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Drawing rule with raising slider.

The drawing rule (10) comprises a device for raising the longitudinal edges (12a) above the surface of the drawing paper; the rule (10) is particularly suitable for use in carrying out pencil drawings and Chin ink drawings. Below the body (11) of the rule, on the side facing towards the drawing sheet, a slider (14) has been provided which is movable along a longitudinal guide (15); the slider (14) comprises at least one raising head (16, 16a) provided on an elastically flexible arm cooperating with lateral cams (17) for shifting the raising head (16, 16a) from a retracted position inside the guide (15) to one or more positions in which it protrudes with respect to the plane defined by the lateral edges (12a) of the rule (10).

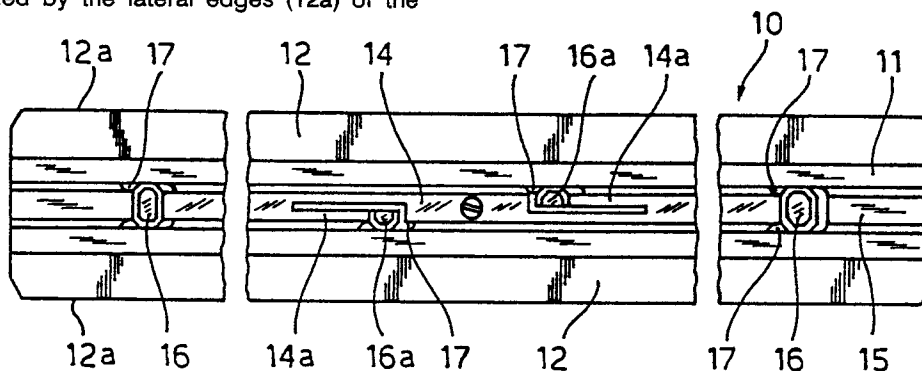


Fig. 11

Drawing rule with raising slider

This invention relates to improvements on drawing rules and refers in particular to a rule for universal drafting devices provided with a rising slider for raising and detaching the lateral edges of the rule from the sheet of drawing paper so as to enable it to be used both for drawings in pencil and in ink.

It is a well known fact that conventional drawing tables are provided with a universal drafting device comprising two rules arranged at right angles rigidly connected to a goniometer. When carrying out drawings in pencil, the two rules, that is to say their lateral edges, slide slightly in contact with the surface of the paper to achieve a perfect execution of the drawing in pencil. However, whenever it is necessary to go over the drawing or carry it out in ink, the edges of the rule must be detached from the sheet of paper beneath it in order to prevent the ink from soiling the edges of the rule and smudging the drawing.

At present, on universal drafting devices different rules are used which are designed either for carrying out pencil drawings or ink drawings, in other words rules specially made with one edge raised with respect to the back plane, which rules must be replaced each time by a rule for pencil drawings, thus taking time and additional expense due to the need to have two complete sets of rules for each universal drafting device. It should also be added that the distance of the edges of the rule from the surface of the drawing sheet, in conventional rules for ink drawings, is constant and is calculated on an average in order to adapt to different types of nibs; however, when using nibs for drawing fine lines, for which it would be advisable for the rule to be closer to the paper, it is easy for the draughtsman to make parallax errors which can only be avoided with more skill and attention.

In order to partially limit the above-mentioned problems, and in particular in order to avoid having to frequently change rules, it was even suggested using spacers which could be fitted onto the lower face of conventional rules for pencil drawings, by snapping them into specially provided seats in the actual rule itself. The use of these spacers however involves an operation which is troublesome and not very easy to carry out due to the fact that it is necessary to turn the rules of the universal drafting device over in order to snap on the spacers. Moreover, even with the spacers, the edges of the rule are set at a fixed distance from the surface of the drawing paper, without any possibility whatsoever of varying it.

The scope of this invention is to provide a drawing rule which is provided with an edge raising device which is either built into or forms part of the rule itself, and which can be easily operated in order to use the same rule for carrying out either pencil or ink drawings, without having to continually fit and/or remove extra parts, or remove and turn the rule over.

A further scope of this invention is to provide a rule as described above, by means of which it is possible in each case to adjust and to vary the distance of the lateral edges from the surface of the drawing sheet, according to the various requirements and without changing any part of the rule itself.

A still further scope of this invention is to provide a rule for universal drafting devices, with a device for raising the lateral edges in order to carry out pencil and/or ink drawings, said device being adaptable for rules of different lengths.

The above has been made possible by means of a drawing rule according to this invention, comprising a manually operable device for raising the lateral edges with respect to the surface of a drawing sheet, in which the raising device comprises a longitudinally movable slider underneath the rule itself, said slider comprising at least one raising head provided on the end of an elastically flexible arm, and guide means for guiding said slider and for shifting said raising head from a first operative position in which the raising head is completely retracted with respect to the back plane defined by the lateral edges of the rule, so as to enable it to be used for carrying out pencil drawings, to a second operative position in which the raising head is partially protruding from the aforesaid back plane.

Although it is possible to use independent sliders for the same rule, each one provided with at least one raising head, it is however preferable to use a single slider of an adequate length provided with two or more raising heads which can be actuated simultaneously by means of a single control button located on the upper or front side of the rule.

These and further features of the drawing rule with a sliding device for raising the lateral edges, will ensue from the following description of a number of embodiments, given purely by way of example, in which:

Fig. 1 shows a top view of a rule incorporating a raising device according to a first embodiment of this invention;

Fig. 2 shows a bottom plan view of the same rule of the previous figure;

Fig. 3 shows an enlarged cross-sectional view along line 3-3 of figure 1;

Fig. 4 shows an enlarged longitudinal cross-sectional view along line 4-4 of figure 3;

Fig. 5 shows an enlarged bottom view of the slider guide and control cams for one of the raising heads of the rule;

Fig. 6 shows a longitudinal cross-sectional view along line 6-6 of figure 5;

Fig. 7 shows a cross-sectional view along line 7-7 of figure 5;

Fig. 8 shows a cross-sectional view along line 8-8 of figure 2 with the raising head completely retracted;

Fig. 9 shows a cross-sectional view similar to that of figure 8, with the raising head completely protruding;

Fig. 10 shows a longitudinal cross-sectional view along the line 10-10 of figure 8;

Fig. 11 shows a bottom plan view of a second embodiment.

Figures 1 and 2-and the subsequent views and cross-sectional view of figures 3 to 10 show a first embodiment of a drawing rule incorporating the raising device according to this invention. As is shown, the rule 10 comprises a main central portion 11 with millimetric fins 12 whose lateral edges 12a, along which the pencil point or ink pen is made to slide, define a back plane 13 (fig. 3) destined to coincide or come to rest parallel with and at a short distance from the surface of a drawing sheet, according to whether the drawing is carried out in pencil or in ink. In the case shown, the lateral fins 12 have been shown as separate parts secured to the central part 11 of the rule, however it is obvious that the rule could also be made in one piece.

According to this invention, the rule comprises a manually-actuable raising slider means in order to vary and adjust the distance of the lateral edges 12a of the rule from the surface of the drawing sheet. The device in question comprises a slider 14 in the form of an elastically flexible arm, which runs along a longitudinal guide slot 15 provided below or to the rear of the central part 11 of the rule. At one or both ends, the slider 14 is provided with a raising head 16 running along lateral cam surfaces 17 which, in the case of a slider with one or more heads, are slanted and all facing in the same direction.

In particular, as shown in figures 5, 6 and 7, the longitudinal slot 15 for guiding the slider 14, has a flat bottom 15a, and flat side walls 15b which are provided, in a suitable position, with cams 17. In the case in question, each cam 17 is defined by a sloping surface 17a, which forms a small angle of a few degrees with respect to the main plane 13 of the rule, and a flat side surface 17b parallel to the

sliding direction of the slider, for guiding the raising head 16. The sloping surface 17a and the corresponding flat side surface 17b, as shown in the cross-sectional view of figure 6, start from a point slightly further in or higher than the bottom of the slider-guide slot 15 and extend in the same longitudinal direction and downwards, that is to say, towards the main back plane 13 of the rule, for a distance and with a slope calculated to allow the raising head 16 to shift from a first completely retracted position (figs. 8 and 10) in which the rule rests with its edges 12a directly on the surface 18 of the drawing sheet, to a protruding position (figs. 9 and 10) in which the head 16 rests on the surface 18, thereby keeping the edges 12a of the rule raised with respect to the aforesaid surface 18. Since the raising head 16 moves along a sloping surface, it is obvious that for intermediate positions of the head 16, between the two previously mentioned extreme positions, there will be corresponding intermediate distances of the rule edge 12a from the surface 18 of the drawing sheet, which can be adjusted each time by manually shifting the position of the slider 14.

As mentioned previously, the slider 14 is manually actuable from the upper part of the rule: the slider 14 is connected to a control button 19 by means of a screw 21 which passes through a hole in the slider 14 and screws into a matching hole in a shank 20 on the control button. The shank 20 is elongated in shape and runs along an elongated slot 22 in the central part 11 of the rule, said slot 22 being longer than the shank 20 in order to define both the working stroke for the raising heads of the slider, and a stop in the two extreme operative positions.

In the case of figure 2, the rule 10 comprises a raising slider 14 provided with two raising heads 16, one at each end, which are moved simultaneously by means of a single control button; it is obvious however that, within the above described inventive principle, other solutions are possible: for example, the slider could be provided with a single raising head, in which case it would be expedient to provide the rule with two or more sliders with independent control buttons or, in the case of particularly long rules, the slider could be provided with a larger number of heads and namely, two end heads and one or more intermediate heads. This latter solution is shown in the example in figure 11.

In figure 11, the parts which are identical or equivalent to those of the previous figures have been indicated with the same references.

Consequently, also in this embodiment, the rule 10 comprises a central part 11 with a longitudinal guide 15 on the lower portion, in which a slider 14 moves. The slider 14 is provided at the ends with two raising heads 16 with the relative lateral

cams 17, as well as two intermediate raising heads 16a each of which is connected to a respective flexible arm 14a disposed parallel and coplanate with the slider 14; the heads protrude laterally and in the case of the intermediate heads 16a only one cam 17 is provided; the two intermediate heads are situated on the two opposing edges of the slider 14, on opposite sides of the control button, so as to symmetrically support the rule. In this case too, the cams 17 of the raising heads 16a must all face and slope in the same direction.

It will be clear, from what has been described and shown in the figures of the accompanying drawings, that the invention refers to a new drawing rule and, in particular, to a rule for universal drafting devices, suitable for carrying out drawings in pencil and in ink, in which, by simply shifting a manually-operable slider located on the upper side of the rule, in a longitudinal direction, it is possible to raise and lower the lateral edges with respect to the surface of the drawing sheet. It is obvious however that what has been described with reference to the accompanying drawings, was given purely by way of example and that other equivalent solutions are possible; for example, in the illustrated case, the raising head has a flat surface which runs along a sloping plane defined by one or two lateral cams 17, however the disposition could also be reversed by providing a wedge-shaped head, or with a gradually variable thickness, whose lower sloping surface, or in which lateral sloping surfaces, run along a projecting surface or ledge beneath the central part of the rule, thereby obtaining cam means for guiding and shifting the raising heads, wholly similar or equivalent to those previously illustrated.

Claims

1. A drawing rule comprising a device for raising the rule above the drawing sheet, said rule being provided with a central part (11) having lateral fins whose edges define a main back plane - (13), characterized by the fact that the raising device comprises a slider (14) to the rear of the central part (11) of the rule (10), guide means (15) for the slider (14), the latter (14) being movable longitudinally from a first to a second operative position, said slider (14) being provided with at least one raising head (16) at one end of an elastically flexible arm, and cam means (17) acting on the raising head (16) to shift it from a retracted position to a protruding position with respect to the main plane (13) of the rule, in the aforesaid first and second operative positions of the slider (14).

2. Rule as claimed in claim 1, characterized by the fact that the slider (14) is movable along a longitudinal guide slot (15) below the central part - (11) of the rule (10).

3. Rule as claimed in claims 1 and 2, characterized by the fact that said cam means (17) comprise at least one sloping surface (17a) for the raising head (16) of the slider, to the rear of the central part (11) of the rule.

4. Rule as claimed in claim 3, characterized by the fact that the cam means (17) comprise at least one surface portion (17a) disposed according to a sloping plane along one lateral edge of the slider guide slot (15).

5. Rule as claimed in claim 3, characterized by the fact that the cam means (17) comprise surface portions (17a) disposed according to a sloping plane, on both sides of the slider guide slot (15).

6. Rule as claimed in claim 1, characterized by the fact that the slider (14) comprises first and second raising heads (16) at its opposing ends, and in which the cam means (17) comprise sloping surfaces (17a) facing in the same direction.

7. Rule as claimed in claim 6, further characterized by the fact that the slider (14) is provided with at least one intermediate raising head (16a) on a supplementary flexible arm (14a).

8. Rule as claimed in claim 7, characterized by the fact that it comprises a first and at least a second intermediate raising head (16a), said intermediate heads (16a) being alternately disposed on two opposing sides of the slider (14).

9. Rule as claimed in claim 7, characterized by the fact that each intermediate raising head (16a) is provided on a flexible arm (14a) which is longitudinal and coplanate with the slider (14).

10. Rule as claimed in claim 1 or 7, characterized by the fact that the raising heads (16, 16a) protrude laterally with respect to the edges of the slider (14).

11. Rule as claimed in claim 1, characterized by the fact that the slider (14) is connected to a manually-actuable pushbutton (19) on the upper side of the rule (10).

12. Rule as claimed in claim 1, characterized by the fact that it comprises stop means (20, 22) for stopping the slider (14) in the aforesaid first and second operative positions.

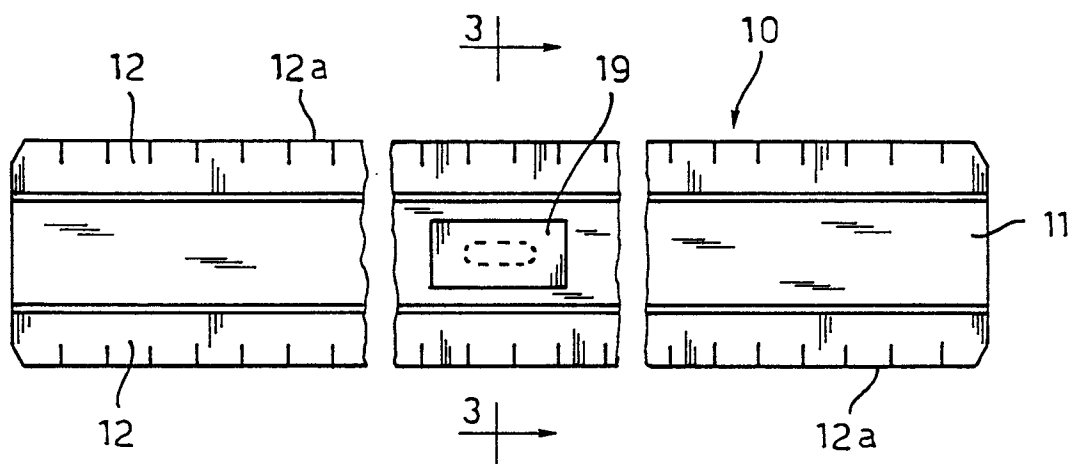


Fig. 1

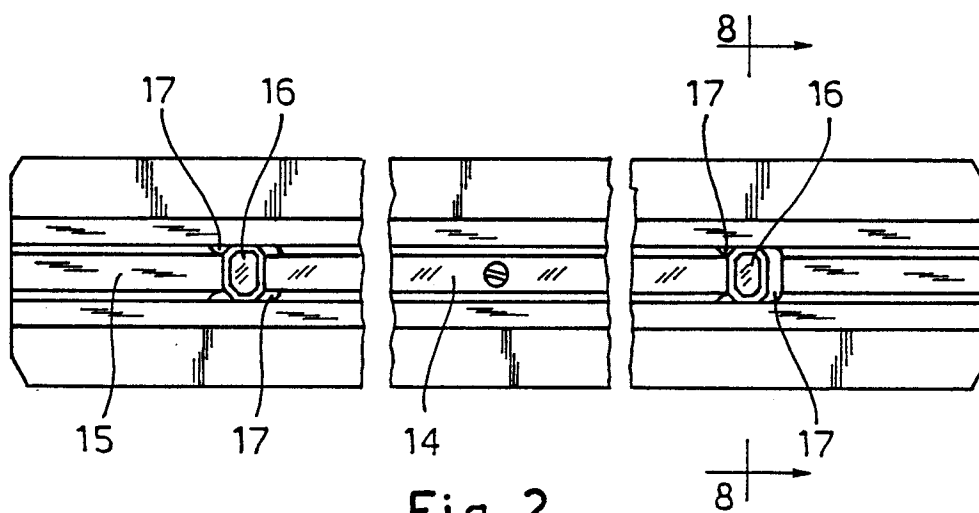


Fig. 2

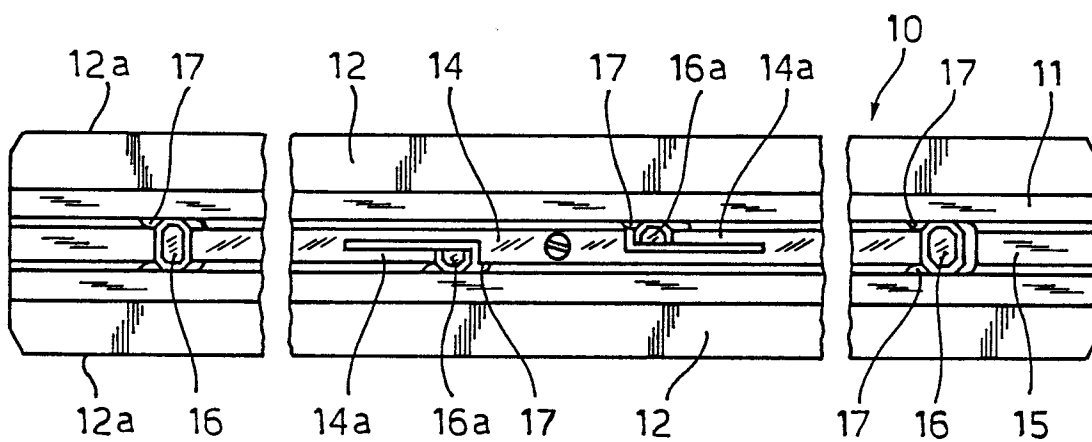


Fig. 11

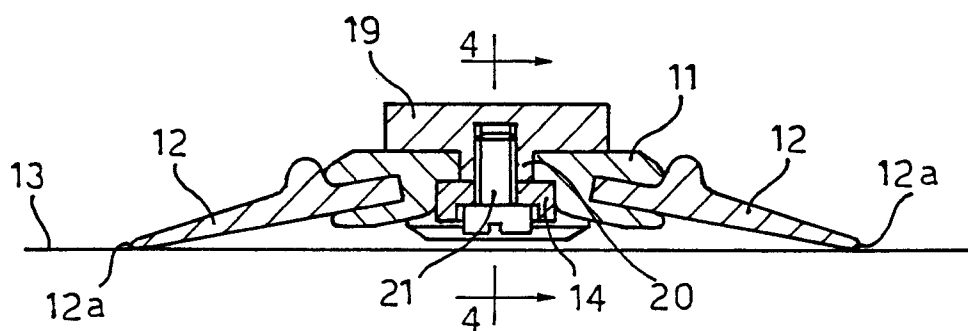


Fig.3

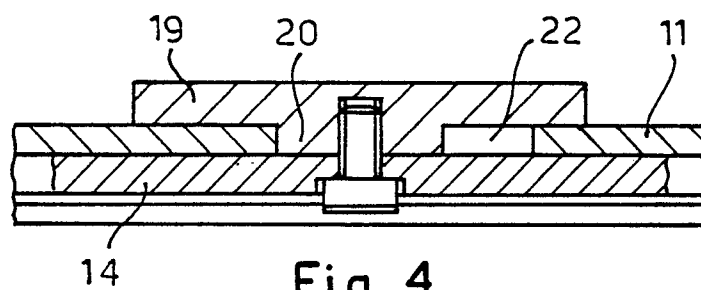


Fig. 4

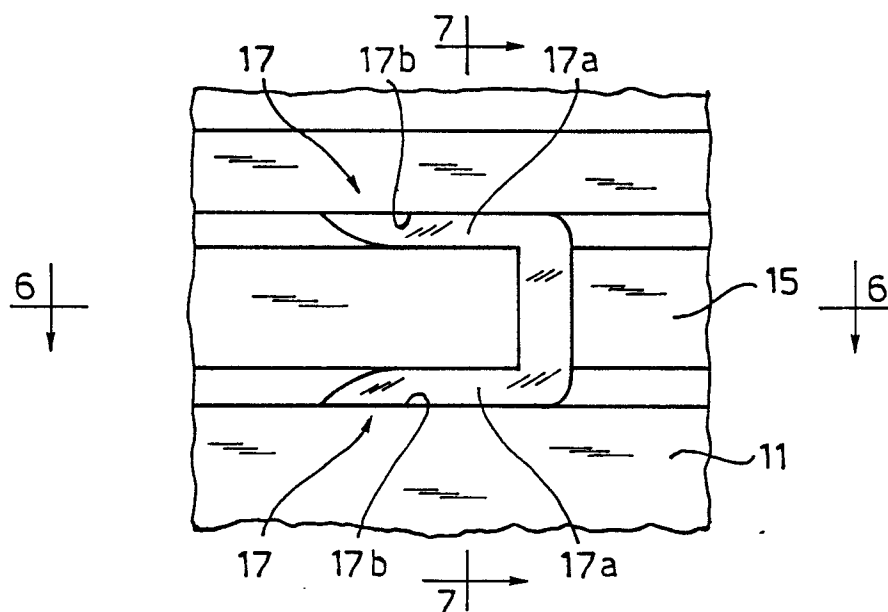


Fig.5

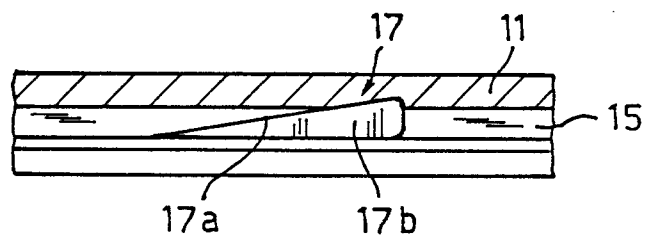


Fig. 6

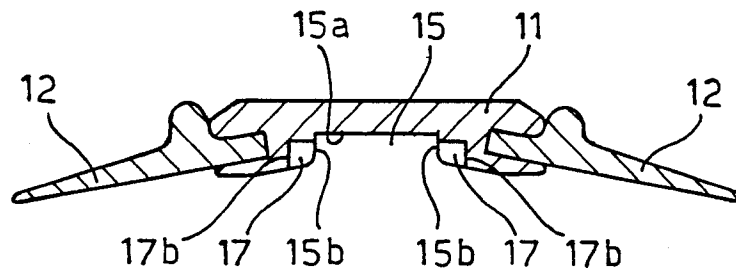


Fig. 7

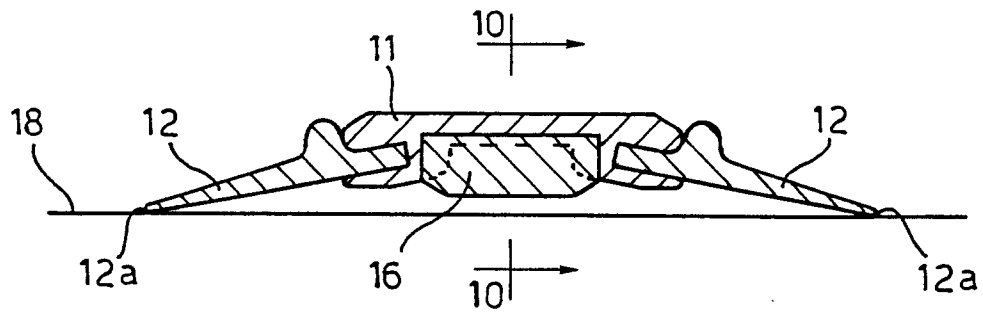


Fig. 8

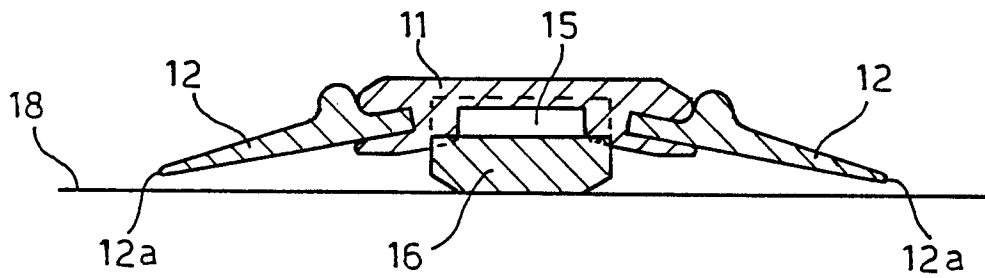


Fig. 9

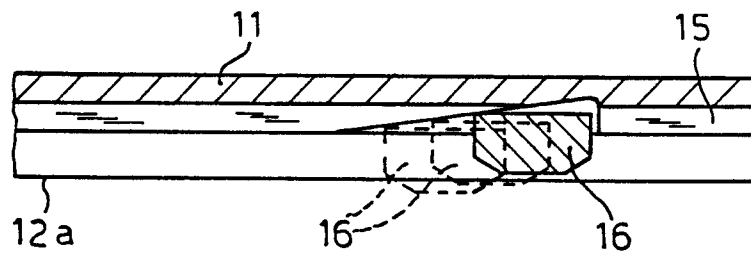


Fig. 10