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(54) **PLUG FOR PLASTERBOARD REPAIR**

DÜBEL ZUR REPARATUR VON GIPSPLATTEN

TAMPON POUR LA RÉPARATION DE PLAQUES DE PLÂTRE

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Description

TECHNICAL BACKGROUND

[0001] Plasterboard, also referred to as drywall, gypsum board or sheetrock (proprietary name of United States Gypsum Company) has become a common standard material for interior walls and ceilings in modern buildings. Plasterboard is made primarily from gypsum plaster, the semi-hydrous form of calcium sulphate ($\text{CaSO}_4 \cdot \frac{1}{2}\text{H}_2\text{O}$), typically mixed with additives such as fiber and mildew and fire resistance agents, which is sandwiched between two sheets of heavy paper or fiberglass mats. When the core sets and is dried, the sandwich becomes rigid and strong.

[0002] It is easy to cut the plasterboards and make holes through them, e.g. for cords and pipes that have to cross the walls or ceilings being formed by the boards.

[0003] Methods for repairing plasterboard constructions, e.g. closing off holes made for pipes or cords that are no longer used or holes from accidental impact, typically involve use of a joint compound (sometimes referred to as "mud") which is supplied as a powder for mixing with water or ready-to-use wet paste. Such compound is also used for sealing and finishing joints between adjacent plasterboards in a wall structure. Larger holes require cutting even edges around the hole and fastening therein a suitably cut-out plasterboard piece.

[0004] However, using joint material for filling cracks or holes can often be tedious as the material shrinks upon drying and several layers are often required which must be allowed to dry in between applications.

[0005] Alternative simple and time-saving methods for repairing plasterboards would therefore be appreciated.

SUMMARY OF INVENTION

[0006] The invention provides a method for repairing plasterboards, and particularly for sealing holes, as defined in the claims.

[0007] The plug of the method has a substantially cylindrical shape with a longitudinal axis extending between a front end and a back end, and having a cylindrical side wall and a substantially circular cross-section across the longitudinal axis, the plug further having recesses on the side wall which recesses are either longitudinal or spiral around the cylindrical side walls.

[0008] Such a repair plug having spiraling recesses around its cylindrical side walls is known from DE 196 47 083 A1. This plug is fastened in the hole with the use of a fluid/liquid which is absorbed by the material of the plug, thus fastening it in the hole.

BRIEF DESCRIPTION OF FIGURES

[0009]

Figure 1 shows a plug with longitudinal recesses.

Figures 1b, 1c and 1d show the cross-section of plugs with a different number of recesses and differently dimensioned recesses.

Figure 2 a and b show repair plugs with spiraling recesses with a different pitch (different number of recesses per unit length of the plug).

Figure 3 shows repair plugs with vertical recesses dividing the plugs into segments.

Figure 4 shows a perspective view, side view and end view of one embodiment of the plug of the invention, with four longitudinal recesses and three vertical recesses dividing the plug into four segments.

Figure 5 shows end views of different sizes of plugs such as shown in Figure 3.

DETAILED DESCRIPTION

[0010] The plug of the method of the invention comprises gypsum plaster or materially similar material (chalk or chalk-like material including in particular conventional gypsum plaster (hydrated calcium sulfate) but can also be from calcium carbonate, magnesium carbonate, magnesium silicate, etc.). The term 'chalk-like material' is used herein to describe solid, typically porous or semi-porous material, which can be readily filed or sanded down. Accordingly, the term also encompasses other material that fulfils this functional criterion, including but not limited to polymeric material, e.g. PVC-based polymer clay, cement material, and any mixtures of the above-mentioned materials.

[0011] The plug has a substantially cylindrical shape with a longitudinal axis extending between a front end 3 and a back end 4, and a cylindrical side wall 2 and a substantially circular cross-section across the longitudinal axis. The plug further has recesses 5 on the side wall 2 which recesses are either longitudinal or spiral around the cylindrical side wall. These recesses 5 provide a filling space for joint material which is used for fastening the plug in the hole to be closed. Since the plug is made from a relatively soft chalk material, the recesses also aid in the insertion of a plug into a hole which is slightly smaller than the plug, as the plug can be twisted or screwed in the hole thereby peeling off some of the outermost material in between the recesses. This material is peeled/polished off and the plug sits snugly in the hole.

[0012] When the recesses on the side wall are longitudinal these are typically at least four and can also be in the range of about 6 to 10. This can however depend on the diameter of the plug; wider plugs (e.g. in the range of 20 to 40 mm) can have a higher number of recesses, e.g. 2-4 recesses per cm of the outer circumference of the plug, forming a longitudinally striped pattern on the sidewall. Wider plugs can however as well have relatively

few recesses, such as four, five or six. The invention is not limited to certain particular dimensions of the recesses, the width of the recesses may typically depend to some extent on the diameter of the plug and typically the recesses have an outermost width 7 in the range of about 2 to 5 mm. In certain plugs, particularly the larger plugs, the recesses can lie relatively close to each other such that the section 8 of the circumference of the plug (in between adjacent recesses) can be about as wide as the recess width 7, or the section 8 can be slightly shorter than the recess width 7, or substantially wider than the recess width, as in the embodiments shown in Figure 5. Examples of a few possible embodiments are illustrated in Figures 1b-d which show cross-sections of a few embodiments of the plug, with varying density of the recesses as well as varying depth 9, both as absolute depth and as relative depth compared to the recess width. Figure 5 shows different embodiments of the longitudinal recesses. In these embodiments the recesses are relatively deep, thus forming a cross-shaped or star-shaped cross-section, depending on the number of recesses.

[0013] In other useful embodiments of the method, the plug has spiraling recesses, which spiral around the side-wall of the plug much like the thread of a screw. Similar to the longitudinal recesses described above, spiraling recesses can have varying depth and width, and can be arranged with varying pitch, i.e. how closely spaced the recesses are to each other. Figure 2 illustrates two examples of different pitch 11 on two different plugs of this type.

[0014] In certain embodiments, the repair plug described herein is shaped such that the depth of each recess is in the range of about 5-20% of the diameter of the plug, such as, e.g., in the range of about 5-15% or the range of 5-10%, including about 5% or about 7% or about 10% but also any value in the range of about 10-20% of the diameter of the plug, such as in the range of about 12-20%, for example, 12%, 15% or 17%.

[0015] The plug of the method of the present invention is not limited to certain dimensions. It follows however, that it is most useful for holes that are larger than the plug that such holes can be readily closed and finished with a single layer of joint material. Consequently, the plugs can be relatively small, having a diameter in the range of about 4-10 mm, and preferably in the range of 5-10 mm, such as about 5 mm, 6 mm, 7 mm, 8 mm or 10 mm. Plugs with a larger diameter can be even more useful, such as with a diameter in the range of about 10-40 mm, such as in the range of about 10-25 mm, including the range of about 10-20 mm.

[0016] In a particular embodiments the plugs are made even bigger, such as having a maximum cross section in the range of about 50-85 mm, e.g. having a width of about 54, 74 or 84 mm. Such plugs are however typically shorter and not segmented with vertical recesses, as their large width would make them difficult to break. These large plugs are useful for closing of unused holes in walls intended for electrical circuitry, switches and the

like. These extra wide plugs can have a length of about e.g. 1 cm, 2 cm, 3 cm or 4 cm or another suitable length.

[0017] The plugs can be suitably offered in lengths roughly corresponding to the thickness of the boards to be repaired. Plasterboards manufactured in accordance with the metric system can have a thickness such as 10, 12 or 15 mm, and frequently walls are made from two layers of board. Consequently, in certain embodiments the plugs have a length such as 10, 12, 14, 18, 20, 24 or 30 mm. It should be noted that generally, interior walls have a hollow space and thus when a hole is being repaired, the plug does not have to be flush with the inner surface of the plasterboard, as it is in those cases only the outer, visible surface of the board that should be flat, such that after the repaired area has been finished and painted, the spot is preferably nearly invisible.

[0018] In the plugs depicted in the accompanying figures, the front end 3 is intended to be inserted first and is the end facing the inside of the wall after location of the plug, while the back end 4 is the end facing the outer, visible surface of the board. The front end 3 preferably has a chamfer 6 to ease insertion of the plug.

[0019] In a useful embodiment the plug has one or more vertical recesses 10 that circumscribe the plug, dividing the plug into two or more segments 12, such as, e.g., 3, 4, 5 or 6 segments. By means of the recesses, the segments can be broken off the remaining plug, one by one, or more than one segment at a time. The length of each segment is consequently preferably such as any of the length values mentioned above, whereas the overall length of the plug in this embodiment is more, depending on the number of segments. If, for example, the segment length is 12 mm, one segment can be broken off for a suitable length to repair a single 12 mm plasterboard whereas two segments provide a plug of 24 mm, suitable for repair of a double-layered wall of two 12 mm plasterboards.

Claims

1. A method for sealing holes in plasterboards with the use of a repair plug (1) comprising gypsum plaster or other chalk-like material and having substantially a cylindrical shape with a longitudinal axis extending between a front end (3) and a back end (4), and having a cylindrical side wall (2) and a substantially circular cross-section across the longitudinal axis, the plug further having recesses (5) on the side wall (2) which recesses are either longitudinal or spiral around the cylindrical side walls, the method comprising inserting said repair plug in the hole to be sealed and inserting joint material in the voids formed by the recesses.
2. The method of claim 1, wherein said repair plug has at least four longitudinal recesses (5) along the cylindrical side wall (2).

3. The method of claim 2, wherein said repair plug has in the range of about six to ten longitudinal recesses (5) along the cylindrical side wall.
4. The method of claim 1, wherein said repair plug has spiraling recesses (5) with a pitch (11) in the range of about 5 to 15 mm.
5. The method of any of the aforementioned claims where the depth (9) of each recess of said repair plug is in the range of about 5-20% of the outer diameter of the plug.
6. The method of any of the aforementioned claims wherein said repair plug has a diameter in the range of about 5 to 10 mm.
7. The method of any of the aforementioned claims wherein said repair plug has a diameter in the range of about 10 to 40 mm.
8. The method of any of the aforementioned claims wherein said repair plug has a length in the range of about 8 to 24 mm.
9. The method of any of claims 1 to 7, wherein said repair plug has one or more vertical recesses (10) circumscribing the plug dividing the plug into two or more segments (12).
10. The method of claim 9, wherein said repair plug has a segment length in the range of about 8 to 24 mm.
11. The method of any of claim 1 to 5, wherein said repair plug has a diameter in the range of 40-80 mm.

Patentansprüche

1. Verfahren zum Abdichten von Löchern in Gipsplatten durch Verwenden eines Reparaturpfropfens (1), der Gipsputz oder ein anderes kreideartiges Material umfasst und eine im Wesentlichen zylinderförmige Form mit einer Längsachse, die sich zwischen einem vorderen Ende (3) und einem hinteren Ende (4) erstreckt, und eine zylinderförmige Seitenwand (2) und einen im Wesentlichen kreisförmigen Querschnitt entlang der Längsachse aufweist, wobei der Pfropfen ferner Aussparungen (5) in der Seitenwand (2) aufweist, wobei die Aussparungen entweder längs oder spiralförmig um die zylinderförmigen Seitenwände verlaufen, wobei das Verfahren das Einführen des Reparaturpfropfens in das abzudichtende Loch und das Einführen von Verbindungsmaterial in die Lücken umfasst, die von den Aussparungen gebildet werden.
2. Verfahren nach Anspruch 1, wobei der Reparatur-

pfropfen mindestens vier Längsaussparungen (5) entlang der zylinderförmigen Seitenwand (2) aufweist.

3. Verfahren nach Anspruch 2, wobei der Reparaturpfropfen im Bereich von etwa sechs bis zehn Längsaussparungen (5) entlang der zylinderförmigen Seitenwand aufweist.
4. Verfahren nach Anspruch 1, wobei der Reparaturpfropfen Spiralaussparungen (5) mit einer Steigung (11) im Bereich von etwa 5 bis 15 mm aufweist.
5. Verfahren nach einem der vorherigen Ansprüche, wobei die Tiefe (9) jeder Aussparung des Reparaturpfropfens im Bereich von etwa 5 bis 20 % des Außendurchmessers des Pfropfens liegt.
6. Verfahren nach einem der vorherigen Ansprüche, wobei der Reparaturpfropfen einen Durchmesser im Bereich von etwa 5 bis 10 mm aufweist.
7. Verfahren nach einem der vorherigen Ansprüche, wobei der Reparaturpfropfen einen Durchmesser im Bereich von etwa 10 bis 40 mm aufweist.
8. Verfahren nach einem der vorherigen Ansprüche, wobei der Reparaturpfropfen eine Länge im Bereich von etwa 8 bis 24 mm aufweist.
9. Verfahren nach Anspruch 1 bis 7, wobei der Reparaturpfropfen eine oder mehrere vertikale Aussparungen (10) aufweist, die den Pfropfen umschreiben und den Pfropfen in zwei oder mehrere Segmente (12) unterteilen.
10. Verfahren nach Anspruch 9, wobei der Reparaturpfropfen eine Segmentlänge im Bereich von etwa 8 bis 24 mm aufweist.
11. Verfahren nach einem der Ansprüche 1 bis 5, wobei der Reparaturpfropfen einen Durchmesser im Bereich von etwa 40 bis 80 mm aufweist.

Revendications

1. Procédé destiné à boucher des trous dans des plaques de plâtre en utilisant un bouchon de réparation (1) comprenant du plâtre de gypse ou un autre matériau de type crayeux et ayant substantiellement une forme cylindrique avec un axe longitudinal s'étendant entre une extrémité avant (3) et une extrémité arrière (4), et ayant une paroi latérale cylindrique (2) et une section transversale substantiellement circulaire en travers de l'axe longitudinal, le bouchon ayant en outre des retraits (5) sur la paroi latérale (2), lesquels retraits ont une forme soit lon-

gitudinale soit spirale autour des parois latérales cylindriques, le procédé comprenant l'insertion dudit bouchon de réparation dans le trou à boucher et l'insertion de matériau de joint dans les vides formés par les retraits.

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2. Procédé selon la revendication 1, dans lequel ledit bouchon de réparation présente au moins quatre retraits longitudinaux (5) le long de la paroi latérale cylindrique (2). 10
3. Procédé selon la revendication 2, dans lequel ledit bouchon de réparation présente entre environ six et dix retraits longitudinaux (5) le long de la paroi latérale cylindrique. 15
4. Procédé selon la revendication 1, dans lequel ledit bouchon de réparation présente des retraits en spirale (5) avec un pas (11) compris entre environ 5 et 15 mm. 20
5. Procédé selon l'une quelconque des revendications précédentes, dans lequel la profondeur (9) de chaque retrait dudit bouchon de réparation est comprise entre environ 5 et 20 % du diamètre extérieur du bouchon. 25
6. Procédé selon l'une quelconque des revendications précédentes, dans lequel ledit bouchon de réparation présente un diamètre compris entre environ 5 et 10 mm. 30
7. Procédé selon l'une quelconque des revendications précédentes, dans lequel ledit bouchon de réparation présente un diamètre compris entre environ 10 et 40 mm. 35
8. Procédé selon l'une quelconque des revendications précédentes, dans lequel ledit bouchon de réparation présente une longueur comprise entre environ 8 et 24 mm. 40
9. Procédé selon l'une quelconque des revendications 1 à 7, dans lequel ledit bouchon de réparation présente un ou plusieurs retraits verticaux (10) entourant le bouchon et divisant le bouchon en deux ou plus de deux segments (12). 45
10. Procédé selon la revendication 9, dans lequel ledit bouchon de réparation présente une longueur de segment comprise entre environ 8 et 24 mm. 50
11. Procédé selon l'une quelconque des revendications 1 à 5, dans lequel ledit bouchon de réparation présente un diamètre compris entre 40 et 80 mm. 55

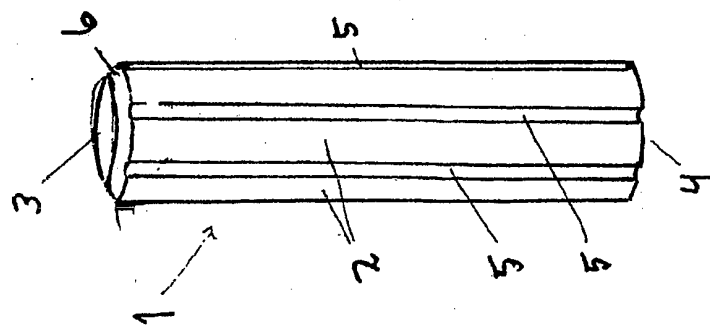


Fig. 1a

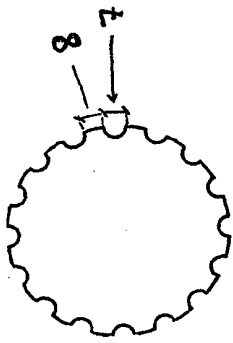


Fig. 1b

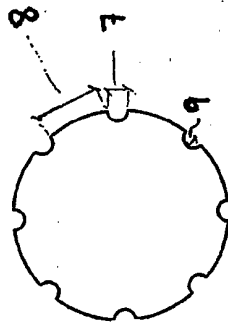


Fig. 1c

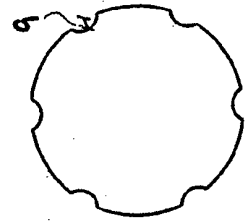


Fig. 1d

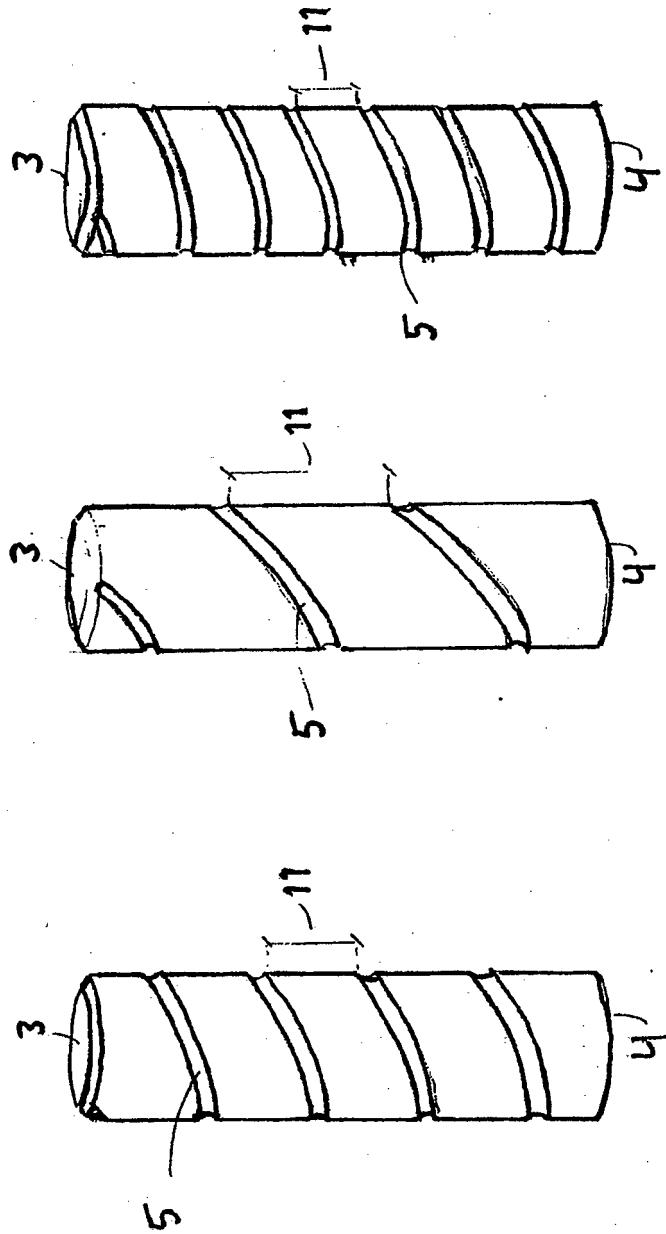
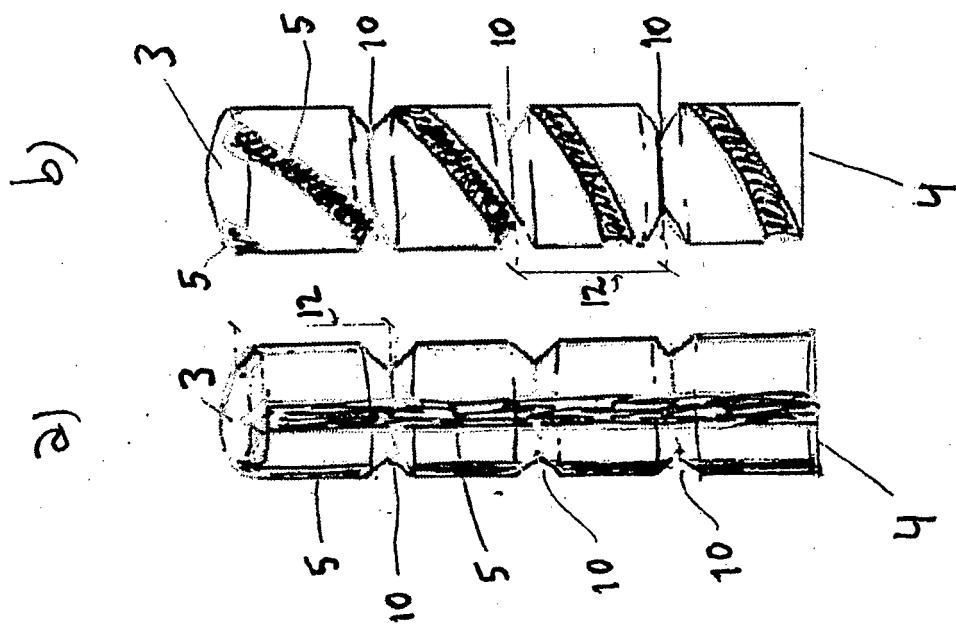


Fig. 2



3
F. 9

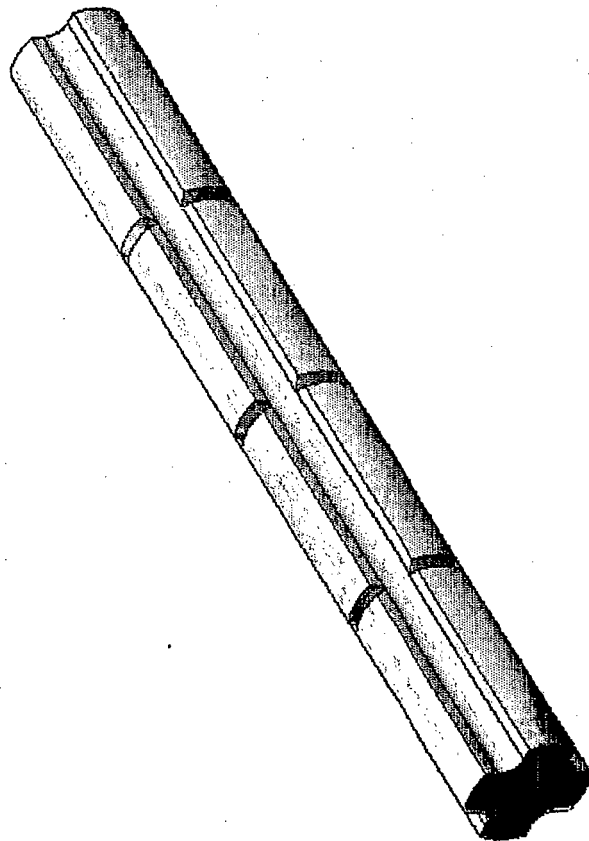
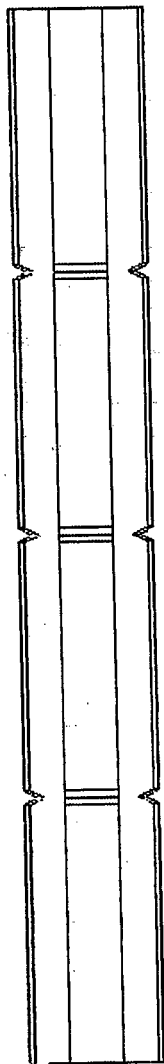
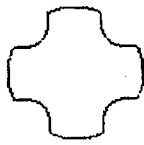


Figure 4

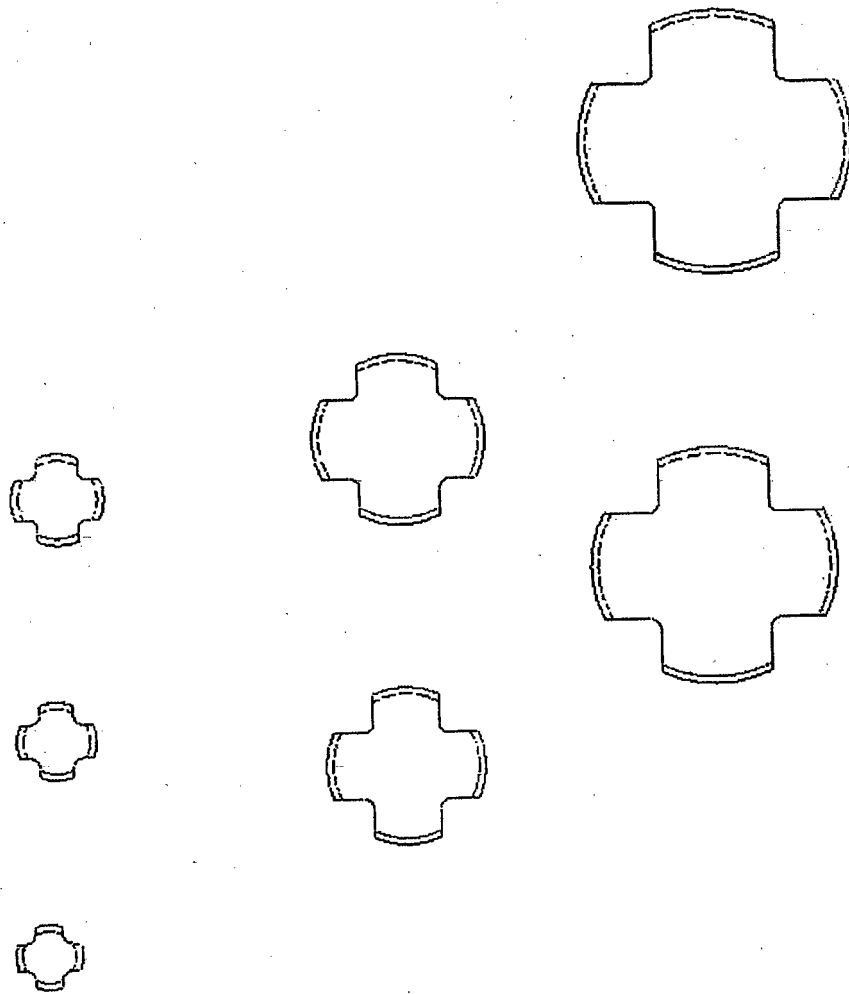


Figure 5

REFERENCES CITED IN THE DESCRIPTION

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