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Fenéklemez zsaluzat

Az európai szabadalom ellen, megadásának az Európai Szabadalmi Közlönyben való meghirdetésétől számított kilenc hónapon belül, felszólalást lehet benyújtani az Európai Szabadalmi Hivatalnál. (Európai Szabadalmi Egyezmény 99. cikk(1))

A fordítást a szabadalmas az 1995. évi XXXIII. törvény 84/H. §-a szerint nyújtotta be. A fordítás tartalmi helyességét a Szellemi Tulajdon Nemzeti Hivatala nem vizsgálta.



EP 2439361

Bottom plate formwork

The present invention relates to a bottom plate formwork comprising bottom and edge board elements that are made of a heat-insulating material and are interconnected.

Due to the increasing requirements for heat insulation of buildings, buildings are ever more being erected on a bottom plate formwork made of a heat-insulating material. In order to be able to produce a bottom slab of concrete, the area to be covered with the bottom slab is lined with board elements onto which the bottom slab of concrete is then poured. In order also to insulate the front faces of the bottom slab against heat losses, in addition to the bottom board elements, edge board elements are also installed, which act as lost formwork for producing the bottom slab. A side formwork for the bottom slab is known from DE 94 22 074 U1. The formwork plates are interconnected via a tongue and groove joint. Further formwork elements are known from DE 298 02 915 U1 and DE 20 2009 017 284 U1.

In order to interconnect the bottom and edge board elements, it is customary for these to be glued. Since the adhesive bond alone is often not sufficient to support the weight of the poured concrete of the bottom slab at the sides, the bottom board elements onto which the edge board elements are to be mounted are provided with an accurately fitting milled region in order to be able to set the edge board elements into the milled region, and so, in addition to the adhesive bond, a positive-fit force component results in order to withstand the weight of the poured concrete. A corresponding bottom plate formwork having tongue and groove joints between the bottom and side formwork plates is disclosed in EP 2 080 837 A2.

Milling the recesses for the edge board elements into the bottom board elements is exceptionally complicated and time-consuming. Generally, this work cannot be carried out on the building site, but must be done in a workshop appropriately equipped with tools for this. For the milling work, the building plan must be known and the individual board elements must be arranged in a plan according to requirements, and then correspondingly worked and numbered so that they can be assigned to their correct installed position on the building site. As a result, processing of the board elements on the building site also becomes complicated and time-consuming. Subsequent corrections are possible only with difficulty.

The object of the present invention is to provide a bottom plate formwork which has a sufficiently firm connection between the bottom and edge board elements and can be produced on the building site in a simple manner.

The object is achieved for a generic bottom plate formwork in that the bottom board elements are screwed to the edge board elements, and the edge board elements that form a corner are screwed to one another by means of corner connection elements, the screw joints having sufficient load-bearing capacity to laterally support the concrete poured in for producing the bottom slab, and so the corner connection elements, as the only component, absorb the pressure of the concrete poured in and support the edge board elements in the desired formwork position thereof.

By means of the embodiment according to the invention, a building block is provided in which, for producing a bottom plate formwork, it is initially sufficient to lay the bottom board elements along the edge of the bottom slab to be produced. The edge board elements can then be placed on the bottom board elements in order then to screw the bottom to the edge board elements and to screw the edge board elements that form a corner to one another by means of corner connection elements. The screwed connections can be established quickly and easily. The screw joints also have sufficient load-bearing capacity to laterally support the concrete poured in for producing the bottom slab. The number of corner connection elements to be mounted per linear metre can be varied as required, depending on the height of the bottom slab to be produced and the associated shearing forces against the edge board elements. After producing the formwork edge, the interior can be lined with board elements in order to complete the bottom plate formwork.

By producing the bottom plate formwork on the building site, the detailed preparation work away from the building site is omitted. The logistics and the assembly on the building site are simplified considerably as a result. By omitting the complicated pre-planning, the bottom plate formworks can be erected much more quickly and cheaply. Any necessary adjustments in the dimensions of the processed board elements can be made directly on the building site. Deviations of the plans from actual circumstances or requirements on the building site can thus also still be reacted to flexibly there.

Considerably less waste is created for producing the bottom plate formworks, since the otherwise customary milling work and the volume of waste thereby created can be

dispensed with. Cut board elements can often still be used as filling material at the cutting sites, and so residual amounts scarcely result. Finally, builder's merchants can dispense with expensive machining tools and limit themselves to stocking and supplying only the board elements, corner connection elements and the required screws and optionally insulation plugs.

According to one embodiment of the invention, the board elements are made of an extruded polystyrene, and the screwed connection is established by means of insulation plugs that are screwed into the polystyrene and provided with a male thread. Such insulation plugs can also transmit very high retaining forces into the polystyrene material by means of male threads of appropriately large dimensions. Even with the action of relatively high forces, with this type of screwed connection, there is no need for concern regarding overloading and tearing out of the plug.

According to one embodiment of the invention, a corner connection element comprises at least two bearing plates interconnected by means of a connection plate, which bearing plates can each be placed on an associated board element and are at right angles to one another, each bearing plate comprising at least two holes, through each of which a screw is intended to be guided, and a bearing surface surrounding the holes. By means of such a corner connection element, standardised connections can be established. Each bearing plate is assigned a board element to which the bearing plate can be screwed. By simply mounting the bearing plates on the associated board element, no further workings or pretreatments of the board elements are necessary. Owing to the right angle at which the bearing plates are relative to one another, the side front faces of the bottom slab are necessarily presented cleanly. As a result, the building quality increases. Owing to in each case at least two holes per bearing plate, it is ensured that a board element cannot subsequently twist away or pull askew.

Owing to the bearing surface which surrounds the holes, a planar counter-force to the screwed connection by the insulation plug can be applied over the surface of the heat-insulating material, although the heat-insulating material has only little load-bearing capacity at points. The bearing surface comes into contact with the board element in the immediate vicinity of the insulation plug by means of the screwed connection. By means of the insulation plug and the screwed connection of the insulation plug to the bearing surface, retaining forces are likewise transmitted into the depth of the board element, and so, by

addition of the retaining forces transmitted by the bearing surface and the associated insulation plug, an overall unexpectedly high strength of the connection can be achieved. By connecting the two bearing plates by means of a connection plate, a single corner connection element is formed, which, as the only component, absorbs the pressure of the concrete poured in and supports the edge board elements in the desired formwork position thereof. By reducing the connection of the board element to a single component, assembly is simplified since only this one component has to be kept in stock and processed in a sufficient number.

According to one embodiment of the invention, the bearing plates are at right angles to the connection plate. Owing to the right-angled form, right-angled installed positions of the board elements relative to one another necessarily result, the forces acting on the board elements due to the concrete poured in being transmitted in an optimum manner by means of the connection plate.

According to one embodiment of the invention, the corner connection element is made of a plastics material or of a corrosion-resistant metal. Since the corner connection elements are processed in the edge region of the bottom plate formwork, these are subject to the risk of coming into contact with moisture penetrating in from the side or from the bottom. As a result, there is a risk of corrosion on unprotected metallic materials. By using plastics materials or protected metallic materials, such as galvanised iron or high-grade steel, the risk of corrosion is reliably excluded. Furthermore, corner connection elements produced from plastics material in particular can be produced inexpensively and due to their specifically low weight are also supportable in a larger quantity.

According to one embodiment the invention, the insulation plugs are screwed into the board elements in a preassembled manner so as to be ready for use on a building site. By preassembling the insulation plugs in the board elements, the holes for the insulation plugs can be predrilled efficiently in the factory and positioned accurately in this manner such that contact between the board elements that is accurate to the millimetre results when the screws are screwed into the insulation plugs by the corner connection elements. Production of the bottom plate formwork on the building site itself is simplified, because it is not necessary there to predrill holes and to screw insulation plugs into the material of the board elements. It is advantageous to provide the insulation plugs only along one longitudinal side of the board elements, since the board elements also have to be connected as bottom board

elements to the edge board elements only on one longitudinal side. Adaptations in the dimensions of the board elements can then be made on the side of the board elements in which no insulation plugs are screwed. With the proposed preassembling of the insulation plugs, on the building site it is only still necessary in exceptional cases to provide individual board elements with insulation plugs at specific points. However, for the few remaining points to be set individually, this is possible rapidly and without great effort, since the heat-insulating material of the board elements can be worked easily.

It is expressly pointed out that the features of the embodiments described above can each be combined with one another separately, but also with one another in any desired manner.

Further modifications and embodiments of the invention can be found in the following description of the subject matter and the drawings.

The invention is now to be described in more detail with reference to an embodiment. In the figures:

Fig. 1: shows a corner of a bottom plate formwork,

Fig. 2: is a detailed view of the circle II in Fig. 1.

Fig. 1 shows by way of example how a corner of a bottom plate formwork can be configured according to the invention. A bottom board element 4 is laid on the bottom. On two sides the bottom board element 4 is delimited by edge board elements 6. The edge board elements 6 protrude beyond the surface of the bottom board element 4 by the height of the bottom slab to be poured from concrete. In the abutment region, the bottom board element 4 is connected to the edge board elements 6 by means of corner connection elements 8. The screwed connection of the corner connection elements 8 to the bottom and in both edge board elements is indicated by points. Of course, as many other bottom board elements 4 as desired can be laid on the one bottom board element 4 shown, in order thus to line the underside of the bottom slab to be produced and to insulate it against heat losses. It is also possible to produce the edge formwork for the bottom slab to be produced by further edge board elements 6 installed on the bottom board element 4. By means of the corner connection elements, the edge board elements 6 are held in a vertical position when liquid concrete is poured into the bottom plate formwork 2. The compressive forces which the

freshly poured in concrete exerts in the lateral direction on the edge board elements 6 are transmitted into the bottom board elements 4 by means of the corner connection elements 8.

In the embodiment, a total of three corner connection elements 8 are shown for connecting the bottom board element 4 to the two edge board elements 6; however, depending on the thickness of the bottom slab to be produced and the technical configuration of the corner connection elements 8, more or fewer corner connection elements 8 can also be provided per linear metre of formwork to be erected.

Fig. 2 shows an enlarged view of the connecting region, identified by the circle II in Fig. 1, between the bottom board element 4 and an edge board element 6. In the enlarged view in Fig. 2 it can be seen that an individual insulation plug 10 which is already screwed into the bottom board element 4 is indicated in the bottom board element 4. The further insulation plugs 10 are not shown, but are present in board elements 4, 6 configured according to the invention. On the surface of the bottom board element 4 and of the edge board element 6 a bearing plate 12 is mounted in each case, each of which is a constituent of the corner connection element 8. The bearing plates 12 each have two holes 14, through which a screw 16 can be screwed into the insulation plugs in the particular board elements 4, 6. The two bearing plates 12 are interconnected by a connection plate 18, by means of which the retaining forces are transmitted between the two bearing plates 12. It can be seen from Fig. 2 that both the bearing plates 12 in relation to the connection plate 18 and the bearing plates 12 relative to one another are arranged at right angles.

The invention is not limited to the embodiment. It would not be difficult for a person skilled in the art to adapt the invention to a specific use in a manner which appears suitable to him with the aid of the expert knowledge available to him.



FENÉKLEMEZ ZSALUZAT

1. Fenéklemez zsaluzat (2) egy fenékoldali és egy hőszigetelő anyagból készült peremoldali panelelemmel (4, 6) amelyek egymással össze vannak kötve, azzal jellemezve, hogy a fenékoldali panelelem (4) a peremoldali panelelemmel (6), és egy sarkot kialakító peremoldali panelelem (6) egy sarokösszekötő elem (8) segítségével van egymással összezsavarozva, ahol a csavarkötések a fenéklemezbe töltött beton oldalsó tartásának megfelelően vannak terhelve, úgy, hogy a sarokösszekötő elemek (8) önálló alkatrészként a beöntött beton nyomását felveszik és az a peremoldali panelelemeket (4) a szükséges zsaluzati pozícióban tartják.

2. Az 1. igénypont szerinti fenéklemez zsaluzat (2), azzal jellemezve, hogy a panelelemek (4, 6) extrudált polisztirolból vannak előállítva, és a csavarozás a polisztirolba betekert, egy külső menettel ellátott szigetelésrögzítő (10) által van kialakítva.

3. Az 1. vagy a 2. igénypont szerinti fenéklemez zsaluzat (2), azzal jellemezve, hogy egy sarokösszekötő elem (8) legalább két, egy összekötő lap (18) által egymással összekötött felfekvő lapot (12) tartalmaz, amelyek egyenként egy hozzá tartozó panelelemre (4, 6) felfektethetőek, és amelyek egymáshoz képest derékszögben állnak, ahol minden felfekvő lap (12) egyenként egy csavar (16) átvezetésére legalább két furatot (14), és egy, a furatokat (14) körülvevő felfekvő felületet tartalmaz.

4. A 3. igénypont szerinti fenéklemez zsaluzat (2), azzal jellemezve, hogy a felfekvő lapok (12) az összekötőlaphoz képest derékszögben állnak.

5. Az előző igénypontok egyike szerinti fenéklemez zsaluzat (2), azzal jellemezve, hogy a sarokösszekötő elem (8) műanyagból vagy korrózióvédett fémből van előállítva.

6. A 2-5 igénypontok egyike szerinti fenéklemez zsaluzat (2), azzal jellemezve, hogy a szigetelésrögzítők (10) építésre készen, előszerelve a panelelemekbe (4, 6) be vannak csavarva.

A meghatalmazott:

16 Feb. 2011

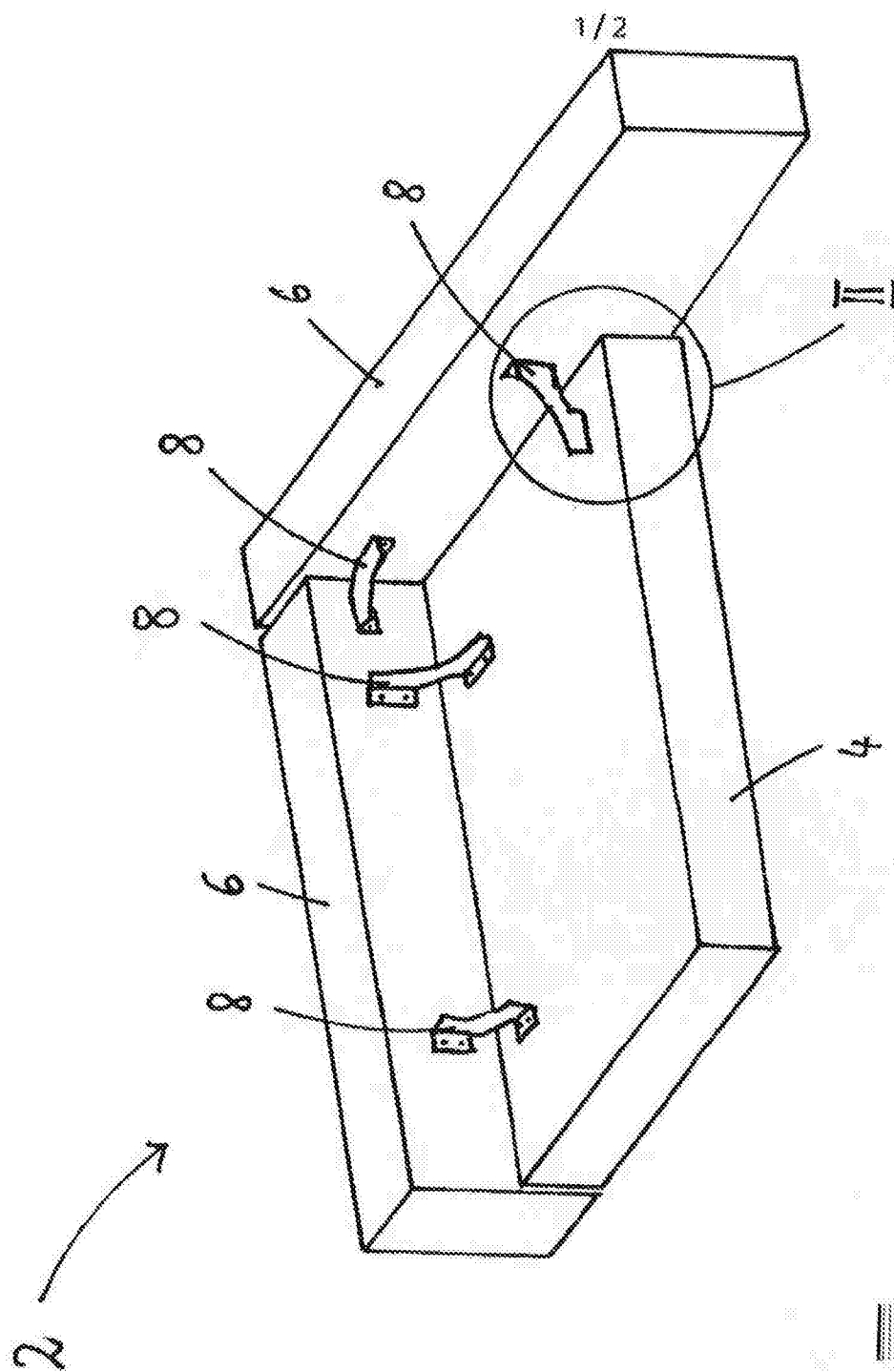


Fig. 1



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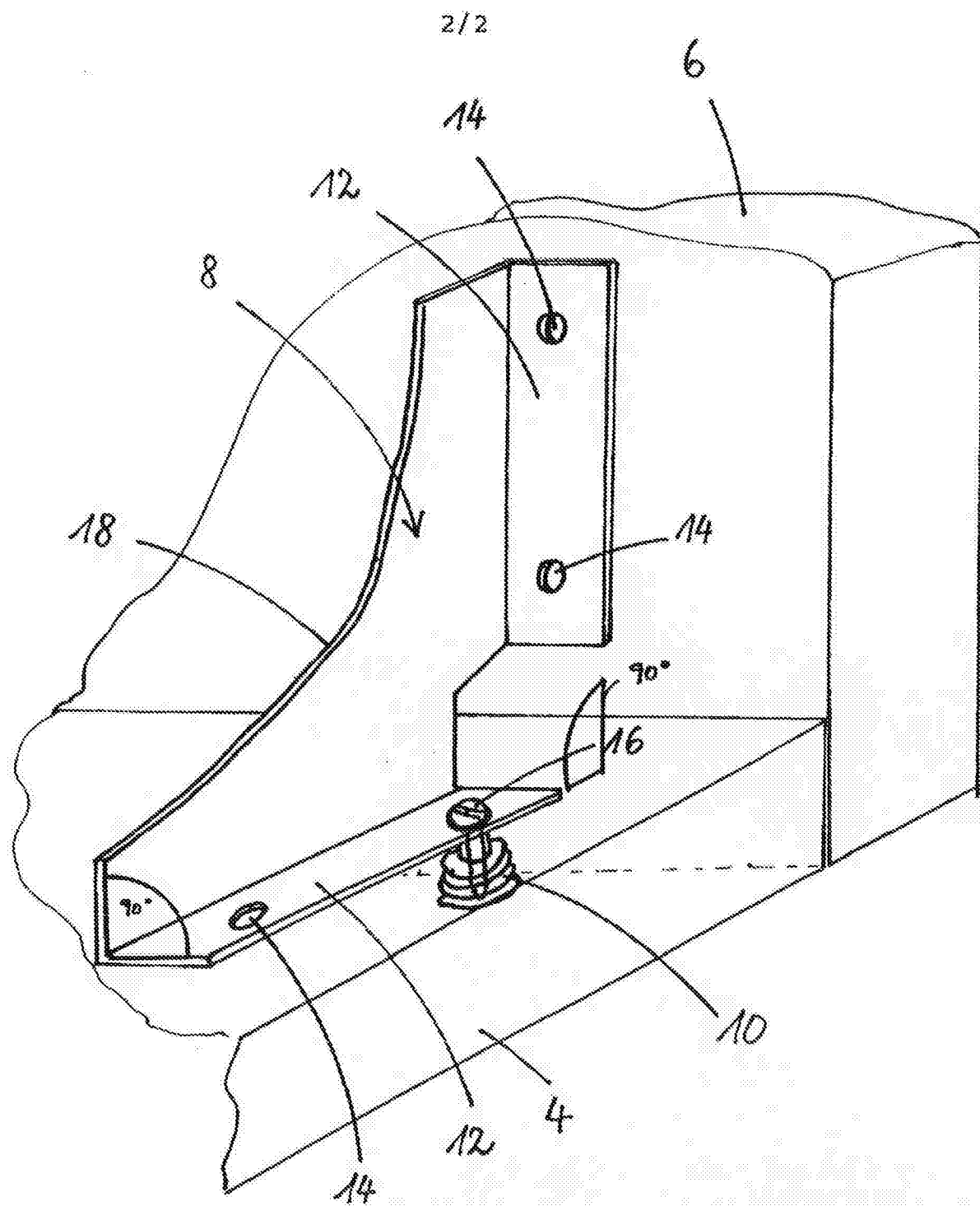


Fig. 2