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(71) ISOLA AS, NO

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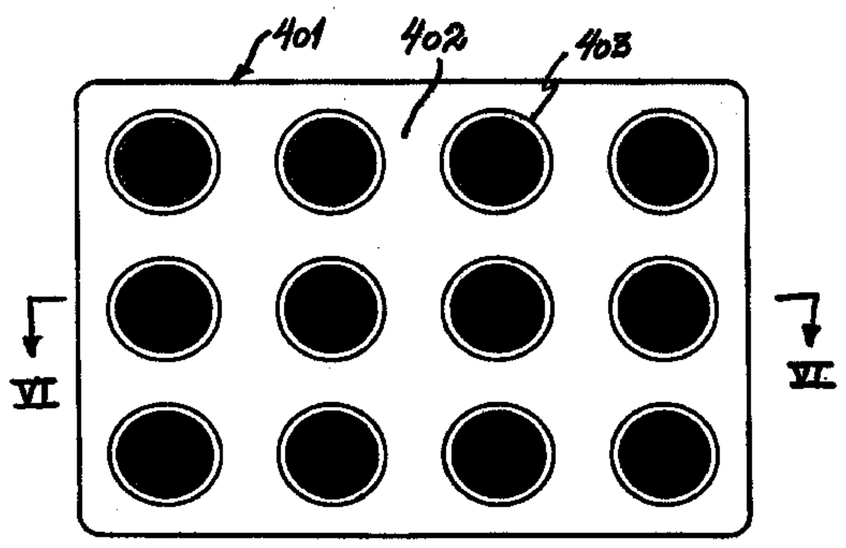
(54) **UTILISATION D'UNE PLAQUE, NOTAMMENT D'UNE PLAQUE FORMEE SOUS VIDE**

(54) **USE OF A PLATE, ESPECIALLY A VACUUM FORMED PLATE**



(57) L'invention concerne l'utilisation d'une plaque moulée sous vide comme support d'enduit. Le support (210; 410) est ancré dans une ou plusieurs cavités internes (206; 406) présentant un débord. La plaque est formée d'un matériau ductile, notamment d'un matériau ductile à la chaleur. Plusieurs protubérances creuses (203; 403), disposées dans le plan principal de la plaque ou de la bande (201; 401), forment les cavités (206; 406).

(57) The present invention relates to the use of a vacuum moulded plate as a plaster plate, the plaster (210; 410) being anchored in one or more interior undercut cavities (206; 406). The plate is formed of a ductile material, in particular a heat ductile material. Several hollow protrusions (203; 403) are provided in the main plane of the plate or web (201; 401), the protrusions forming the cavities (206; 406).

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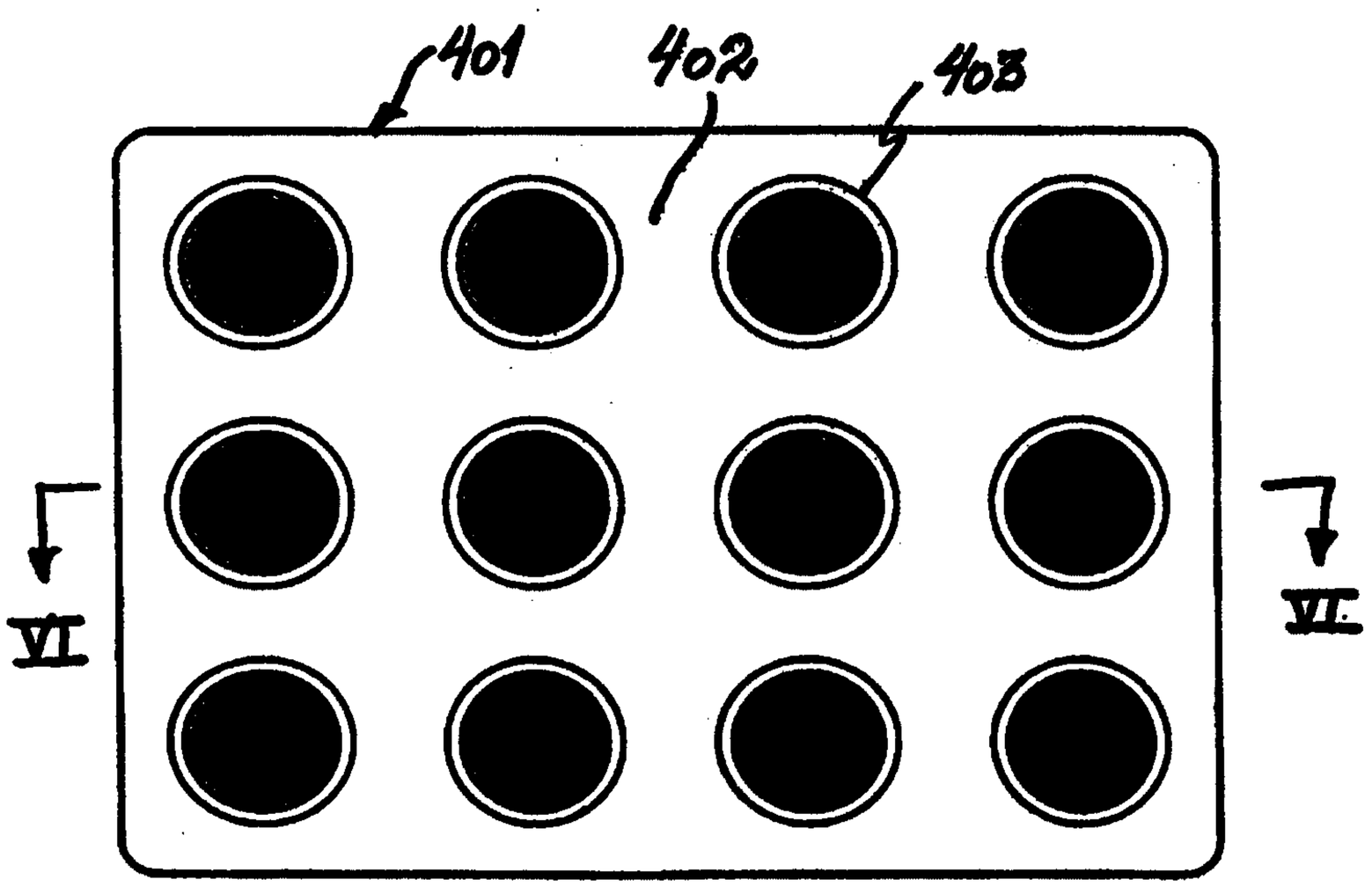

(57) Abstract

The present invention relates to the use of a vacuum moulded plate as a plaster plate, the plaster (210; 410) being anchored in one or more interior undercut cavities (206; 406). The plate is formed of a ductile material, in particular a heat ductile material. Several hollow protrusions (203; 403) are provided in the main plane of the plate or web (201; 401), the protrusions forming the cavities (206; 406).

USE OF A PLATE, ESPECIALLY A VACUUM FORMED PLATE

Field of the invention

The invention relates to the use of a plate, particularly a vacuum formed plate, utilizing hollow protrusions or studs in a effective and rational manner.

Background of the invention

One of the largest limitations with regard to vacuum moulding of plates, especially in relation to injection moulding, lays in the forming of details comprising a undercut or a overhang. With regard to vacuum moulding, it is paramount that all details are formed with a certain release angle, i.e. that attention is paid to the release of the tool shaping the stock, making it at all possible to pull back the tool after the moulding is carried out.

Prior art

Plates with inverted profiles forming retainment points for the mortar applied to the plate, are known in the art. A plate of this kind is marketed by the German company Schlüter and is produced by Ewald Dörken. A common feature of plates of this kind, with inverted trapezoidal profiles, is that the profiles are connected in the perpendicular direction of the plates.

The perpendicular connection of the profiles of the known plates is a result of the applied production method, this method having relatively large limitations. The largest problem lays in the release of the profiles that are formed with undercuts, this being possible only to a limited degree with profiles connected in the longitudinal direction of the production roll. Vacuum shaping normally does not allow a large degree of undercutting without special devices, this especially being true when producing a plate with rounded or square studs with undercuts.

DE 1929878 (Farbwerke Hoechst AG/Breitwieser) shows a mould comprising a cavity with inner walls, the mould simultaneously comprising a relatively soft, protruding core piece by the entrance of the cavity, the mould forming a undercut or a neck portion during the moulding of the material in the mentioned cavity of the mould. The formed material is drawn out of the cavity after moulding. However, in order for the portions in the cavity having a larger diameter than the mentioned neck portion to pass the mentioned protruding square core pieces, said pieces are provided with partition groove slits as shown in fig. 2 of said publication.

In other words this document describes how individual objects are provided by means of an interior mould, e.g. lamp fixtures for ceiling lighting with a basic edge-prismatic shape. A such interior, basic edge shape and prism shape, providing individual objects, cannot automatically be used for providing e.g. foundation walls with several circular, pyramid or cone shaped studs with upper undercuts, or the running production of foundation plates in which several undercut shapes are provided on a production roll.

The French patent publication no. 1 444 070 (Société VALFOR) relates to a known technique whereby a thermoplastic plate is formed on a number of inverse conical moulds made of a flexible material, e.g. crude rubber.

Fig. 4 of the said French publication shows that the mould may be formed as a evenly truncated pyramid or cone, head down, at the same time as each individual mould is fixed to a fixing plate 8 by means of a hollow annular fixing organ.

Thereby, both a plate comprising several hollow protrusions with one or more interior undercut cavities, a tool for providing such a plate, and a method providing such a plate are known. However, the area of applicability for plates provided according to the French publication no. 1 444 070

seems to be different from what is suggested in the present invention, the French publication describing how such plates or pairs of plates with hollow protrusions of somewhat different sizes, are " buttoned" together, with special reference to fig. 7, 8 and 9.

Fig. 13 and 14 of the French publication shows an example of a book cover comprising button-like protrusions and how they by suitable positioning may be buttoned together in order to close the cover around the book.

Said French publication does not show that the heat moulded plates, provided according to the known art, also may be used as plaster plates, the plaster being anchored in the hollow portions of the protrusions, or as a pipe or cable plate for heat emitting floors, or together with a grid provided at the upper portion of the studs, alternatively with a grid being provided at the opposite side of the plate.

DE 29 47 499 B1 (Dörken AG/Agethen) relates to a system for " buttoning " together the joint of two " studded plates" . No indication is given with regard to plates with undercuts, and especially no indication is given of plates provided by means of moulds comprising truncated pyramids or cones being placed head down.

DE 35 12 527 C1 (Klink) relates to a waterproof profile providing a sealing against a wall. The thermoplastic seal may be fixed to a wall by means of mortar, and claim 2 of said publication indicates that the T-shaped grooves of the profiles are mutually mounted and parallel.

However, this German publication mentions nothing about the actual manufacturing method, nor anything about the use of several hollow protrusions comprising one or more interior hollow undercut cavities.

Objects of the invention

The object of the present invention is to indicate how to better utilize plates with hollow protrusions, the protrusions forming or being provided with " overhangs" or undercuts in appropriate portions of the respective protrusions.

A further object of the present invention is to indicate how plates provided with such protrusions may gain a more general applicability.

Yet a further object of the present invention is to specifically indicate a tile pavement/plaster plate with several inverted studs or profiles acting as an anchoring for the mortal being applied to the plate, the plate in addition being provided with a suitably incorporated grid, e.g. on one side of several studs.

Short description of the invention

The objects are reached by means of a plate as indicated in the appended claims 1 - 3.

A plate formed with protrusions comprising overhangs or undercuts will serve well as a plaster plate, in which the anchoring of the plaster is reinforced by the said undercuts, and such plates may also advantageously be used as a base plate for laying pipes and cables for heat emitting floors.

Further advantages and features of the present invention will be apparent from the following disclosure with reference to the appended drawings as well as the appended claims.

Short description of the drawings

Fig. 1 shows a section of a first embodiment of a moulding stud included in the manufacture of a plate, the figure showing one step of the moulding process.

Fig. 2 shows a section of the same embodiment as in fig. 1 where the process has reached the release step.

Fig. 3 shows a plan view of a cutaway of a completed plate, e.g. provided by means of the vacuum moulds shown in fig. 1 and 2, whereby the plate in particular may be utilized as a plaster plate.

Fig. 4 is a section taken along IV - IV in fig. 3 and shows an example of the positioning of a grid on the plate.

Fig. 5 is a plan view of a cutaway of a further embodiment of a completed plate comprising moulding studs.

Fig. 6 is a section taken along VI - VI in fig. 5 showing how plaster is anchored to the undercut stud portions of the plate.

Description of embodiments

Fig. 1 and 2 show a first embodiment of a moulding stud that may be used for forming a plate according to the present invention. The figures show a section of a plate or web 1 of ductile material, in particular heat ductile material, in which one or more hollow protrusions 3 are moulded in the main plane 2 by means of vacuum moulding on correspondingly shaped moulding studs 4.

In the example shown in fig. 1 and 2, the moulding stud 4 is shaped as an inversely truncated cone, but any other shape, e.g. an inversely truncated pyramid, is also possible.

In the outset the truncated cone gives a suitable release angel with regard to vacuum moulding, the moulding stud 4 comprising a moulding portion 5 that is stiff enough to withstand pressure during the moulding of said protrusion 3, as shown in fig. 1, but at the same time having a design

or comprising such materials making the moulding portion 5 soft enough to be released from the corresponding moulded portion 6 on the protrusion 3, this being indicated in fig. 2, showing the release step during the manufacture of the plate or web 1.

In other words, a moulding portion 5, generally having sufficient stiffness to mould the plate material 1 during the moulding process, is indicated, see fig. 1, exhibiting releasing properties during the release of the moulded cavity surrounding the moulding portion, see fig. 2.

By the embodiment according to fig. 1 and 2, the moulding portion 5 suitably may have the shape of a disc comprising a flexible material, e.g. a rubber or plastics material, the moulding portion 5 being fixed to a fixing organ 7 by means of a suitable upper cone shaped portion 7a with a smaller diameter, and a lower collar shaped portion 7b with a larger diameter. The fixing organ 7 is fixed to the mantle 8 of the moulding tool.

Fig. 3 and 4 show a plan view and a section, respectively, of a small plate and a cutaway of a plate 201 formed as indicated above. The actual plate 201 is formed with hollow protrusions 203 from the main plane 202 of the plate, the protrusions having hollow undercut portions 206 comprising exterior overhangs or undercuts 206a.

The embodiment of the plate 201 shown in fig. 3 and 4 may be used as so called plaster plates, where the undercut hollow portion 206 or exterior overhang or undercut 206a may be used for anchoring of the actual plaster 210.

The plate 201 shown in fig. 3 and 4 may appropriately be provided with a grid 212 on a suitable side of the plate, the grid being fixed to the main plane 202 of the plate.

Alternatively, said grid 212 may be fixed to the top of the hollow protrusion 203.

Fig. 5 and 6 shows a plan view and a section, respectively, of a small plate and a cutaway of a plate 401 comprising a different stud profile. The actual plate 401 is formed with hollow protrusions 403 on the main plane 402, the protrusions, at their upper and lower parts, respectively, comprising interior hollow undercut cavities 406, which in turn comprise exterior overhangs or undercuts 406a. With regard to the embodiment shown in fig. 5 and 6, the plate 401 may appropriately be used as a so called plaster plate, whereby said hollow, undercut cavities 406 are particularly advantageous for anchoring of the plaster 410.

It is understood that the plate according to fig. 5 and 6 comprise protrusions 403 with substantially flat upper portions 403a, the flat upper portions 403a being provided with overhangs or undercuts 406a. It is further understood that the actual plate 401 is able to receive pressures not only on the main plane 402, but also on the exterior portions 403a, resulting in versatile application of the completed plates.

In addition to being used as a plaster plate, as described with regard to fig. 3, 4; 5, 6, a plate of this kind may advantageously be used as a base when laying pipes and/or cables for heat emitting floors, the spaces between the respective protrusions forming advantageous guiding paths for pipe guides and/or cable guides.

C l a i m s

1. The use of a plate as a plaster plate (201; 401), the plate comprising several hollow rounded protrusions formed with one ore more interior undercut cavities , the plaster (210; 410) being applied to the outside of the plate, i.e. onto the space where the plate is mounted, at the same time as the plaster is anchored in the cavities of the protrusions.

2. The use of a plate according to claim 1 as a pipe or cable plate for heat emitting floors.

3. The use of a plate according to claim 1 or 2, in which a upper portion of the protrusions include a grid (202), the grid (212) alternatively being provided on the opposite side of the plate.

2327701 (Divisional)

UNSCANNABLE ITEM

RECEIVED WITH THIS APPLICATION

(ITEM ON THE 10TH FLOOR ZONE 5 IN THE FILE PREPARATION SECTION)

DOCUMENT REÇU AVEC CETTE DEMANDE

NE POUVANT ÊTRE BALAYÉ

(DOCUMENT AU 10 IÈME ÉTAGE AIRE 5 DANS LA SECTION DE LA

PRÉPARATION DES DOSSIERS)

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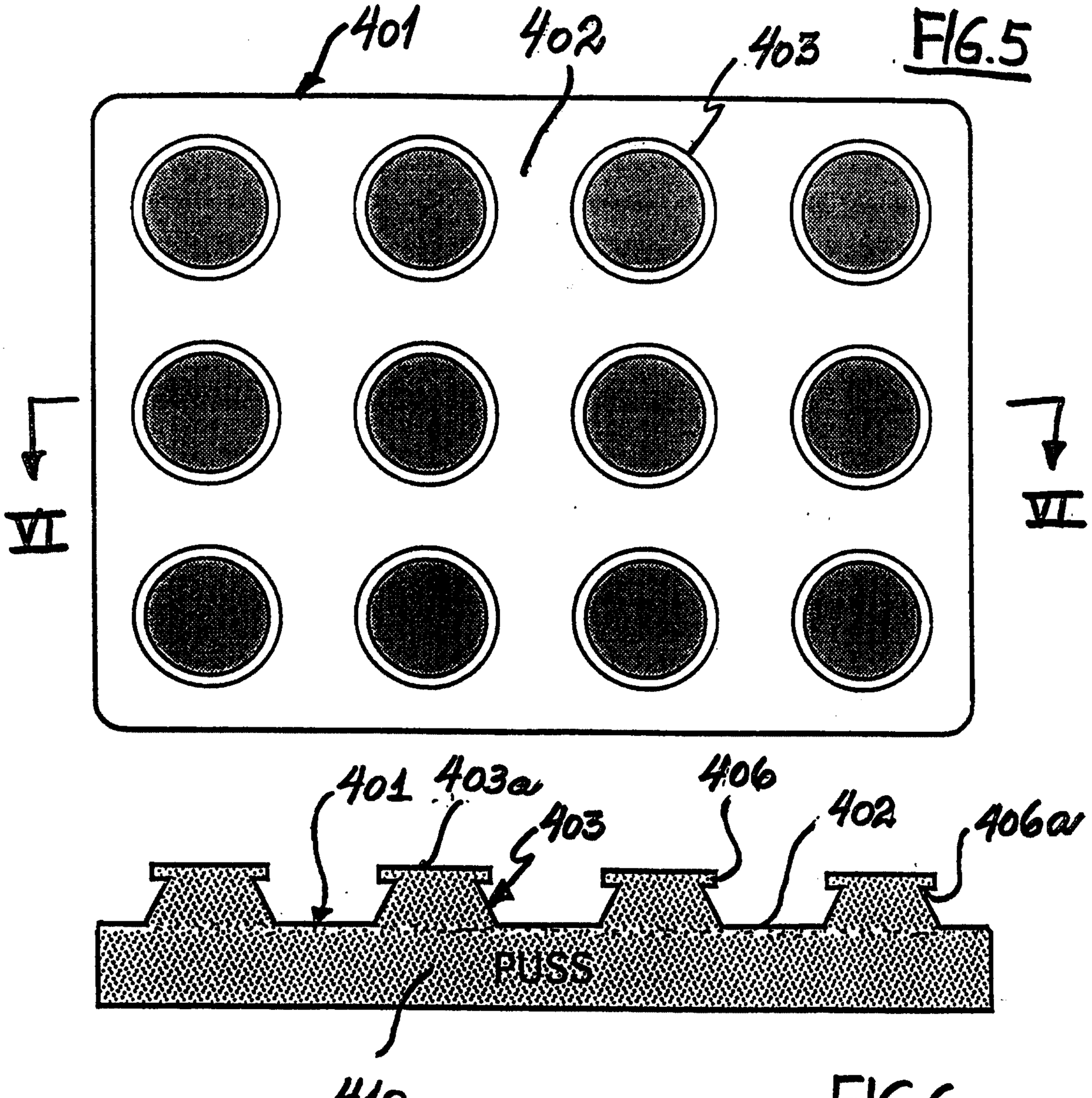
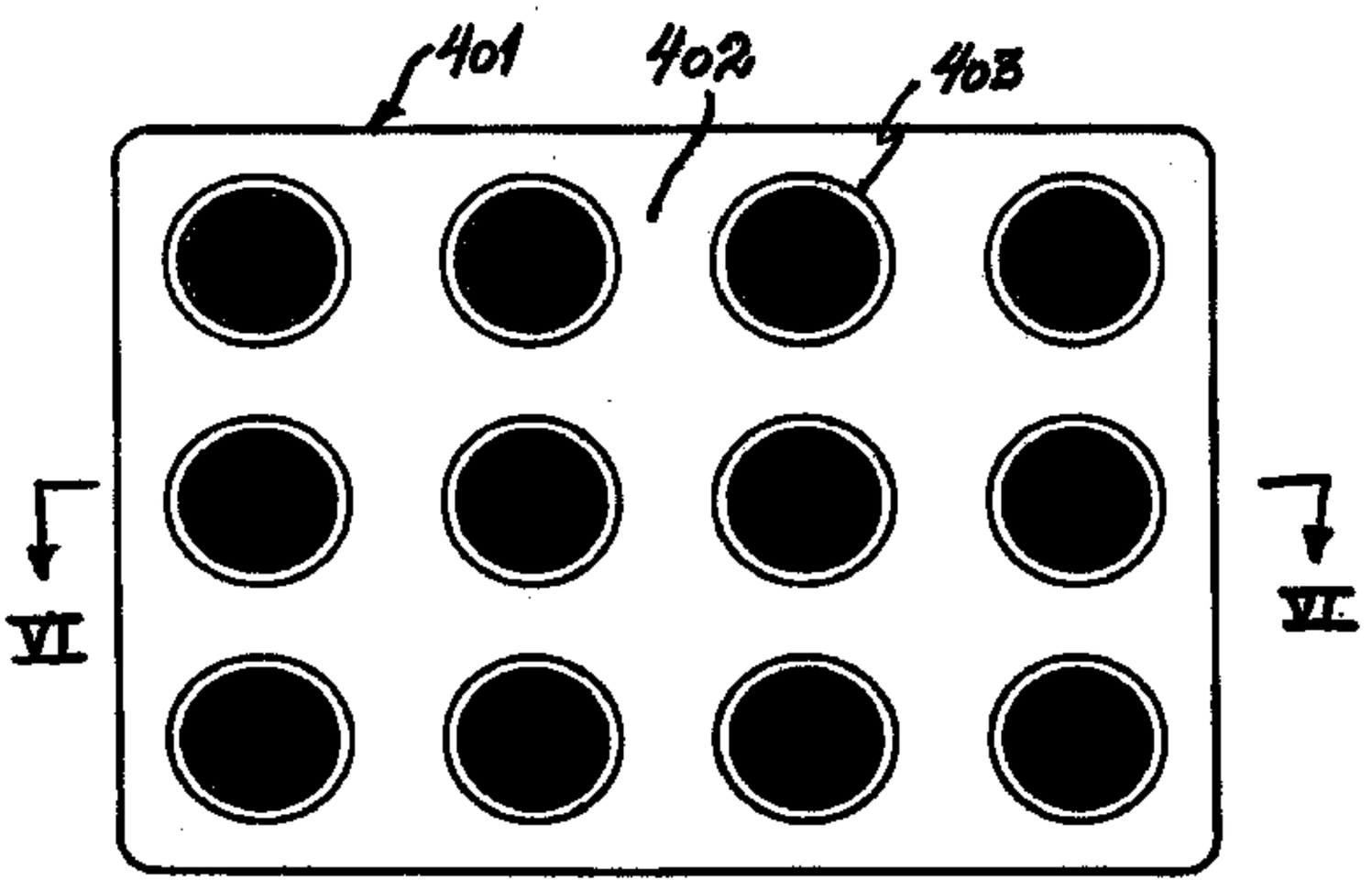


FIG.5

FIG.6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