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(54) **UNIVERSAL MULTICAVITY CASSETTE MOULD FOR PRODUCING INTERLOCKING  
GROUTED PLATES**

(57) The invention relates to building construction and to the production of building products and can be used for constructing low rise residential, industrial and administrative buildings for different climatic zones. Said invention increases the quality of products having a complicated geometric configuration, extends the range thereof and makes it possible to obtain the precise geometrical shape of said products. The inventive universal multicavity cassette mould is embodied in such

a way that it is multisectional and has the form of crest-forming elements rigidly fixed to a frame, articulated drop sides being also fixed to said frame. Groove-forming and crest-forming elements are fixed to the opposite longitudinal sides, respectively. Said articulated drop sides are provided with locking elements, the upper groove-forming elements being disposed in such a way that they are dismountable.

**Description****Field of the Invention**

[0001] The invention relates to the civil engineering and production of structural elements and can be used in construction of apartment houses and industrial-and-office buildings under various environmental conditions.

**Prior Art**

[0002] The closest prior art technical solution is represented by a plant for the manufacture of products from fast-hardening mixes, said plant comprising a supporting frame, a casing form with separating walls, and upper groove-forming members arranged to be disposed strictly above crest-forming members attached to the frame — see in the specification: USSR Inventor's Certificate No. 1680515, Int. Cl. B28B 7/24, publ. 1988.

[0003] The known casing form allows to manufacture only a rather narrow range of structural elements of inadequate quality.

**Disclosure of the Invention**

[0004] The engineering effect of the invention consists in improving quality and widening the range of structural elements having a complicated configuration as well as in obtaining a high-precision geometrical shape and improving productivity.

[0005] The engineering effect is accomplished owing to that, in the general-purpose casing form for the manufacture of groove-and-crest plates from structural mixes, comprising a supporting frame, a casing form with separating walls, and upper groove-forming members arranged to be disposed strictly above crest-forming members attached to the frame, the casing form is made so that it is a multiple casing form consisting of the crest-forming members fixed rigidly to the frame, and longitudinal and end-face drop sides hinged to the frame, wherein attached to the opposite longitudinal sides are respectively the groove-forming members and the crest-forming members, the end-face drop sides are provided with locking members, the upper groove-forming members are removable, the separating walls defining the forming compartments are mounted so that the latter are readjustable, and wherein the groove-forming members and the crest-forming members are made of an elastic material, for instance, plastic or rubber, the upper removable groove-forming members are made so that they have a trapezoidal or semicircular or, else, semi-oval cross-section, the separating walls are made of a metal having a polished inner surface, and the separating walls of the forming compartments are further provided with elements for producing three-dimensional decorative patterns on the front face of the structural elements.

**Brief Description of the Drawings**

[0006] The invention is now described in detail with reference to the accompanying drawings, where: Fig. 1 illustrates the general-purpose multiple casing form for the manufacture of groove-and-crest plates from structural mixes, shown when the sides thereof are haft-open; Fig. 2 is a longitudinal sectional view of the general-purpose multiple casing form along line A-A; Fig. 3 shows how an upper groove-forming member is arranged to be disposed; Fig. 4 is a sectional view of the crest-forming members; Fig. 5 is a sectional view of the groove-forming members; Fig. 6 is a lateral sectional view of the general-purpose multiple casing form; and Fig. 7 is an example of finished structural element.

[0007] The general-purpose multiple casing form for the manufacture of groove-and-crest plates from structural mixes comprises (Figs. 1, 2 and 6) a frame 1 with crest-forming members 2 fixed thereto on the horizontal plane thereof, longitudinal drop sides 3, the crest-forming members being provided with seats 4 (Figs. 3 and 4), groove-forming members 5 (Fig. 5) and crest-forming members 6 (Figs. 3 and 4), end-face drop sides 7, upper removable groove-forming members 8 that are mounted above the crest-forming members 2 (Fig. 3), separating walls 9, hinges 10, and locking members 11. The crest-forming members 2 and 6 and the groove-forming members 5 are made of an elastic material, for instance, plastic, rubber, etc. The separating walls 9 are made of a metal having a polished surface and they are mounted so that the forming compartments are readjustable. Besides, the separating walls 9 of the forming compartments are further provided with elements for providing three-dimensional decorative patterns on the front faces of the structural elements. The upper removable groove-forming members 8 are made, for instance, so that they have a trapezoidal or semicircular or, else, semi-oval cross-section.

**The Best Embodiment of the Invention**

[0008] The general-purpose multiple casing form for the manufacture of groove-and-crest plates from structural mixes operates as follows.

[0009] Prior to pouring the structural mix, the longitudinal drop sides 3 and the end-face drop sides 7 are to be brought to their upper vertical position and braced by the locking members 11. Next, into the gaps between the groove-forming members 5 and the crest-forming members 2 and 6, the separating walls 9 are to be installed and, if necessary, they are installed together with the elements for providing three-dimensional decorative patterns on the front faces of the structural elements, whereupon placed in the seats 4 of the members 5 and 6 are the upper removable groove-forming members 8. The compartments thus defined are then filled with the structural mix poured therein and, after the mix gets set, dismantling of the casing form is carried out. Thereupon,

the locking members 11 are opened. Through the use of the hinges 10, the longitudinal drop sides 3 and the end-face drop sides 7 are shifted to their lower position with respect to the frame 1. The dismantling is carried out by way of removing the upper groove-forming members 8 from the structural element thus formed, followed by removing the separating walls 9 from the structural element that has been produced. As a structural mix, use is to be made predominantly of fast-hardening mixes, for instance, the mixes that are based on composite gypsum binders, portland cement and microsilica.

**[0010]** Varying the spacing between the separating walls 9 installed in respective grooves between the groove-forming and crest-forming members 2, 5 and 6, structural elements having different constructional and thermal-physical parameters can be produced, which may find use in construction engineering, ranging from internal partitions to multiplayer external fencing structures.

**[0011]** By mounting additional elements for providing three-dimensional decorative patterns to the separating walls of the forming compartments, it is possible to provide various ornaments, figures and other three-dimensional patterns on the front face of the structural element.

#### **Industrial Applicability**

**[0012]** The general-purpose multiple casing form for the manufacture of groove-and-crest plates from fast-hardening structural mixes based on a composition of gypsum binders allows to improve quality of the structural elements owing to possible variations in their constructional and thermal-physical parameters. Besides, it allows widening the range of structural elements having a complicated configuration and obtaining a high-precision geometrical shape of the structural elements thus produced, i.e., it provides accuracy within  $\pm 0.5$  mm when fitting the structural elements, thus ensuring that the wall has an ideally smooth surface without any projections at the joints (Fig. 7). Besides, the general-purpose casing form allows providing three-dimensional decorative patterns on the front faces of the structural elements.

#### **Claims**

1. A general-purpose casing form for the manufacture of groove-and-crest plates from structural mixes, comprising a supporting frame, a casing form with separating walls, and upper groove-forming members arranged to be disposed strictly above crest-forming members attached to the frame, **characterized in that** the casing form is made so that it is a multiple casing form consisting of the crest-forming members fixed rigidly to the frame, and longitudinal and end-face drop sides hinged to the frame,

wherein attached to the opposite longitudinal sides are respectively the groove-forming members and the crest-forming members, the end-face drop sides are provided with locking members, the upper groove-forming members are removable, and the separating walls defining the forming compartments are mounted so that the latter are readjustable.

2. The general-purpose casing form for the manufacture of groove-and-crest plates from structural mixes according to claim 1, **characterized in that** the groove-forming members and the crest-forming members are made of an elastic material, for instance, plastic or rubber.
3. The general-purpose casing form for the manufacture of groove-and-crest plates from structural mixes according to claims 1 and 2, **characterized in that** the upper removable groove-forming members are made so that they have a trapezoidal or semi-circular or, else, semi-oval cross-section.
4. The general-purpose casing form for the manufacture of groove-and-crest plates from structural mixes according to claim 1, **characterized in that** the separating walls are made of a metal having a polished inner surface.
5. The general-purpose casing form for the manufacture of groove-and-crest plates from structural mixes according to claims 1 and 4, **characterized in that** the separating walls of the forming compartments are further provided with elements for producing three-dimensional decorative patterns on the front face of the structural elements.

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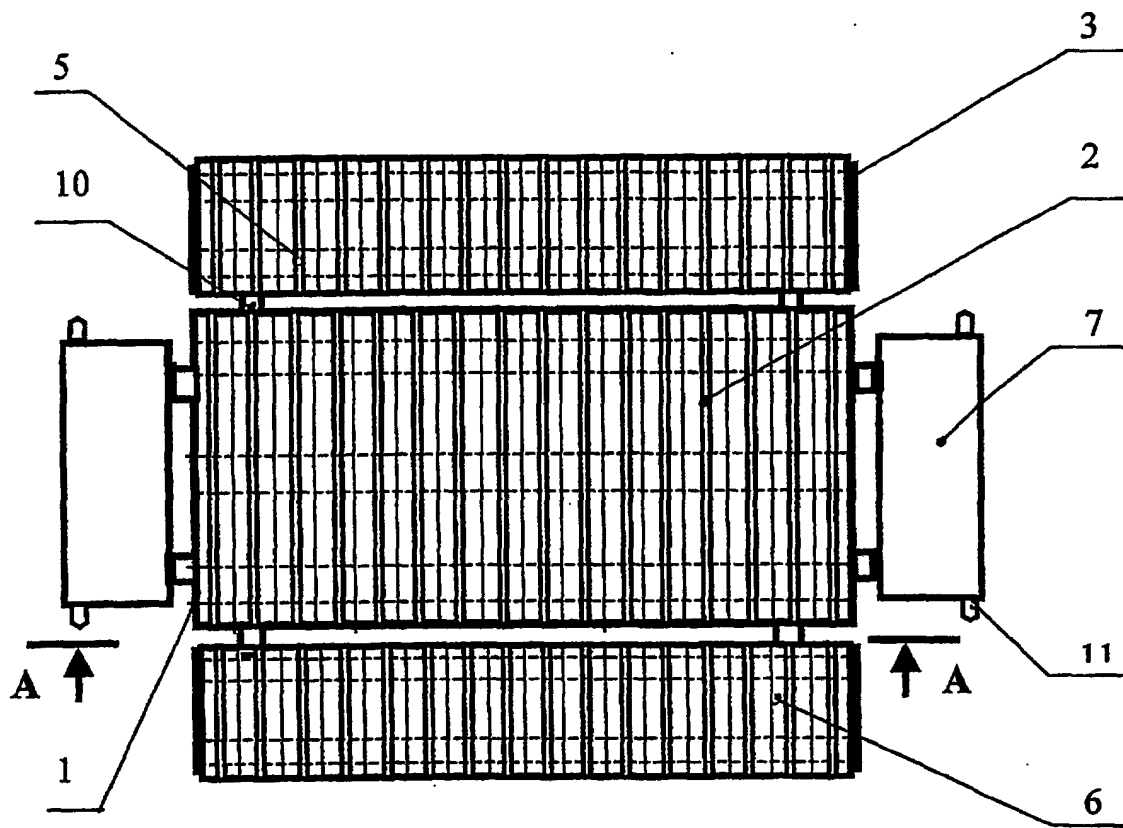


Fig. 1

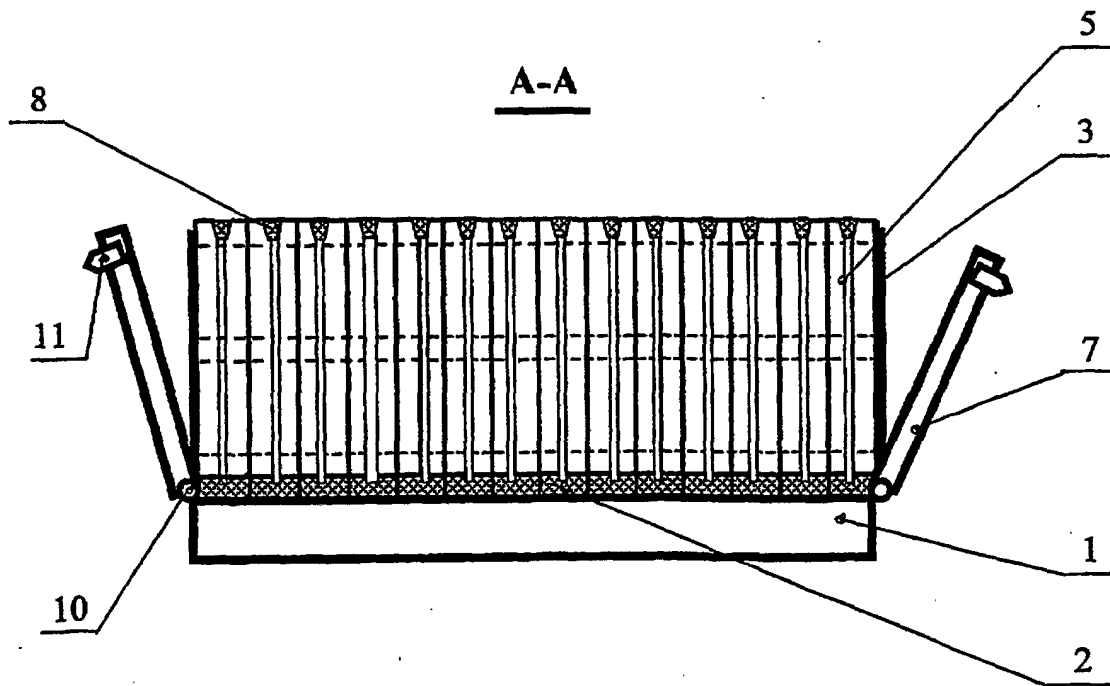


Fig. 2

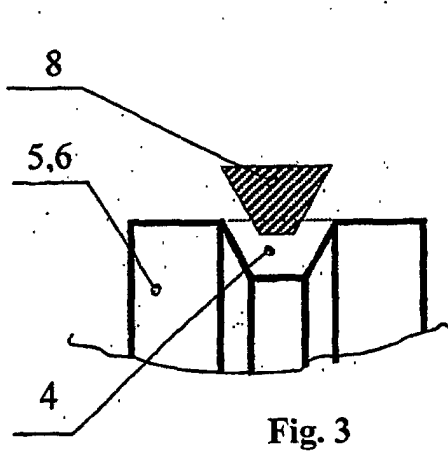


Fig. 3

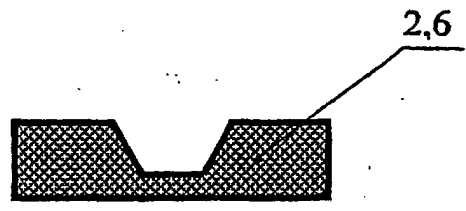


Fig. 4

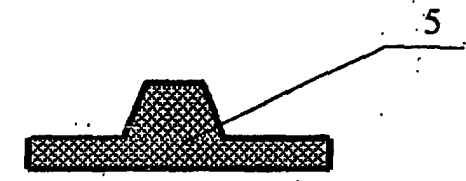


Fig. 5

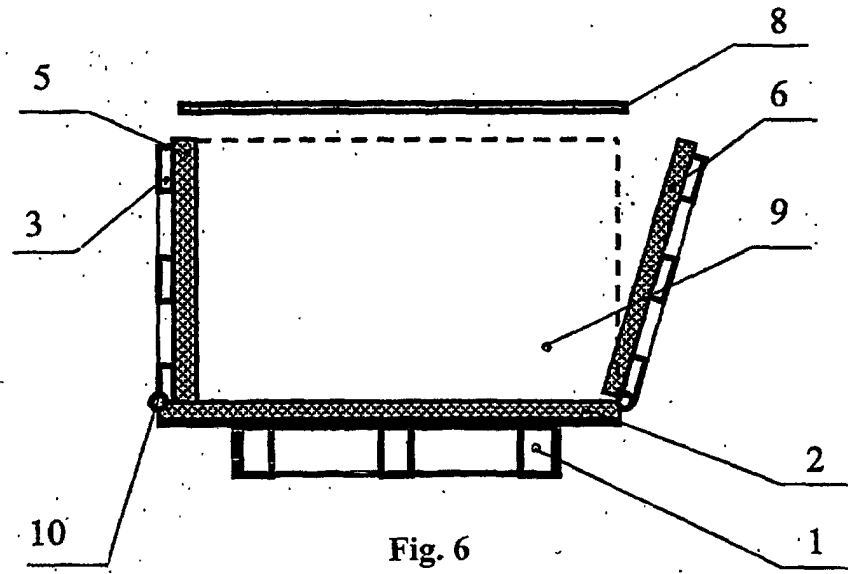


Fig. 6

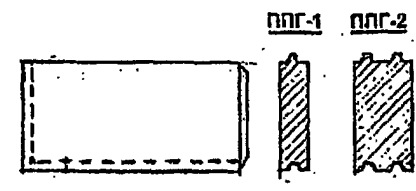
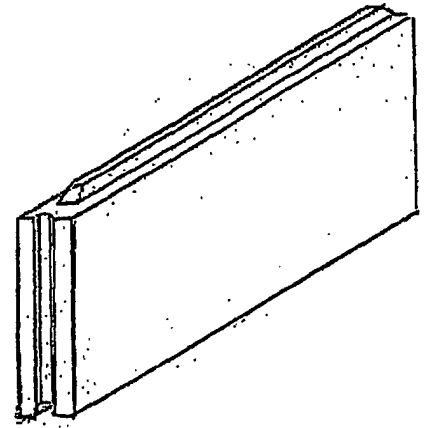


Fig. 7

## INTERNATIONAL SEARCH REPORT

International application No.

PCT/RU 02/00471

A. CLASSIFICATION OF SUBJECT MATTER		
		B28B 7/24
According to International Patent Classification (IPC) or to both national classification and IPC (МИПК-7)		
B. FIELDS SEARCHED		
Minimum documentation searched (classification system followed by classification symbols) МИПК-7:		
B28B 7/24, B28B 7/00, 7/22, 7/26		
Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched		
Electronic data base consulted during the international search (name of data base and, where practicable, search terms used)		
C. DOCUMENTS CONSIDERED TO BE RELEVANT		
Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
A	SU 1680515 A1 (TSENTRALNY I PROEKTNY NAUCHNO-ISSLEDOVATELSKY EXPERIMENTALNY I PROEKTNY INSTITUT PO SELSKOMU STROITELSTVU) 30.09.1991	1-5
A	RU 2081745 c1 (GOSUDARSTVENNY PROEKTNO-IZYKSATELSKY I NAUCHNO-ISSLEDOVATELSKY INSTITUT "ORGSTROINIIPROEKT") 1997.06.20	1-5
A	DE 2759363 B1 (FA. ROBERT WEHINGER) 27. 3.1980	1-5
<input type="checkbox"/> Further documents are listed in the continuation of Box C. <input type="checkbox"/> See patent family annex.		
* Special categories of cited documents: "A" document defining the general state of the art which is not considered to be of particular relevance "E" earlier document but published on or after the international filing date "L" document which may throw doubts on priority claim(s) or which is cited to establish the publication date of another citation or other special reason (as specified) "O" document referring to an oral disclosure, use, exhibition or other means "P" document published prior to the international filing date but later than the priority date claimed "T" later document published after the international filing date or priority date and not in conflict with the application but cited to understand the principle or theory underlying the invention "X" document of particular relevance; the claimed invention cannot be considered novel or cannot be considered to involve an inventive step when the document is taken alone "Y" document of particular relevance; the claimed invention cannot be considered to involve an inventive step when the document is combined with one or more other such documents, such combination being obvious to a person skilled in the art "&" document member of the same patent family		
Date of the actual completion of the international search		Date of mailing of the international search report
04 February 2003 (04.02.03)		20 February 2003 (20.02.03)
Name and mailing address of the ISA/ RU		Authorized officer
Facsimile No.		Telephone No.

Form PCT/ISA/210 (second sheet) (July 1992)

## ОТЧЕТ О МЕЖДУНАРОДНОМ ПОИСКЕ

Международная заявка №  
PCT/RU 02/00471

A. КЛАССИФИКАЦИЯ ПРЕДМЕТА ИЗОБРЕТЕНИЯ: B28B 7/24		
Согласно международной патентной классификации (МПК-7)		
B. ОБЛАСТИ ПОИСКА:		
Проверенный минимум документации (система классификации и индексы) МПК-7: B28B 7/24, B28B 7/00, 7/22, 7/26		
Другая проверенная документация в той мере, в какой она включена в поисковые подборки:		
Электронная база данных, использовавшаяся при поиске (название базы и, если, возможно, поисковые термины):		
C. ДОКУМЕНТЫ, СЧИТАЮЩИЕСЯ РЕЛЕВАНТНЫМИ:		
Категория*	Ссылки на документы с указанием, где это возможно, релевантных частей	Относится к пункту №
A	SU 1680515 A1 (ЦЕНТРАЛЬНЫЙ НАУЧНО-ИССЛЕДОВАТЕЛЬСКИЙ ЭКСПЕРИМЕНТАЛЬНЫЙ И ПРОЕКТНЫЙ ИНСТИТУТ ПО СЕЛЬСКОМУ СТРОИТЕЛЬСТВУ) 30.09.1991	1-5
A	RU 2081745 C1 (ГОСУДАРСТВЕННЫЙ ПРОЕКТНО-ИЗЫСКАТЕЛЬСКИЙ И НАУЧНО-ИССЛЕДОВАТЕЛЬСКИЙ ИНСТИТУТ "ОРГСТРОЙНИИПРОЕКТ") 1997.06.20	1-5
A	DE 2759363 B1 (FA. ROBERT WENINGER) 27. 3.1980	1-5
<input type="checkbox"/> последующие документы указаны в продолжении графы C.		<input type="checkbox"/> данные о патентах-аналогах указаны в приложении
* Особые категории ссылочных документов:		T более поздний документ, опубликованный после даты приоритета и приведенный для понимания изобретения
A документ, определяющий общий уровень техники		X документ, имеющий наиболее близкое отношение к предмету поиска, порочащий новизну и изобретательский уровень
E более ранний документ, но опубликованный на дату международной подачи или после нее		Y документ, порочащий изобретательский уровень в сочетании с одним или несколькими документами той же категории
O документ, относящийся к устному раскрытию, экспонированию и т.д.		& документ, являющийся патентом-аналогом
P документ, опубликованный до даты международной подачи, но после даты испрашиваемого приоритета и т.д.		
Дата действительного завершения международного поиска: 04 февраля 2003 (04.02.2003)	Дата отправки настоящего отчета о международном поиске: 20 февраля 2003 (20.02.2003)	
Наименование и адрес Международного поискового органа Федеральный институт промышленной собственности РФ, 123995, Москва, Г-59, ГСП-5, Бережковская наб., 30,1 Факс: 243-3337, телетайп: 114818 ПОДАЧА	Уполномоченное лицо:  Н. Березин  Телефон № 240-25-91	

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