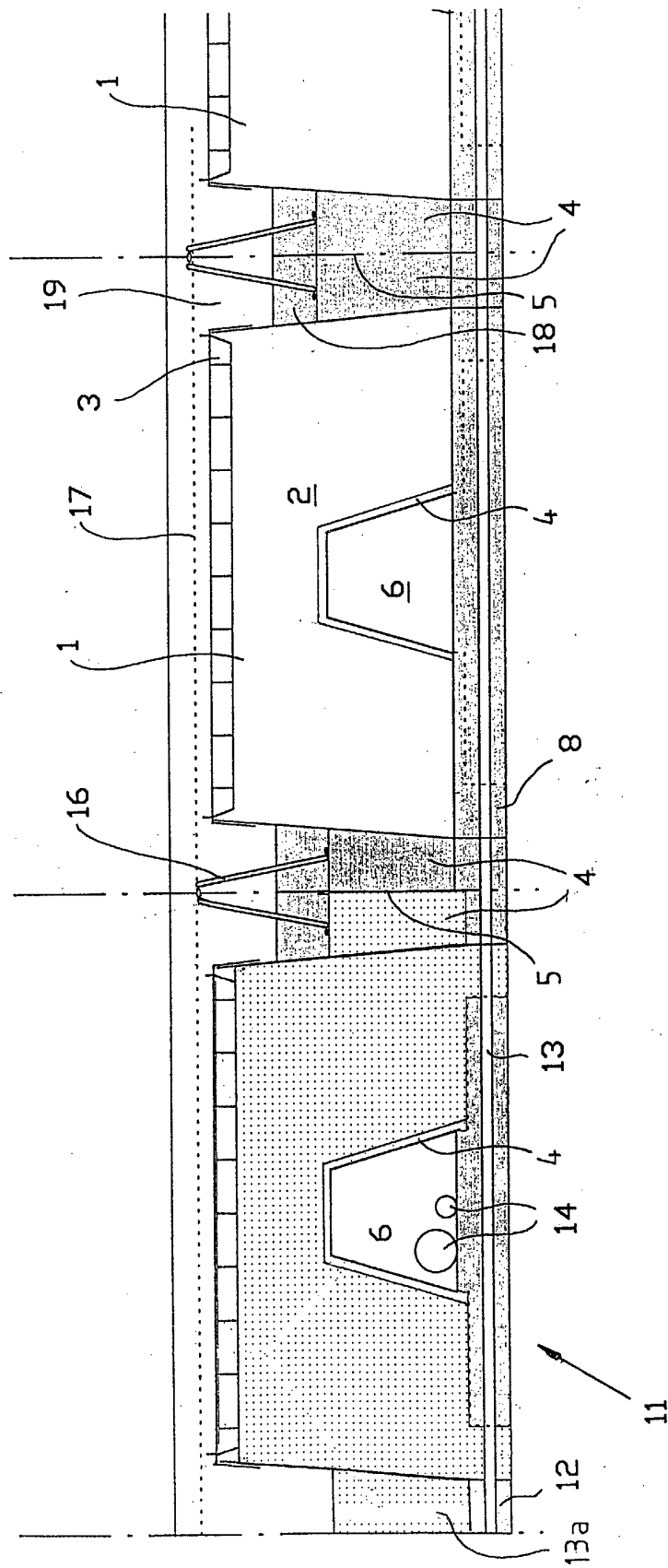


FIG. 1



FIG. 2



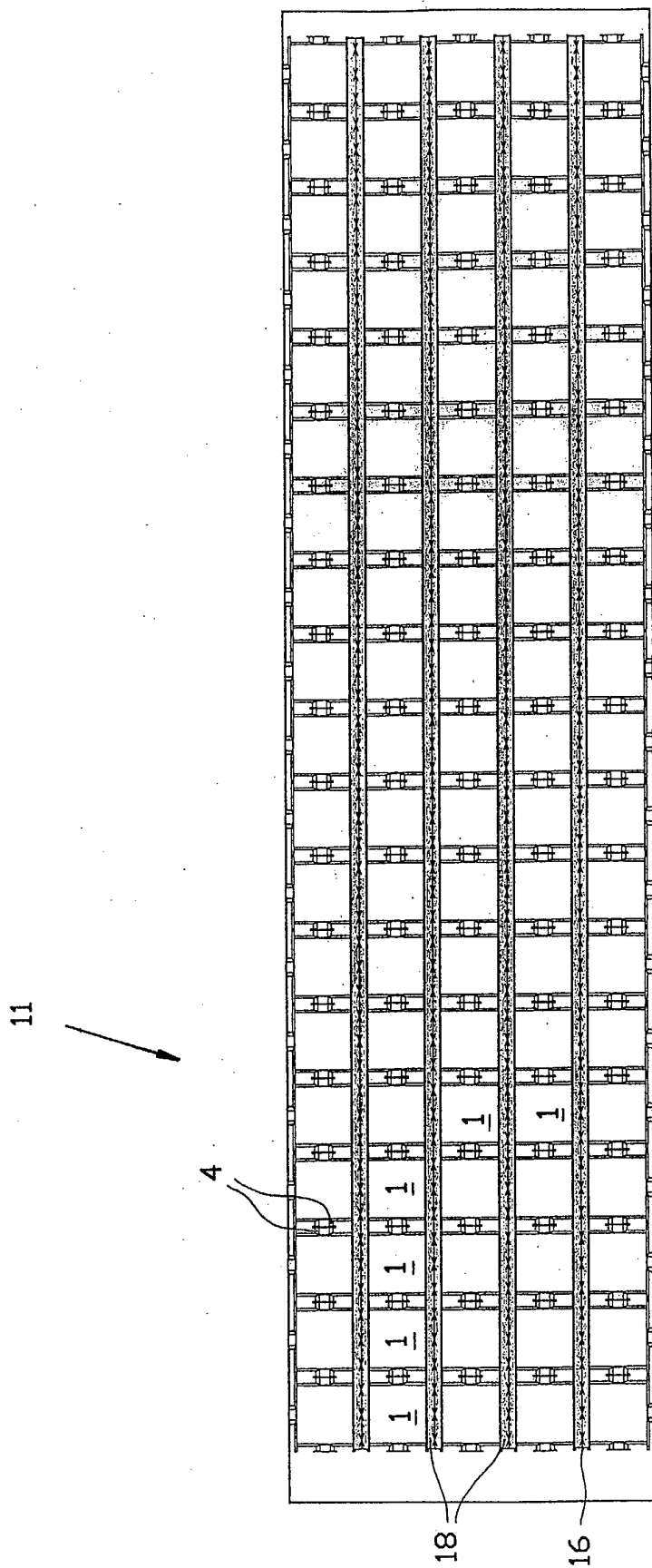


FIG. 3

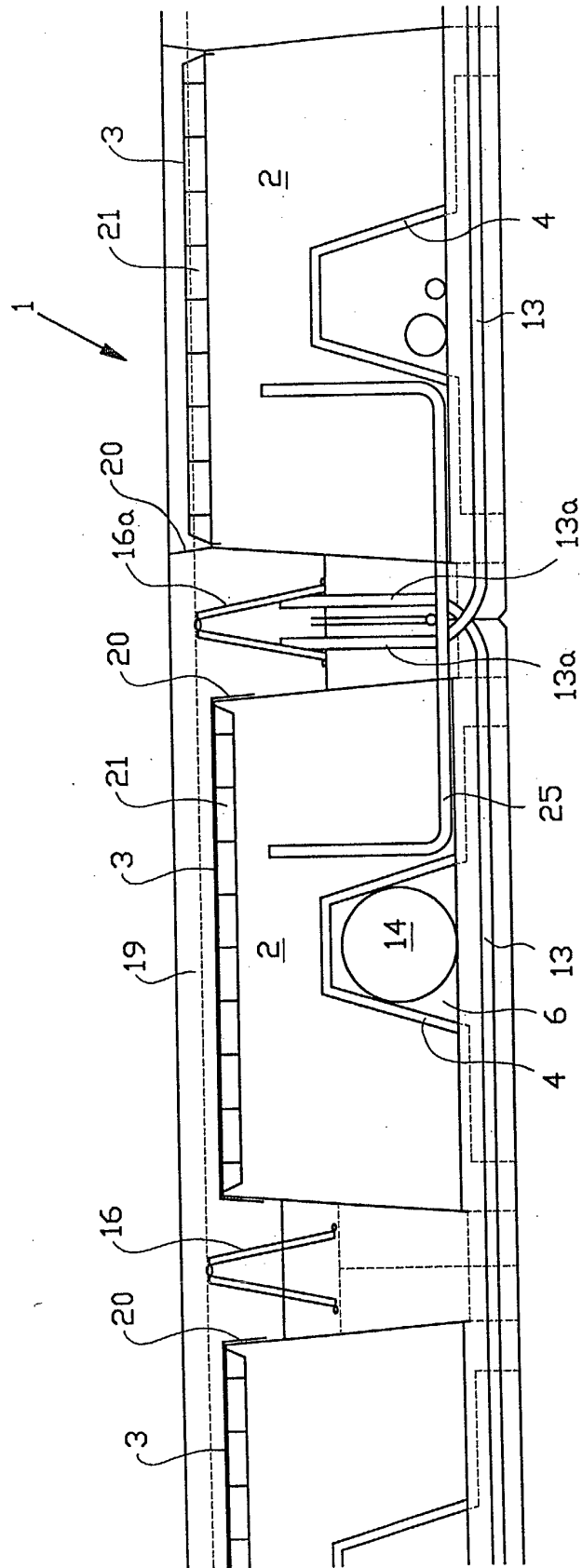
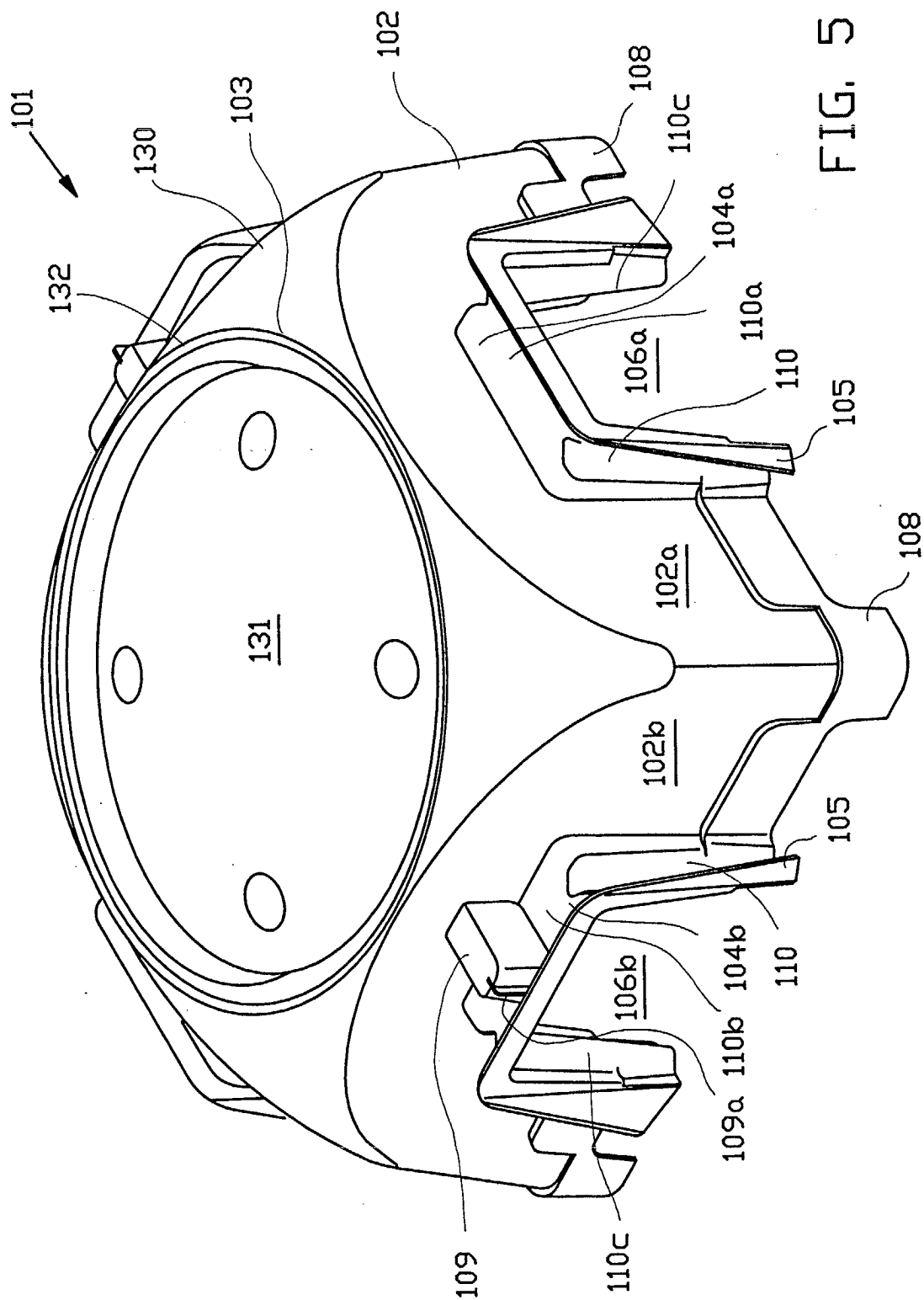
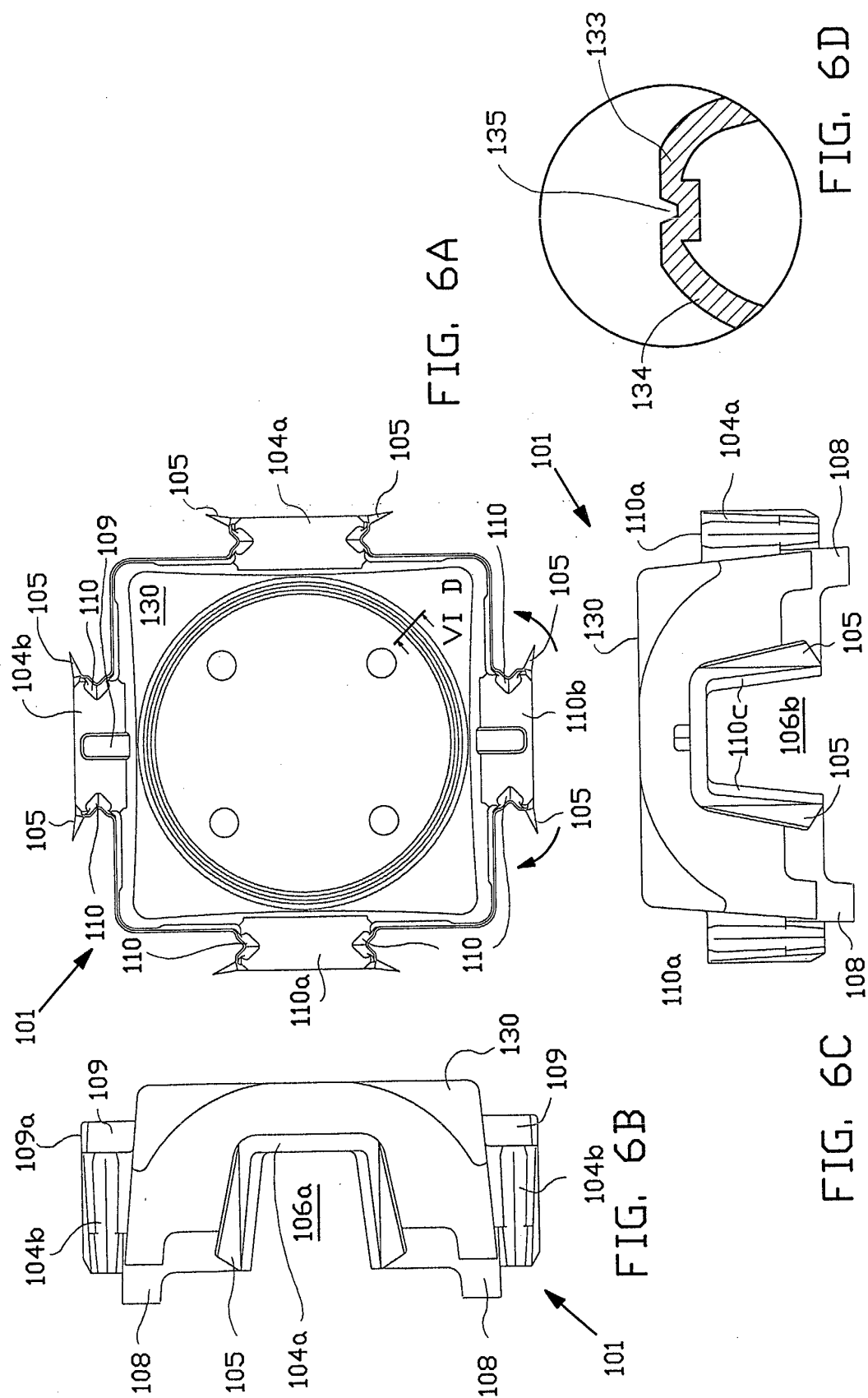


FIG. 4





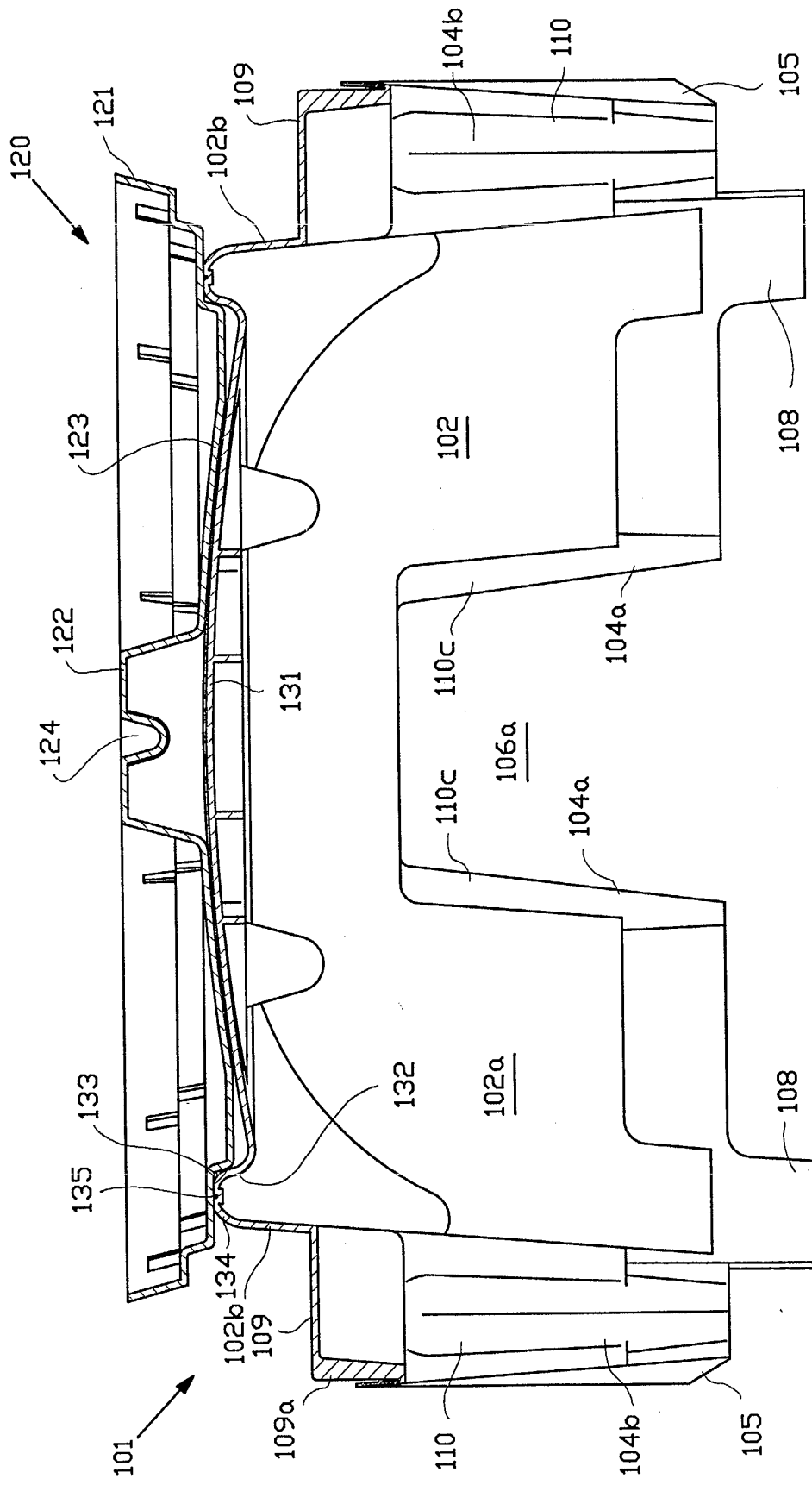
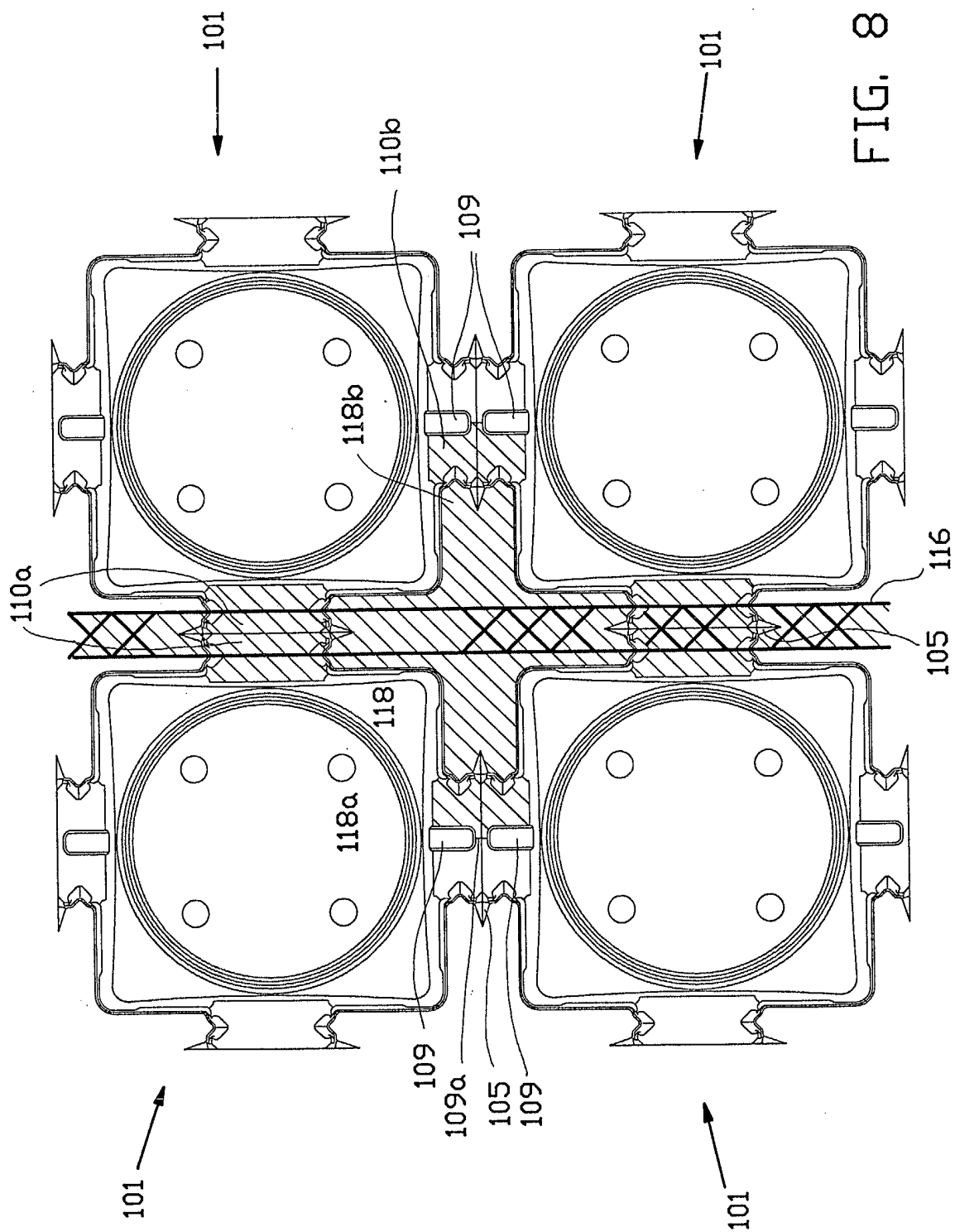


FIG. 7





European Patent  
Office

# EUROPEAN SEARCH REPORT

Application Number  
EP 03 07 5048

| 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.7)                        |
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