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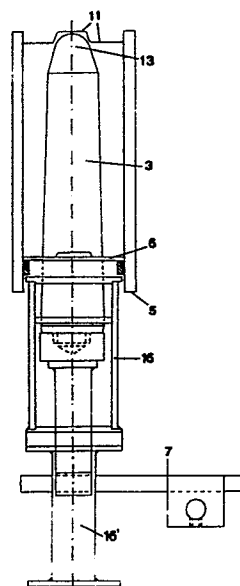
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(54) **Device for producing gypsum building panels.**

(57) Device installed in installations for the production of gypsum building panels consisting of a hydraulic piston 4 which raises vertical bars or cores 3 contemporaneously with the respective lower slabs 6 with respect to form 1 containing the panels 9, until said bars 3 hit a shoulder and are stopped at the end, while said slabs 6 continue to rise extracting said panels 9 from said bars 3, thus facilitating final extraction and preventing any deformation.



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Device for producing gypsum building panels

Gypsum Panels Machinery S.R.L.

The invention concerns a new device applied in installations for the production of gypsum panels used in construction to build dividing walls, partitions and the like.

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These installations are known to consist of reservoirs and mixers for gypsum and water, which dump the compound into containers or forms parallelepiped in structure equipped with several series of metal separating walls and eventually with various cylindrical cores or vertical bars, around which the gypsum solidifies so that when a pushing device raises the lower supports to which the bars are joined from the bottom of said form toward the top, with the relative panels shaped around the bars themselves, the packs of all the panels formed may be extracted by means of a clamp and eventually placed in storage.

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However, these known installations have, among others, the severe disadvantage that they over violently strain the structure of the gypsum panels when, before they are completely solidified, to shorten production times, they are raised by the pushing device which rises with respect to the form with all the cores joined to it, leading to mechanical com-

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pression of the lower part of the panels as well as their possible weakening when said panels, held with the clamp, must be extracted from the cores which remain inserted until they are completely removed from the form. For these reasons some panels are occasionally deformed and even broken, with evident production losses.

The aim of this invention is the realization of a device for the construction of bored out gypsum panels, eventually with internal brick structure, very perfect structurally with no loss of production.

This aim is achieved according to the invention with a pushing device which rises joined with the bars or cores for the first section of the modular form until the bar-carrying rods or braces strike against the dividing of the form and so stop the cores from rising, while the lower slab can then be slid with respect to said cores and continues to rise, detaching the panels formed from the vertical cores and so allowing the complete pack of panels built to be held by the clamps, with no force required to remove and extract them from the vertical cores, thus preventing any deformation.

To achieve this same end, said vertical bars or cores are slightly conical to facilitate detachment of the inner walls of the boxes in the panels from the

side walls of the cores themselves.

The advantages of the device according to the invention are considerable:

- 5 - panel production is rapid and waste-free;
- the panels are strong and free of structural defects;
- bored panels made entirely of gypsum may be realized, or ones with an internal structure of brick,
- 10 consisting of bored bricks of any size, commonly known as paving slabs, which are placed in the forms and covered externally and internally with gypsum leaving the central openings corresponding to the bars of the installation empty, the latter
- 15 being inserted in the cavities in the bricks themselves before the gypsum is poured;
- panels of any size may be produced by changing the internal subdivision of the form using metal walls.

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The invention will be described below in a purely exemplificative preferred embodiment, shown in the attached figures showing, respectively:

- figure 1, an axonometric view of the complete in-
- 25 stallation for the production of gypsum panels;
- figures 2, 3, 4, the succession of operating phases of the pushing device;
- figure 5, a variant of the form for producing twice as many panels of half the size;

- figure 6, the axonometric view of a lower molding slab;
- figures 7, 8, respectively, the vertical view of the device pushing a vertical bar or core, and the lateral schematization of the device for moving the bar-carrying basket.

In detail, the figures show the parallelepiped 1, fed by a gypsum producing installation of known type, subdivided by the inner walls 2, into several parallelepiped spaces 12 where, when the gypsum is poured, panels 9 are formed, eventually around bored out bricks which are placed manually by turns in each of said spaces 12, so as to coincide the cavities of said bricks with the vertical bars or cores 3.

The invention is characterized by the presence of hydraulic piston 4 which, in being raised up, drags along both the vertical cores 3 and the lower molded slabs 6, until it hits the bar-carrying rods or braces 7 against the lower dividing walls 5 of the form 1, to stop bars 3 which by sliding inside the body of said bars, pull up the gypsum panels 9, extracting them from the bars 3 around which they formed, to release them from both the form and the bars themselves.

It is evident that the moveable comb 8, operated after each cast of the lateral pistons 10, forms the

groove shape 11 in the upper part of each panel 9 while the lower slabs 6, with their support molding realize the lower part, and the shapes of the inner sides of the parallelepiped space 12 complete the perimetral molding, according to the aim of realizing panels shaped with a complete perimetral groove.

Said upper shape 11 presents, in correspondnece with the points 13 of each vertical bar 3 a minimum thickness of gypsum so that, when the lower slabs 6 slide, raised by the hydraulic piston device 4 with respect to the slightly conical alteral surface of said bars 3, detaching said points 13 from said upper shape 11 and so creating a depression, the same external atmospheric pressure fractures said minimum thickness of gypsum on the top of the panels so that air enters the cavities 14 already formed vertically in the panels themselves, to facilitate relative sliding and so definitive extraction of the pack of panels 9 from the cores 3 and the form 1. The frame 15 and the upper and lower baskets 16 and 16' complete the installation.

Of course, the invention provides for the presence of a lower shoulder of the supports of cores 3 when they come back down for a new work cycle, so that the points 13 of bars 3 themselves are perfectly aligned with the upper edge of the panels.

As a variant, by introducing a central separating wall 14' in each space 12 of the form 1, twice as many panels may be produced of half the size.

- 5 Of course, while the principle of the invention remains unchanged, the forms of realization and the details of construction may be varied widely from the described and illustrated here, without going beyond the bounds of the present invention.

Claims

1. Device for the production of gypsum panels able
to rise joined with the bars or cores for the first
5 section of the modular form until the bar-carrying
rods or braces strike against the dividing walls of
the form and so stop the cores from rising, while
the lower slab can then be slid with respect to said
cores and continues to rise, detaching the panels
10 formed from the vertical cores and so allowing the
complete pack of panels built to be held by the
clamps, with no force required to remove and extract
them from the vertical cores, thus preventing any
deformation.

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2. Device for the production of gypsum building pan-
els as claimed in claim 1 characterized by the pres-
ence of hydraulic piston 4 which, in being raised
up, drags along both the vertical cores 3 and the
20 lower molded slabs 6, until it hits the bar-carrying
rods or braces 7 against the lower dividing walls 5
of the form 1, to stop bars 3 which by sliding in-
side the body of said bars, pull up the gypsum pan-
els 9, extracting them from the bars 3 around which
25 they formed, to release them from both the form and
the bars themselves.

3. Device for the production of gypsum building pan-
els as claimed in the preceding claims characterized

by the presence of moveable comb 8, operated after each cast of the lateral pistons 10, to form the groove shape 11 in the upper part of each panel 9 while the lower slabs 6, with their support molding, realize the lower part, and the shapes of the inner sides of the parallelepiped space 12 complete the perimetral molding, according to the aim of realizing panels formed with a complete perimetral groove.

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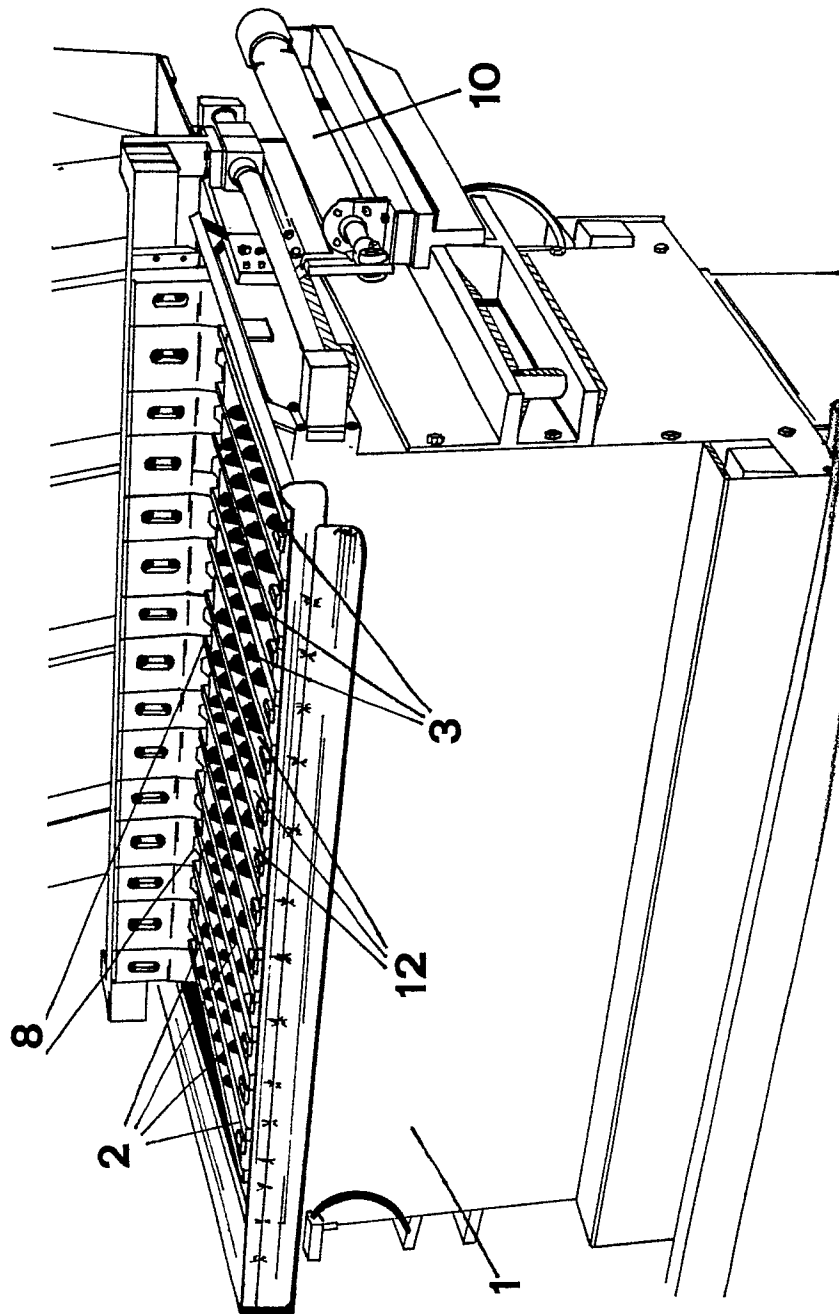
4. Device for the production of gypsum building panels as claimed in the preceding claims characterized by the fact that upper shape 11 presents, in correspondence with the points 13 of each vertical bar 3 a minimum thickness of gypsum so that, when the lower slabs 6 slide, raised by the hydraulic piston device 4 with respect to the slightly conical lateral surface of said bars 3, detaching said points 13 from said upper shape 11 and so creating a depression, the same external atmospheric pressure fractures said minimum thickness of gypsum on the top of the panels so that air enters the cavities 14 already formed vertically in the panels themselves to facilitate relative sliding and so definitive extraction of the pack of panels 9 from the cores 3 and the form 1.

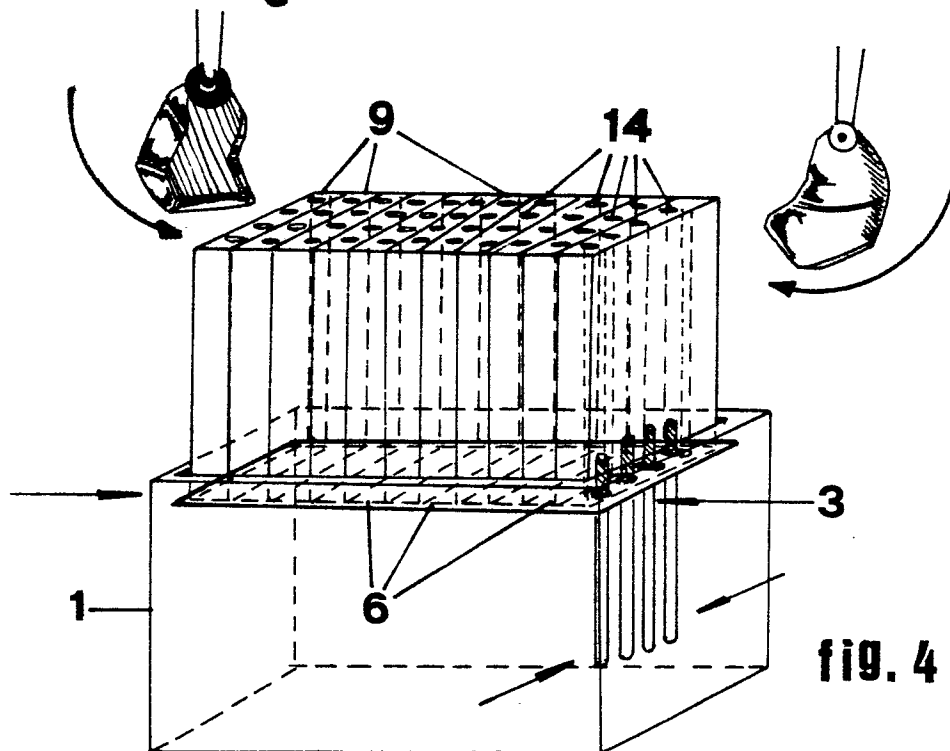
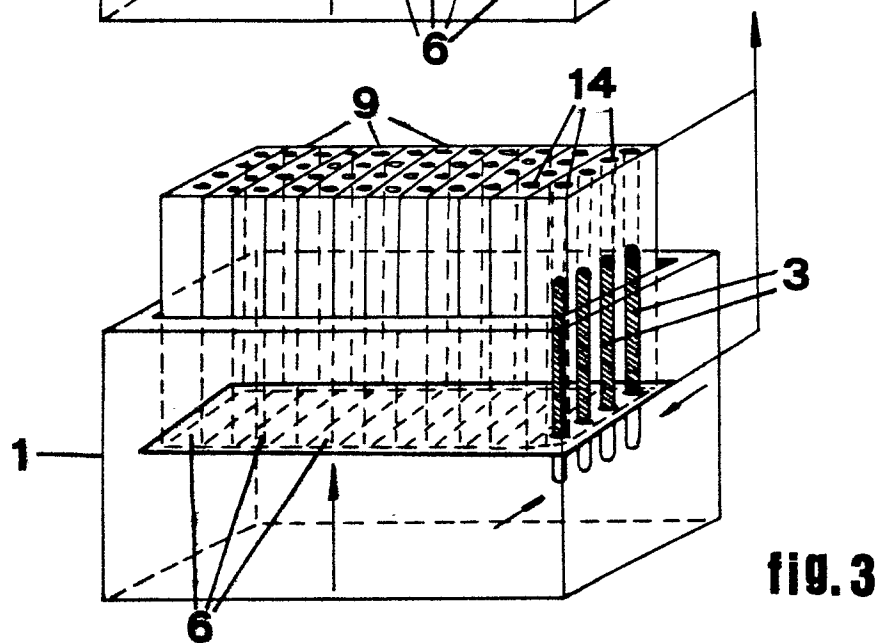
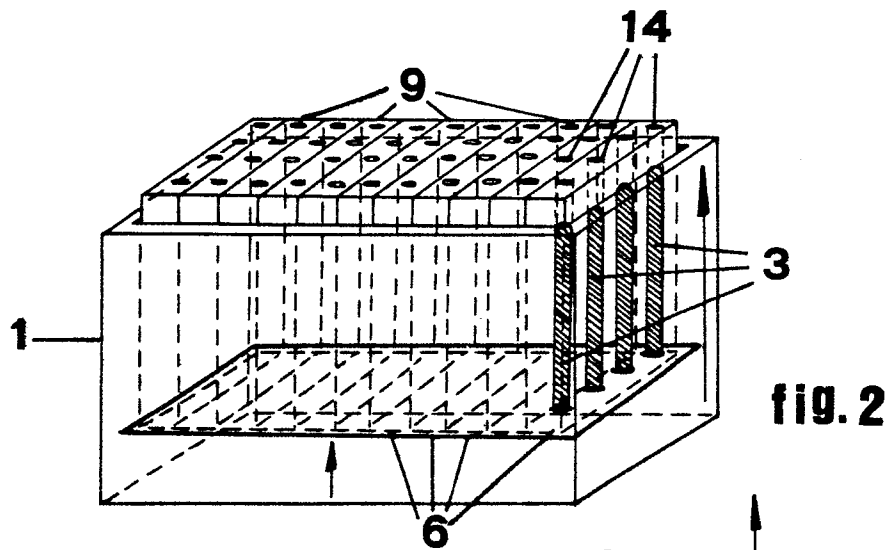
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5. Device for the production of gypsum panels as claimed in the preceding claims characterized by

the fact that introducing a central separating wall
14' in each space 12 of the form 1, twice as many
panels may produced of half the size.

fig.1





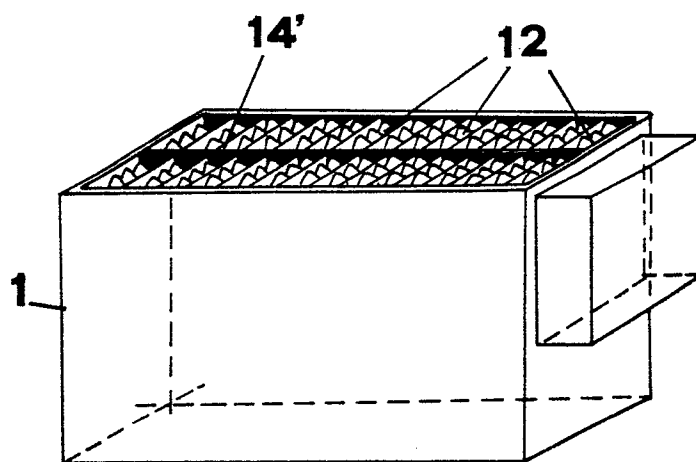
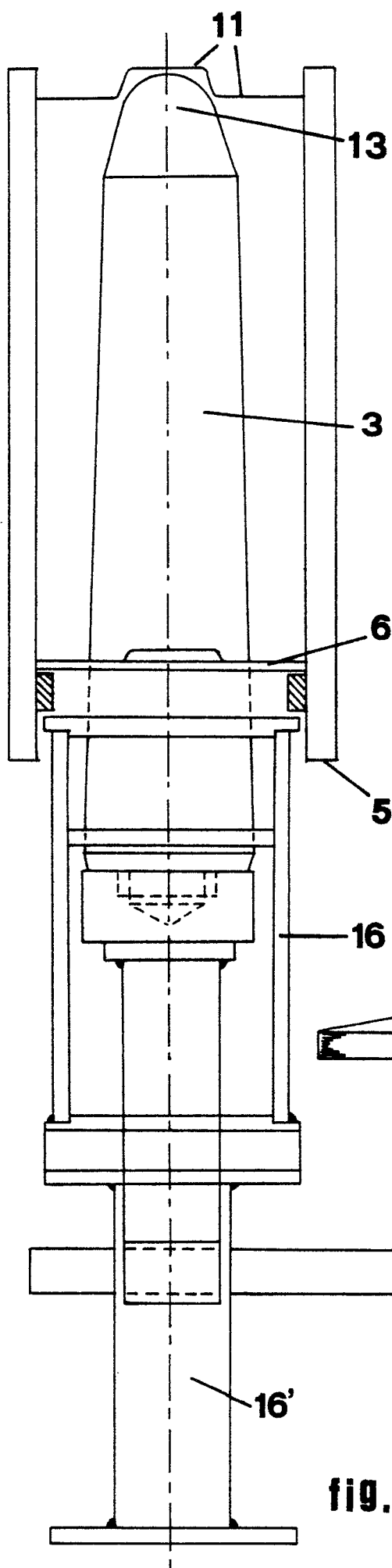


fig.5

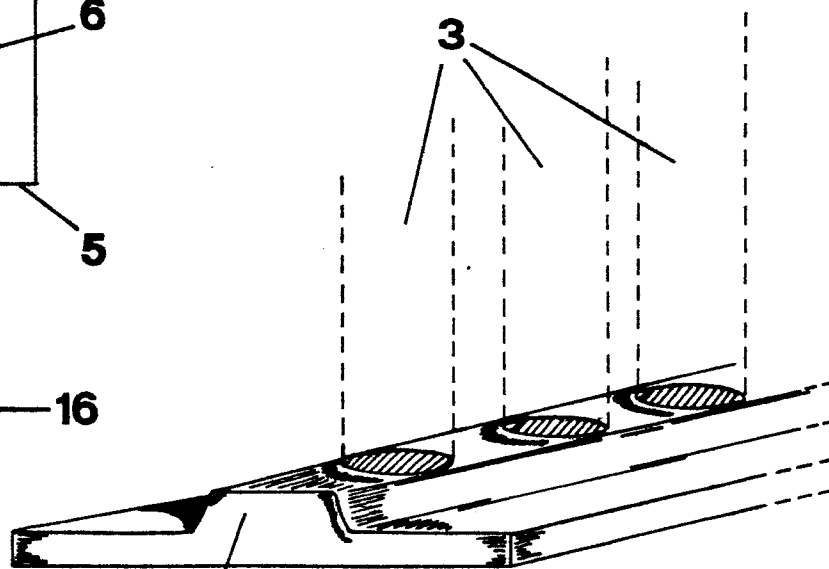
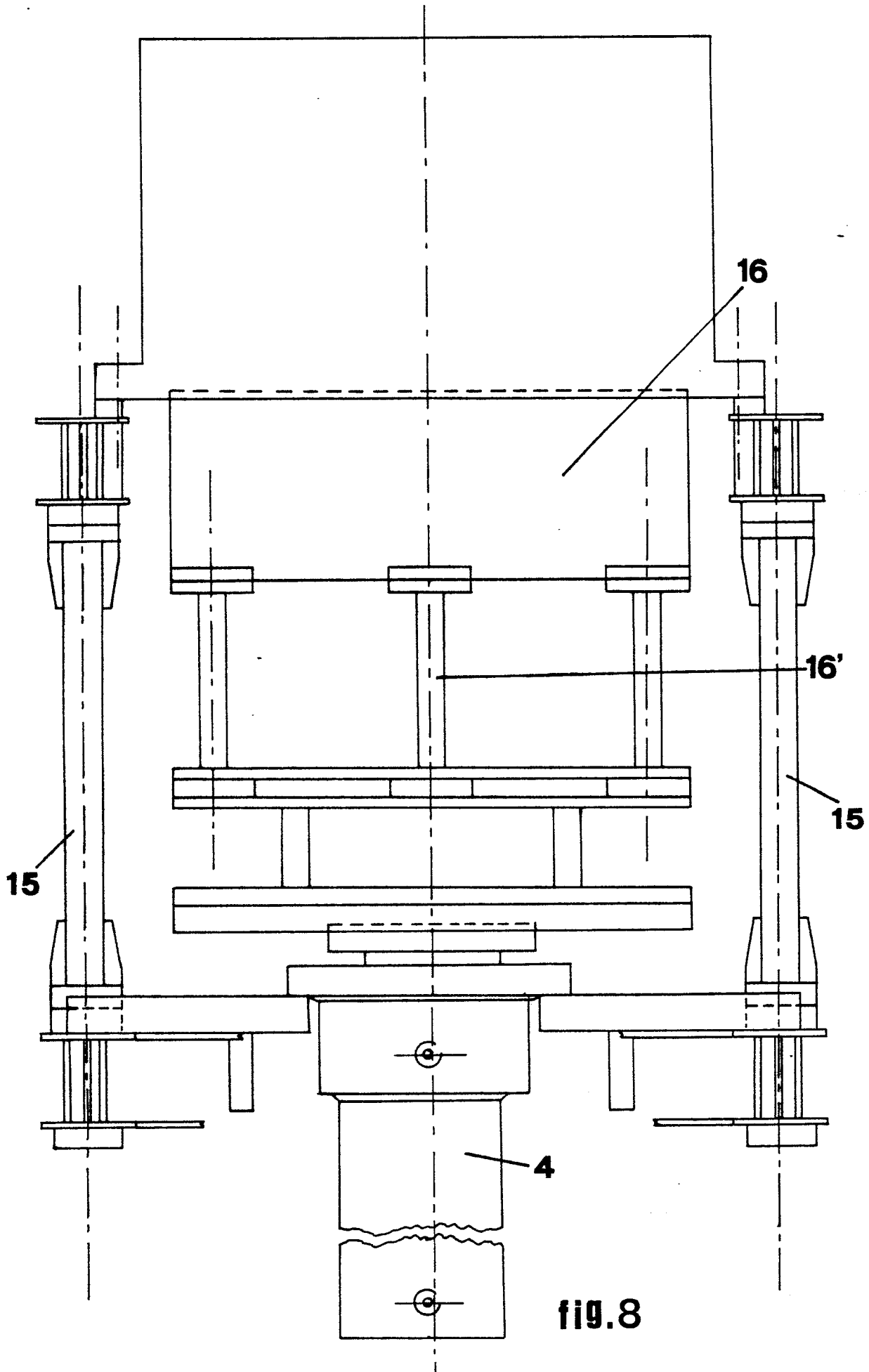


fig.6





European Patent
Office

EUROPEAN SEARCH REPORT

0106003

Application number

EP 82 83 0260

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. ³)
X	GB-A- 970 595 (HARBISON WALKER REFRACTIRIES CO) * Page 1, lines 12-14; page 2, line 130; page 3, lines 1-49; figures 1-5 *	1,2	B 28 B 7/10
X	GB-A- 969 373 (C. WHITTAKER & CO LTD)	1,2	
A	FR-A-2 331 429 (GIPS UNION AG)	3	
A	DE-C- 519 609 (A. BEHNISCH)	4	
A	GB-A- 27 906 (J.B. HORRENBERGER)(A.D. 1911) * Page 1, lines 5-11; page 2, lines 23-26; figures 1,3 *	4	TECHNICAL FIELDS SEARCHED (Int. Cl. ³)
A	US-A-1 458 551 (WOODFORD O. SEAT) * Page 1, lines 8-25; page 1, lines 82-93; figures 1-5 *	5	B 28 B
The present search report has been drawn up for all claims			
Place of search THE HAGUE		Date of completion of the search 16-06-1983	Examiner GOURIER P.A.
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			