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Fixing device for a rail

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(56) Related Art
**DE 3602567
DE 29922481
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Abstract

The fixing device which serves for retaining a rail (1), in particular a running or guide rail, has a strip (2) which is provided with an angular profile and can be connected with little outlay on one side to a wall (9) and 5 on the other side to a rail (1). The strip (2) has two limbs (21; 22) which are provided for holding the rail (1), the first limb (21) of which is provided with openings (23) for the passing through of fixing screws (24) which can be connected to the wall (9), and the 10 second limb (22) of which is provided with a T-profile-shaped longitudinal slot (25) which is open towards the rail (1) and serves for holding and for retaining a locking element (3) which preferably has a thread (31) for a mounting screw (32) which can be connected to the rail 15 (1), or is connected fixedly to said mounting screw.

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COMPLETE SPECIFICATION

FOR A STANDARD PATENT

ORIGINAL

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Invention Title: 'FIXING DEVICE FOR A RAIL'

The following statement is a full description of this invention, including the best method of performing it known to me/us:-

File: 33100AUP00

Fixing device for a rail

The invention relates to a fixing device for a rail, in particular a running or guide rail for sliding fittings, in accordance with the precharacterizing clause of Patent Claim 1.

Any discussion of the prior art throughout the specification should in no way be considered as an admission that such prior art is widely known or forms part of common general knowledge in the field.

Sliding doors which serve for shutting off and/or dividing rooms are normally suspended on a running mechanism which is guided in a rail. Rails of this type, which are normally fixed to the ceiling or to a side wall, and running-mechanism mountings suitable for them are described, for example, in the 2000 catalogue "Schiebebeschläge/Baubeschläge [Sliding fittings/ building fittings]" glass/metal from HAWA AG, Mettmenstetten (see, for example, page 14). This shows, among other things, that rails which have, for example, a U profile, are connected to the masonry by means of screws which are guided through holes in the rail. As DE-A1 3201 121 shows, the running and guide rails can also have flanges which are provided with holes for the fixing screws. Furthermore, WO 00/55460 reveals a rail which is provided with threaded holes and is connected to a wall by means of fixing screws and an angular element (see Figure 5 below).

For mounting purposes, these rails therefore have to be provided, at a correspondingly high outlay, with the necessary holes, if appropriate with threaded holes, generally at the installation site. During the making of the holes, because of the metal-removing machining of the rail

metal, particles often get onto the running surfaces of the rail, as a result of which damage can be caused to the wheels of the running mechanisms and the resultant running characteristics can be negatively affected. In addition, 5 further damage due to scratches or distortion of the rail may arise during the mechanical machining and because of the direct mounting of the rail onto the masonry.

During the mounting of the rails, in particular in the context of renovation work, further problems may arise, 10 depending on the structure of the material of the mounting locations.

As can be seen, for example, in DE-A1 3201 121, fixing means which are used, such as flanges, screws, etc., which remain visible after the rail has been mounted, can also 15 have an annoying effect.

It is an object of the present invention to overcome or ameliorate at least one of the disadvantages of the prior art, or to provide a useful alternative.

SUMMARY OF THE INVENTION

20 Accordingly, the present invention provides a fixing device for a rail having a mounting element which on one side is connectable to a wall and on the other side to the rail, wherein the mounting element is a strip which has an angular profile and has two limbs which are provided for holding the rail, the first limb having openings for receiving fixing screws for connection to the wall, and the second limb having a T-profile-shaped longitudinal slot which is open towards the rail and serves for holding and 25 for retaining a locking element which is connected by means

of a thread to a mounting screw serving for retaining the rail and wherein the locking element is at least approximately of cuboidal design, and is introduced in a longitudinal orientation into the T-profile-shaped longitudinal slot, and can be rotated therein, into a retaining position, after which the mounting screws is tightened.

At least one embodiment of the invention provides a fixing device by means of which a rail, in particular a running or guide rail for sliding fittings, can be fitted with little outlay and without the occurrence of the disadvantages described above.

The fixing device which serves for retaining a rail, in particular a running or guide rail, has a strip which is provided with an angular profile and can be connected with little outlay on one side to a wall and on the other side to a rail. The strip has two limbs which are provided for holding a rail, the first limb of which is provided with openings for the passing through of fixing screws which can be connected to the wall, and the second limb of which is provided with a T-profile-shaped longitudinal slot which is open towards the rail and serves for holding and for retaining a locking element which preferably has a thread for a mounting screw which can be connected to the rail.

The solution according to the invention gives rise to various advantages during production, mounting and during subsequent operation of the individual parts of the device. The rail and the strip provided for holding it can already be provided during the manufacturing with holes for the fixing and the mounting screws. Drilling and/or _____

thread cutting during the mounting of the device is/are omitted, so that at the same time soiling or mechanical impairment of the rail is avoided. This ensures optimum functioning of the rail and of running mechanisms guided
5 therein. The strip can be provided with a plurality of openings for fixing screws, since, after the device has been mounted, said openings together with the fixing screws are covered by the mounted rail and therefore do not have an annoying effect. Since the locking elements
10 can be introduced into the longitudinal slot in any desired positions of the strip, the rail can likewise be provided with pre-manufactured holes which serve for the passing through of the mounting screws.

The mounting of the rail into the pre-fitted strip can
15 therefore take place in a few moves. The locking element is introduced for this purpose into the longitudinal slot of the strip, rotated from position A into position B and subsequently tightened by rotating in the same direction.
Of course, the release and refitting of the rail with the
20 same parts is also possible in a similarly simple manner.

The dimensions of the rail and of the strip are preferably matched to one another, so that after the mounting is finished they visually form one unit. The inside of the strip is covered, so that no flanges or tabs can be seen.
25 This design of the rail and strip enables their ends to advantageously be provided with a covering element which conceals any differences in length between the rail and strip there.

The mounting of the strip on walls of different material
30 can take place without any problem. There are no special requirements made of the structure and design of the substrate to be provided with a rail, so that the device according to the invention can particularly advantageously be used even in renovations and reconstructions of
35 buildings.

In a preferred refinement, the strip can also be connected

in a simple manner to one or more spacer elements by means of which the distance of the rail from the wall can be set.

5 The rail preferably has at least approximately a U profile. However, it may also have other profile shapes. Furthermore, the use of double rails is possible. In this case, the corresponding limb of the strip preferably has two longitudinal slots running parallel.

10 The invention will be explained in greater detail below with reference to a drawing, in which:

Figure 1 shows a fixing device according to the invention with a rail 1 and a strip 2 in a preferred refinement,

15 Figure 2 shows the fixing device according to the invention with a rail 1, which is shown in section, during the mounting,

Figure 3 shows the fixing device according to the invention with a rail 1 and strip 2, which are shown in section, during the mounting,

20 Figure 4 shows the fixing device according to the invention with a rail 1 and strip 2, which are shown in section, after the mounting, and

Figure 5 shows a fixing device which is known from the prior art for a rail 1.

25 Figure 5 shows a fixing device which is known from laid-open application WO 00/55460 and has an angular piece 200 which is screwed on one side to a wall 9 by means of a fixing screw 240 and on the other side to a rail 1 by means of a mounting screw 320. The approximately U-profile-shaped rail 1 comprises a back element 13, at whose ends limbs 14a, 14b which run parallel and have terminating, mutually facing foot pieces 15a, 15b are provided and whose upper sides form the running surfaces

11 for the wheels 102 of a running mechanism 100 which serves for carrying a displaceable element, for example a door or a partition.

The disadvantages described at the beginning of a device
5 of this type can be seen clearly in Figure 5. The rail 1 has to be provided at suitable points with threaded holes 12 for the mounting screws 320 which are screwed from above into the back element 13 of the rail 1. The machining of these parts may result, as described above,
10 in soiling of the running rail 1 and in a corresponding impairment of the operating characteristics of the running mechanism 100. When the device is released and displaced in order to adjust the position of the rail 1, new holes may have to be provided, again with an appropriate outlay.
15 Also, the mounting elements, the angular piece 200 and fixing and mounting screws 240, 320 are not covered, which means that the aesthetic impression of the fitted device is not very satisfactory.

Figure 1 shows a fixing device according to the invention having a strip 2 which is preferably manufactured from light metal and has an angular profile which is formed by two limbs 21, 22, which are perpendicular with respect to each other, into which profile a rail 1 is fitted. The first, vertical limb 21 has openings 23 for the passing
20 through of fixing screws 24 which are to be connected to a wall 9 (see Figure 4). The second, horizontal limb 22 has a T-profile-shaped longitudinal slot 25 which is open towards the rail 1 and serves for holding and for retaining a locking element 3, which can be inserted
25 through an outer partial slot 25a of relatively small dimensions into an inner partial slot 25b of larger dimensions and can be rotated there from a first position A into a second position B (see Figure 3).

The locking element 3 preferably has a thread 31 for a
35 mounting screw 32 which is, for example, guided through a hole 12 in the back element 13 and can thereby be connected to the rail 1 and after the positioning of the

locking element 3 can be tightened. However, a fixed connection is possible between the mounting screw 32 and the locking element 3, which element is designed in such a manner that it wedges in the longitudinal slot 25 when it
5 is rotated.

The openings 23 serving for the passing through of the fixing screws are preferably arranged in a depression suitable for holding the head of the fixing screw 24, preferably in a channel 26 running along the first limb
10 21. As a result, a standard rail can be used and can be fitted and fixed between the limbs 21, 22 of the strip 2.

Since the head of the fixing screw 24 is embedded in the channel 26, the limb 14 of the rail 1 also rests over its entire surface on the limb 21 of the strip 2, which makes
15 it possible to absorb laterally acting loads.

In the centre, the channel 26 is preferably additionally provided with a continuous drilling notch, which simplifies any necessary drilling of additional holes.

It can furthermore be seen from Figure 1 and Figure 4
20 that, on the side facing away from the rail 1, the first limb 21 is provided with longitudinal grooves 27 which serve for holding retaining splines 41 of a spacer element 40 which permits simple setting of the distance of the rail 1 from the wall.

25 The mounting of the rail 1 can readily be seen from Figure 2 and Figure 3. Figure 2 shows the fixing device according to the invention with the rail 1, which is illustrated in section, during the mounting. Figure 3 shows the fixing device according to the invention with the rail 1 and
30 strip 2, which are shown in section. It can be seen from Figure 3 that the locking element 3, which is connected to the mounting screw 32, is guided, with its orientation running along the rail 1, into the longitudinal slot 25 and is rotated there from a position A into a position B
35 until it locks and, if appropriate, wedges within the

longitudinal slot 25. In the arrangement according to Figure 3, the locking element 3 is provided with a thread 31, so that the mounting screw 32 can be tightened as soon as the locking element 3 reaches the position B.

5 The locking element 3 is preferably of cuboidal design, is rounded and is optionally provided with inclined surfaces, by means of which the locking element 3 is displaced downwards when rotated within the longitudinal slot 25, the rail 1 is tightened as a result and is wedged in the
10 vicinity of the stop.

If the locking element 3 has a thread 31, the latter or the associated mounting screw 32 is preferably provided with a viscous substance or paint which entrains the locking element 3 when the mounting screw 32 is rotated
15 from position A to position B.

Figure 2 also shows a covering 50 which can be placed onto the ends of the rail 1 and strip 2, which ends are not arranged flush, if appropriate. The covering 50 is preferably provided with pins 51 which can be inserted
20 into the T-profile-shaped longitudinal slot 25 or the channel 26.

Figure 4 shows the ready fitted fixing device with a rail 1 and strip 2, which are illustrated in section. It can be seen that the lengths of the limbs 21, 22 are selected in accordance with the dimensions of the rail 1, so that steps at the transitions between the rail 1 and strip 2 are avoided, as a result of which, and with flanges or further fixing elements being avoided, visually one unit comprising the rail 1 and strip 2 is obtained. The
30 dimensions of the spacer element 40 have likewise been matched to the associated limb 21 of the strip 2.

THE CLAIMS DEFINING THE INVENTION ARE AS FOLLOWS:-

1. Fixing device for a rail having a mounting element which on one side is connectable to a wall and on the other side to the rail, wherein the mounting element is a strip which has an angular profile and has two limbs which are provided for holding the rail, the first limb having openings for receiving fixing screws for connection to the wall, and the second limb having a T-profile-shaped longitudinal slot which is open towards the rail and serves for holding and for retaining a locking element which is connected by means of a thread to a mounting screw serving for retaining the rail and wherein the locking element is at least approximately of cuboidal design, and is introduced in a longitudinal orientation into the T-profile-shaped longitudinal slot, and can be rotated therein, into a retaining position, after which the mounting screws is tightened.
2. Fixing device according to claim 1, wherein the openings are arranged in a depression suitable for holding the head of the fixing screw, in a channel running along the first limb.
3. Fixing device according to any one of claims 1 or 2, wherein on the side facing away from the rail, the first limb is provided with longitudinal grooves which serve for holding retaining splines of a spacer element.
4. Fixing device according to any one of claims 1, 2 or 3, wherein the two limbs of the strip are generally perpendicular with respect to each other.
5. Fixing device according to any one of claims 1, 2, 3, or 4, wherein the strip is manufactured from light metal.
6. Fixing device according to any one of claims 1 to 5, wherein one of the thread of the locking element and of the

associated mounting screws is provided with one of a viscous substance and paint.

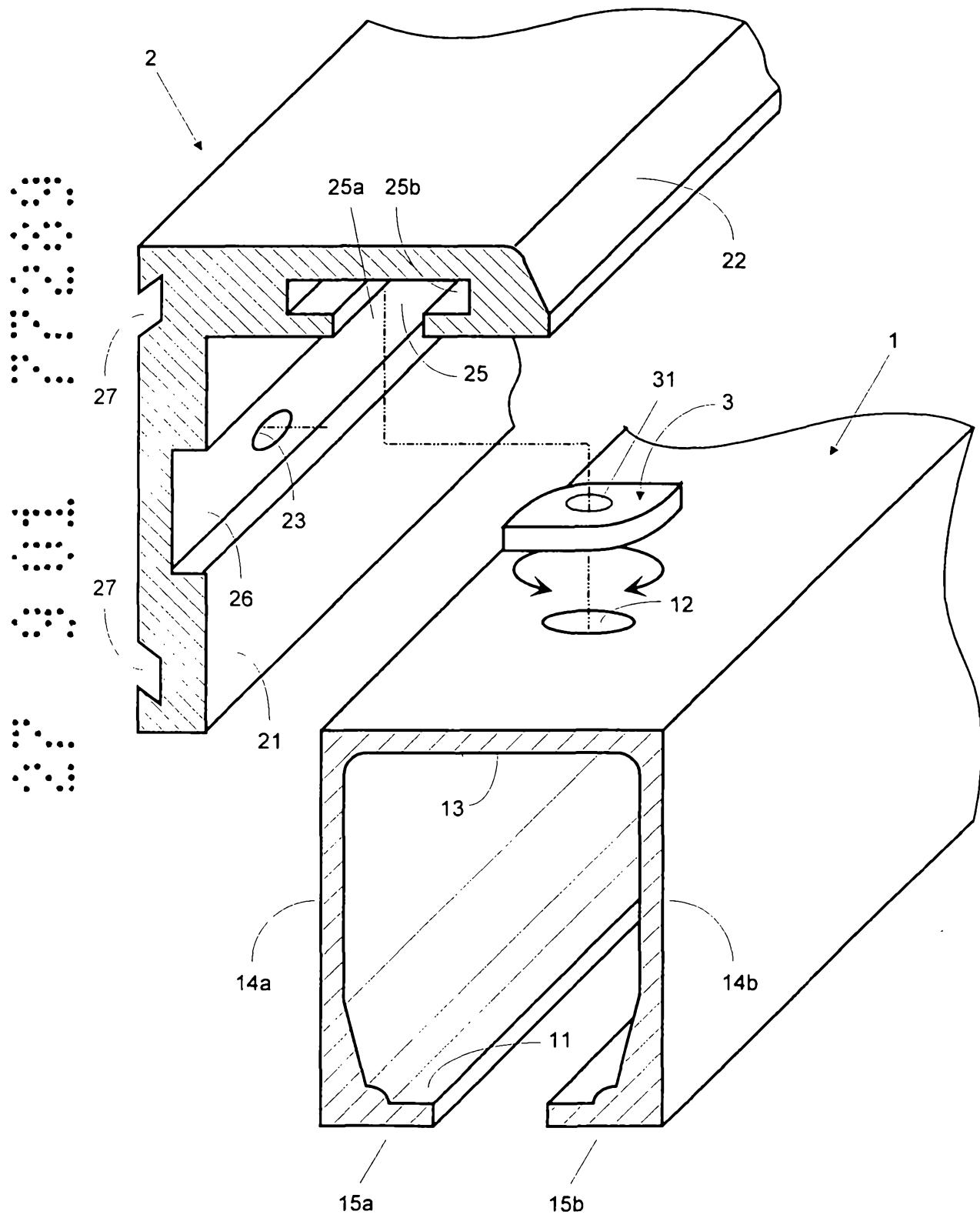
7. Fixing device according to any one of claims 1 to 6, wherein the lengths of the limbs are selected in accordance with the dimensions of the rail, avoiding steps at the transitions between the rail and strip.
8. Fixing device according to any one of claims 1 to 7, wherein a covering is placed onto the ends of the rail and of the strip.
- 10 9. Fixing device according to claim 8, wherein the covering is provided with pins for insertion into one of the T-profile-shaped longitudinal slot and the channel.
- 15 10. Fixing device according to any one of claims 1 to 9, wherein the rail is inserted into the strip having an angular profile and is retained by locking elements introduced into the T-profile-shaped longitudinal slot and corresponding mounting screws.
- 20 11. Fixing device for a rail substantially as herein described with reference to any one of the embodiments of the invention illustrated in the accompanying drawings and/or examples.

DATED this 25th day of July, 2005

Shelston IP

Attorneys for: HAWA AG

Fig. 1



2/3

Fig. 2

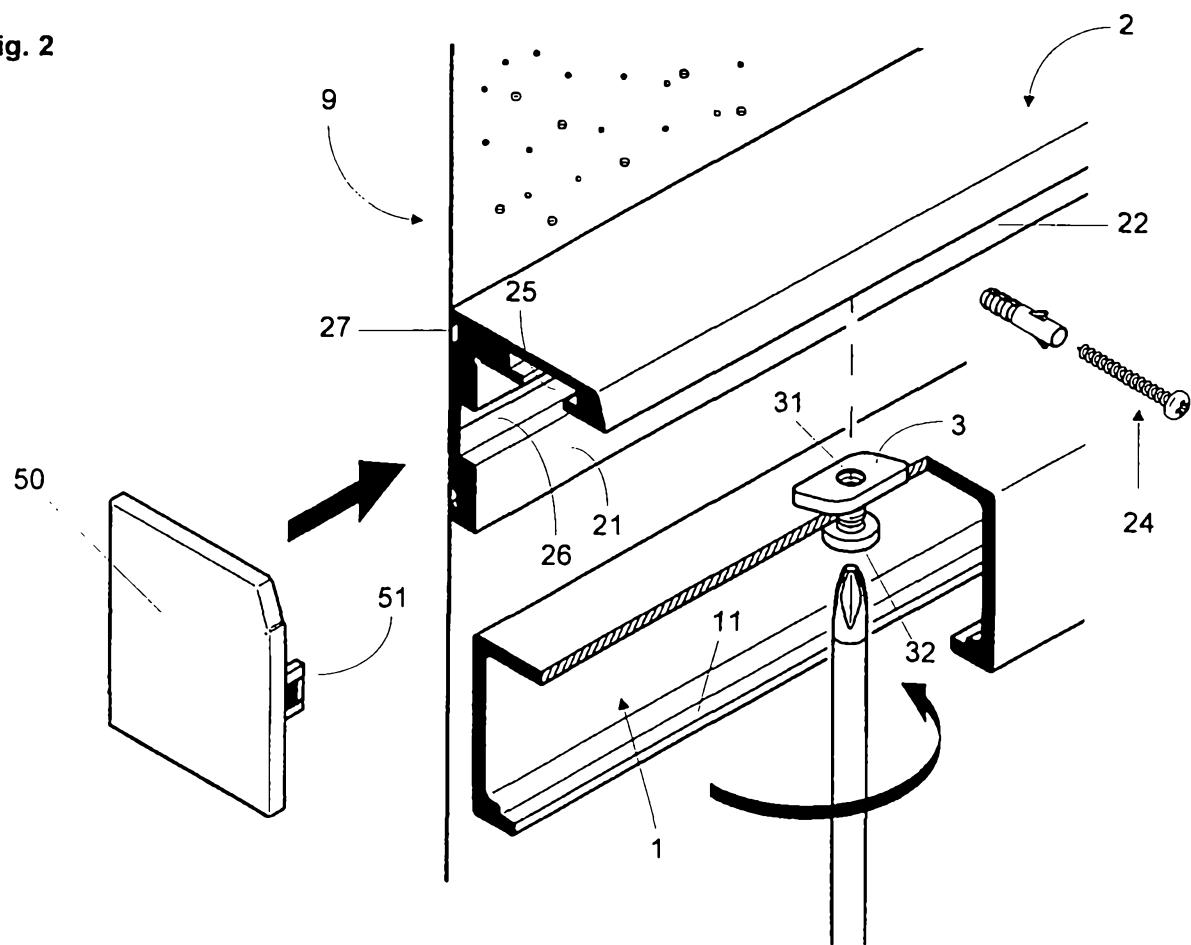


Fig. 3

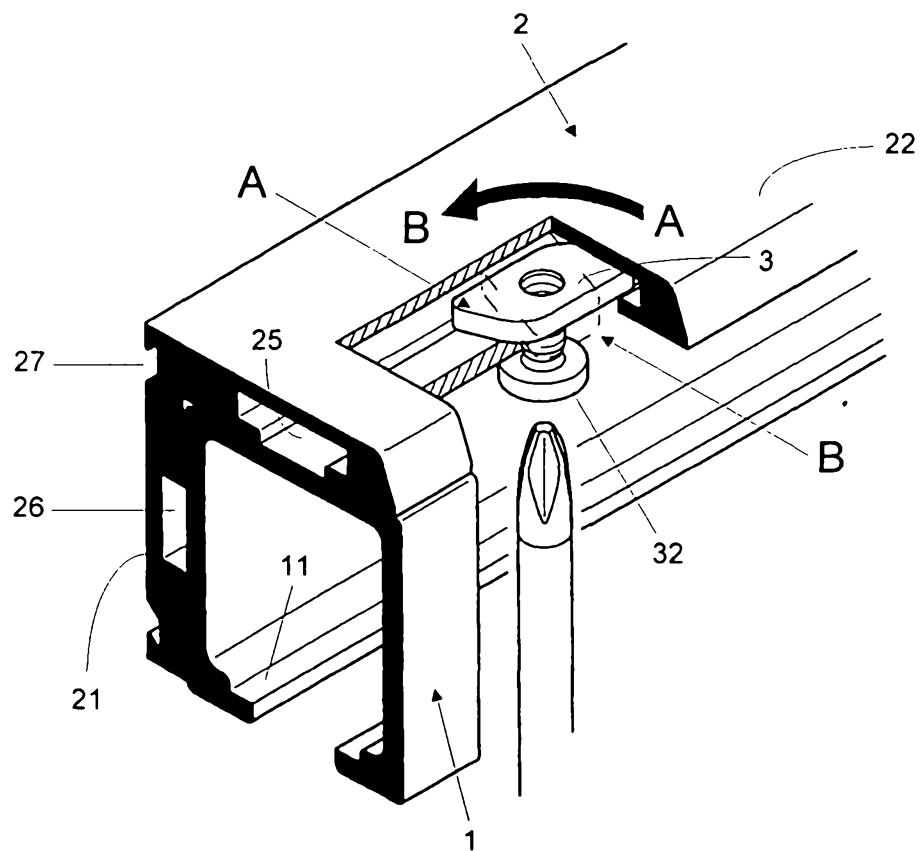


Fig. 4

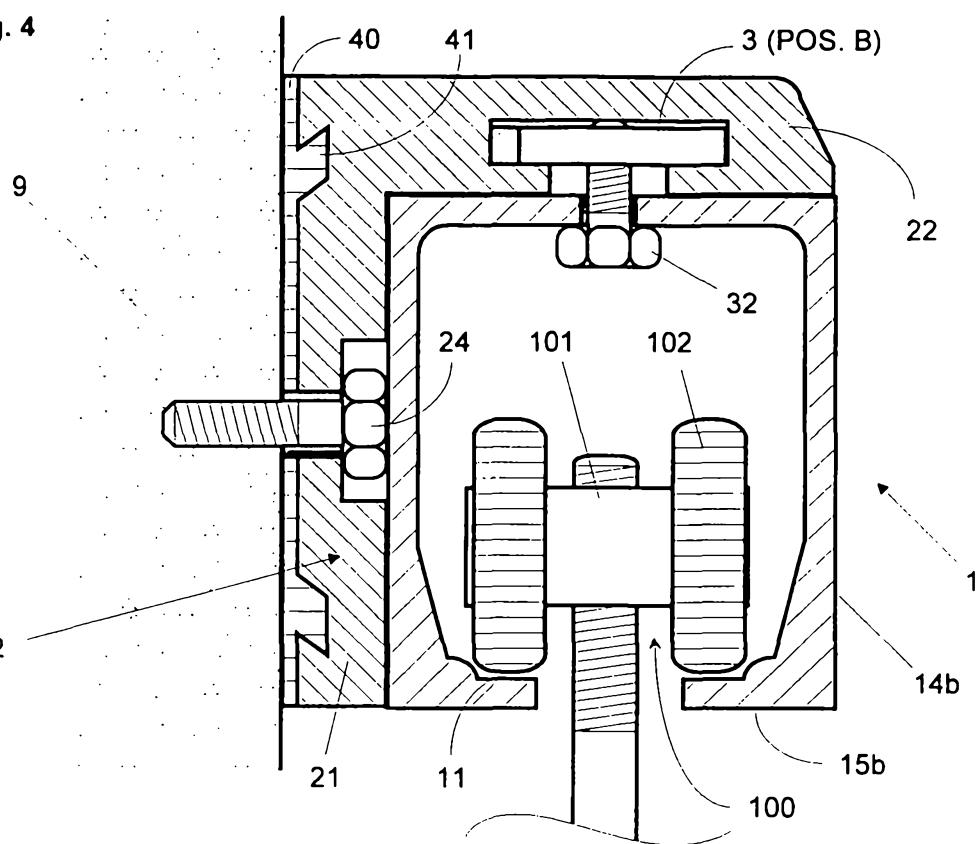


Fig. 5

