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(54) **Forma beton formatestek előállítására**

Mold for producing molded concrete blocks

Description

The invention relates to a mould for the production of moulded concrete blocks.

Moulds for the industrial production of moulded concrete blocks in concrete moulding machines typically have a plurality of mould cavities which are arranged next to one another and are separated from one another by partition walls. The totality of the mould cavities is also referred to as a block field, wherein the marginal mould cavities facing towards the outside of the block field are delimited by outer walls. In particular for high moulds, for example for the production of hollow blocks, at least the partition walls are typically constituted by wall panels, which are connected to each other and to the outer walls directly or indirectly and form a substantially rigid box. The mould cavities are open to the top and to the bottom, and the wall panels are formed continuously vertically between a lower boundary plane and an upper boundary plane of the mould. On the upper side of the mould, the block field is enclosed as a rule by a cover frame surface, which can be constituted in particular by exchangeable wear plates.

The wall surfaces delimiting the mould cavities are subjected to considerable mechanical stresses, in particular structurally as a result of the high lateral pressure of the concrete mass, against the upper side of which pressure plates bear, and also dynamically by abrasion forces of the granular components of the concrete mass moving along the wall surfaces during vibration and during demoulding, and the surfaces of the side walls are advantageously hardened in order to reduce signs of wear by abrasion. In the course of hardening, case hardening produces higher resistance to wear than nitration, although it also involves a greater risk of moulds becoming deformed and requiring remedial work at high cost after hardening.

Whereas, in the case of moulds in which partition walls extend only in a single direction between outer walls that are situated opposite one another, the connections of the partition walls to the outer walls can be executed in a dimensionally stable manner in relatively simple ways, this is considerably more difficult in the case of moulds having partition walls extending in various directions and intersecting at points of intersection.

Welded joints of the wall panels at points of intersection are known to form stable connections, although they weaken the resistance to wear in conjunction with welding after hardening and increase the risk of fatigue fracture. Moulds with welded wall panels before hardening frequently exhibit considerable deformation after hardening.

Weld-free connections can be achieved, for example, by the partition walls in a first direction being configured as continuous first wall panels extending over the entire block field, and by partition walls extending transversely thereto in a second direction extending only between two first wall panels and being positively connected to the first wall panels via plug-in connections on their end surfaces facing towards the first wall panels. US 4 249 358 describes moulds having intersecting wall panels as partition walls and outer walls of mould cavities of a block field, which are plugged into one another in a comb-like manner at points of intersection via slots that are oriented in opposing directions and are secured to a mould frame in the absence of welding outside the block field.

A mould for the production of concrete blocks, which mould consists of cardboard or board, is described in JP 60 053512 U according to the preamble to claim 1.

A beverage crate is disclosed in DE 18 18 977 U.

The invention has as its object to propose an advantageous design of a mould having wall panels intersecting one another at points of intersection.

The invention is described in the independent claim. The dependent claims contain advantageous embodiments and further developments of the invention.

The positive fixing of the edges of a slot of a partition wall panel by means of holding structures to the other partition wall panel of a point of intersection results, advantageously and with minimal expense in the absence of welding or additional mechanical connection elements, in a transverse support having high stability of the plug-in connection of two partition wall panels existing at the point of intersection. In particular lateral deviation of the wall panels from the vertical path can in the region of the opening of the slot, e.g. under the effect of the hydrostatic pressure in the concrete mass.

The expressions above, below, vertical, horizontal, etc., are intended here and in the following to denote a regular operating position of the mould in a moulding machine, in which the mould with a lower boundary plane rests on top of a horizontal level supporting base and the mould cavities possess a substantially constant cross section in the vertical direction.

Any minor mould distortions of the partition wall panels that may arise from a preceding hardening process can also be compensated for advantageously, furthermore, by the positive fixing. The holding structures are formed as depressions, namely as grooves in the wall surface of a first of the two wall panels that are plugged into one another at the point of intersection, in which wall panels the edges of the slot of the second of the two wall panels are supported.

Of particular importance is the transverse supporting of the edges of the slots that are open to the bottom. The edges of the slots of both the intersecting partition wall panels that are plugged into one another are preferably mutually fixed at a point of intersection to holding structures for the other partition wall panel in each case and are supported against a change in position parallel to the wall surface of the wall surface exhibiting the holding structures in each case.

Depressions intended as holding structures in the wall surface of a first partition wall panel configured as first grooves as an extension of a first slot are advantageously formed over the entire extent of the first partition wall panels as an extension of the first slot, so that the edges of the second slot are enclosed therein and are positively fixed over the entire length of the first grooves. In addition, the depth of engagement of the edges of the second slot into the first grooves in a lying starting region in conjunction with opening of the second slot is greater than in a region that is remote from the slot opening. The first grooves can possess a constant cross section over their vertical longitudinal extent for this purpose, and the edges of the second slot in the starting region exhibit projecting parts facing towards one another. In the region that is remote from the slot opening, a slot edge then exhibits a greater distance in relation to the bottom of the groove than in the starting region. In particular, the projecting parts can also bear firmly against the bottoms of the grooves, but without the plugging together of the partition wall panels at the point of intersection being obstructed to an appreciable degree.

Advantageously, the outer walls of the mould cavities of the block field are likewise delimited by wall panels, designated in the following as outer wall panels. The partition wall panels can preferably likewise be connected to partition wall panels and/or other outer wall panels in the absence of welding via comb-like slot-plug-in connections at points of intersection. Other forms of connection can also apply at these points of intersection. The relative fixing of outer wall panels to one another and to the partition wall panels is preferably effected outside the block field, for which purpose the partition wall panels advantageously protrude laterally with projections beyond the outer wall panels. Advantageously, no welds are performed in this case on the panel portions delimiting the mould cavities. In particular, connection elements can be disposed on outer surfaces of the outer wall panels and/or partition wall panels, which connection elements achieve a relative vertical fixing of partition wall panels and outer wall panels.

In one particular embodiment, additional plates can be provided on two opposing sides of the block field at a distance from the outer wall panels delimiting said block field and in addition at a distance from the block field, and substantially parallel to the outer wall panels, which additional plates form empty fields together with the outer wall panels and the partition wall panels that are oriented in an intersecting manner thereto. The provision of a distance to the block field in the case of the additional plates allows welded joints to be produced with the intersecting partition wall panels, but without compromising the resistance to wear of the hardened wall surfaces of the mould cavities.

The mould advantageously exhibits an outline that is substantially rectangular when viewed from above and is delimited by longitudinal sides and transverse sides, and on both of its transverse sides, although not on the longitudinal sides, has flanges for clamping into a moulding machine, by means of which flanges the mould is capable of being pressed onto the vibrating supporting base with high force during filling of the mould cavities and during a vibrating process for the consolidation of the concrete mass into moulded concrete blocks. Whereas, in the case of the aforementioned US 4 249 358, the application of the greatest force is adopted during the raising of the mould in conjunction with demoulding of the moulded concrete blocks, in a mould that is adapted to a vibrating supporting base, the maximum loads occur during the vibrating process, wherein in particular the supporting base exert upwardly directed forces on the lower edges of the wall panels of the mould and the machine clamping exerts downwardly directed forces on the flanges on the transverse sides. Advantageously, the slot openings face downwards in the case of the partition wall panels that are particularly subjected to deflection continuously between both of the transverse sides, so that a constriction of the slot opening as a result of supporting the edges of the slot on the transversely extending wall panels associated with a deflection of said partition wall panels can be absorbed particularly advantageously and any deflection can be kept particularly small. Advantageously, the length of the downward facing slots is at most 45 %, and in particular at most 40 % of the entire height of the partition wall panels. In partition wall panels extending transversely thereto, the length of the slots that are open to the top is then at least 55 %, and in particular at least 60 % of the entire height of the partition wall panels.

The invention is illustrated in more detail below on the basis of preferred illustrative embodiments with reference to the figures. In the drawings:

Fig. 1 depicts a complete mould in an oblique view,

Fig. 2 depicts a representation in the form of an assembly of components of the mould according to Fig. 1,

Fig. 3 depicts the wall panels for the mould according to Fig. 1 as a representation in the form of an assembly,

Fig. 4 depicts two wall panels plugged into one another,

Fig. 5 depicts a longitudinal wall panel in various views,

Fig. 6 depicts a transverse wall panel,

Fig. 7 depicts an enlarged detail of a slot,

Fig. 8 depicts the representation according to Fig. 7 with a view parallel to the wall surface normal,

Fig. 9 depicts a view into the slot from below,

Fig. 10 depicts an oblique view of a slot that is open to the top,

Fig. 11 depicts a sectioned view of a detail of a point of intersection,

Fig. 12 depicts a point of intersection from below

Fig. 13 depicts a point of intersection from above,

Fig. 14 depicts an enlarged representation of the end region of a slot,

Fig. 15 depicts an enlarged representation of a support region,

Fig. 16 depicts a variant of a mould construction,

Fig. 17 depicts a detail of Fig. 16.

Fig. 1 depicts a complete mould for the production of hollow blocks in a view obliquely from above, in relation to which the invention is explained in the following. Marked in the drawing in relation to the mould is a rectangular Cartesian x-y-z coordinate system, of which the x-y plane extends horizontally in a regular operating position of the mould, and of which the z-direction indicates the vertical direction in this case. The x-direction may also be designated in the following as the transverse direction, and the y-direction as the longitudinal direction.

The mould has a plurality of mould cavities FN, which continue between a visible upper horizontal boundary plane in Fig. 1 and a concealed lower horizontal boundary plane in Fig. 1 with a substantially constant cross section and are open to the top and to the bottom. The mould in operation is positioned with the lower boundary plane on a vibrating supporting base of a moulding machine and is clamped into a moulding machine via two machine flanges FM disposed on transverse sides lying opposite one another in the longitudinal direction y and is pressed onto the vibrating supporting base. A charging trolley is typically moved over the mould in the x-direction for the purpose of filling the mould cavities FN with free-flowing fresh concrete mass. Dirt strips or guide strips WF can be provided on the upper side of the mould.

The totality of the multiple mould cavities FN constitutes the block field, which is delimited towards the outside by longitudinal outer walls AL extending in the longitudinal direction y and by transverse outer walls AQ extending in the transverse direction x. The outer walls AL, AQ are constituted advantageously by wall panels.

The mould cavity is subdivided into the multiple mould cavities by longitudinal partition walls ZL extending in the longitudinal direction y and by transverse partition walls ZQ extending in the transverse direction x. The partition walls intersect at points of intersection KP and are plugged into one another there in a manner described in more detail in the following and are held together in the absence of welding. The partition walls ZL, ZQ are likewise configured as wall panels and continue uninterrupted through the block field in the longitudinal direction or in the transverse direction between the outer walls AL or AQ. The partition wall panels ZQ, ZL are supported horizontally against one another at the points of intersection. A vertical fixing between wall panels extending in the longitudinal direction and in the transverse direction is effected advantageously by connection devices outside the block field, for which reason a clamping strip SL represented in the longitudinal direction is represented in Fig. 1, which clamping strip is guided through recesses SA in panel projections UQ of the transverse partition wall panels protruding outwards beyond the longitudinal outer wall panels AL.

Arranged in the mould cavities FN are mould cores FK, which are held on core holder strips KL spanning the block field.

Additional wall panels WZ, which extend parallel to the transverse outer wall panels AQ and form empty fields on the mutually opposite transverse sides in the longitudinal direction y outside the block field, are provided in the longitudinal direction y of the transverse outer wall panels AQ displaced away from the block field in the example represented in Fig. 1. The longitudinal partition walls ZL extending in the longitudinal direction y also extend with these additional wall panels WZ in an intersecting manner and project with panel portions UL in the longitudinal direction beyond the additional wall panels WZ. Metal cover sheets DL extending in the longitudinal direction and metal cover sheets DQ extending in the transverse direction are arranged on the upper side of the mould, which cover sheets are typically detachably connected to the mould as wearing parts.

The machine flanges FM are advantageously connected to the ends of the panels of the partition wall panels ZL and the outer wall panels AL extending in the longitudinal direction, in order to transfer the forces of the moulding machine onto the mould. No machine flanges are positioned on the longitudinal sides of the mould. The mould is stressed as a result, in particular by deflection in the y-z planes, when pressing the mould onto the vibrating supporting base via the machine flanges FM that are clamped into the moulding machine.

Fig. 2 depicts components of the mould represented in Fig. 1 in a representation in the form of an assembly. The mould cores FK and the core holder strips KL are not represented in Fig. 2 for the sake of clarity. The wall panels extending in the longitudinal direction and in the transverse direction are represented in Fig. 2 in the state in which they are plugged together.

Fig. 3 depicts exclusively the wall panels introduced into the mould according to Fig. 1 and Fig. 2 in a representation in which they are disengaged from one another, but are aligned ready for joining together. The longitudinal partition wall panels ZL and one of the longitudinal outer wall panels AL have a non-level structure on one side, which provide for the production of depressions in lateral surfaces of a hollow block, into which mortar or adhesive can be introduced for connecting neighbouring blocks together. The wall panels are otherwise substantially level and are advantageously at least approximately of the same thickness, which favours uniform and low-distortion hardening in a joint hardening process. The evenness of the panels is not obligatory, although it is particularly advantageously with respect to production and is customary for a multiplicity of types of block. It is accordingly assumed in the following, without limiting the general applicability, that the moulds have wall panels extending in a straight line in the longitudinal direction and in the transverse direction.

The longitudinal partition wall panels ZL have lower slots SU leading upwards from their lower edges UK, and slots SO in the transverse partition wall panels ZQ are guided downwards in a corresponding manner from the upper edges of these transverse partition wall panels. Corresponding slots are also formed in the outer wall panels AL, AQ and the additional wall panels WZ. The longitudinal or transverse wall panels extending in such a way as to intersect one another in the vertical projection are plugged together with lower slots SU and upper slots SO that are in alignment in the vertical direction. The slots then lie at the points of intersection of the assembled panels.

In order to provide a clearer illustration of the invention, Fig. 4 depicts only a longitudinal partition wall ZL and a transverse partition wall ZQ, which are plugged into one another at a point of intersection KP, so that the lower edges of both wall panels lie in a common lower boundary plane. The plug-in connection of the two wall panels at the point of intersection KP ensures that both wall panels are supported on one another both in the longitudinal direction y and in the transverse direction x.

An essential feature of the invention is that, at the point of intersection, not only lateral overlapping of the longitudinal partition wall ZL through a slot SO of the transverse partition wall ZQ and overlapping of the transverse partition wall ZQ are provided by a slot SU of the longitudinal partition wall ZL, but that in addition the slot edges at least of a slot SU or SO, and preferably of both slots, are supported in addition by holding structures on the wall panel that is enclosed by the respective slot in the horizontal direction parallel to the enclosed wall panel. The edges of a slot SO of the transverse partition wall ZQ that is open to the top are in addition supported as a result at the point of intersection KP in the y-direction, so that no deflection, in particular of the upper edge of the transverse partition wall ZQ, can occur in the region of the slot opening. In the same way, the edges of a slot SU of the longitudinal partition wall ZL that is open to the bottom are supported by holding structures on the transverse partition wall at the point of intersection KP by holding structures on the transverse partition wall ZQ at the point of intersection against a possible displacement in particular of the lower edge UK of the longitudinal partition wall in the event of the deformation of the longitudinal partition wall ZL.

According to the invention, as outlined in Fig. 4, such holding structures are realized by grooves on the wall panels as an extension of the slots. Upper grooves NO are formed as depressions against the surrounding panel surface as an extension of the slots SU that are open to the bottom in the longitudinal partition wall ZL. Slot edges of a slot SO of the transverse partition wall ZQ that is open to the top are enclosed at a point of intersection KP in said upper grooves NO and, in so doing, prevent the deflection in particular of the upper edges of the transverse partition wall ZQ at the point of intersection KP in the y-direction in the event of the occurrence of high forces. Lower grooves NU in the transverse partition wall ZQ are similarly provided as an extension of a slot SO that is open to the top, and edges of a lower slot SU of the longitudinal partition wall ZL are supported in lower grooves NU of the transverse partition wall ZQ against deflection in the x-direction.

Supporting is of particular relevance in the respective slot openings, since the wall panels here are subjected to the highest bending moments in the event of any unequally acting forces being exerted on the wall panels from mutually opposite sides of the panel. The slots are thus constricted advantageously in the region of their openings by a small dimension in relation to the rest of their path. Projecting parts VO, which constrict the width of the slot slightly in the region of the slot opening in relation to the rest of its path, are formed in the case of the lower slots SU in the region of the slot opening on the lower edge UK of the longitudinal partition wall projecting parts VU, and in the case of the upper slots SO in the transverse partition wall. Such a special arrangement of the slots is particularly advantageous for the transverse support of the particularly highly loaded panel edges in the region of the slot openings on the one hand and for the simple plugging together of intersecting panels in the points of intersection on the other hand.

It is also particularly advantageous, in connection with the fixing of machine flanges FM to the opposing ends of the longitudinal partition wall panels ZL in the longitudinal direction y, that the slots in the longitudinal partition wall panels ZL are open to the bottom. As a result of the downward directed holding forces acting on the machine flanges FM at the ends of the longitudinal partition wall panels, and as a result of the upward directed forces exerted by the vibrating supporting base on the lower edges UK of the wall panels in the course of the vibrating process, the longitudinal partition wall panels are subjected to bending stresses, which attempt to bring about arching of the longitudinal partition wall panels between the machine flanges FM in an upward direction. The lower slots would be constricted in this case, although this is prevented to a large extent by the support for the edges of the grooves of the lower slots SU in the lower grooves NU of the transverse partition wall panel in the y-direction, so that, as a result of this choice of the alignment of the slot openings downwards in the longitudinal partition wall panels, the flexural strength of these panels against the particular bending stresses in the moulding machine is increased in the course of vibration operation. The transverse partition wall panels ZQ are not subjected to any significant bending stresses, since no particular suppressing forces, arising from the inherent rigidity of the mould, act on the opposite ends of these transverse partition wall panels.

The particular and different bending stresses of the longitudinal partition wall panels and the transverse partition wall panels with the machine flanges exclusively at the opposing ends of the longitudinal partition wall panels is also taken into account advantageously by the fact that the slot length of the lower slots SU in the longitudinal partition wall panels is smaller than the length of the upper slots SO in the transverse partition wall panels.

A longitudinal partition wall panel ZL is represented separately in various views in Fig. 5, wherein Fig. 5 (A) represents an oblique view, Fig. 5 (B) a view from below of the lower edge and Fig. 5 (C) a view in the x-direction perpendicular to the panel surface. The individual design characteristics of the longitudinal partition wall panel ZL are provided with the reference symbols that are also already used in Fig. 4, so that reference is made to the explanations to Fig. 4. Regions which are depicted in an enlarged representation in Fig. 7, Fig. 8 and Fig. 9 are designated in Fig. 5 with the Roman numerals VII, VIII and IX.

Fig. 6 depicts in an oblique view a separate transverse partition wall panel ZQ, in which the slot length of the upper slot SO is designated with HO. The slot length HO is advantageously at least 55 %, and in particular at least 60 % of the overall height HW of the wall panel. The other reference symbols used in Fig. 6 are identical in respect of their marking with the reference symbols that are used in the preceding Figures, to which reference is made for this purpose.

Fig. 7 depicts a lower slot SU in a longitudinal partition wall panel ZL as a detail VII from Fig. 5 (A) in an oblique view. Fig. 8 depicts the detail observed in a direction parallel to the x-direction. The lower slot SU is open towards the lower edge UK of the wall panel. In the region of the slot opening, the slot width measured in the y-direction is reduced to a width dimension DU by cams situated opposite one another as projecting parts VU. The dimension DU is adapted to the reduced wall thickness in the lower groove NU of the transverse partition wall panel. In a region that is remote from the lower slot opening, the slot SU is configured more broadly by a small dimension. In the z-direction as an extension of the slot SU an upper groove NO is formed as a depression against the wall surface of the longitudinal partition wall panel as a holding structure for the slot edges of a transverse partition wall panel plugged together at a point of intersection with the longitudinal partition wall panel ZL. The width of the groove NO in the y-direction is preferably substantially the same as the cam distance DU. The width BO of the groove NO is adapted to the reduced width of the upper cams VO in relation to the surrounding wall thickness of the transverse partition wall panel in the opening from the slot SO that is open to the top.

A view from below of the lower slot SU of the longitudinal partition wall panel according to Fig. 8 and 9 is represented in Fig. 9, from which the mutually opposite upper grooves NO are visible as depressions against the wall surface and the lower projecting parts VU are visible projecting on both sides from the edges of the lower slot to the middle of the slot. A chamfer FA on the upper edge of the longitudinal partition wall panel, which lies concealed in this view, is indicated with a broken line.

Fig. 10 depicts in an oblique view a detail of a transverse partition wall panel having an upper slot SO. It is also proposed in this example that the slot SO in the slot opening on the upper edge of the transverse partition wall panel is constricted by upper projecting parts VO facing towards the middle of the slot and widens once more from the slot opening in the direction of the bottom of the slot after the upper projecting parts VO in a region that is remote from the slot opening. The lower groove NU in the transverse partition wall panel continues as far as its upper edge, so that the upper projecting parts VO do not extend in the y-direction over the entire panel thickness, but that a stepped path of the edges of the upper slot occurs at this point in the vertical projection.

Fig. 11 depicts, as a sectioned view in a y-z cutting plane, a detail of a point of intersection with a longitudinal partition wall panel ZL and a transverse partition wall panel ZQ plugged together with the latter. It is particularly apparent from the representation according to Fig. 11 that the distance of the edges of the lower slot SU from the transverse partition wall panel in the y-direction in a region that is remote from the lower slot opening of the lower slot SU is greater than in a region in the lower slot opening, where the edges of the lower slot are formed via lower projecting parts VU projecting towards the middle of the slot. This is in particular of benefit for the plugging together of the wall panels at the point of intersection. This is further illustrated in a detail C of Fig. 11 represented in Fig. 15. A narrow gap between the lower projecting parts VU and the transverse partition wall panel ZQ is also indicated in the detail represented in Fig. 15. However, the lower projecting parts VU can also bear directly against the transverse partition wall panel ZQ in the y-direction.

Fig. 12 depicts a view of a point of intersection from below. From this view, it can be appreciated how the edges of the lower slot SU of the longitudinal partition wall panel ZL engage in the lower groove NU of the transverse partition wall panel ZQ, and how the edges of the slot SU are supported positively on the side edges of the lower groove in the x-direction. Reliable support is provided in particular in the region of the lower projecting parts VU by their deeper engagement in the grooves NU. The cutting plane of the view according to Fig. 11 is designated in Fig. 12 with XI - XI, from which it can be appreciated that the cut surface represented with hatched lines in Fig. 11 for the transverse partition wall panel ZQ does not represent the full wall thickness of the transverse partition wall panel ZQ, but rather the reduced wall thickness in the region of the lower grooves NU.

Fig. 13 depicts a view of a point of intersection vertically from above and illustrates the stepped course in this region of the edges of the upper slot SO with the upper projecting parts VO, which do not adopt the full wall thickness of the transverse partition wall panel ZQ. The upper slot SO can be formed engaging in the upper groove NO in a region that is remote from its slot openings in the direction of the bottom of the slot, wherein the depth of engagement in this remote region is advantageously smaller than the depth of engagement of the projecting parts VO in the groove NO. However, the upper slot SO can also possess the stepped path illustrated in Fig. 13 only in the region of the upper projecting parts VO and can be milled out to the full wall thickness of the longitudinal partition wall panel ZL in a region remote therefrom in the direction of the bottom of the slot, so that a transverse support of the upper edge of the transverse partition wall panel ZQ in the y-direction is provided exclusively by the upper projecting parts VO in the upper groove NO.

The transverse support of the edges of the slots in the partition wall panels in the region of the respective slot opening is particularly advantageous, although not obligatory, because of the force relationships. A transverse support can also be provided remotely over the entire length of the slots or only from the respective slot openings in the direction of the bottom of the slot. Fig. 14 depicts an enlarged detail C of Fig. 11, in which the construction of the bottom of the slot of the lower slot SU is represented on an enlarged scale. In particular the side walls of the lower slot SU in the region of their slot bottom GU delimiting the insertion depth in conjunction with plugging longitudinal and transverse partition wall panels together merge into the latter via roundings FR, whereby the occurrence of high notch stresses in this region is reliably avoided. The region of the upper slot SO in the region of its slot bottom GO is configured advantageously in the same way.

Fig. 16 depicts a further embodiment of a mould having the connection of longitudinal and transverse partition wall panels according to the invention, wherein, in the representation depicted in Fig. 16, the metal cover sheets and the core holder arrangement are omitted. Fig. 17 depicts an enlarged detail in Fig. 16. In the mould represented in Fig. 16, the transverse partition wall panels extending in the transverse direction x are connected to panel portions UQ protruding beyond the longitudinal outer wall panels AL via angle connectors VW to the longitudinal outer wall panels AL. The angle connectors VW are screwed both to the protruding portions UQ and also to the outsides of the outer wall panels AL via two vertical connector legs. Advantageously, the angle connectors VW as represented, can exhibit an additional horizontal connector leg, which serves for screwing the metal cover sheets to the mould. The panel portions of the transverse outer wall panels AQ projecting in the transverse direction beyond the outer wall panel AL can be connected to the longitudinal outer wall panels AL with the same angle connectors. The portions of core holder strips protruding beyond the outer wall panels can be braced vertically downwards against the outer wall panels via additional holding elements HL, which are engaged positively in depressions in the outer surface of the outer wall panels AL and are screwed to the outer wall panels AL.

Provided on the transverse sides of the mould are further angle connectors VF, by means of which the machine flange strips FM are secured to the longitudinal partition wall panels and the longitudinal outer wall panels. The angle connectors VF in turn can serve advantageously at the same time for screwing the transverse metal cover sheets DQ or DL to the mould.

Forma beton formatestek előállítására

SZABADALMI IGÉNYPONTOK

1. Forma beton formatestek előállítására egymás mellett elrendezett és mezőt képező formafészkekkel (FN), amik a formafészkek alsó oldala és felső oldala között átmenő falakkal vannak elválasztva, és a falakat válaszfal lemezek (ZL, ZQ) alkotják, amik az egész mezőn át egy darabból vannak kiképezve és egymást keresztezési pontokban (KP) metszik, ahol két egymást metsző válaszfal lemez (ZL, ZQ) ellenkező irányú hasítékokkal (SU, SO) van összeillesztve, ahol két egymást metsző válaszfal lemez közül legalább ez elsőn (ZQ) az ezen első válaszfal lemezen lévő első hasíték (SO) meghosszabbításában olyan tartószerkezetek (NU) vannak kialakítva, amik a második válaszfal lemezen lévő második hasíték (SU) peremeit az első válaszfal lemez (ZQ) válaszfal felületeivel párhuzamos irányban (y) és az első és második hasítékra (SU, SO) keresztirányban (x) rögzítik, **azzal jellemezve, hogy** a tartószerkezetek bemélyedésekként (MU) vannak kialakítva a válaszfal lemezek (ZL, ZQ) körülvevő falaival szemben, a bemélyedések hornyokként (NU) vannak kialakítva, és a második hasítékok (SU) belső felületei a hasíték nyílásától távolabb fekvő szakaszon a hornyok (NU) fenekétől nagyobb távolságra vannak, mint a hasíték nyílásánál.

2. Az 1. igénypont szerinti forma, **azzal jellemezve, hogy** a hornyok (NU) a körben fekvő falfelületekre merőleges oldalélekkel vannak kialakítva.
3. Az 1. vagy 2. igénypont szerinti forma, **azzal jellemezve, hogy** a hornyok (NU) szélessége állandó, és a második válaszfal lemez (ZL) a második hasíték (SU) peremeinél teljes falvastagságával a hornyokban (NU) felfekszik.
4. Az 1. igénypont szerinti forma, **azzal jellemezve, hogy** a második hasíték (SU) a hasíték nyílásnál a távközzel elhelyezkedő szakasz felé keskenyedik.
5. Az 1 – 4. igénypontok bármelyike szerinti forma, **azzal jellemezve, hogy** a második válaszfal lemezen (ZL) második tartószerkezetek (NU) vannak kialakítva, az első hasíték (SO) peremeinek keresztirányú megtámasztására.
6. Az 1 – 5. igénypontok bármelyike szerinti forma, **azzal jellemezve, hogy** az első hasíték (SO) és a második hasíték (SU) a hasíték nyílással szemközti hasíték fenékénél a hasíték oldalfalak felé néző lekerekítésekkel (FR) van ellátva.
7. Az 1 – 6. igénypontok bármelyike szerinti forma, **azzal jellemezve, hogy** a mező külső falai legalább két szemben fekvő oldalon külső fallemezként (AL, AQ) vannak kialakítva.
8. A 7. igénypont szerinti forma, **azzal jellemezve, hogy** a válaszfal lemezek (ZL, ZQ) a külső fallemezeken (AL, AQ) túlnyúlóan a mezőből oldalra kinyúló nyúlványokkal (UL, ZU) vannak ellátva.
9. A 6. vagy 7. igénypont szerinti forma, **azzal jellemezve, hogy** a mező lényegében négyszögletes, hosszirányú és keresztirányú peremekkel, és két, egymással derékszöget bezáró külső fallemezzel (AL, AQ) van határolva.
10. A 9. igénypont szerinti forma, **azzal jellemezve, hogy** a külső fallemezek (AL, AQ) a sarokpontoknál egymást metszve vannak elrendezve.
11. A 8 – 10. igénypontok bármelyike szerinti forma, **azzal jellemezve, hogy** a válaszfal lemezek (ZQ) nyúlványai (UQ) első szögkapcsok (VW) segítségével vannak a külső fallemezek (AL) külső felületével összekötve, előnyösen összecsavarozva.
12. A 11. igénypont szerinti forma, **azzal jellemezve, hogy** az első szögkapcsok (VW) csak a keresztirányú válaszfal lemezek (ZQ) nyúlványait (UQ) és a hosszirányú külső fallemezeket (AL) kapcsolják össze.
13. A 7 – 12. igénypontok bármelyike szerinti forma, **azzal jellemezve, hogy** a mező felületén fedőlemezekkel (DQ,DL) van körbevéve, és a fedőlemezek (DQ,DL) második szögkapcsok (VW) segítségével vannak a külső fallemezekkel (AQ) vagy a válaszfal lemezekkel (ZL) összekötve, előnyösen összecsavarozva.
14. A 13. igénypont szerinti forma, **azzal jellemezve, hogy** második szögkapcsok (VW) legalább egy része első szögkapcsot (VW) is képez.
15. A 7 – 14. igénypontok bármelyike szerinti forma, **azzal jellemezve, hogy** két egymással szemben fekvő külső fallemez külső falfelületén ellentartó van egy formamag magtartó lécei (KL) számára.

16. A 15. igénypont szerinti forma, **azzal jellemezve, hogy** az ellentartó a magtartó léceknek a külső fallemezeken túlnyúló végeivel függőlegesen van kifeszítve.

17. A 15. vagy 16. igénypont szerinti forma, **azzal jellemezve, hogy** az ellentartó a külső fallemezek külső felületére van felcsavarozva.

18. A 15. vagy 16. igénypont szerinti forma, **azzal jellemezve, hogy** az ellentartói a keresztirányú válaszfal lemezek (ZQ) nyúlványai tartják.

19. A 18. igénypont szerinti forma, **azzal jellemezve, hogy** a magtartó lécek (KL) a külső fallemezek (AL) kivágásaiba illeszkednek, és a külső fallemezek (AL) függőleges kapcsolata az ezeket keresztező válaszfal lemezekkel a magtartó lécek (KL) végeinek kifeszítésével kombinálódik.

20. Az 1 – 19. igénypontok bármelyike szerinti forma, **azzal jellemezve, hogy** két szemben fekvő keresztirányú oldal mindig egy, a formát egy formázó berendezésben rögzítő karima szerkezettel van ellátva.

21. A 20. igénypont szerinti forma, **azzal jellemezve, hogy** a hosszirányban a keresztirányú oldalak között futó válaszfal lemezeken (ZL) a hasítékok (SU) lefelé nyitottak.

22. A 21. igénypont szerinti forma, **azzal jellemezve, hogy** a lefelé nyitott hasítékok (SU) magassága a válaszfal lemezek (ZL) magasságának legfeljebb 45%-a, előnyösen legfeljebb 40%-a.

23. A 7 – 22. igénypontok bármelyike szerinti forma, **azzal jellemezve, hogy** a külső fallemezek (AQ) legalább két szemben fekvő oldalán kifelé távközzel elrendezett járulékos lemezek (WZ) vannak, amik a külső fallemezek (AQ) felé üres mezőket képeznek.

24. A 23. igénypont szerinti forma, **azzal jellemezve, hogy** a járulékos lemezek (WZ) az őket keresztező válaszfal lemezekkel (ZL) és/vagy külső fallemezekkel (AL) össze vannak hegesztve.

Fig. 1

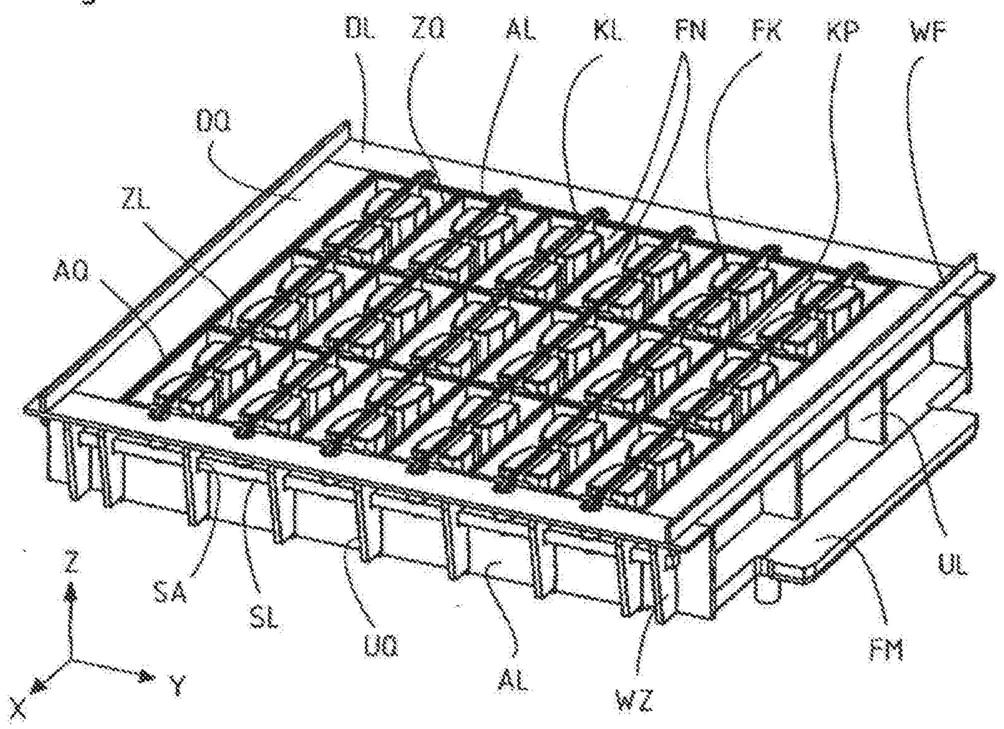
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Fig. 2

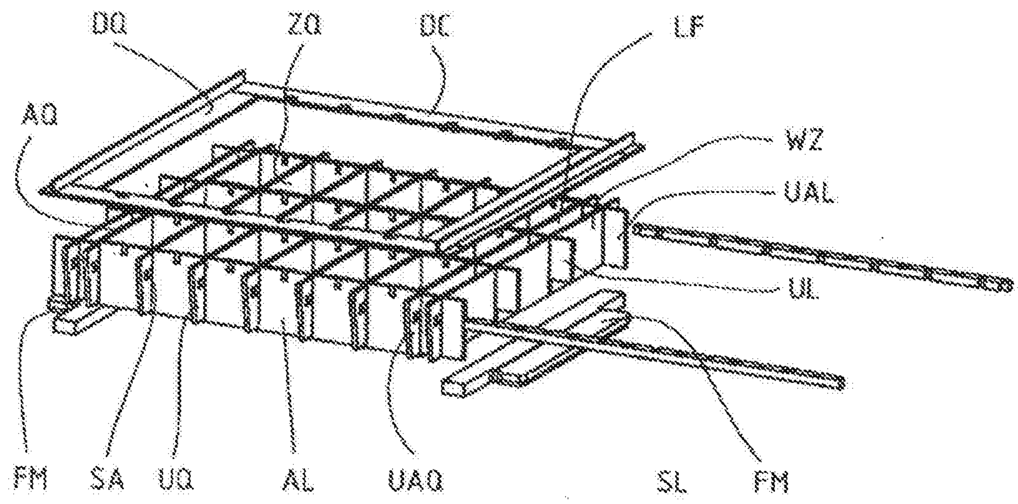
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Fig. 3

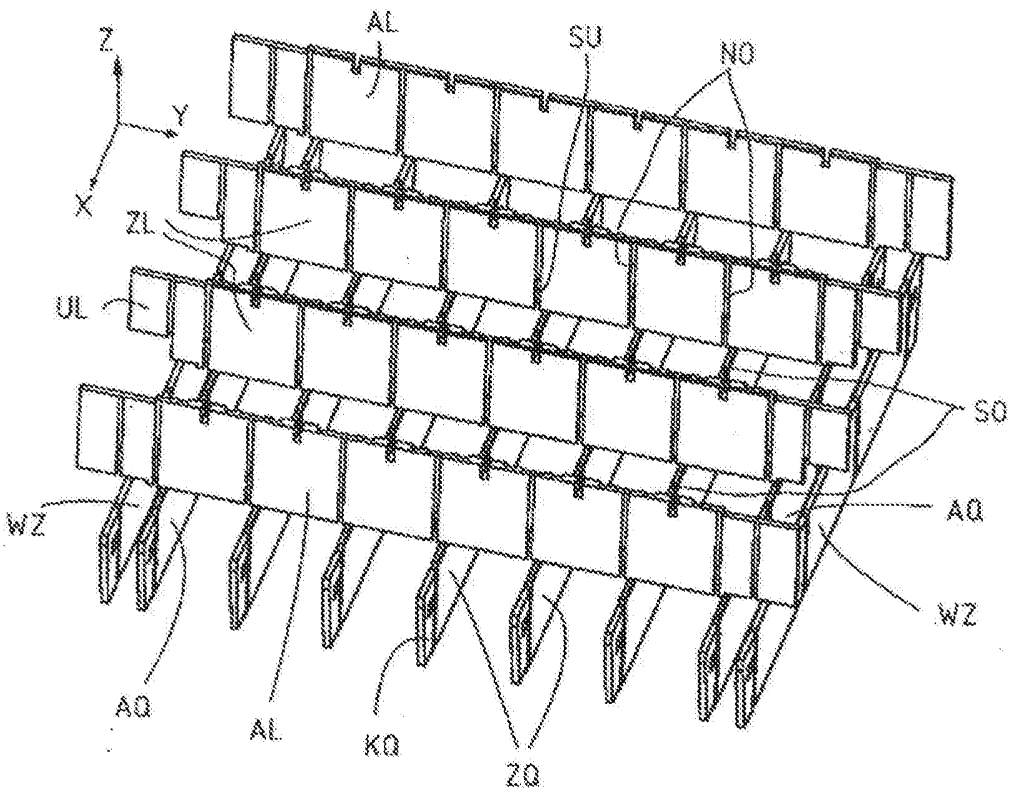
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Fig. 4

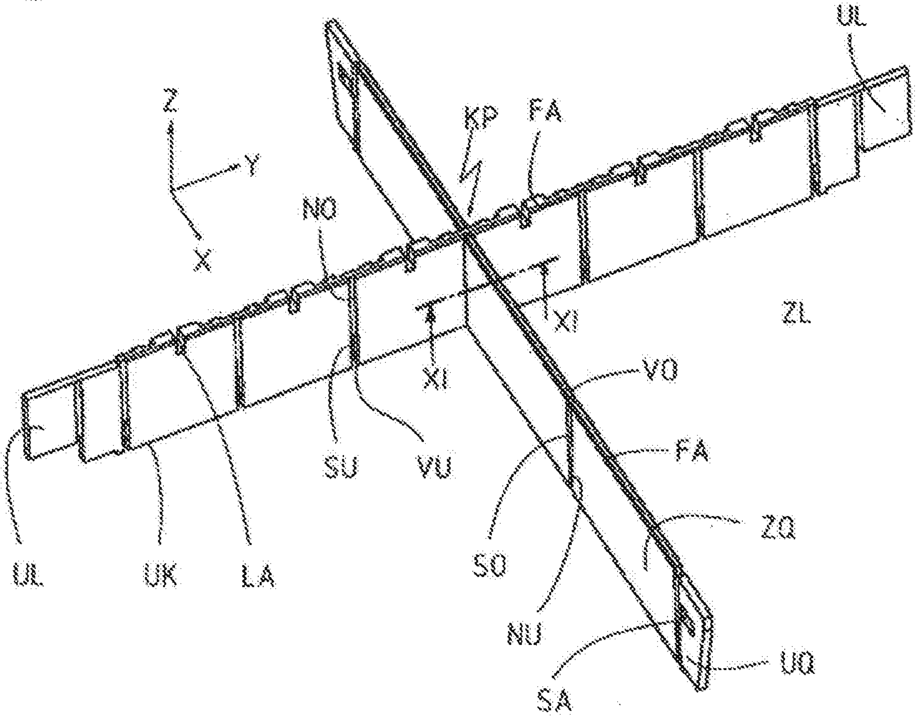
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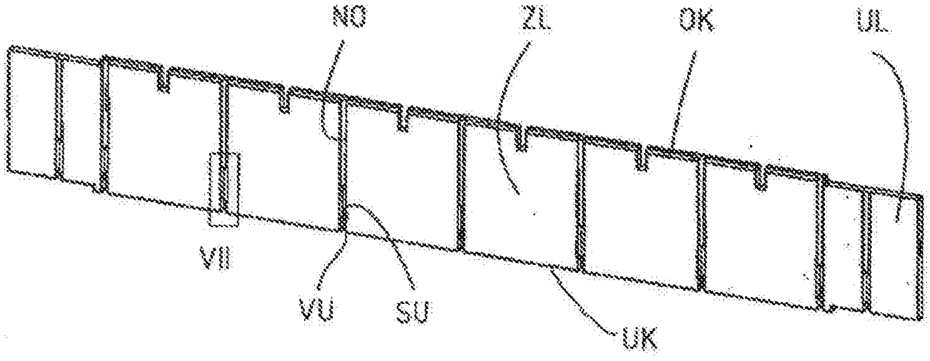
Fig. 5 (A)



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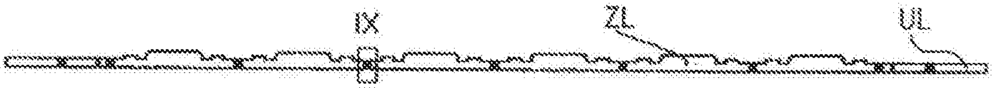

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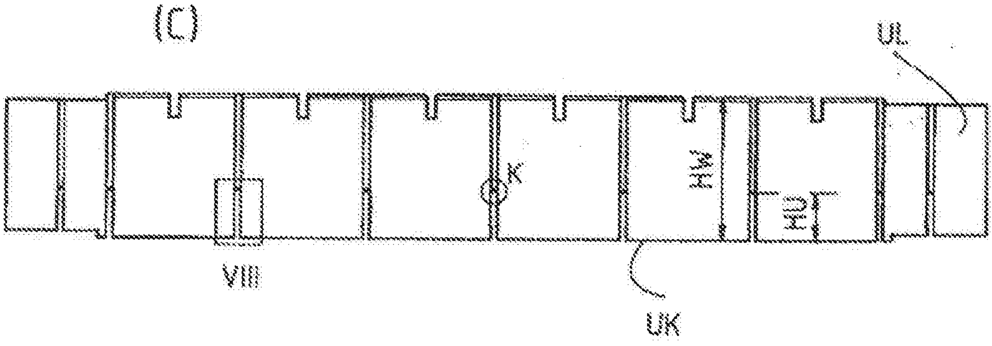

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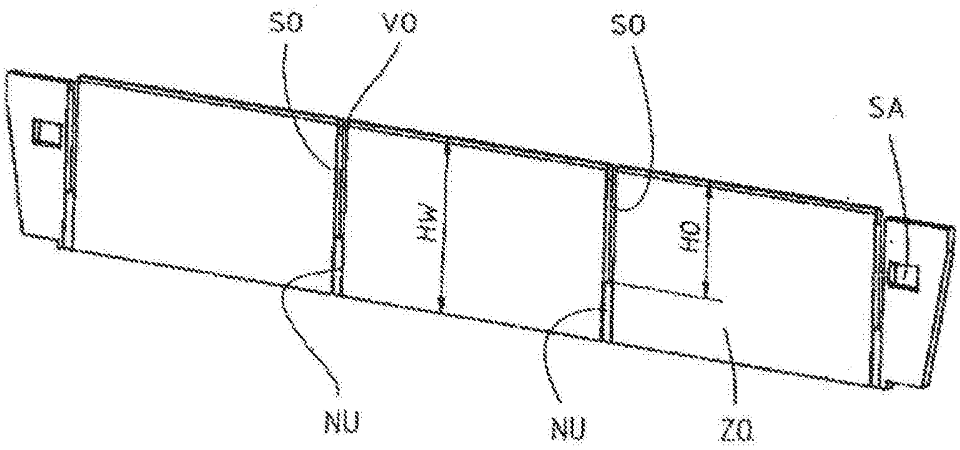
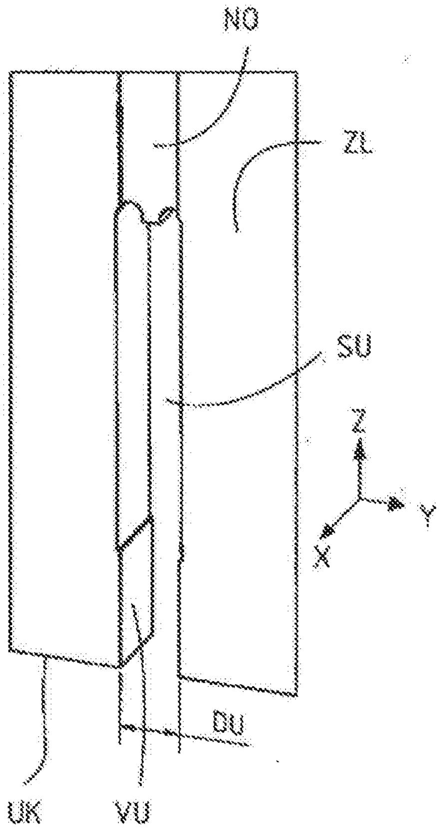


Fig. 7



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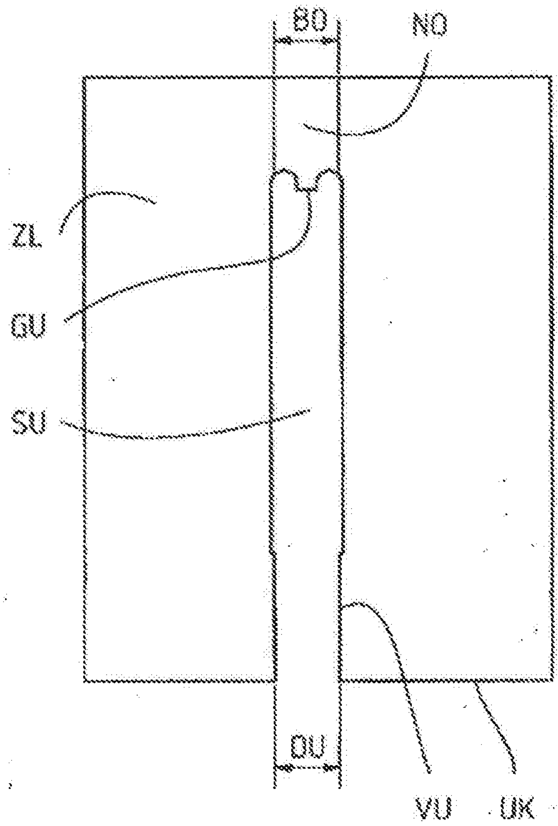

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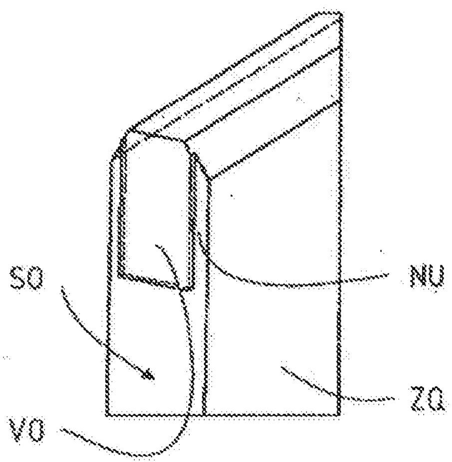

Fig. 9

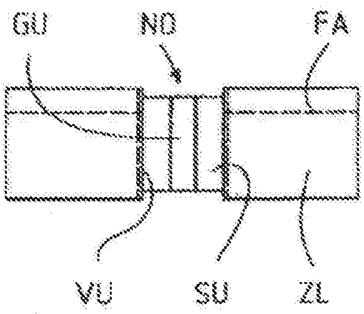

Fig. 11

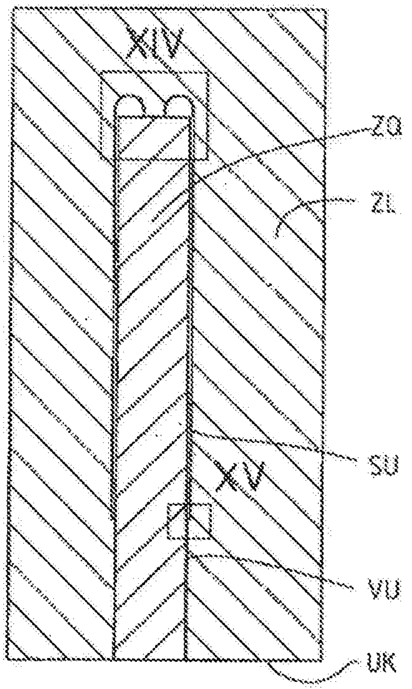

Fig. 12

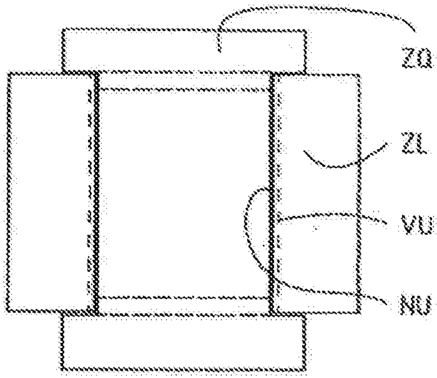

Fig. 13

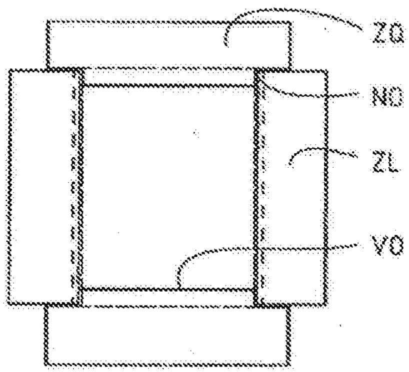

Fig. 14

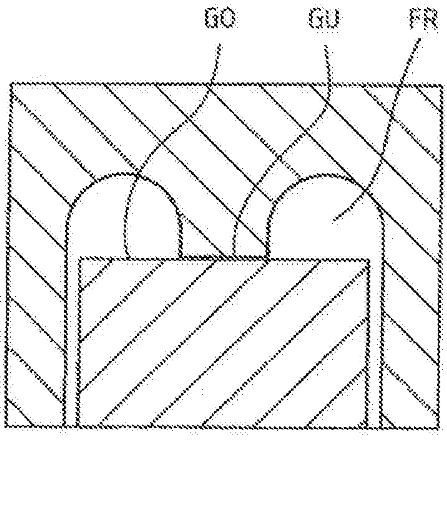

Fig. 15

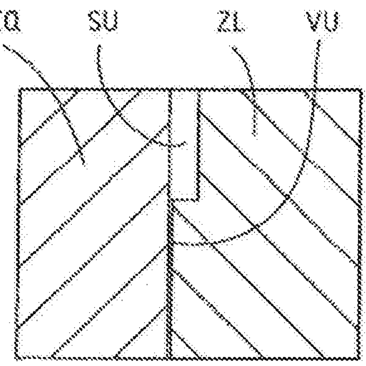

Fig. 16

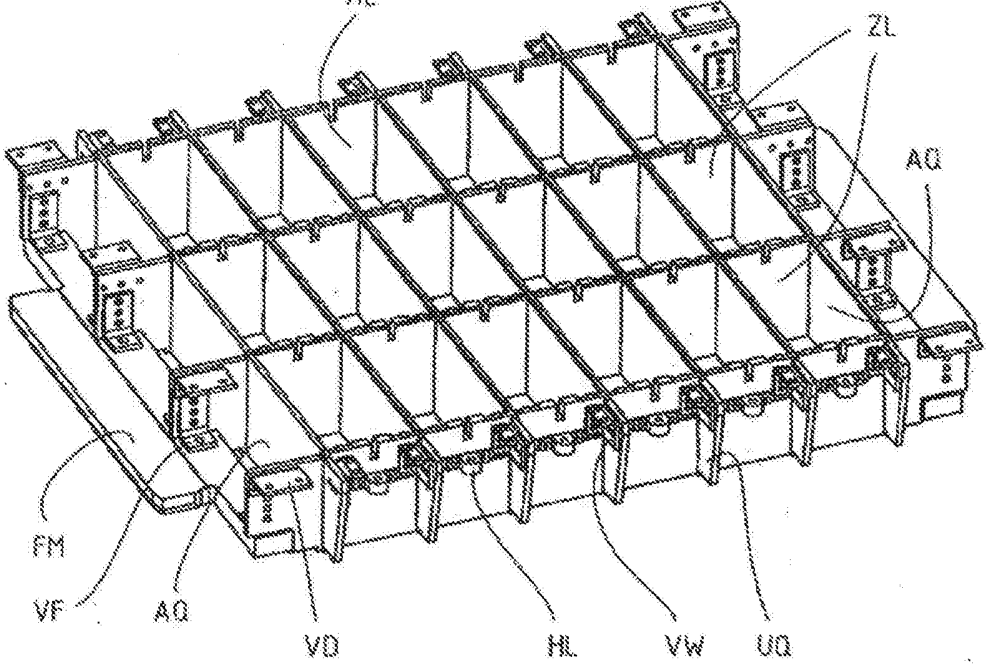

Fig. 17