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### (54) A method of manufacturing moulded containers

Verfahren zur Herstellung von gegossenen Behältern

Méthode de fabrication de récipients moulés

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**DE-A- 3 121 084 DE-A- 3 939 516  
DE-U- 9 111 986 NL-A- 8 502 335**

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## Description

[0001] The present invention relates to a method of manufacturing moulded containers, which bring substantial features of novelty and inventive activity to the object for which they are intended.

[0002] The moulded containers to which the present invention relates generally comprise two bodies, a moulded casing and moulded lid, respectively, produced from synthetic materials, which are hinged to one another, generally with moulded elements formed for the said purpose in the mentioned casing and lid and optionally with the cooperation of detachable elements, the said casing and lid comprising, in the closure area, devices for maintaining the two elements joined to one another in a releasable manner. Containers of this type are widely used in various industrial fields, preferably as tool-carrying containers, containers for small industrial apparatuses, etc.

[0003] In the containers of the type mentioned, information-carrying sheet-form elements are normally provided in the form of labels and the like and are connected to some of the surfaces of the container in order to indicate, where appropriate, the type and make of the contents of the container or other information necessary for the contents of the container or for its function.

[0004] The attachment of the said labels or the like by means of adhesives nevertheless has certain disadvantages from the point of view of the difficulty of changing the information labels or sheets, owing to the labour required to attach the labels by means of an adhesive and the ecological disadvantages resulting from the use of adhesives, etc.

[0005] The mentioned disadvantages are more considerable bearing in mind that many of the containers of the type for which the present invention is intended are used to receive different types of contents, as a result of which, starting from a single container, it is necessary to change the instruction label or sheet frequently in order to adapt the container to different contents.

[0006] DE-A-3 121 084 refers to a rectangular container which has four lateral walls and a bottom wall, having in the lateral surfaces of the longer sides recesses having slits to receive corresponding expansions of a web-like element carrying graphic information. However, said reference does not disclose closable containers made out of two articulated parts with thickened portions in the recesses to receive coplanar cuts parallel to the base of the recess.

[0007] The improvements forming the subject-matter of the present invention are intended to overcome the mentioned disadvantages by providing means such that it is possible to arrange the instruction label or sheet in a very simple manner in containers of the moulded type without having to use adhesives or the like and with the possibility of changing the instruction label or sheet very rapidly and easily.

[0008] Basically, the method of manufacturing moulded containers of the present invention resides in the provision of recessed areas in those faces of the container which are to be provided with the instruction labels or sheets, such as, principally, the larger faces of the container, which recessed areas may be of varying size and shape and the depth of which recessed areas is substantially equal to the thickness of the card or sheet-form element acting as label, advertisement, instruction carrier, etc., there being produced in the moulding operation a series of thickened areas in the form of local ribs which may extend to the corner areas, intermediate areas, etc., and the thickness of which may be substantially equal to the depth of the recess. In a subsequent phase, cuts are made in the mentioned thickened areas or ribs in a single plane parallel to the plane of the base of each recess, which enables the edges of the sheet-form elements to be introduced into the slots made in the mentioned ribs, thereby providing for a rapid and easy retention of the sheet-form element in the container. As will be appreciated, owing to the application of the present improvements, the inscription-carrying sheet-form elements acting as labels, instructions, etc., can be readily mounted and dismounted from the moulded container, which, moreover, does not require substantial changes to the design or moulding in order to obtain the structure necessary for receiving the sheet-form information elements.

[0009] The operation of cutting the mentioned slots in the thickened portions or ribs in the areas of the edges of the recesses mentioned may be effected in a completely mechanised manner by means of a knife or saw of the discoidal type, the thickness of which is equal to the desired width of the slots for introducing the sheet-form element carrying the printed motifs and which operates in the manner of a rotating tool having an axis perpendicular to the base of the recess in which the thickened portions or ribs have been moulded and which is displaced automatically for successive following of the various thickened portions or ribs in such a manner that each of the containers can simply be centred in a completely mechanised manner in the work table of a machine having a structure similar to a vertical milling machine, the automatic cutting cycle being effected continuously.

[0010] For a better understanding of the present invention, some explanatory drawings of the method to which the present invention relates are appended by way of example.

Figures 1 and 2 show front and side elevations, respectively, of a moulded container manufactured by the method of the present invention.

Figure 3 is a plan view of a detail of an area of a recess for receiving sheet-form information elements according to the present invention.

Figures 4 and 5 are each sections along the indicated cutting planes.

Figure 6 is a plan view representing the mode of operation of the disc for cutting the slots.

Figures 7 and 8 are each sections along the cutting planes indicated in Figure 6.

Figure 9 is a front elevation of part of a recess of a container in which a sheet-form element carrying graphic information has been incorporated.

Figures 10 and 11 are each sectional views along the indicated cutting planes of a recess for receiving a sheet-form element carrying graphic information.

**[0011]** The present invention can be applied to moulded containers, such as that indicated by the general reference numeral 1 in Figures 1 and 2, the preferred form of which is a flat parallelepiped with rounded edges and which has two irregular halves 2 and 3 which constitute the casing and the lid, respectively, of the container, and an upper handle 4 and lower hinges for the articulation of the two parts 2 and 3 to one another, lower protuberances such as 5 and 6 being provided as protuberances for supporting the container.

**[0012]** The present invention provide for the production, in the moulding phase of the parts 2 and 3, of recesses 7 which are of a variable size and which preferably have a shape corresponding to that of the inscription-carrying sheet-form element which is to be incorporated in the container, and the depth of which recesses is very shallow, as shown in Figures 4 and 5 which indicate the flat base of the recess 7 which, characteristically, has a series of thickened portions or ribs distributed over its sides and corners, such as the thickened portions 8, 8', 8" and 8"" which are in the form of a right-angle and are arranged in the corners of the recess and other short, straight thickened portions, such as those indicated by the reference numerals 9 and 9' for one of the larger sides and 9" and 9"" for the other side. As will be appreciated, the number and arrangement of the said thickened portions may vary widely and will depend on the nature of the sheet-form element which is to be connected to the moulded container. Thus, the exact shape of the recess may vary within wide limits, depending on the shape of the sheet-form element carrying the graphic information, and may be rectangular, as in the case illustrated, square, pentagonal, circular, etc.

**[0013]** The thickened portions or ribs mentioned above are to receive coplanar slots which are parallel to the flat base of the recess 7 and which are preferably produced by means of a circular tool 10, Figure 6, in the form of a discoidal saw or mill which rotates about an axis 11 perpendicular to the plane of the recess 7 and the thickness of which coincides with that of the slots which are to be formed in the said ribs. The penetration of the cutting discs 10 depends on the size of the mentioned ribs or thickened portions, and the path to be followed by the discoidal cutting tool is determined by the profile of the recess 7. In any case, the discoidal cutting

tool is driven automatically, as a result of which the cutting operation is completely automated.

**[0014]** As shown in Figures 7 and 8, the slots 12 are produced adjacent to the base 7 of the recesses so that the sheet-form elements carrying the printed motifs can fit against the flat base 7.

**[0015]** As shown in Figures 9, 10 and 11, the sheet-form element 13 carrying various printed motifs 14 has a shape which substantially matches that of the periphery of the recesses 7 and has dimensions which enable it to be introduced into the slots produced by cutting in the thickened portions. In this manner, the sheet-form element 13 is centered and held well in the desired faces of the container and can be readily fitted and exchanged in accordance with the descriptions they are to carry.

**[0016]** The depth of the coplanar cuts is greater than the width of the thickened portions, thus permitting the insertion of the sheet-form element which carries the graphic information and which is completely adapted to the straight side edges of the recesses.

### Claims

25. 1. A method of manufacturing moulded containers of the type comprising two moulded elements (2,3) connected to one another by articulation and being provided with closure members for the container, characterised in that, in the moulding phase, recessed areas (7) of shallow depth are formed in the principal external faces of the container and are provided at their periphery with a plurality of thickened portions (8,8',8'',8''') which are of a height equal to the depth of the recess and which are distributed over the sides and corners of the recess, and, in a subsequent phase, coplanar cuts (12) parallel to the base of the recess are produced for the retention of the edges of corresponding exchangeable sheet-form elements (13) carrying graphic information.
30. 2. A method, according to Claim 1, characterised in that the thickened portions (8,8',8'',8''') corresponding to the corners of the recesses (7) have an angular shape matching that of the said corners.
35. 3. A method, according to Claim 1, characterised in that the coplanar cuts (12) produced in the thickened portions of the periphery of the recesses (7) are arranged adjacent to the flat base of the said recesses.
40. 4. A method, according to Claim 1, characterised in that the coplanar cuts (12) in the recesses (7) are produced by means of a circular cutting tool (10), the thickness of which matches that of the cuts (12) to be made and which is actuated about a rotating axis perpendicular to the base of the recess (7),

automatically following the development of the edges of the same.

5. A method, according to Claim 4, characterised in that the depth of the coplanar cuts (12) is greater than the width of the thickened portions, (8,8',8",8'",9,9',9",9") thus permitting the insertion of the sheet-form element (13) which carries the graphic information and which is completely adapted to the straight side edges of the recesses. 10

#### Patentansprüche

1. Verfahren zur Herstellung von gegossenen Behältern des Typs, der zwei gegossene Elemente (2, 3) enthält, die miteinander durch eine Gelenkverbindung verbunden sind und mit Verschlußelementen für den Behälter versehen sind, dadurch gekennzeichnet, daß in der Gießphase in den äußeren Hauptflächen des Behälters ausgesparte Bereiche (7) mit geringer Tiefe ausgebildet werden, die an ihrem Umfang mit mehreren verdickten Abschnitten (8, 8', 8", 8'", 9, 9', 9", 9") versehen sind, deren Höhe gleich der Tiefe der Aussparung ist und die über die Seiten und die Ecken der Aussparung verteilt sind, und daß in einer nachfolgenden Phase koplanare Einschnitte (12), die zur Grundfläche der Aussparung parallel sind, erzeugt werden, um die Kanten entsprechender austauschbarer blattförmiger Elemente (13), die graphische Information tragen, zu halten. 15

2. Verfahren nach Anspruch 1, dadurch gekennzeichnet, daß die den Ecken der Aussparungen (7) entsprechenden verdickten Abschnitte (8, 8', 8", 8") eine angewinkelte Form besitzen, die mit jener der Ecken übereinstimmt. 20

3. Verfahren nach Anspruch 1, dadurch gekennzeichnet, daß die in den verdickten Abschnitten am Umfang der Aussparungen (7) erzeugten koplanaren Einschnitte (12) in der Nähe der ebenen Grundfläche der Aussparungen angeordnet sind. 25

4. Verfahren nach Anspruch 1, dadurch gekennzeichnet, daß die koplanaren Einschnitte (12) in den Aussparungen (7) mittels eines kreisförmigen Schneidwerkzeugs (10) erzeugt werden, dessen Dicke mit derjenigen der herzustellenden Einschnitte (12) übereinstimmt und das um eine zur Grundfläche der Aussparung (7) senkrechte Drehachse angetrieben wird und automatisch dem Kantenverlauf der Aussparung folgt. 30

5. Verfahren nach Anspruch 4, dadurch gekennzeichnet, daß die Tiefe der koplanaren Einschnitte (12) größer als die Breite der verdickten Abschnitte (8, 8', 8", 8'", 9, 9', 9", 9") ist, so daß das Einschie- 35

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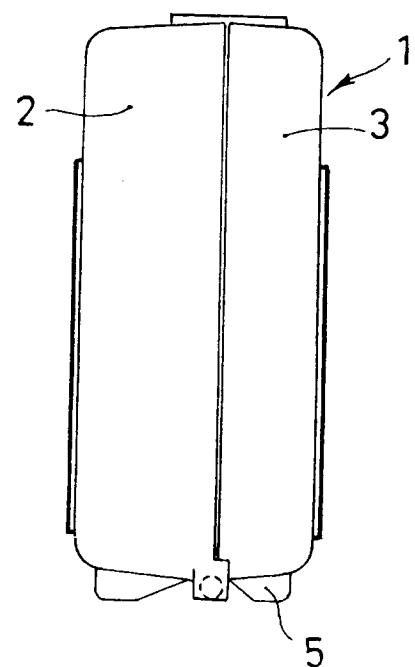
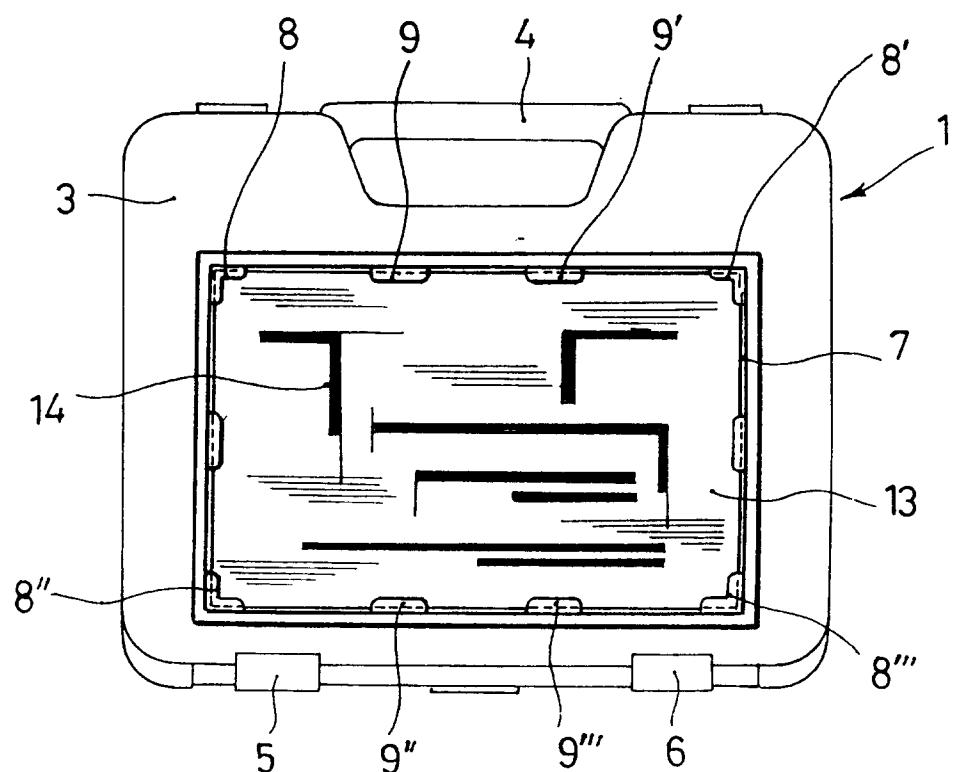
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ben des blattförmigen Elements (13) möglich ist, das die graphische Information trägt und das vollständig an die geraden Seitenkanten der Aussparungen angepaßt ist.

#### Revendications

1. Procédé de fabrication de récipients moulés du type comprenant deux éléments moulés (2, 3) accouplés l'un à l'autre par une articulation et qui comportent des éléments de fermeture du récipient, caractérisées en ce que dans la phase de moulage, des parties évidées (7) de faible profondeur sont formées dans les faces extérieures principales du récipient et sont dotées en leur périphérie d'une pluralité de parties épaissies (8, 8', 8", 8'", 9, 9', 9", 9") dont la hauteur est égale à la profondeur des parties évidées et qui sont réparties sur les côtés et les coins des parties évidées, et dans une phase ultérieure, des entailles coplanaires (12), parallèles à la base des parties évidées sont produites pour retenir les bords d'éléments correspondants (13) interchangeables, en forme de feuilles, qui portent une information graphique. 20
2. Procédé selon la revendication 1, caractérisé en ce que les parties épaissies (8, 8', 8", 8") qui correspondent aux coins des parties évidées (7) ont une forme angulaire qui épouse celle desdits coins. 25
3. Procédé selon la revendication 1, caractérisé en ce que les entailles coplanaires (12) produites dans les parties épaissies de la périphérie des parties évidées (7) sont disposées pour être adjacentes à la base plate desdites parties évidées. 30
4. Procédé selon la revendication 1, caractérisé en ce que les entailles coplanaires (12) dans les parties évidées (7) sont produites au moyen d'un outil couplant circulaire (10), dont l'épaisseur correspond à celle des entailles (12) à réaliser et qui est actionné autour d'un axe de rotation perpendiculaire à la base des parties évidées (7), automatiquement après la formation des bords de ces dernières. 35
5. Procédé selon la revendication 4, caractérisé en ce que la profondeur des entailles coplanaires (12) est supérieurs à la largeur des parties épaissies (8, 8', 8", 8'", 9, 9', 9", 9"), ce qui permet l'insertion de l'élément en forme de feuille (13) qui porte l'information graphique et qui est totalement adapté aux bords latéraux rectilignes des parties évidées. 40



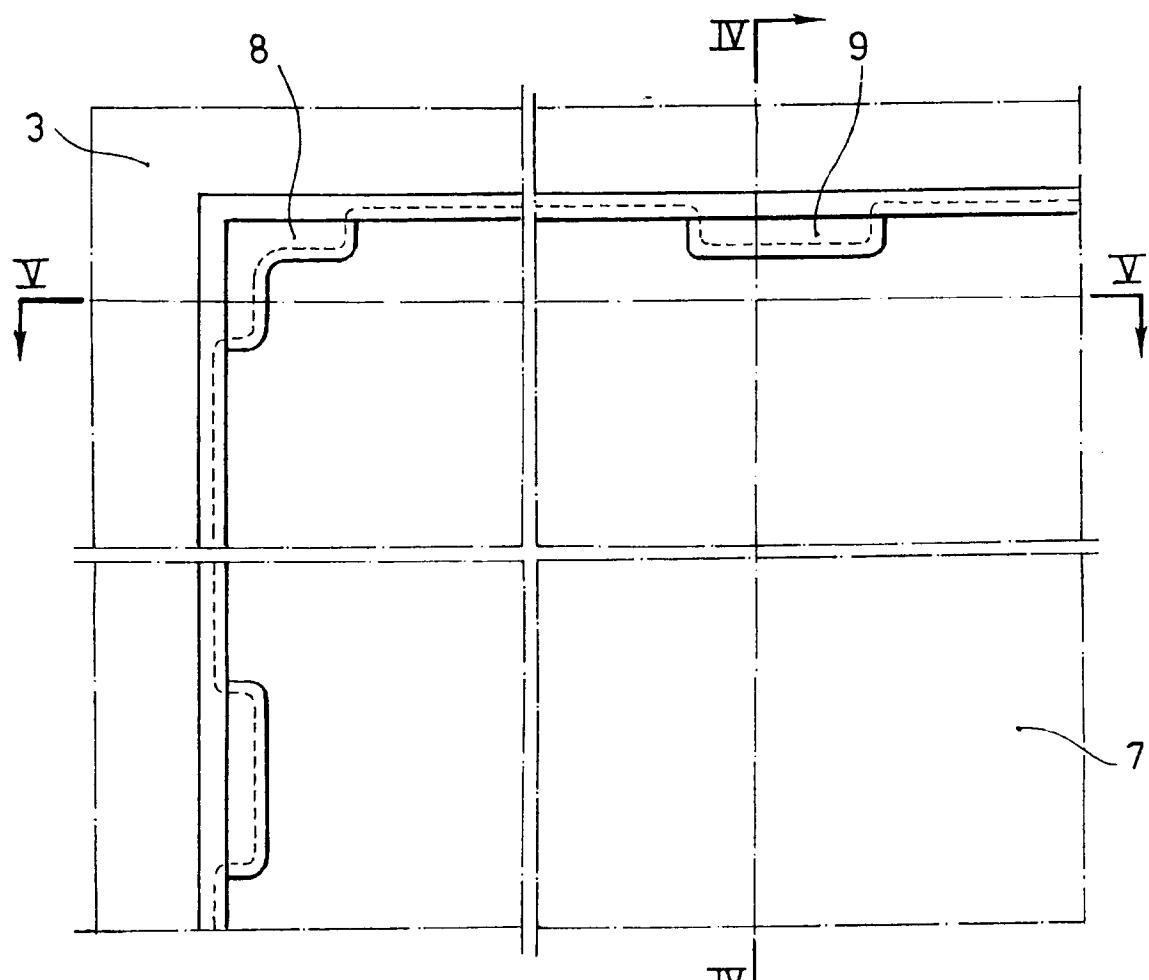


FIG. 3

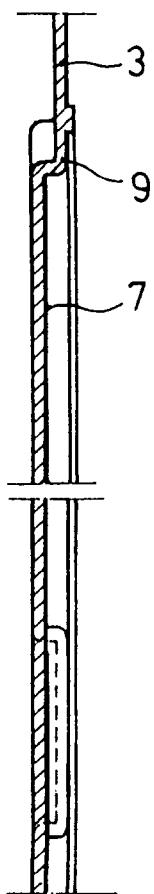


FIG. 4

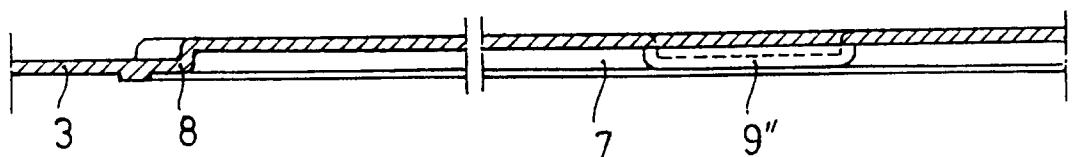


FIG. 5

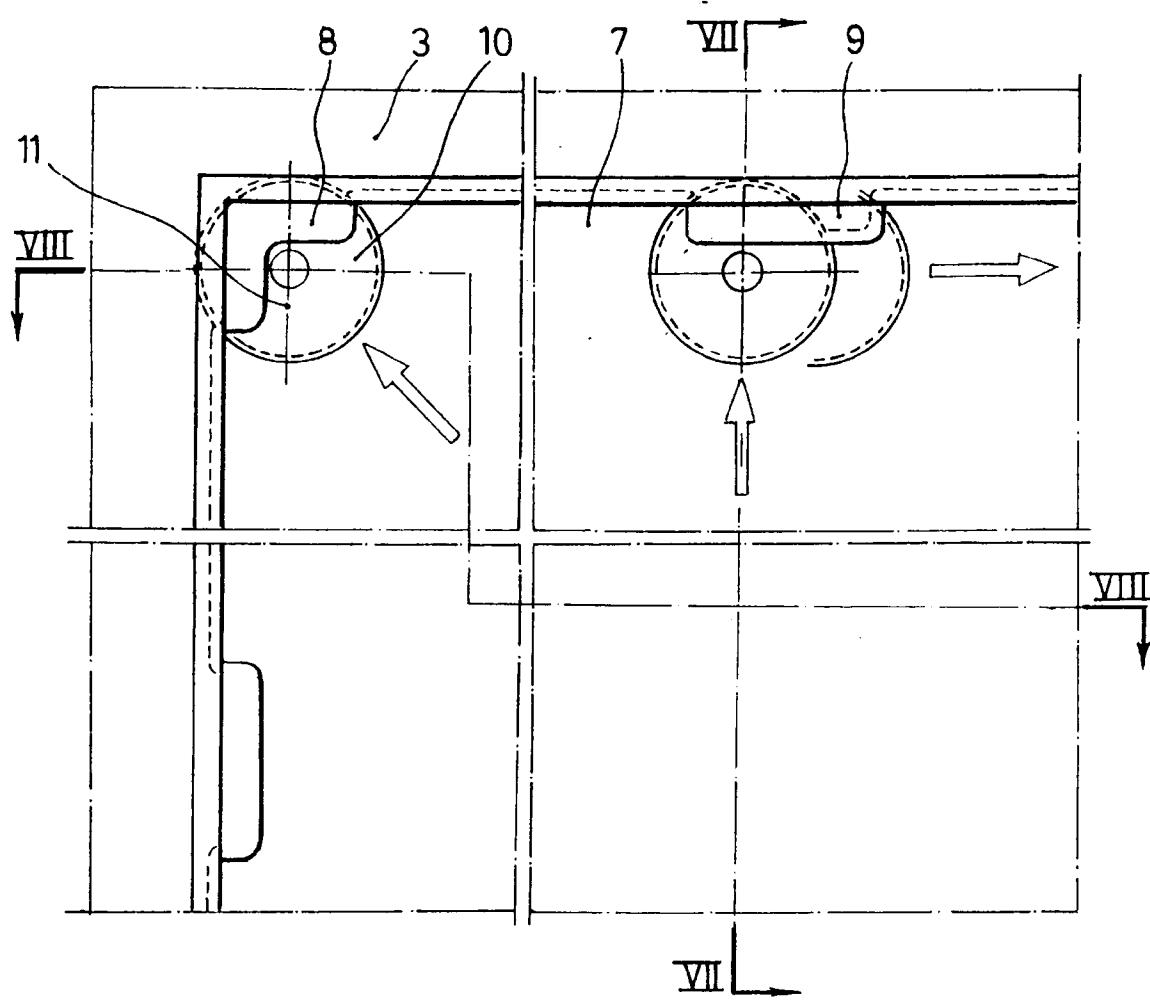


FIG. 6

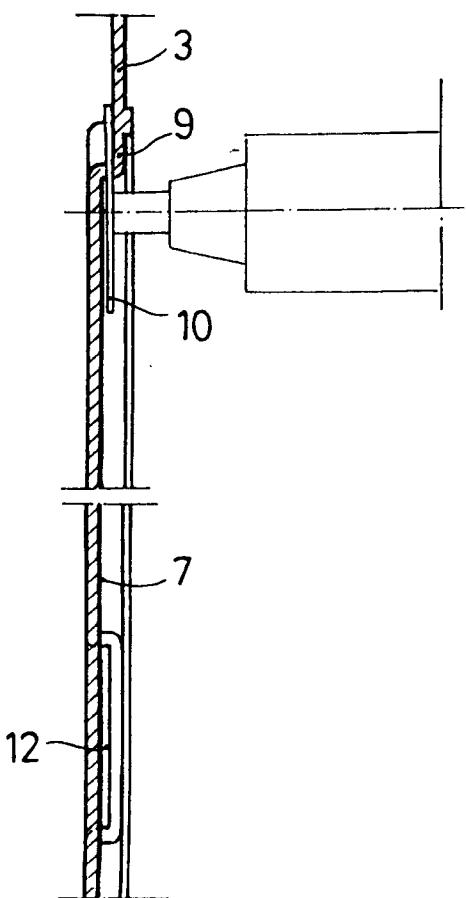


FIG. 7

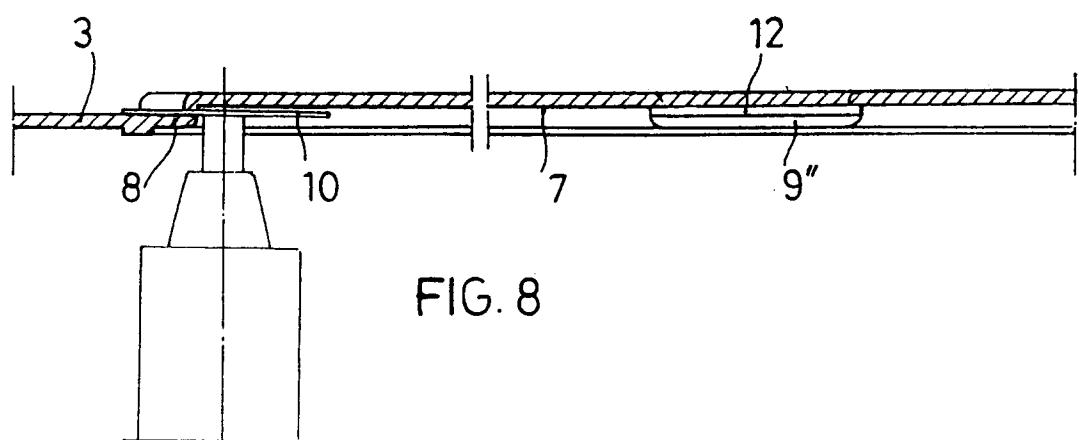


FIG. 8

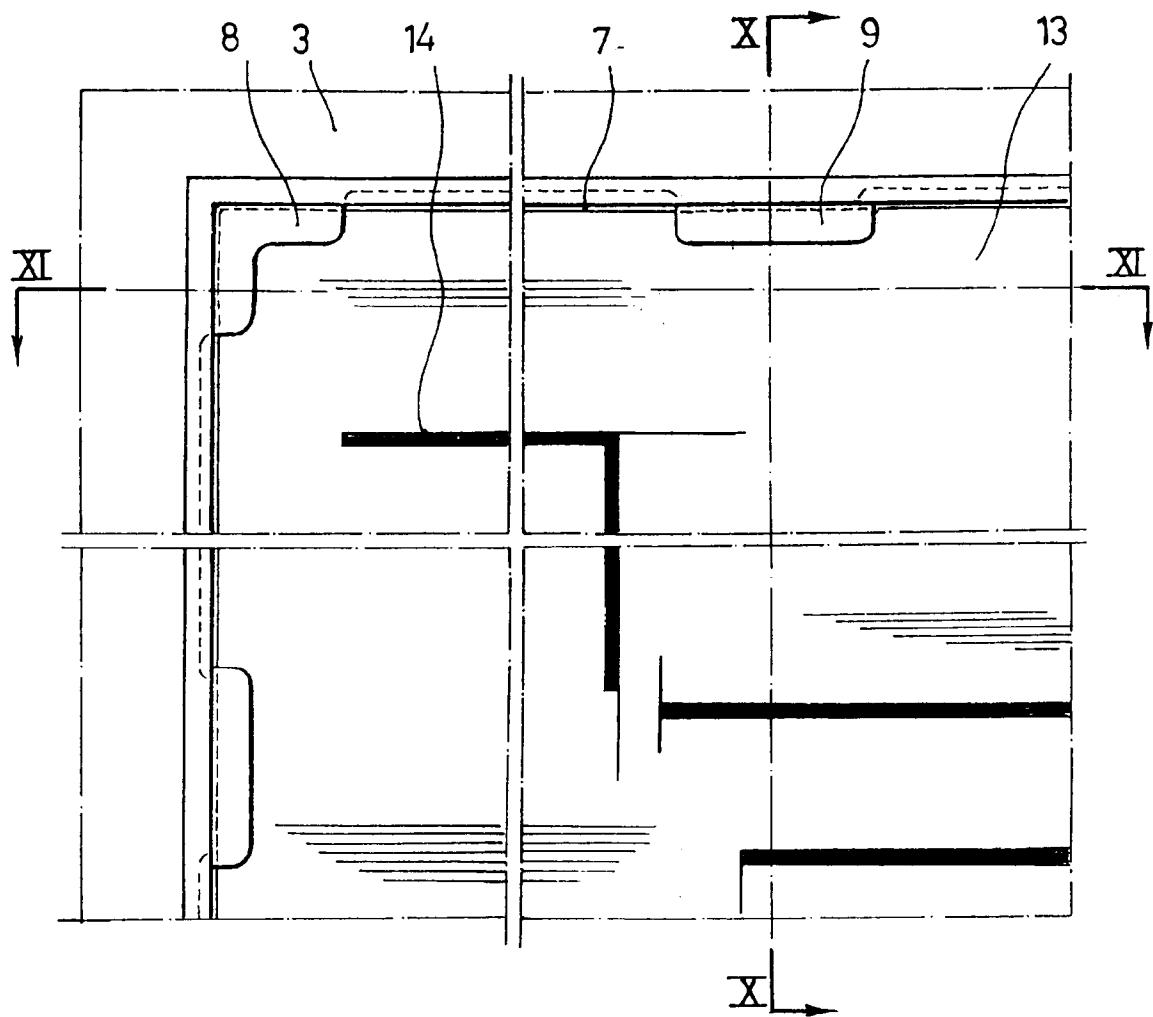


FIG. 9

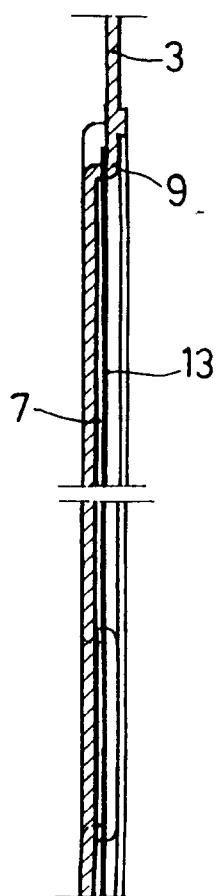


FIG.10

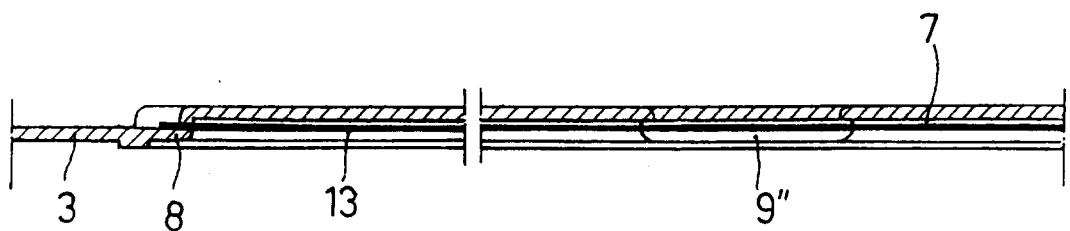


FIG.11