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(54) **DOGLEG STAIRS.**

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Description

The invention relates to a dogleg staircase comprised of at least a first stairs, an intermediate landing forming an extension for it, and a second stairs extending from the landing at a right angles to the first stairs, the inner edges of the first and second stairs forming a right angle inner turn point at the inner corner of the landing, whereby the head of the first stairs preceding the landing is displaced, with respect to the inner turn point beneath the landing in the tread direction of the stairs essentially by the tread-depth dimension of the step of the stairs, and that the nose of the landing is notched essentially corresponding to the displacement. Such a staircase construction is disclosed in the FR-A-562 605.

The dogleg staircase is otherwise conventionally constructed in such a way that the stairs is extended close to the nose of the landing, whereby the rear edge of the uppermost run step is essentially in the same vertical plane as the nose of the landing, but one step-riser below it.

However, a detrimental feature of said construction is the need of space required by it. The "tread-depth" of the landing, i.e. its dimension from the nose to the opposite edge is usually the same as the width of the stairs extending from the landing. This dimension is essentially larger than the tread-depth dimension of the stairs.

As an alternative construction for the said dogleg stair-case is in fact usually used the spiral stairs, which from the point of view of the space required is more advantageous. However, this construction has its own disadvantages, one of which is essentially a decreasing tread-depth from the outer curve toward the inner curve.

The staircase construction of FR-A-562 605 referred to above is in fact a modification of the said spiral stairs, with the same disadvanteges as the basic spiral stairs construction. One of the main disadvantages is the fact that the stringer at the outer curve side of the staircase has to have a different slope angle than the stringer at the inner curve side in order to maintain the foot steps in a horisontal plane. The slope at the outer curve side is to be more gentle than that at the inner curve side. In a usual construction this difference in the slope angles can be nearly 10 °.

The object of the invention is to eliminate the drawbacks involved in the known dogleg staircase constructions, i.e. to decrease the space required by the said dogleg staircase unit, whereby the construction is very competitive against the spiral stairs from the point of view of the space required without the detriments related thereto.

According to the invention the said saved space for the stairs construction is taken from the landing in such a way that the notching is extended by its full depth from the outer edge of the first stairs to a distance from the inner edge essentially corresponding to the notching depth, as well as directed therefrom toward the inner turn point.

The invention is described on the basis of an embodiment related to the accompanying drawing figures, which embodiment is not intended to limit the patent protection defined in the patent claims.

In the enclosed drawing

Fig. 1 shows a staircase seen from the top,
Fig. 2 shows the staircase seen from the side,
Fig. 3 shows the fastening of the head of a stairs stringer to the landing,
Fig. 4 shows the fastening of a stair step to the stairs stringer seen on the step plane, and
Fig. 5 shows the fastening according to Fig. 4 seen from below.

The stairs shown in the Fig. 1 and 2 contains a first stairs 1, a first landing 2, further a second stairs 3, a second landing 6 as well as a third stairs 7. The invention is illustrated essentially by means of a basic unit formed by a stairs, a landing following it, and a second stairs.

As perhaps is best illustrated in Fig. 2, the head of the first stairs 1 is displaced under the following landing 2.

This requires, as shown in Fig. 1, that the nose of the landing 2 be notched for achieving a continuous step pattern. The depth of the notching of the nose of the landing 2 is essentially the same as that by which the uppermost step 8 of the stairs 1 is underneath relative to the landing, i.e. the same as the tread-depth of the stairs.

The notching is extended from the edge on the outer side of the landing by its full depth dimension near the inner curve point A′ of the staircase unit. The notching is extended towards the inner edge essentially to a distance measured from the inner edge and corresponds to the depth of the notching, from which distance the notching is essentially directed to the inner curve point, i.e. the notching is decreased to the original front edge of the landing. The reason for decreasing this notching is the forming of a step area in the area of the inner curve in such a way that when coming from the next stairs 3 following the landing 2, it is not possible to directly enter the uppermost step 8 of the first stairs. The decrease of the notching can be performed rectili-

nearly according to Fig. 1, or alternatively as convex or concave or other curve forms. As mentioned above, the application primarily describes a basic unit formed by a stairs, a landing following it, and a second stairs. These units can be combined according to the applications desired, and the turn direction can be varied according to the application desired.

It is further to be taken into account that the under-swing of the stairs and the landing following it does not necessarily have to be of the same dimension as the tread-depth, but it can be considerably smaller than that, if the circumstances so allow. In some special cases, an underswing greater than the tread-depth can be considered, as much as about one and a half times the tread-depth. However, these greater underswings are used in especially narrow spaces, since the solution is connected with a partial discontinuity problem in the step pattern on the side of the inner curve of the stairs.

It has frequently been observed that when the staircase construction, described above and requiring less space in comparison with a conventional dogleg staircase construction, is installed, the space reserved for the staircase does in practice not correspond to the dimensioning accurately desired. Said factor has caused problems in the installation of prefabricated staircases, and in some cases also an unsatisfactory working result because of installation borings, notchings and the like made in the construction. These actions requiring installation adjustments have been facilitated by means of an additional feature, as shown in Fig. 3 of the invention. In accordance with this additional feature, the stringer 9 of the stairs is fastened to the lower surface of the landing 2 by means of two groove rails 10 and 11 forming with each other a notch locking.

The groove rail 10 provided with a downwardly directed open groove is fastened to the upper end of the stringer 9, to the level of the top end of the stringer. One of the groove rails, the rail 11, is similarly fastened to the lower surface of the landing 2, the groove being upwardly directed. The dimensions of the grooves in contact with each other have been selected in such a way that when the fastening of the groove 11 to the lower surface of the landing 2 is loose, the grooves can be mutually longitudinally slided, i.e. the upper end of the stringer can be horizontally pushed for support under the landing. Tightening the fastening of the groove rail 11 to the lower surface of the landing presses the upper surface of the groove rail 10 fastened to the stringer as well as the end of the stringer against the lower surface of the landing 2. The location of the upper end of the stringer can thus be adjusted in place relative to the landing 2 before locking the stringer in place. By means of the fastening, the construction can also be readily afterwards disassembled, when necessary.

The installation solution of the steps and the landing adapted to the assembly and disassembly of the stairs is shown in Fig. 4 and 5. The fastening is based on a hook-like element 12, which is mounted on the groove 13 made on the lower surface of the step (or landing) and on a boring 14 located at its inner end. The hook-like element 12 essentially extends outside the end of the step by the thickness of the stringer 9. The protruding end of the hook-like element 12 is provided with a thread for fastening the end with a barrel nut to a corresponding boring made in the bridgeboard. The hook end of the element 12 is correspondingly fastened to the boring 14 of the step 8 by means of a plug made of plastic or a corresponding material, in which plug the hook end is preliminary embedded or which is provided with a suitable boring for the hook end.

It is preferable to slightly tilt the hook end in the tightening direction, e.g. about 15° for ensuring the gripping of the hook.

Claims

1. A dogleg staircase comprised of at least a first stairs (1), an intermediate landing forming an extension for it, and a second stairs extending from the landing at a right angles to the first stairs, the inner edges of the first and second stairs (3) forming a right angle inner turn point (A′) at the inner corner of the landing, whereby the head of the first stairs (1) preceding the landing (2) is displaced, with respect to the inner turn point (A′) beneath the landing in the tread direction of the stairs essentially by the tread-depth dimension of the step (8) of the stairs (1,3), and that the nose of the landing (2) is notched (4) essentially corresponding to the displacement, **characterized** in that the notching (4) is extended by its full depth from the outer edge of the first stairs (1) to a distance from the inner edge essentially corresponding to the notching depth (5), as well as directed therefrom toward the inner turn point (A′).

2. A dogleg staircase according to claim 1, **characterized** in that the decrease in the notching depth is realized rectilinearly.

3. A dogleg staircase according to claim 1 or 2, **characterized** in that the distance, by which the head of the first stairs (1) is under the landing (2) is the tread-depth of the stairs (1), at the highest.

4. A dogleg staircase according to any of the preceding claims 1-3, **characterized** in that the distance, by which the head of the first stairs (1) is under the landing (2) is larger than the tread-depth of the stairs (1) .

5. A dogleg staircase according to claim 3 or 4, **characterized** in that distance, by which the head of the first stairs (1) is under the landing (2), is about 10-150% of the tread-depth of the stairs.

6. A dogleg staircase according to any of the preceding claims 1-5, **characterized** in that the head of the stringers (9) of one stairs (1, 3, 7) is fastened to the following landing (2, 6) by means of interacting groove lists (10, 11) of which one is fastened to the stringer (9) and the other to the lower surface of the landing (2, 6).

7. A dogleg staircase according to any of the preceding claims 1-6, **characterized** in that the steps (8) are fastened to the stringers by means of a hook bolt barrel nut fastening (12; 15) extending through the stringers.

Patentansprüche

1. Treppe mit mindestens einem ersten Treppenteil (1), einem Zwischenpodest, das hiervon eine Verlängerung bildet, und einem zweiten Treppenteil, das sich vom Zwischenpodest rechtwinklig zum ersten Treppenteil erstreckt, wobei die Innenkanten des ersten und zweiten Treppenteiles (3) einen rechtwinkligen inneren Drehpunkt (A′) an der inneren Ecke des Podestes bilden, der Kopf des dem Podest (2) vorhergehenden ersten Treppenteiles (1) relativ zum inneren Drehpunkt (A′) in Trittrichtung der Treppenteile im wesentlichen um die Tiefe der Stufe (8) der Treppenteile (1, 3) unter das Podest verschoben ist und die Nase des Podestes (2) im wesentlichen entsprechend der Verschiebung ausgenommen (4) ist, dadurch gekennzeichnet, daß sich die Ausnehmung (4) über ihre volle Tiefe von der Außenkante des ersten Treppenteiles (1) bis zu einem Abstand von der Innenkante erstreckt, der im wesentlichen der Tiefe (5) der Ausnehmung entspricht und sich hiervon in Richtung auf den inneren Drehpunkt (A′) erstreckt.

2. Treppe nach Anspruch 1, dadurch gekennzeichnet, daß die abnahme der Tiefe der Ausnehmung geradlinig erfolgt.

3. Treppe nach Anspruch 1 oder 2, dadurch gekennzeichnet, daß die Strecke, über die sich der Kopf des ersten Trappenteiles (1) unter das Podest (2) erstreckt, maximal der Trittiefe des Treppenteiles (1) entspricht.

4. Treppe nach einem der vorangehenden Ansprüche 1 - 3, dadurch gekennzeichnet, daß die Strecke, über die sich der Kopf des ersten Treppenteiles (1) unter das Podest (2) erstreckt, größer ist als die Trittiefe des Treppenteiles (1).

5. Treppe nach Anspruch 3 oder 4, dadurch gekennzeichnet, daß die Strecke, über die sich der Kopf des ersten Treppenteiles (1) unter das Podest (2) erstreckt, etwa 10-150 % der Trittiefe des Treppenteiles entspricht.

6. Treppe nach einem der vorangehenden Ansprüche 1 - 5, dadurch gekennzeichnet, daß der Kopf der Längsträger (9) eines Treppenteiles (1, 3, 7) am nachfolgenden Podest (2, 6) mit Hilfe von zusammenwirkenden Nutbalken (10, 11) befestigt ist, von denen einer am Längsträger (9) und der andere an der unteren Fläche des Podestes (2, 6) fixiert ist.

7. Treppe nach einem der vorangehenden Ansprüche 1 - 6, dadurch gekennzeichnet, daß die Stufen (8) mit Hilfe von Hakenbolzen-Schaftmutterbefestigungen (12; 15), die sich durch die Längsträger erstrecken, an den Längsträger befestigt sind.

Revendications

1. Escalier à deux volées composé d'au moins une première volée (1), un palier intermédiaire formant une extension pour celle-ci, et une seconde volée partant du palier à angle droit par rapport à la première volée,

les bords intérieurs de la première et de la seconde (3) volées formant un point (A′) de virage intérieur à angle droit dans l'angle intérieur du palier, le haut de la première volée (1) précédant le palier (2) étant déplacé, par rapport au point (A′) de virage intérieur, sous le palier, dans le sens du giron de la volée, essentiellement de la profondeur du giron de la marche (8) des volées (1, 3) et le nez du palier (2) étant entaillé (4) essentiellement en correspondance avec le déplacement, ***caractérisé en ce que*** l'entaille (4) s'étend sur toute sa profondeur du bord extérieur de la première volée (1) jusqu'à une distance du bord intérieur correspondant essentiellement à la profondeur (5) de l'entaille, et est également orientée à partir de là vers le point intérieur (A′) de virage.

2. Escalier à deux volées selon la Revendication 1, ***caractérisé en ce que*** la diminution dans la profondeur du découpage est réalisée rectilinéairement.

3. Escalier à deux volées selon la Revendication 1 ou 2, ***caractérisé en ce que*** la distance selon laquelle le haut de la première volée (1) se trouve sous le palier (2) est au maximum la profondeur du giron de la volée (1).

4. Escalier à deux volées selon l'une quelconque des Revendications 1 à 3, ***caractérisé en ce que*** la distance selon laquelle le haut de la première volée (1) se trouve sous le palier (2) est supérieur à la profondeur du giron de la volée (1).

5. Escalier à deux volées selon la Revendication 3 ou 4, ***caractérisé en ce que*** la distance selon laquelle le haut de la première volée (1) se trouve sous le palier (2) représente de 10 à 150 % environ de la profondeur du giron de la volée.

6. Escalier à deux volées selon l'une quelconque des Revendications 1 à 5, ***caractérisé en ce que*** la partie supérieure des limons (9) d'une volée (1, 3, 7) est fixée au palier (2, 6) qui la suit au moyen de traverses (10, 11) coopérant par des rainures, et dont l'une est fixée au limon (9) et l'autre à la surface inférieure du palier (2, 6).

7. Escalier à deux volées selon l'une quelconque des Revendications 1 à 6, ***caractérisé en ce que*** les marches (8) sont fixées aux limons au moyen d'une fixation à boulon à crochet et écrou de fermeture (12; 15) traversant les limons.

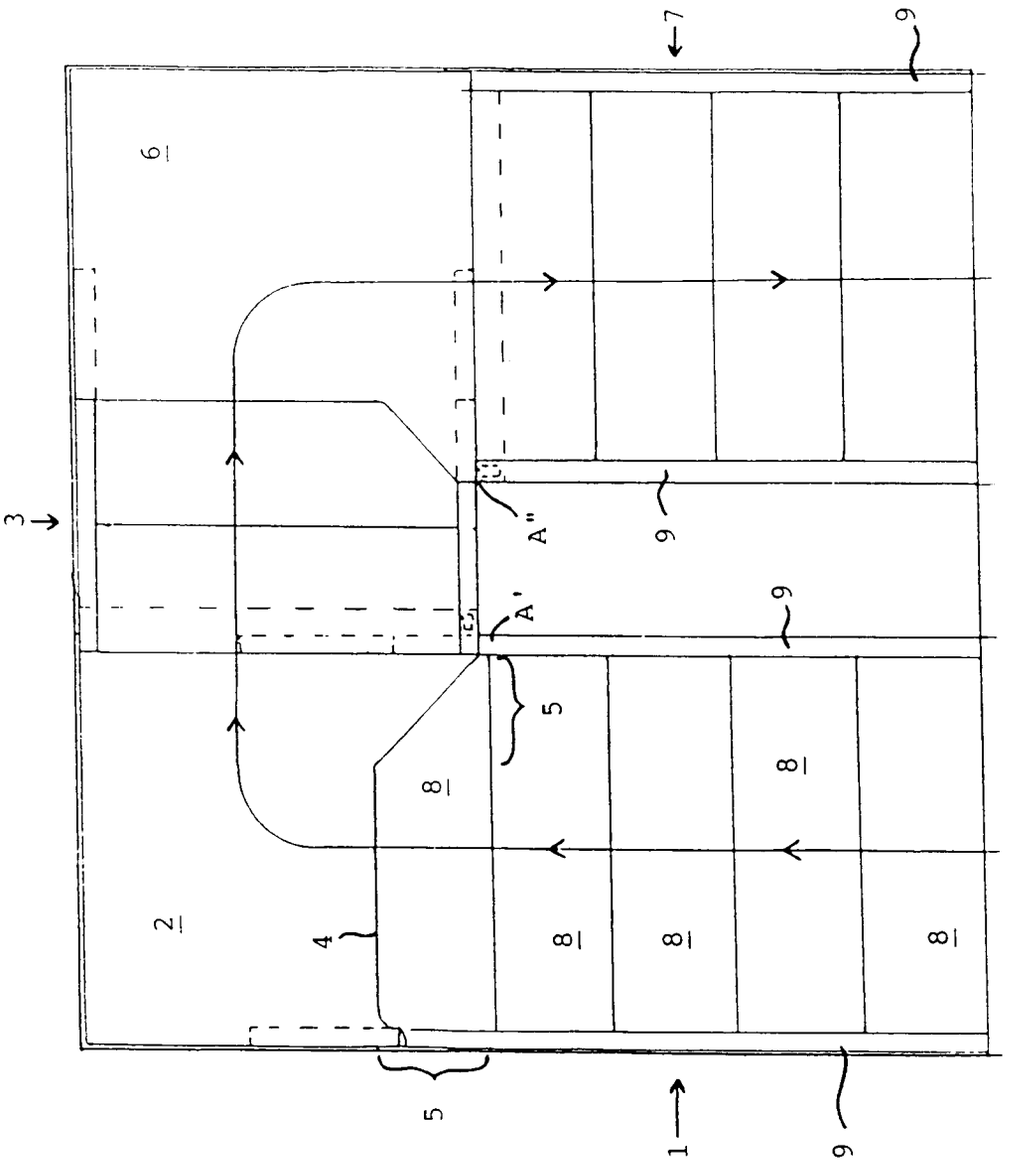
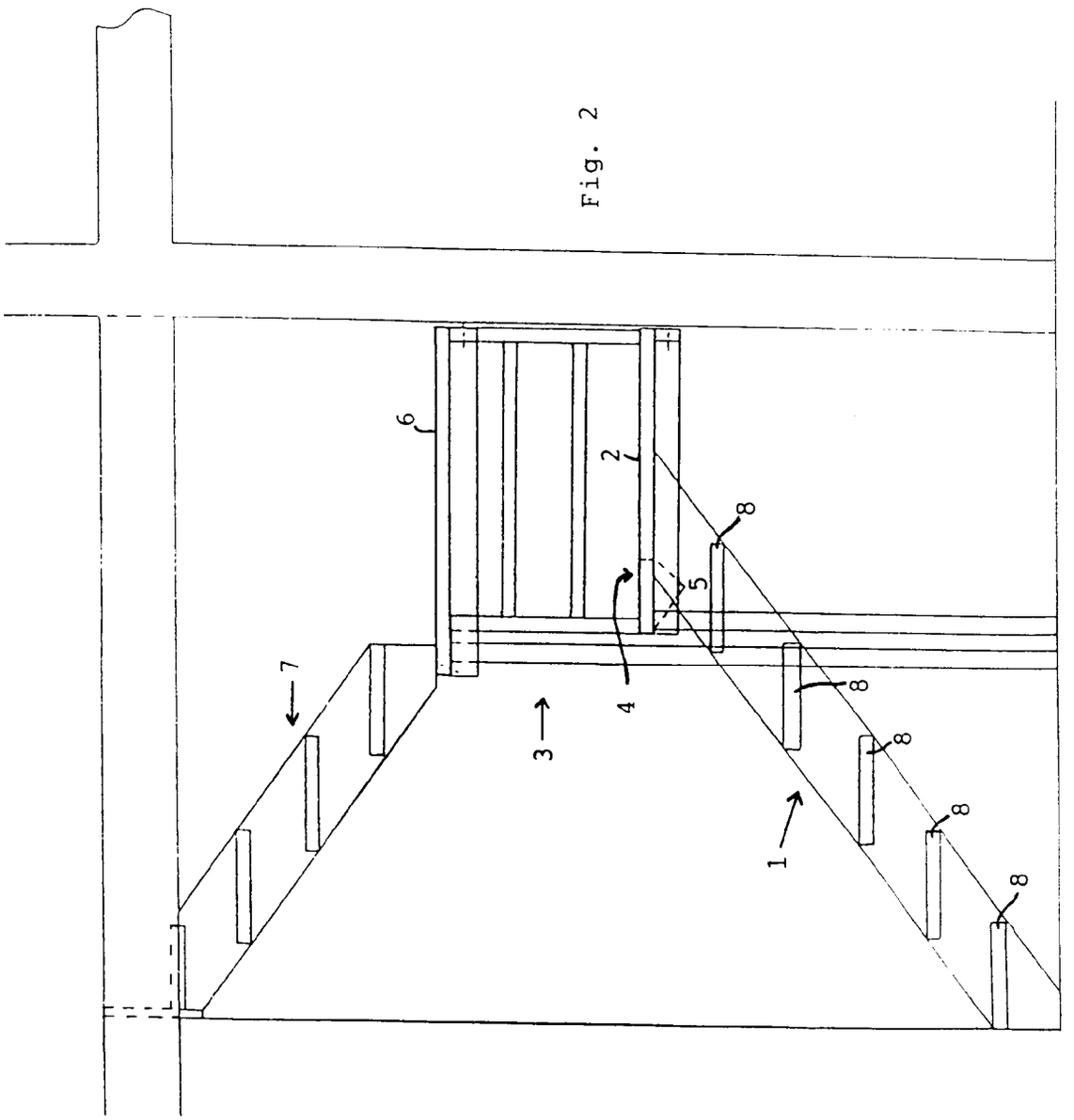


Fig. 1

Fig. 2



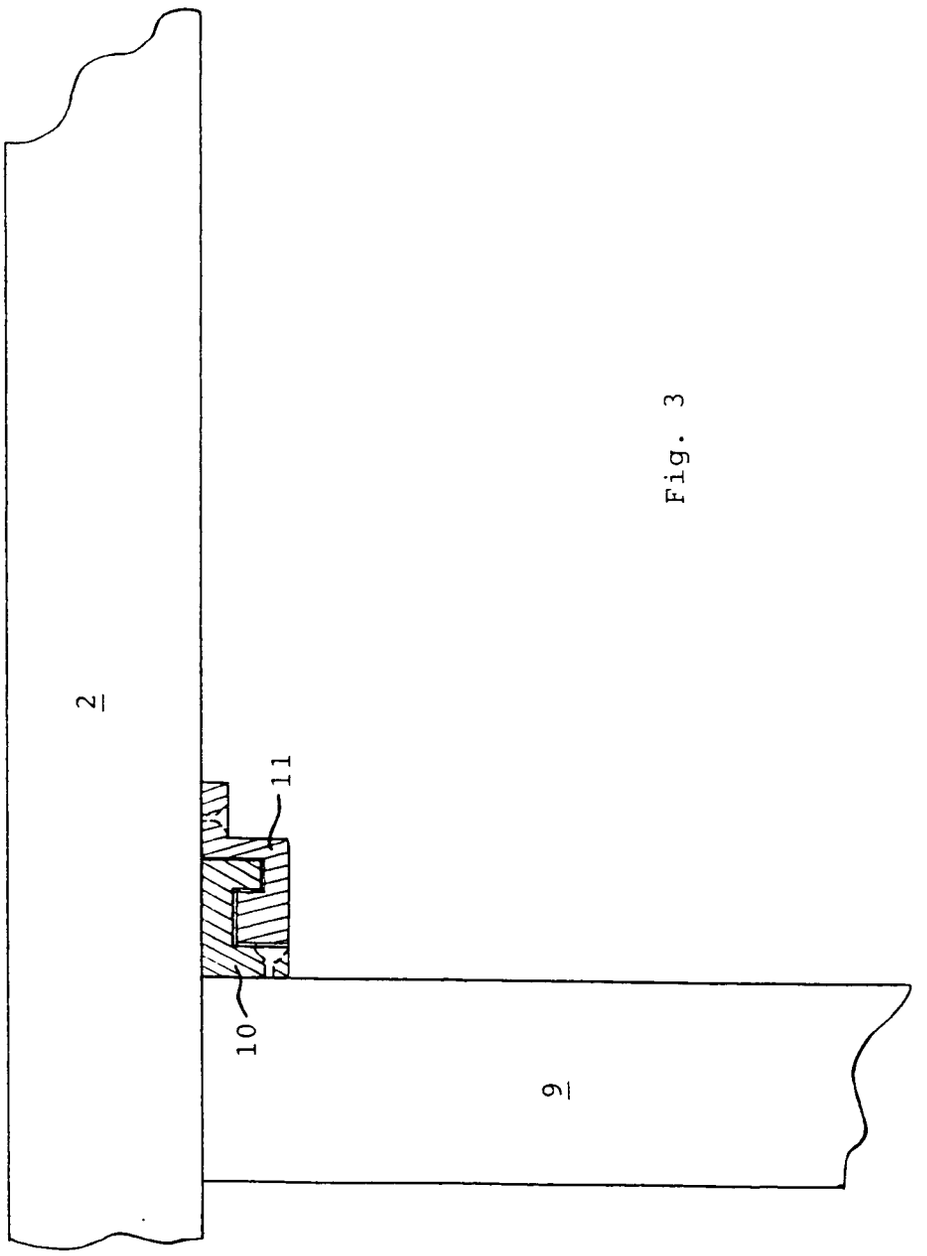
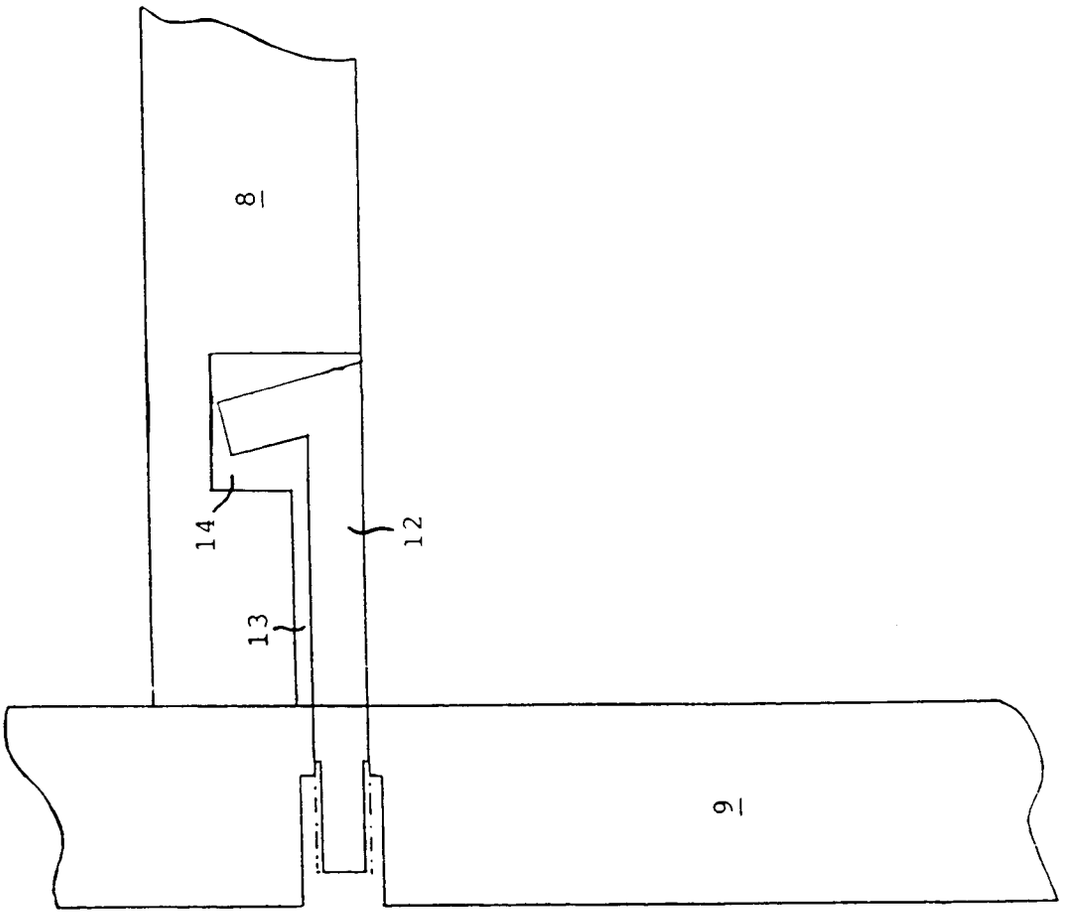


Fig. 3



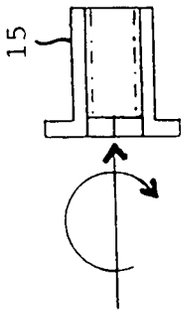


Fig. 4

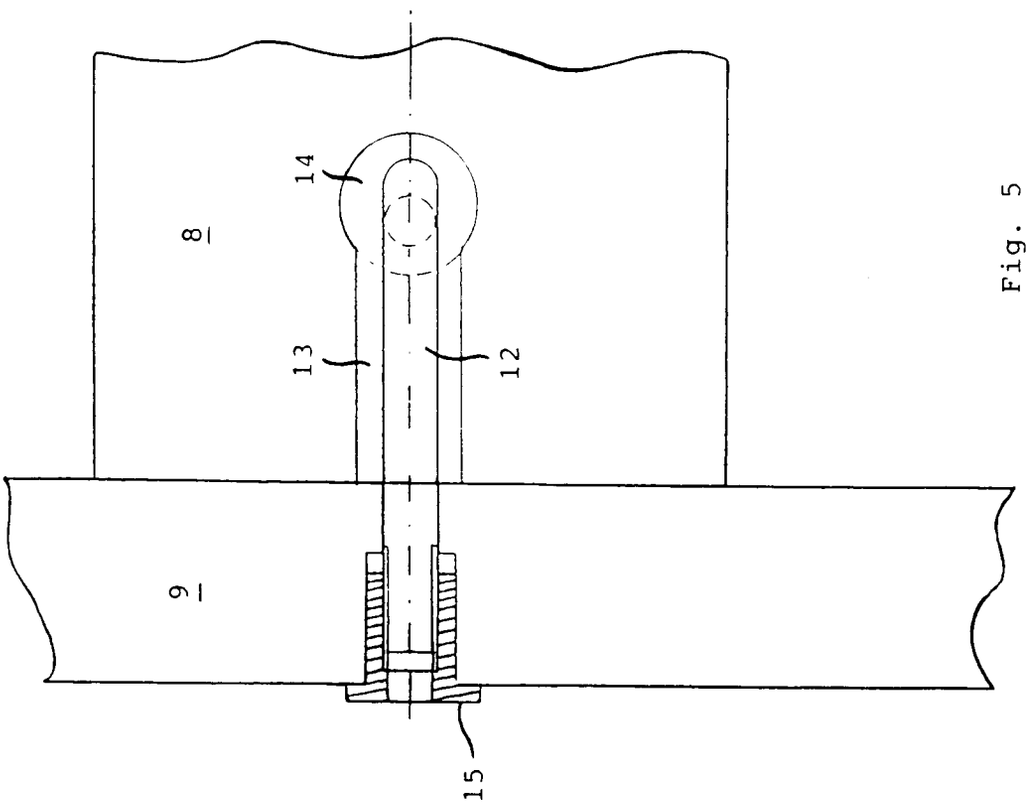


Fig. 5