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(54) **A fastening means for mounting a plate originally made of several small pieces of plate onto a substantially planar wall.**

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## Description

The invention relates to a fastening member for mounting a plate optionally made of several small pieces of plate onto a substantially planar wall, said plate for instance being a mirror made of several small pieces of mirror or a relief made of several small pieces of relief, comprising a bottom member to be secured on the wall, an intermediary member secured on top of said bottom member and including a surface for carrying and/or supporting that plate, optionally the pieces of plate, and a cover situated on top of said intermediate member and serving to secure the plate, optionally the pieces of plate to the intermediary member.

A fastening member of this type is known from FR—A—1 472 193.

When all the pieces of the mirror are to be situated on the same level which is necessary for producing, by reflection, a correct image of the person, for instance, looking at himself in the mirror, the wall onto which the mirror is mounted must be completely planar. However, these walls are are not always planar because of unevennesses in the layer of plaster, or in case of walls of wood said unevennesses are caused by deformations on account of moisture or displacement of the boards.

The above problem may also arise when mounting a large plate of several smaller pieces of plate with a light-reflecting or gleaming surface such as for instance an enamelled surface. When one of the pieces of plate is obliquely positioned, the appearance of the large plate is disturbed because of the incorrect light-reflection of the incorrectly positioned piece of plate. It turned out that the human eye is very sensitive regarding noticing such errors. Furthermore a risk exists when mounting only one plate onto a not completely planar wall, namely of said plate presenting a skew surface which also causes undesired light-reflections.

The object of the invention is to provide a fastening means of the above type and allowing an easy mounting of the plate onto a not completely planar wall without involving the risk of said plate presenting a skew surface, and which furthermore implies that a plate made of several smaller pieces of plate forms a completely planar front surface without skew pieces of plate upon the mounting.

For solving this object, according to the invention a fastening member of the type as described at the beginning of this specification is characterised in that said bottom member has first engaging means with surface portions located in different distances from the bottom surface of said bottom member, that said intermediary member has second engaging means with surface portions located in different distances from the top surface of said intermediary member, that said first and second engaging means engage each other, that said intermediary member is rotatably mounted on said bottom member so that different surface portions of said first and second engaging means engage each other for adjusting the distance of its top surface from the bottom surface of the bottom member, and that said surface comprises projections for carrying and/or supporting corners of the plate, optionally of said pieces of plate. In this manner an easy mounting of the plate onto the not completely planar wall is obtained without risking a plate presenting a skew surface.

The latter is obtained by the fact that the four fastening means used for mounting the plate ensure that the top surface of the intermediary member of said fastening means is adjusted so as to be at a predetermined level in such a manner that the plate is only carried and/or supported by the fastening means. The plate is not allowed to touch possible lopsidenesses on the wall. A plate mounted in this manner is not presenting a skew surface when it is being mounted. The bottom member may for instance be secured to the wall by means of pins.

When the plate is made of for instance four smaller pieces of plate and said pieces are to be mounted onto the uneven wall, the bottom member and intermediary member of a fastening means are initially mounted at each of the locations corresponding to the corner points of the plate mounted. Subsequently said intermediary members are adjusted in such a manner that their top surfaces are at one and the same level suitably spaced from the uneven wall. Finally the individual pieces of plate are mounted on the projections and the pieces of plate are fixedly pressed against the intermediary members by means of the covers. The fastening means turned out to be particularly suited for mounting mirrors composed of smaller pieces of mirror, e.g. four such pieces of mirror. In the latter case nine fastening means are necessary. The front surface of the completed mirror is nice uniform without the tendency of incorrect light-reflections and incorrect reflections of the person looking at himself in the mirror.

According to the invention the adjustment of the distance between the top surface of the intermediary member and the bottom surface of the bottom member may be carried out in short steps. Such a procedure turned out in practice to allow a satisfactory mounting of the pieces of plate without each fastening means being too complicated.

Moreover according to the invention the bottom side of the intermediary member may be provided with a recess receiving at least part of the bottom member. As a result, the intermediary member easily catches the bottom member during the mounting of the fastening means.

The intermediary member may according to the invention — compared to the bottom member — be adjustable into a plurality of angular positions, preferably four, with a mutual distance of 90°, whereby it is easy to adjust each fastening means during the mounting procedure.

In addition, according to a preferred embodi-

ment of the invention, the surface portions of said first engaging means are arranged along sides of the bottom member and the surface portions of said second engaging means are arranged along sides of the intermediary member while the surface portions of each of said first and second engaging means are formed by step surfaces.

According to the invention all the step surfaces on the engaging means of the bottom member may abut all the step surfaces of each of the engaging means of the intermediary member when said intermediary member is in a specific angular position, whereas only a minority of said step surfaces on each engaging means of the bottom member abut the corresponding step surfaces of each engaging means of the intermediary member in the remaining angular positions of said intermediary member, the distance of the top surface of the intermediary member to the bottom surface of the bottom member changing in said remaining angular positions. This embodiment of the fastening means is particularly suited for mounting compound mirrors.

When a fastening means comprises four sides with their respective engaging means, each engaging means may according to the invention comprise four step surfaces, viz. in a first low level, a second slightly higher level, a third still higher level, and a fourth highest level, and considerable changes in distances may exist between two neighboring step surfaces, whereby it is obtained in a simple manner that the top surface of the intermediary member is at various levels in the various angular positions of said intermediary member.

A further embodiment of the fastening means according to the invention is characterised in that the engaging means at the first side of the bottom member comprises step surfaces arranged in the following level sequence: First, second, third, and fourth level; that the engaging means at the second side of the bottom member comprises step surfaces arranged in the following level sequence: Fourth, first, second, and third level; that the engaging means at the third side of the bottom member comprises step surfaces arranged in the following level sequence: Third, fourth, first, and second level; and that the engaging means at the fourth side of the bottom member comprises step surfaces arranged in the following level sequence: Second, third, fourth, and first level, whereby the step surfaces of the opposing engaging means on the intermediary member comprise levels complementary to the step surface levels on the bottom member. In this manner a great constructional simplicity is obtained.

According to the invention the first low level of the step surfaces may be fictive as it corresponds to the level of the bottom surface of the bottom member and is situated at an opening in the bottom member, whereby material is saved in connection with the bottom member.

Moreover according to the invention the top side of the bottom member may comprise guide pins in each corner, said pins being adapted to cooperate with corresponding guide openings on the bottom side of the intermediary member. In this manner it is additionally ensured that the intermediary member catches the bottom member when a user is to mount the fastening means onto the wall, and furthermore the intermediary member is prevented from turning relative to the bottom member when the latter is at the highest level.

Furthermore according to the invention the projections of the intermediary member may be provided on projections on the top surface of the intermediary member, whereby said projections are provided in a very simple manner.

Moreover according to the invention the cover may be secured to the intermediary member by means of securing pins projecting from the cover and cooperating with auxiliary openings in the projections of the intermediary member, whereby the cover can be secured very reliably to the intermediary member in such a manner that the piece of plate such as for instance the piece of mirror is well retained against the intermediary member.

According to the invention the securing pins may be free of grooves, and the auxiliary openings of the intermediary member may comprise recesses all being located to the same side and therefore influencing the securing pins on various sides depending on the angular position of the cover. This embodiment is particularly suited in connection with a demounting and a new mounting procedure.

The intermediary member is according to the invention secured to the bottom member by means of a central fixing means such as a screw with associated wall plug extending both through the intermediary member and the bottom member and into the wall. Such a securing of the fastening means turned out to be particularly reliable.

Moreover according to the invention the bottom member and the intermediary member may be made of a harder material, preferably acetal, than the cover preferably made of polyamide or propene (polypropylene). The use of these materials implies that the fastening means is both inexpensive and strong.

Finally according to the invention the bottom member may be secured to the wall by means of pin-like members extending through the channel in the guide pins of the bottom member.

The invention will be described below with reference to the accompanying drawing, in which

Figure 1 is a top view of a bottom member of the fastening means according to the invention,

Figure 2 is a sectional view of the bottom member of Figure 1 taken along the line II—II of Figure 1,

Figure 3 is a top view of the intermediary member of the fastening means,

Figure 4 is a sectional view of the intermediary member of Figure 3 taken along the line IV—IV of Figure 3,

Figure 5 is an end view of the intermediary member of Figure 3,

Figure 6 is a top view of the cover of the fastening means,

Figure 7 is a sectional view of the cover of Figure 6 taken along the line VII—VII of Figure 6,

Figure 8 is an end view of the cover of Figure 6,

Figure 9 is a side view of a fastening means according to the invention mounted on a wall,

Figure 10 is a sectional view of the bottom member taken along the line X—X of Figure 1,

Figure 11 is a sectional view of the bottom member of Figure 10 taken along the line XI—XI of Figure 1,

Figure 12 is a sectional view of the bottom member of Figure 10 taken along the line XII—XII of Figure 1,

Figure 13 is a sectional view of the bottom member of Figure 10 taken along the line XIII—XIII of Figure 1,

Figure 14 is a sectional view of the intermediary member taken along the line XIV—XIV of Figure 5,

Figure 15 is a sectional view of the intermediary member of Figure 14 taken along the line XV—XV of Figure 5,

Figure 16 is a sectional view of the intermediary member of Figure 14 taken along the line XVI—XVI of Figure 5,

Figure 17 is a sectional view of the intermediary member of Figure 14 taken along the line XVII—XVII of Figure 5,

Figure 18 is a front view of a mirror composed of four pieces of mirror and mounted on a wall by means of nine fastening means according to the invention, and

Figure 19 is a bottom view of the intermediary member of the fastening means.

As illustrated in Figure 9 the fastening means according to the invention comprises a bottom member 1, an intermediary member 15, and a cover 30, said parts engaging each other when the fastening means is mounted on a wall 40. Figure 18 illustrates a mirror 45 composed of four pieces of mirror 41, 42, 43, 44. The mirror is secured to an uneven wall by means of nine fastening means according to the invention. As the top surface of the intermediary member of each fastening means is adjustable and serves to support each piece of mirror it is ensured that none of the pieces of mirror is positioned out of plane relative to the remaining three pieces of mirror.

Figures 1, 2, and 19 illustrate the bottom member, and Figure 2 illustrates how said bottom member comprises a top side 2 and a bottom surface 4. Figures 3, 4, and 5 illustrate the intermediary member comprising a top surface 17 and a bottom surface 16. When the intermediary member is mounted on the bottom member, the surface 16 faces downwards towards the top side 2 of the bottom surface. As the top side of the bottom member and the bottom side of the intermediary member comprise engaging means cooperating with each other, cf. the more detailed explanation below, the distance h, cf. Figure 9, between the top surface 17 of the intermediary member and the bottom surface 4 of the bottom member is adjustable, which implies that the surface 17 may be positioned relatively close to the wall or relatively far from the wall. The intermediary member, cf. Figure 3, is provided with projections 25a, 25b, 25c, 25d — not all the projections have been provided with reference numerals — and these projections serve to support and/or carry the corners of the pieces of plate 41, 42, 43, 44 which are to be mounted. A single corner piece 46 has been indicated by a dotted line. The cover 30 is illustrated in greater details in Figures 6, 7, and 8. This cover is provided with a plurality of securing pins 31, 32, 33, not all the securing pins being provided with reference numerals. These securing pins can be pressed into some auxiliary openings 18, 19 — only a few openings being provided with reference numerals — in some projections 21, not all the projections being provided with reference numerals. The latter projections are provided with the above projections 25a, 25b, 25c, 25d.

The bottom side 16 of the intermediary member is provided with a recess 28 receiving a portion 11 of the bottom member 1. Some guide pins 8, cf. below, on the bottom member ensure that the intermediary member can be turned when it is positioned at the highest level relative to the bottom member.

Figure 3 illustrates how the intermediary member can be turned — indicated by the double arrows A and B. The intermediary member can be turned into four angular positions which on a dial correspond to 9 and 12 o'clock a.m. and 3 and 6 o'clock p.m., respectively.

As illustrated in Figure 1, the bottom member 1 comprises at each side 1′, 1″, 1‴, 1⁗ engaging means 1a, 1b, 1c, and 1d. Each engaging means comprises a plurality of step surfaces, viz. in the present case four such surfaces. Thus the engaging means 1a comprises the step surfaces 1aa, 1ab, 1ac, and 1ad. The engaging means 1b comprises the step surfaces 1ba, 1bb, 1bc, 1bd. The engaging means 1c comprises the step surfaces 1ca, 1cb, 1cc, and 1cd, whereas the engaging means ld comprises the step surfaces 1da, 1db, 1dc, and 1dd. Correspondingly engaging means 15a, 15b, 15c, and 15d are provided at the sides 15′, 15″, 15″ ′, 15″ ″ of the intermediary member. The engaging means 15a comprises the step surfaces 15aa, 15ab, 15ac, 15ad. The engaging means 15b comprises the step surface 15ba, 15bb, 15bc, 15bd. The engaging means 15c comprises the step surfaces 15ca, 15cb, 15cc, 15cd, whereas the engaging means 15d comprises the step surfaces 15da, 15db, 15dc, 15dd. Figures 10 to 13 are longitudinal sectional views through each of the engaging means 1a, 1b, 1c, and 1d of the bottom member, whereas Figures 14 to 17 arelongitudinal sectional views through the engaging means 15a, 15b, 15c, and 15d of the intermediary member. It appears clearly from these Figures that the engaging means 1a and 15a are complementary, and the same applies to the

engaging means 1b and 15b, etc. When the engaging means 15a abuts the engaging means 1a, the engaging means 15b abuts the engaging means 1b, etc. which is the case in one of the four angular positions of the intermediary member, all four step surfaces of two opposing engaging means abut each other. When, however, a 90° turning of the intermediary member is carried out in such a manner that the engaging means 15a of the intermediary member cooperates with the engaging means 1b of the bottom member, and the engaging means 15b of the intermediary member cooperates with the engaging means 1c of the bottom member, etc., the contact surface common to two engaging means corresponds only to a single step surface. In the latter case, the top surface of the intermediary member and the bottom surface of the bottom member are interspaced as much as possible. When the intermediary member is subjected to an additional 90° turning, for instance the engaging means 15a of the intermediary member and the engaging means 1c of the bottom member have two step surfaces in common. At the same time the distance between the top surface of the intermediary member and the bottom surface of the bottom member is, however, somewhat smaller.

As illustrated in Figures 10 to 13 and 14 to 17, the four step surfaces of each engaging means are positioned at various levels, viz. at a first low level, a second slightly higher level, a third still higher level, and a fourth highest level. As illustrated considerable distances may exist between two neighboring surfaces, e.g. 15dc and 15dd. Figure 10 illustrates how the first engaging means on the bottom member comprises the step surfaces 1aa, 1ab, 1ac, 1ad positioned in the following level sequence: First, second, third, and fourth level. The second engaging means on the bottom member comprises the step surfaces 1ba, 1bb, 1bc, 1bd positioned in the following level sequence: Fourth, first, second, and third level. The third engaging means 1c on the bottom member comprises its step surfaces 1ca, 1cb, 1cc, 1cd positioned in the following level sequence: Third, fourth, first, and second level. Finally the fourth engaging means 1d on the bottom member comprises its step surfaces 1da, 1db, 1dc, 1dd positioned in the following level sequence: Second, third, fourth, and first level. The step surfaces of the opposing engaging means 15a, 15b, 15c, 15d on the intermediary member 15 comprise levels complementary to the step surface levels on the bottom member 1.

As illustrated in Figure 19, the first low level, cf. 1aa of Figure 10, may be fictive, as it is in fact a question of an opening in the bottom member. The low level corresponds to the bottom surface of the bottom member. The dotted line in Figure 2 indicates a layer 6 of material, which can be removed so as to produce openings in the bottom member 2, cf. Figure 19, whereby the openings appear clearly at 7. In this manner material is saved in connection with the bottom member.

As illustrated in Figures 1 and 2, the bottom member 1 comprises in each corner guide pins 8 adapted to cooperate with corresponding guide openings 23 in the bottom side of the intermediary member 15. These guide pins prevent a turning of the intermediary member when the latter is positioned at the uppermost level.

As illustrated in Figure 3, the auxiliary openings 18, 19 of the intermediary member 15 may comprise small recesses 18a, 19a, 20a, not all the recesses being provided with reference numerals. All these recesses are situated to the same side and consequently influence the securing pins 31, 32, 33 of the cover on various sides depending on the angular position of the cover.

Usually the bottom member 1 is secured to the wall 40 by means of pin-like members 9 such as thin pins or nails, cf. Figures 1 and 19. These pins or nails may extend through the channel 10 in the guide pins 8. At the securing of the bottom member 1 to the wall 40 it is of importance that the bottom member is positioned on the wall exactly in the way shown in Figure 1. The latter has been symbolically indicated by means of the two fat arrows in the middle of Figure 1.

The intermediary member 15 is usually secured to the bottom member 1 by means of a central fixing member 47 such as a screw with associated wall plug extending both through the intermediary member and the bottom member and into the wall 40.

The step surfaces of the engaging means may optionally be slightly curved.

**Claims**

1. A fastening member for mounting a plate (45) optionally made of several small pieces (41, 42, 43, 44) of plate onto a substantially planar wall (40), said plate (45) for instance being a mirror made of several small pieces of mirror or a relief made of several small pieces of relief, comprising a bottom member (1) to be secured on the wall (40), an intermediary member (15) secured on top of said bottom member and including a surface for carrying and/or supporting that plate (45), optionally the pieces (41, 42, 43, 44) of plate, and a cover (30) situated on top of said intermediate member (15) and serving to secure the plate (45), optionally the pieces (41, 42, 43, 44) of plate to the intermediary member (15), characterized in that

(a) said bottom member (1) has first engaging means (1a, 1b, 1c, 1d) with surface portions (1aa, 1ab, 1ac, 1ad; 1ba, 1bb, 1bc, 1bd; 1ca, 1cb, 1cc, 1cd; 1da, 1db, 1dc, 1dd) located in different distances from the bottom surface (4) of said bottom member (1),

(b) said intermediary member (15) has second engaging means (15a, 15b, 15c, 15d) with surface portions (15aa, 15ab, 15ac, 15ad; 15ba, 15bb, 15bc, 15bd; 15ca, 15cb, 15cc, 15cd; 15da, 15db, 15dc, 15dd) located in different distances from the top surface (17) of said intermediary member (15),

(c) said first and second engaging means engage each other,

(d) said intermediary member (15) is rotatably

mounted on said bottom member (1) so that different surface portions of said first and second engaging means engage each other for adjusting the distance (h) of its top surface (17) from the bottom surface (4) of the bottom member (1), and

(e) said surface comprises projections (25a, 25b, 25c, 25d) for carrying and/or supporting corners of the plate (45), optionally of said pieces (41, 42, 43, 44) of plate.

2. A fastening means as claimed in claim 1, characterised in that the adjustment of the distance (h) between the top surface (17) of the intermediary member (15) and the bottom surface (4) of the bottom member (1) can be carried out in short steps (1aa, 1ab, 1ac, 1ad).

3. A fastening means as claimed in claim 1 or 2, characterised in that the bottom side (16) of the intermediary member (15) is provided with a recess (28) receiving at least part of the bottom member (1).

4. A fastening means as claimed in claim 1, 2 or 3, characterised in that the intermediary member (15) — compared to the bottom member (1) — is adjustable into a plurality of angular positions, preferably four, with a mutual distance of 90° (cf. the double arrows A and B of Figure 3).

5. A fastening member as claimed in one or more of the preceding claims 1 to 4, characterized in that the surface portions (1aa, 1ab, 1ac, 1ad; 1ba, 1bb, 1bc, 1bd; 1ca, 1cb, 1cc, 1cd; 1da, 1db, 1dc, 1dd) of said first engaging means (1a, 1b, 1c, 1d) are arranged along sides (1', 1'', 1''', 1'''') of the bottom member (1) and the surface portions (15aa, 15ab, 15ac, 15ad; 15ba, 15bb, 15bc, 15bd; 15ca, 15cb, 15cc, 15cd; 15da, 15db, 15dc, 15dd) of said second engaging means (15a, 15b, 15c, 15d) are arranged along sides (15', 15'', 15''', 15'''') of the intermediary member (15), and that the surface portions of each of said first and second engaging means are formed by step surfaces.

6. A fastening means as claimed in claim 5, characterised in that all the step surfaces on the engaging means (1a, 1b, 1c, 1d) of the bottom member (1) abut all the step surfaces of each of the engaging means of the intermediary member (15) when said intermediary member (15) is in a specific angular position, whereas only a minority of said step surfaces on each engaging means (1a, 1b, 1c, 1d) of the bottom member (1) abut the corresponding step surfaces of each engaging means (15a, 15b, 15c, 15d) of the intermediary member (15) in the remaining angular positions of said intermediary member (15), the distance (h) of the top surface (17) of the intermediary member (15) to the bottom surface (4) of the bottom member changing in said remaining angular positions.

7. A fastening means as claimed in one or more of the preceding claims 1 to 6, and comprising four sides (1', 1'', 1''', 1'' '', 15', 15'', 15''', 15'''') with adjacent engaging means (1a, 1b, 1c, 1d, 15a, 15b, 15c, 15d), characterised in that each engaging means (1a, 1b, 1c, 1d, 15a, 15b, 15c, 15d) comprises four step surfaces, viz. in a first low level (1aa), a second slightly higher level (1ab), a third still higher level (1ac), and a fourth highest level (1ad), and that considerable changes in distances may exist between two neighboring step surfaces (15dc and 15dd).

8. A fastening means as claimed in one or more of the preceding claims, characterised in that the en gaging means (1a) at the first side (1') of the bottom member (1) comprises step surfaces (1aa, 1ab, 1ac, 1ad) arranged in the following level sequence: First, second, third, and fourth level; that the end (1b) at the secong side (1'') of the bottom member (1) comprises step surfaces (1ba, lbb, 1bc, 1bd) arranged in the following level sequence: Fourth, first, second, and third level; that the en gaging means (1c) at the third side (1''') of the bottom member (1) comprises step surfaces (1ca, 1cb, 1cc, 1cd) arranged in the following level sequence: Third, fourth, first, and second level; and that the engaging means (1d) at the fourth side (1'' '') of the bottom member (1) comprises step surfaces (1da, 1db, 1dc,. 1dd) arranged in the following level sequence: Second, third, fourth, and first level, whereby the step surfaces of the opposing engaging means (15a, 15b, 15c, 15d) on the intermediary member (15) comprise levels complementary to the step surface levels on the bottom member (1).

9. A fastening means as claimed in one or more of the preceding claims 1 to 8, characterised in that the first low level of the step surfaces (1aa, 1bb, 1cc, 1dd) is fictive as it corresponds to the level of the bottom surface (4) of the bottom member and is situated at an opening (7) in the bottom member (1).

10. A fastening means as claimed in one or more of the preceding claims 1 to 9, characterised in that the top side (2) of the bottom member (1) comprises guide pins (8) in each corner, said pins being adapted to cooperate with corresponding guide openings (23) on the bottom side (16) of the intermediary member (15).

11. A fastening means as claimed in one or more of the preceding claims 1 to 10, characterised in that the projections (25a, 25b, 25c, 25d) of the intermediary member (15) are provided on projections (21) on the top surface (17) of the intermediary member (15).

12. A fastening means as claimed in one or more of the preceding claims 1 to 11, characterised in that the cover (30) is secured to the intermediary member (15) by means of securing pins (31, 32, 33) projecting from the cover (30) and cooperating with auxiliary openings (18, 19, 20) in the projections (21, 22) of the intermediary member (15).

13. A fastening means as claimed in one or more of the preceding claims 1 to 12, characterised in that the securing pins (31, 32, 33) are free of grooves, and that the auxiliary openings (18, 19, 20) of the intermediary member (15) comprise recesses (18a, 19a, 20a) all being located to the same side and therefore influencing the securing pins (31, 32, 33) on various sides depending on the angular position of the cover (30).

14. A fastening means as claimed in one or more of the preceding claims 1 to 13, characterised in that the intermediary member (15) is secured to the bottom member (1) by means of a central fixing means (47) such as a screw with associated wall plug extending both through the intermediary member (15) and the bottom member (1) and into the wall (40).

15. A fastening means as claimed in one or more of the preceding claims 1 to 14, characterised in that the bottom member (1) and the intermediary member (15) are made of a harder material, preferably acetal, than the cover preferably made of polyamide, or propene (polypropylene).

16. A fastening means as claimed in one or more of the preceding claims 1 to 15, characterised in that the bottom member (1) is secured to the wall (40) by means of pin-like members (9) extending through the channel (10) in the guide pins (8) of the bottom member (1).

**Patentansprüche**

1. Befestigungsglied zur Montage einer Platte (45), die ggf. aus mehreren kleinen Plattenelementen (41, 42, 43, 44) hergestellt ist, an einer im wesentlichen planen Wand (40), wobei diese Platte (45) z. B. einen aus mehreren kleinen Spiegelelementen hergestellten Spiegel oder ein aus mehreren kleinen Reliefelementen hergestelltes Relief darstellt, mit einem an der Wand (40) zu befestigenden Unterteil (1), mit einem Zwischenteil (15), das am oberen Ende des Unterteils befestigt ist und eine Fläche zum Tragen oder Abstützen der Platte (45) bzw. der Plattenelemente (41, 42, 43, 44) aufweist, und mit einer am oberen Ende des Zwischenteiles (15) angeordneten und zur Befestigungg der Platte (45) bzw. der Plattenelemente (41, 42, 43, 44) am Zwischenteil (15) dienenden Abdeckung (30), dadurch gekennzeichnet, daß

(a) das Unterteil (1) erste Kontaktflächen (1a, 1b, 1c, 1d) aufweist mit Flächenbereichen (1aa, 1ab, 1ac, 1ad; 1ba, 1bb, 1bc, 1bd; 1ca, 1cb, 1cc, 1cd; 1da, 1db, 1dc, 1dd), die in unterschiedlichen Abständen von der Bodenfläche (4) des Unterteiles (1) angeordnet sind,

(b) das Zwischenteil (15) zweite Kontaktflächen (15a, 15b, 15c, 15d) aufweist mit Flächenbereichen (15aa, 15ab, 15ac, 15ad; 15ba, 15bb, 15bc, 15bd; 15ca, 15cb, 15cc, 15cd; 15da, 15db, 15dc, 15dd), die in unterschiedlichen Abständen von der oberen Fläche (17) des Zwischenteiles (15) angeordnet sind,

(c) die ersten und zweiten Kontaktflächen sich gegenseitig berühren,

(d) das Zwischenteil (15) am Unterteil (1) drehbar befestigt ist, so daß zur Einstellung des Abstandes (h) seiner oberen Fläche (17) von der Bodenfläche (4) des Unterteiles (1) unterschiedliche Flächenbereiche der ersten und zweiten Kontaktflächen sich gegenseitig berühren, und

(e) diese Fläche Vorsprünge (25a, 25b, 25c, 25d) aufweist zum Tragen und/oder Abstützen von Ecken der Platte (45) bzw. der Plattenelemente (41, 42, 43, 44).

2. Befestigungsglied nach Anspruch 1, dadurch gekennzeichnet, daß die Einstellung des Abstandes (h) zwischen der oberen Fläche (17) des Zwischenteiles (17) und der Bodenfläche (4) des Unterteiles (1) in kleinen Schritten (1aa, 1ab, 1ac, 1ad) ausführbar ist.

3. Befestigungsglied nach Anspruch 1 oder 2, dadurch gekennzeichnet, daß die Unterseite (16) des Zwischenteiles (15) mit einer Ausnehmung (28) versehen ist, die zumindest einen Teil des Unterteiles (1) aufnimmt.

4. Befestigungsglied nach Anspruch 1, 2 oder 3, dadurch gekennzeichnet, daß das Zwischenteil (15) — verglichen mit dem Unterteil (1) — in mehrere, vorzugsweise vier Winkelpositionen mit einem gegenseitigen Abstand von 90° einstellbar ist (siehe die doppelten Pfeile A und B in Fig. 1).

5. Befestigungsglied nach einem oder mehreren der vorangehenden Ansprüche 1 bis 4, dadurch gekennzeichnet, daß die Flächenbereiche (1aa, 1ab, 1ac, 1ad; 1ba, 1bb, 1bc, 1bd; 1ca, 1cb, 1cc, 1cd; 1da, 1db, 1dc, 1dd) der ersten Kontaktflächen (1a, 1b, 1c, 1d) längs Seiten (1', 1'', 1''', 1'''') des Unterteiles (1) und die Flächenbereiche (15aa, 15ab, 15ac, 15ad; 15ba, 15bb, 15bc, 15bd; 15ca, 15cb, 15cc, 15cd; 15da, 15db, 15dc, 15dd) der zweiten Kontaktflächen (15a, 15b, 15c, 15d) längs Seiten (15', 15'', 15''', 15'''') des Zwischenteiles (15) angeordnet sind und daß die Flächenbereiche der ersten und zweiten Kontaktflächen jeweils durch Stufenflächen gebildet sind.

6. Befestigungsglied nach Anspruch 5, dadurch gekennzeichnet, daß alle Stufenflächen an den Kontaktmitteln (1a, 1b, 1c, 1d) des Unterteiles (1) an alle Stufenflächen eines jeden der Kontaktmittel des Zwischenteiles (15) stoßen, wenn das Zwischentiel (15) in einer bestimmten Winkelposition ist, während in den übrigen Winkelpositionen des Zwischenteiles (15) nur eine Minderheit dieser Stufenflächen an den jeweiligen Kontaktmitteln (1a, 1b, 1c, 1d) des Unterteiles (1) an die entsprechenden Stufenflächen (15a, 15b, 15c, 15d) des Zwischenteiles (15) stoßen, wobei in diesen übrigen Winkelpositionen der Abstand (h) der oberen Fläche (17) des Zwischenteiles (15) von der Bodenfläche (4) des Unterteiles sich ändert.

7. Befestigungsglied nach einem oder mehreren der vorangehenden Ansprüche 1 bis 6, das vier Seiten (1', 1'', 1''', 1'''', 15', 15'', 15''', 15'''') mit benachbarten Kontaktmitteln (1a, 1b, 1c, 1d, 15a, 15b, 15c, 15d) aufweist, dadurch gekennzeichnet, daß jedes Kontaktmittel (1a, 1b, 1c, 1d, 15a, 15b, 15c, 15d) vier Stufenflächen aufweist, nämlich in einer ersten unteren Ebene (1aa), in einer zweiten, geringfügig höheren Ebene (1ab), in einer dritten, noch etwas höheren Ebene (1ac) und in einer vierten, obersten Ebene (1ad), und daß zwischen zwei benachbarten Stufenflächen (15dc und 15dd) beträchtliche Abstandsänderungen bestehen können.

8. Befestigungsglied nach einem oder mehreren der vorangehenden Ansprüche, dadurch

gekennzeichnet, daß die Kontaktmittel (1a) an der ersten Seite (1') des Unterteiles (1) vier Stufenflächen (1aa, 1ab, 1ac, 1ad) umfassen, die in der folgenden Ebenenfolge angeordnet sind: Erste, zweite, dritte und vierte Ebene, daß die Kontaktmittel (1b) an der zweiten Seite (1'') des Unterteiles (1) vier Stufenflächen (1ba, 1bb, 1bc, 1bd) umfassen, die in der folgenden Ebenenfolge angeordnet sind: Vierte, erste, zweite und dritte Ebene, daß die Kontaktmittel (1c) an der dritten Seite (1''') des Unterteiles (1) vier Stufenflächen (1ca, 1cb, 1cc, 1cd) umfassen, die in der folgenden Ebenenfolge angeordnet sind: Dritte, vierte, erste und zweite Ebene, und daß die Kontaktmittel (1d) an der dritten Seite (1'''') des Unterteiles (1) vier Stufenflächen (1da, 1db, 1dc, 1dd) umfassen, die in der folgenden Ebenenfolge angeordnet sind: Zweite, dritte, vierte und erste Ebene, wobei die Stufenflächen der entgegengesetzten Kontaktmittel (15a, 15b, 15c, 15d) am Zwischenteil (15) Ebenen komplementär zu den Stufenflächenebenen des Unterteiles (1) aufweisen.

9. Befestigungsglied nach einem oder mehreren der vorangehenden Ansprüche 1 bis 8, dadurch gekennzeichnet, daß die erste untere Ebene der Stufenflächen (1aa, 1ab, 1ac, 1ad) fiktiv ist, da sie der Ebene der Bodenfläche (4) des Unterteiles entspricht und an einer Öffnung (7) des Unterteiles (1) angeordnet ist.

10. Befestigungsglied nach einem oder mehreren der vorangehenden Ansprüche 1 bis 9, dadurch gekennzeichnet, daß die Oberseite (2) des Unterteiles (1) an jeder Ecke Führungsstifte (8) aufweist, die zum Zusammenwirken mit entsprechenden Führungsöffnungen (23) an der Unterseite (16) des Zwischenteiles (15) geeignet sind.

11. Befestigungsglied nach einem oder mehreren der vorangehenden Ansprüche 1 bis 10, dadurch gekennzeichnet, daß die Vorsprünnge (25a, 25b, 25c, 25d) des Zwischenteiles (15) an Vorsprüngen (21) an der Oberseite (17) des Zwischenteiles (15) vorgesehen sind.

12. Befestigungsglied nach einem oder mehreren der vorangehenden Ansprüche 1 bis 11, dadurch gekennzeichnet, daß die Abdeckung (30) am Zwischenteil (15) mittels Befestigungsstifte (31, 32, 33) befestigt ist, die von der Abdeckung (30) abstehen und mit Hilfsöffnungen (18, 19, 20) in den Vorsprüngen (21, 22) des Zwischenteiles (15) zusammenwirken.

13. Befestigungsglied nach einem oder mehreren der vorangehenden Ansprüche 1 bis 12, dadurch gekennzeichnet, daß die Befestigungsstifte (31, 32, 33) frei von Rillen sind und aß die Hilfsöffnungen (18, 19, 20) des Zwischenteiles (15) Ausnehmungen (18a, 19a, 20a) aufweisen, die alle zur gleichen Seite angeordnet sind und daher die Befestigungsstifte (31, 32, 33) in Abhängigkeit von der Winkelposition der Abdeckung (30) an verschiedenen Seiten beeinflussen.

14. Befestigungsglied nach einem oder mehreren der vorangehenden Ansprüche 1 bis 13, dadurch gekennzeichnet, daß das Zwischenteil (15) am Unterteil (1) mittels eines zentralen Befestigungsmittels (47) wie z. B. einer Schraube mit zugeordnetem Wanddübel befestigt ist, das sowohl durch das Zwischenteil (15) als auch durch das Unterteil (1) und in die Wand (40) sich erstreckt.

15. Befestigungsglied nach einem oder mehreren der vorangehenden Ansprüche 1 bis 14, dadurch gekennzeichnet, daß das Unterteil (1) und das Zwischenteil (15) aus härterem Material, vorzugsweise Acetal, hergestellt sind als die Abdeckung, die vorzugsweise aus Polyamid oder Propen (Polyproylen) hergestellt ist.

16. Befestigungsglied nach einem oder mehreren der vorangehenden Ansprüche 1 bis 15, dadurch gekennzeichnet, daß das Unterteil (1) an der Wand (40) mittels eines stiftartigen Elementes (9) befestigt ist, das durch den Kanal (10) der Führungsstifte (8) des Unterteiles (1) sich erstreckt.

**Revendications**

1. Organe de fixation destiné au montage d'une plaque (45), éventuellement formée de plusieurs petits morceaux (41, 42, 43, 44) de plaque, sur un mur sensiblement plan (40). la plaque (4) étant par exemple un miroir formé de plusieurs petits morceaux de miroir ou un élément décoratif formé de plusieurs petits morceaux, comprenant un organe inférieur (1) destiné à être fixé sur le mur (40), un organe intermédiaire (15) fixé sur l'organe inférieur et ayant une surface destinée à supporter et/ou retenir la plaque (45), éventuellement les morceaux de plaque (41, 42, 43. 44), et un couvercle (30) placé sur l'organe intermédiaire (15) et destiné à fixer la plaque (45), éventuellement les morceaux de plaque (41, 42, 43, 44), sur l'organe intermédiaire (15), caractérisé en ce que

(a) l'organe inférieur (1) a des premiers dispositifs de coopération (1a, 1b, 1c, 1d) ayant des parties de surfaces (1aa, 1ab, 1ac, 1ad; 1ba, 1bb, 1bc, 1bd; 1ca, 1cb, 1cc, 1cd; 1da, 1db, 1dc, 1dd) placées à des distances différentes de la surface inférieure (4) de l'organe inférieur (1),

(b) l'organe intermédiaire (15) a des seconds dispositifs de coopération (15a, 15b, 15c, 15d) ayant des parties de surface (15aa, 15ab, 15ac, 15ad; 15ba, 15bb, 15bc, 15bd; 15ca, 15cb, 15cc, 15cd; 15da, 15db. 15dc, 15dd) placées à des distances différentes de la surface supérieure (17) de l'organe intermédiaire (15),

(c) les premiers et seconds dispositifs de coopération sont en coopération mutuelle.

(d) l'organe intermédiaire (15) est monté afin qu'il puisse tourner sur l'organe inférieur (1), si bien que des parties différentes de surfaces des premiers et seconds dispositifs de coopération sont en contact et permettent le réglage de la distance (h) comprise entre la surface supérieure (17) de l'organe intermédiaire et la surface inférieure (4) de l'organe inférieur (4), et

(e) ladite surface a des saillies (25a, 25b, 25c, 15d) destinées à supporter et/ou retenir des coins de la plaque (45), éventuellement des morceaux de plaque (41, 42, 43, 44).

2. Dispositif de fixation selon la revendication 1, caractérisé en ce que le réglage de la distance (h) comprise entre la surface supérieure (17) de l'organe intermédiaire (15) et la surface inférieure (4) de l'organe inférieure (1) peut être réalisé par pas courts (1aa, 1ab, 1ac, 1ad).

3. Dispositif de fixation selon la revendication 1 ou 2, caractérisé en ce que la face inférieure (16) de l'organe intermédiaire (15) a une cavité (28) logeant une partie au moins de l'organe inférieur (1).

4. Dispositif de fixation selon la revendication 1, 2 ou 3, caractérisé en ce que l'organe intermédiaire (15) — comparé à l'organe inférieur (1) — est réglable à plusieurs positions angulaires, de préférence quatre, séparées mutuellement par une distance de 90° (voir flèches doubles A et B de la figure 3).

5. Organe de fixation selon une ou plusieurs des revendications précédentes 1 à 4, caractérisé en ce que les parties de surfaces (1aa, 1ab, 1ac, 1ad; 1ba, 1bb, 1bc, 1bd; 1ca, 1cb, 1cc, 1cd; 1da, 1db, ldc, 1dd) des premiers dispositifs de coopération (1a, 1b, 1c, 1d) sont disposées le long de côtés (1', 1'', 1''', 1'''') de l'organe inférieur (1) et les parties de surfaces (15aa, 15ab, 15ac, 15ad; 15ba, 15bb, 15bc, 15bd; 15ca, 15cb, 15cc, 15cd; 15da, 15db, 15dc, 15dd) des seconds dispositifs de coopération (15a, 15b, 15c, 15d) sont placées le long de côtés (15', 15'', 15''', 15'''') de l'organe intermédiaire (15), et en ce que les parties de surface de chacun des premiers et seconds dispositifs de coopération sont formées par des surfaces de gradins.

6. Dispositif de fixation selon la revendication 5, caractérisé en ce que toutes les surfaces de gradins des dispositifs de coopération (1a, 1b, 1c, 1d) de l'organe inférieur (1) sont en butée contre toutes les surfaces de gradins de chacun des dispositifs de coopération de l'organe intermédiaire (15) lorsque l'organe intermédiaire (15) a une position angulaire particulière, alors que seule une minorité des surfaces de gradins de chaque dispositif de coopération (1a, 1b, 1c, 1d) de l'organe inférieur (1) est en butée contre les surfaces correspondantes de gradins de chaque dispositif de coopération (15a, 15b, 15c, 15d) de l'organe intermédiaire (15) dans les autres positions angulaires de l'organe intermédiaire (15), la distance (h) comprise entre la face supérieure (17) de l'organe intermédiaire (15) et la face inférieure (4) de l'organe inférieur changeant dans ces autres positions angulaires.

7. Dispositif de fixation selon une ou plusieurs des revendications précédentes 1 à 6, et comprenant quatre côtés (1', 1'', 1''', 1'''', 15', 15'', 15''', 15'''') ayant des dispositifs adjacents de coopération (1a, 1b, 1c, 1d, 15a, 15b, 15c, 15d) caractérisé en ce que chaque dispositif de coopération (1a, 1b, 1c, 1d, 15a, 15b, 15c, 15d) a quatre surfaces de gradins, se trouvant à un premier niveau bas (1aa), à un second niveau plus élevé (1ab), à un troisième niveau encore plus élevé (1ac) et à un quatrième niveau qui est le plus élevé (1ad), et en ce que des changements considérables de distance peuvent exister entre deux surfaces voisines de gradins (15dc et 15dd).

8. Dispositif de fixation selon l'une quelconque des revendications précédentes, caractérisé en ce que le dispositif de coopération (1a) du premier côté (1') de l'organe inférieur (1) a des surfaces de gradins (1aa, 1ab, 1ac, 1ad) disposées avec la séquence suivante de niveaux: premier, second, troisième et quatrième niveau, en ce que le dispositif de coopération (1b) du second côté (1'') de l'organe inférieur (1) a des surfaces de gradins (1ba, 1bb, 1bc, 1bd) disposées avec la séquence suivante de niveaux: quatrième, premier, second et troisième niveau, en ce que le dispositif de coopération (1c) du troisième côté (1'' ') de l'organe inférieur (1) a des surfaces de gradins (1ca, 1cb, 1cc, 1cd) disposées avec la séquence suivante de niveaux: troisième, quatrième, premier et second niveau, et en ce que le dispositif de coopération (1d) du quatrième côté (1'''') de l'organe inférieur (1) a des surfaces de gradins (1da, 1db, 1dc, 1dd) disposées avec la séquence suivante de niveaux: second, troisième, quatrième et premier niveau, et les surfaces de gradins des dispositifs en regard de coopération (15a, 15b, 15c, 15d) de l'organe intermédiaire (15) ont des niveaux complémentaires des niveaux des surfaces de gradins de l'organe inférieur (1).

9. Dispositif de fixation selon une ou plusieurs de revendications précédentes 1 à 8, caractérisé en ce que le premier niveau bas des surfaces de gradins (1aa, 1bb, 1cc, 1dd) est fictif car il correspond au niveau de la surface inférieure (4) de l'organe inférieur et se trouve dans une ouverture (7) de l'organe inférieur (1).

10. Dispositif de fixation selon une ou plusieurs des revendications précédentes 1 à 9, caractérisé en ce que la face supérieure (2) de l'organe inférieur (1) a des axes de guidage (8) à chaque coin, les axes étant destinés à coopérer avec des ouvertures correspondantes (23) de guidage de la face inférieure (16) de l'organe intermédiaire (15).

11. Dispositif de fixation selon une ou plusieurs des revendications précédentes 1 à 10, caractérisé en ce que les saillies (25a, 25b, 25c, 25d) de l'organe intermédiaire (15) sont disposées sur des saillies (21) de la face supérieure (17) de l'organe intermédiaire (15).

12. Dispositif de fixation selon une ou plusieurs des revendications précédentes (1 à 11), caractérisé en ce que le couvercle (30) est fixé à l'organe intermédiaire (15) par des broches de fixation (31, 32, 33) dépassant du couvercle (30) et coopérant avec des ouvertures auxiliaires (18, 19, 20) des saillies (21, 22) de l'organe intermédiaire (15).

13. Dispositif de fixation selon une ou plusieurs des revendicationns précédentes 1 à 12, caractérisé en ce que les broches de fixation (31, 32, 33) n'ont pas de gorge, et en ce que les ouvertures auxiliaires (18, 19, 20) de l'organe intermédiaire (15) ont des cavités (18a, 19a, 20a) qui sont toutes placées du même côté et influencent donc les broches de fixation (31, 32, 33) des divers côtés d'après la position angulaire du couvercle (30).

14. Dispositif de fixation selon l'une ou plu-

sieurs des revendications précédentes 1 à 13, caractérisé en ce que l'organe intermédiaire (15) est fixé à l'organe inférieur (1) par un dispositif central (47) de fixation tel qu'une vis, associé à une cheville placée dans le mur, la vis passant à la fois dans l'organe intermédiaire (15) et dans l'organe inférieur (1) et pénétrant dans le mur (40).

15. Dispositif de fixation selon une ou plusieurs des revendications précédentes 1 à 14, caractérisé en ce que l'organe inférieur (1) et l'organe intermédiaire (15) sont formés d'un matériau plus dur, de préférence d'un matériau à base d'une résine d'acétal, que celui du couvercle qui est de préférence formé d'un polyamide ou de "Propene" (polypropylène).

16. Dispositif de fixation selon une ou plusieurs des revendications précédentes 1 à 15, caractérisé en ce que l'organe inférieur (1) est fixé au mur (40) par des organes (9) analogues à des broches, passant dans le canal (10) formé dans les axes de guidage (8) de l'organe inférieur (1).

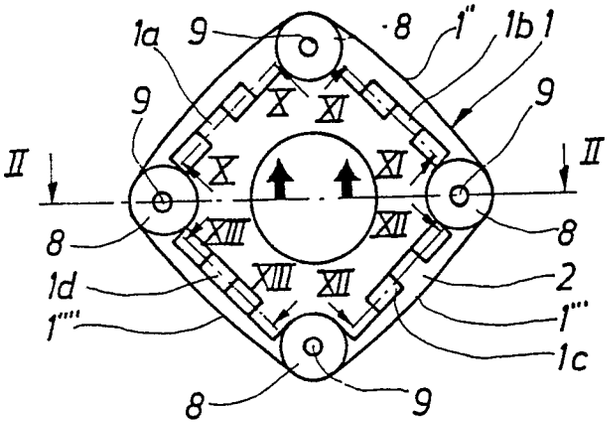



Fig.1

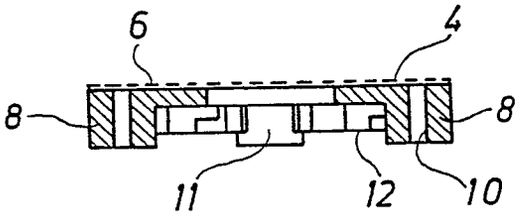



Fig.2

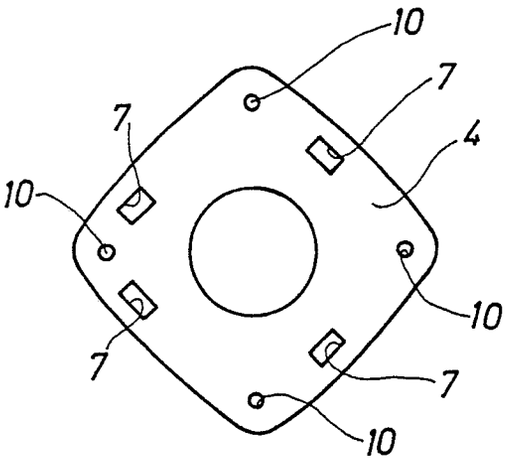



Fig.19

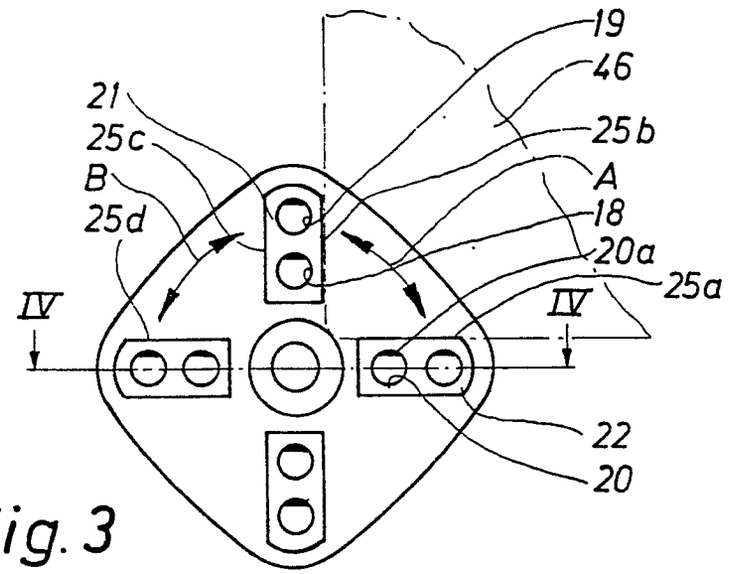



Fig. 3

Fig. 4

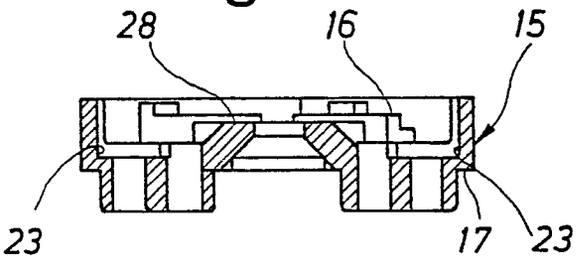
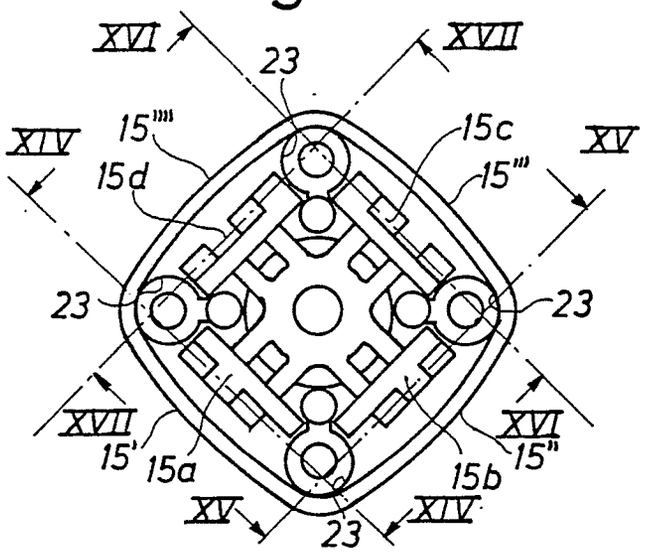



Fig. 5



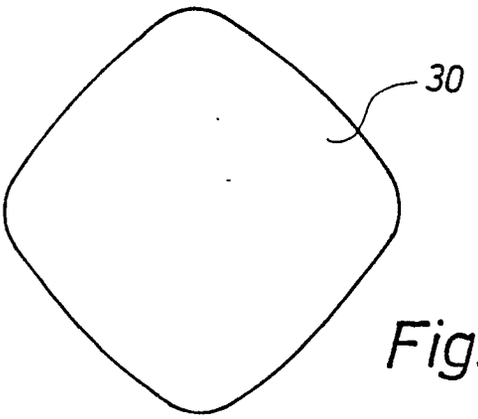



Fig. 6

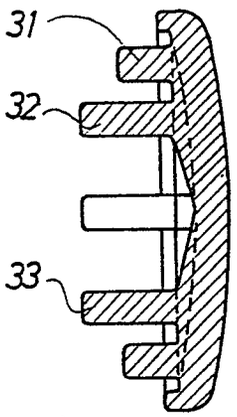



Fig. 7

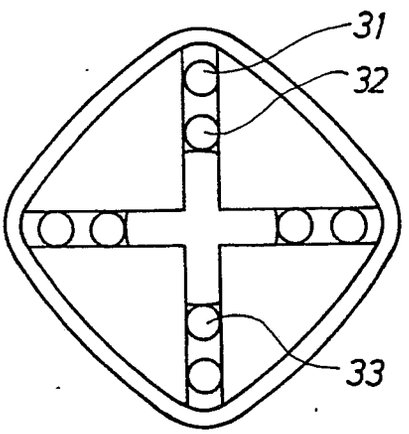



Fig. 8

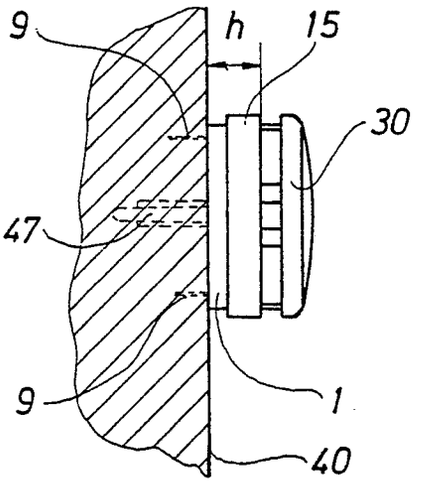



Fig. 9

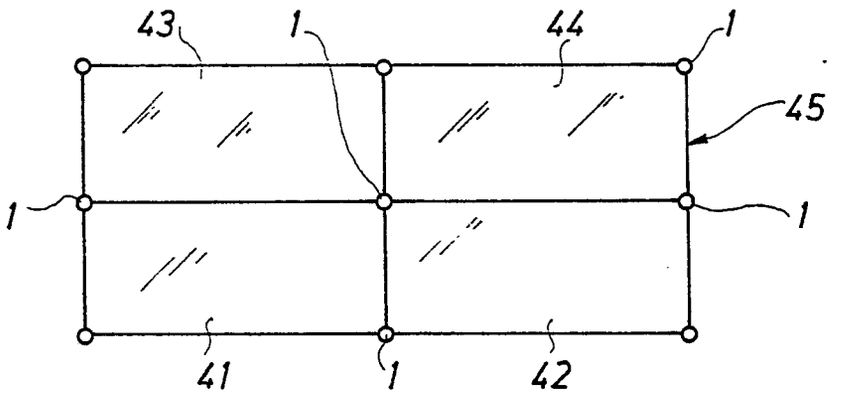



Fig. 18

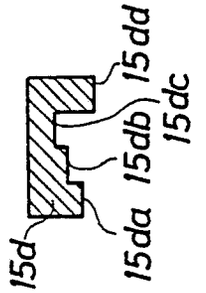



Fig.17

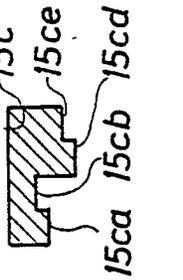



Fig.16

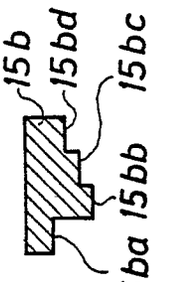



Fig.15

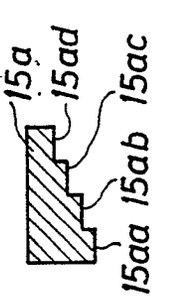



Fig.14

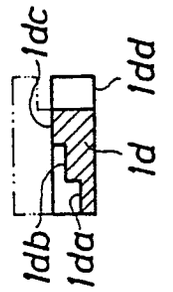



Fig.13

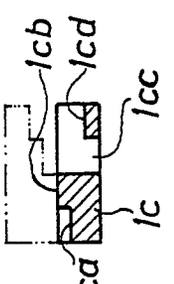



Fig.12

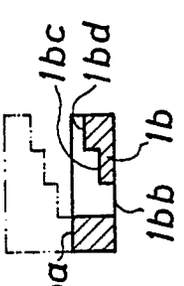



Fig.11

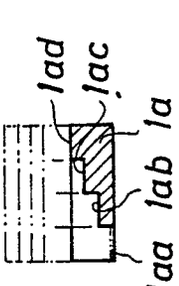



Fig.10