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⑳ A mould for concrete block stones.

㉑ Concrete block stones are produced by moulding in a cellular mould comprising a support frame (2), the inner sides of which are covered by renewable wear plates (8) secured by bolting. By an associated vibration of the mould these plates are subjected to strong, upwardly directed forces, whereby the mounting bolts (6) are easily broken. In connection with the invention the wear plates (8,14) are extended downwardly and provided with lower, outwardly protruding parts (12,16) that will engage beneath the lower edge of the frame (2) and thus transfer the said forces directly to the frame. Hereby the bolts are considerably relieved, and their duration is substantially prolonged .

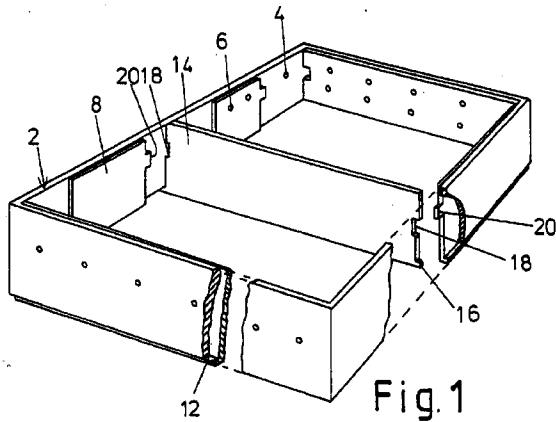


Fig. 1

The present invention relates to a mould for the production of concrete block stones and of the type comprising a support frame for a cellular mould insert, the cells of which are arranged with side walls extending in a direction substantially normal to the plane of the support frame and are, preferably, open at both ends, such that moulding concrete supplied from above to a horizontally disposed mould may intrude downwards into the cells and, after being subjected to vibrations and normally also to a compression in the cells, be expelled from the cells by leaving the cells through the lower ends thereof in response to the entire mould being raised from a support surface, which will thereafter carry the moulded stone members and, optionally, convey them away from the moulding area, if the support surface is laid out as a conveyor.

It is a highly well known problem that moulds of this type should be constructed in a very robust manner in order to be usable for only a reasonably long period of time. The cell walls should be exchangeably mounted in the support frame, because they are subjected to heavy wear and thus should be renewed from time to time without the entire support frame structure having to be scrapped. However, the cell wall elements should also be very safely fixable to the support frame in order to resist the strong vibrations to which the frame is subjected, for the required vibration of the moulding material in the cells. Conventionally, use is made of cell wall plates that are bolted to respective carrier areas of the frame, but insofar as the vibrations will normally be oriented perpendicular to the general plane of the frame, viz. with the use of an underlying vibrator, the vibration impacts will thus produce noticeable shear forces between the cell wall plates and the exterior support frame portions, whereby the applied mounting bolts will easily be cut, unless they are designed very heavily or used in very high numbers, i.e. in both cases conditioning a rather expensive design of the mould.

It is normal practice, therefore, to use moulds of a relatively cheap design, and to accept that the operational lifetime of the moulds is not very long, before they are due for a renewal of the cell wall elements, whether this is necessitated by wear or by an occurring mechanical instability.

In connection with the present invention it has been recognized that the operational lifetime of such a mould can be extended considerably at low costs, if use is made of cell wall elements, which, though still wearable, are thick enough to resist a rapid wear down, provided it is ensured that these wall elements can be fixed to the support frame in a manner such that the fixation means are not too sensitive towards the said vibration impacts. Ac-

5 cording to the invention this can be achieved by providing the cell wall elements with longitudinal, lower edge flanges which project outwardly beneath the lower edge of the support frame so as to be held thereby against movement upwardly. Bolts 10 may still be used for fixing the wall elements against the inner sides of the support frame, but now these bolts need not be particularly heavy, as they shall no longer take up the said shear forces, which will be taken up in a broadly distributed manner by the said flanges abutting the lower edge of the support frame.

15 Thus, it will be possible hereby to arrange for a highly advantageous fixation of the cell wall elements mounted against the inner periphery of the support frame, but the cell configuration in the frame implies that also transverse cell walls are used which should be endwise fixed to the support frame. This fixation raises a separate problem, but according to the invention it may be solved in the way that the end edges of the transverse wall elements are provided with a lower protrusion which, like the said longitudinal flanges, may engage under the lower edge of the inner mounting side of the support frame, such that also these wall elements are stabilized against being pushed upwardly by the vibrations from below. The ends of these transverse walls or partitions may, generally, project to the joining areas between the wall elements mounted along the opposed inner sides of the support frame, and according to the invention an additional fixation of the transverse wall elements may be obtained by providing these end portion with one or more protrusions engaging into corresponding recesses in the end edges of the wall elements mounted against the inner side of the support frame. Thereby a further anchoring of the transverse cell wall plates will be achieved.

20 In the following the invention is described in more detail with reference to the drawing, in which:-

25 Fig. 1 is a perspective view of a mould, illustrating the principle of the invention, and

30 Fig. 2 a top view of a finished mould.

35 The mould shown in Fig. 1 comprises an outer frame portion 2 having sides of heavy plate iron elements provided with bolt holes 4 for bolts 6 for fixing wear resistant, internal lining plates or cell wall elements 8 to the frame 2. In a conventional manner the frame 2 is provided with an outer support construction, which, except for an indicated 40 foot flange 10, is not further illustrated.

45 At their bottom edges the wear plates 8 are shaped with an outwardly projecting flange 12 which, by the mounting and bolting of the plates, 50 are brought to engage the lower edge of the respective cooperating frame side portions.

The frame is provided with a number of transverse partitions 14 made of the same wear resistant material as the plates 8, and these partitions extend all over the width of the frame, i.e. with their opposed ends meeting directly with the frame sides. Correspondingly, the plates 8 are adapted such that as shown in more detail in Fig. 2 they will fill out the spaces between the end portions of the partitions 14, whereby these will be firmly held in the length direction of the frame.

At their ends the transverse wall plates 14 are provided with lower protrusions 16, which project beneath the lower edges of the opposed frame sides, such that these plates will be effectively anchored against being forced upwardly in the mould. In the end edges of the plates 14 recesses 18 are provided, and in level therewith the adjoining end edges of the side plates 8 are provided with protrusions 20 engaging with the recesses 18 so as to further anchor the transverse wall plates, here also against being pushed downwardly from the mould.

Optionally, an inverted anchoring system could be used, whereby the transverse plates 14 could have end protrusions received in recesses in the side plates 8 or in the butt joint areas thereof.

Due to the lower holding parts 12 and 16 both the side plates 12 and the transverse plates 14 will project downwardly below the lower edge of the frame 2. It is desirable that the frame should stand on its support by a relatively thin edge, and because the said holding parts will not have to project all the way to the outer side of the frame they may also contribute by forming a thin support edge, without the thin wear plates being liable to be damaged thereby.

It will be appreciated that the bolts 6, by which the lining plates are held to the frame 2, will be considerably relieved with respect to the transfer of vertical forces when the mould is vibrated from below, as the upwardly directed forces will be widely taken up by the lower projecting parts 12 and 16, due to their engagement with the lower edges of the frame parts. For the same reason the bolts need not be dimensioned particularly heavily, and they will be distinguished by a long operative lifetime.

Claims

1. A mould for the production of block stones of concrete or a similar material and of the type comprising a support frame (2) for a mould insert having wear plates (8) secured to the inner sides of the frame (2), characterized in that the wear plates (8) are designed with lower, outwardly projecting flange means (12) located so as to abut the downward facing

lower edge of the support frame (2).

2. A mould according to claim 1, having wear plates (8,14) mounted both on the interior sides of the frame (2) and located freely across the space between two opposed frame sides, characterized in that the ends of the transverse wear plate or plates (14) are provided with lower protrusions (16) engaging under the lower edge of the frame (2), these plates (14) also, generally, extending downwardly somewhat beyond the level of the lower edge of the frame (2).
- 15 3. A set of wear plates for a mould according to claim 1, comprising a number of wear plates provided with mounting holes mating corresponding bolt holes in a support frame for the wear plates, characterized in that the wear plates are provided with lower projections (12,16) engageable beneath the lower edge of the support frame (2).

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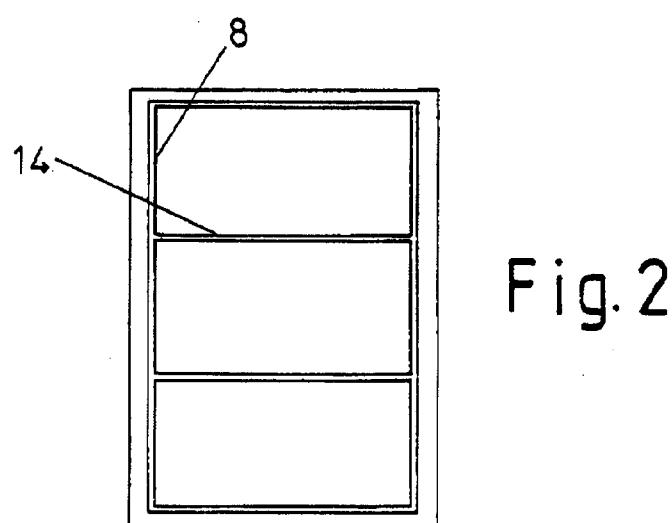
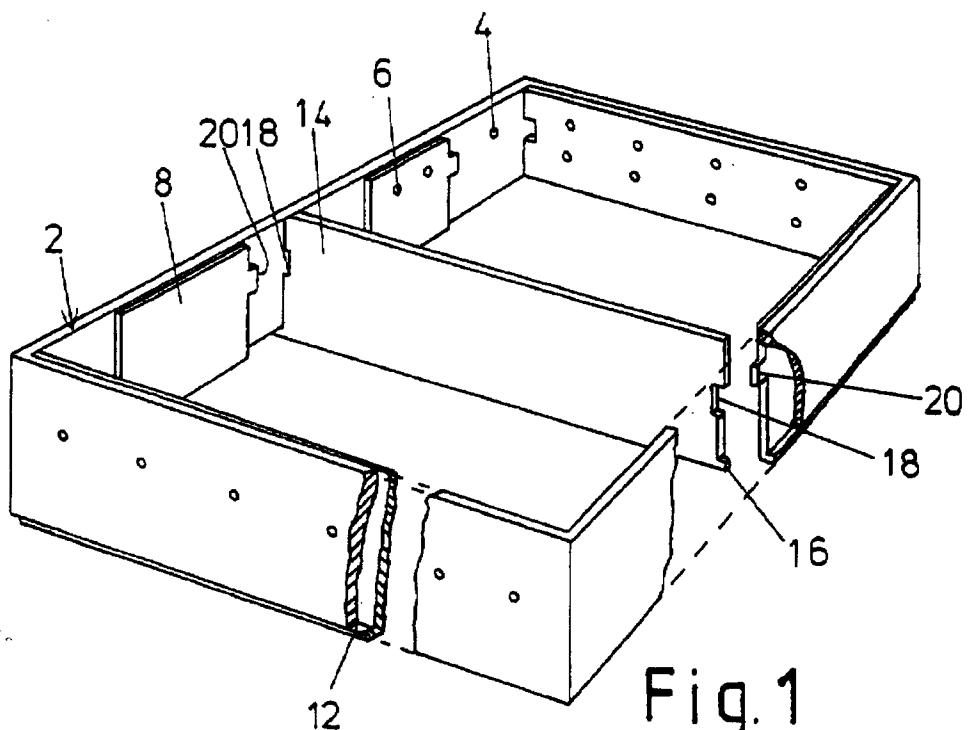
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EUROPEAN SEARCH REPORT

Application Number

EP 92 61 0021

DOCUMENTS CONSIDERED TO BE RELEVANT

Category	Citation of document with indication, where appropriate, of relevant passages	Relevant to claim	CLASSIFICATION OF THE APPLICATION (Int. Cl.5)
Y	DE-C-147 499 (DORRITWERK GERMERSHEIM G.M.B.H.) * the whole document * ---	1-3	B28B7/36 B29C33/56
Y	US-A-4 274 824 (W.L. MULLINS) * figure 7 * ---	1-3	
A	DE-A-2 133 947 (FRIED. KRUPP G.M.B.H.) -----	1-3	
The present search report has been drawn up for all claims			TECHNICAL FIELDS SEARCHED (Int. Cl.5)
			B28B B29C
Place of search THE HAGUE	Date of completion of the search 27 NOVEMBER 1992		Examiner LASSON C.Y.M.
CATEGORY OF CITED DOCUMENTS X : particularly relevant if taken alone Y : particularly relevant if combined with another document of the same category A : technological background O : non-written disclosure P : intermediate document	T : theory or principle underlying the invention E : earlier patent document, but published on, or after the filing date D : document cited in the application L : document cited for other reasons & : member of the same patent family, corresponding document		