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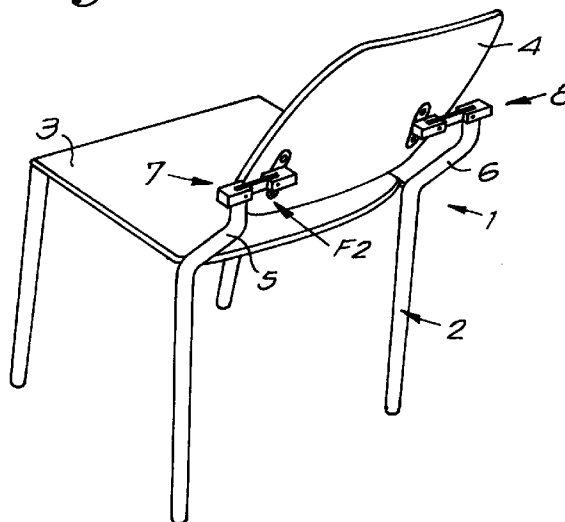
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(54) **Seat**

(57) Seat, consisting of a frame, and a bottom and back supported hereby, characterized in that the back (4) is attached to the frame (2) by means of one or more connecting elements (7-8) which allow a torsional spring movement of the back (4) around a mainly horizontal axis (12).

Fig. 1



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Description

The present invention relates to a seat, more particularly a chair which is provided with a movable back.

More specifically the invention concerns a seat of which the position of the back easily fits the back of the user. Hereby is aimed at a solid but structurally simple connection between the back and the frame of the seat, which is particularly adapted to be used in for example school chairs and similar.

The seat according to the invention is hereto composed of a frame, and a bottom and back supported hereby, the back being attached to the frame by means of one or more connecting elements which allow a torsional spring movement of the back around a mainly horizontal axis.

Preferably each connecting element is composed of two parts which can elastically rotate with respect to each other around a horizontal or almost horizontal axis, by means of leaf spring applied between both parts which undergoes a torsion according to its longitudinal axis.

In order to better show the characteristics of the invention, some preferred embodiments are described hereafter, as an example, and without any restrictive character whatsoever, reference being made to the accompanying drawings, in which:

figure 1 represents a perspective view of a seat, more particularly a chair, according to the invention; figure 2 represents at an enlarged scale a view according to the arrow F2 in figure 1; figure 3 represents a perspective view of a more perfect embodiment of a seat according to the invention; figure 4 represents at an enlarged scale a view according to the arrow F4 in figure 3; figure 5 represents a section according to the line V-V in figure 4; figure 6, in an exploded condition, represents a view of the composing parts of the connecting element according to figure 4; figures 7 and 8 represent sections according to the lines VII-VII and VIII-VIII in figure 6; figures 9, 10 and 11 represent sections according to the lines IX-IX; X-X and XI-XI in figure 4; figure 12 represents a section analogous to the one of figure 11, however in another position.

As shown in figure 1 the seat 1 according to the invention is composed of a frame 2, a bottom 3 and a back 4.

In the represented embodiment the frame 2 is formed by tubular profiles to which the bottom 3 is secured. The back 4 is attached to supports 5-6, situated at both sides of the seat 1, which form a part of the aforesaid frame 2.

According to the invention the back 4 is fixed to the

frame 2, more particularly to the supports 5-6, by means of connecting elements 7-8 which allow a torsional spring movement of the back 4 along a mainly horizontal axis.

The connecting elements 7 and 8 are analogous to each other, however they form the reflection of each other.

Such as represented more in detail in figure 2, the connecting elements 7 and 8 are composed of two parts 9 and 10, which are respectively fixedly connected to the frame 2 and the back 4 and between which an elastic element is applied, preferably a leaf spring 11 which can undergo a torsion. This leaf spring 11, which shows a rectangular oblong shape, extends according to its longitudinal direction mainly according the aforesaid axis 12.

Each part 9 is formed by a body which is suitably secured to a support 5-6, the parts 10 being formed by bodies which are for example provided with a flange 13 to which the back 4 is secured.

Both parts 9 and 10 are provided at their opposite faces with a seat, respectively 14 and 15, more particularly a groove, in which the leaf spring 11 with its extremities 16-17 is applied, and in which the leaf spring 11 is attached for example by means of rivets 19, screws, pins, or similar, 18-19.

When during use of the seat a pressure is exerted on the lower or the upper side of the back 4, the leaf spring 11 will under this influence undergo a torsion resulting in a rotation of the back around the aforesaid axis 12. When the pressure on the back 4 diminishes by the spring force of the leaf spring 11, the back will turn back to its original position.

In this way the back 4 can adapt itself to a large extend to the shape and the position of the back of the user.

A preferred variant of the aforesaid embodiment is represented in the figures 3 to 12.

The parts 9 and 10 are hereby provided with cylindrical parts 20-21 adjacent to each other, which constitute a housing for the leaf spring 11.

As represented in figures 9 and 10, the leaf spring 11 is caught with its extremities 16-17 in the seatings 14-15, which are situated in the bottom of the cylindrical parts 20-21, and is otherwise, analogous to the embodiment of the figures 1 and 2, secured by means of rivets or similar 18 - 19.

The connecting elements 7-8 according to the embodiment of figures 3 to 12 are furthermore provided with guiding means allowing the parts 10 to hinge with respect to the parts 9, and also with abutment means which limit the rotation during the hinging.

Hereto the parts 9 and 10 are each provided with two elements 22-23 and 24-25, which are situated at the inner sides of the cylindrical parts 20-21 and for example form one part herewith.

The elements 22 and 23 are situated diagonally opposite to each other and each extend with a part out-

side the cylindrical part 20. The same applies for the elements 24 and 25 which extend outside the cylindrical part 21.

In assembled position the elements 22-23 are situated between the elements 24-25, such as represented in figure 11. The elements 22-23-24-25 are provided with recesses 26-27-28-29 which leave a free space 30 for the leaf spring 11.

The elements 22 and 23 show abutment surfaces 31-32-33-34 which, by turning in the one or the other direction, can come into contact with the abutment surfaces 35-36-37-38 which are applied to the elements 24 and 25. The respective abutment surfaces are situated at distances from each other such that the maximum rotation, departing from the rest position up to the furthestmost backward tilted position, is in the order of 7 degrees. In a typical embodiment the angle will be 6,25 degrees.

The elements 22-23 are also provided with guiding surfaces 39-40 with which they precisely fit into the cylindrical part 21, the elements 24-25 being provided with guiding surfaces 41-42 with which they fit into the cylindrical part 20.

Such as is also represented in the figures 6, and 9 up to 12, the leaf spring 11 is preferably composed of several lamellae, preferably of a number of three, respectively 43-44 and 45.

The working of the connecting elements 7 and 8 is analogous to the one of the embodiment according to figures 1 and 2, with this difference that the parts 9 and 10 can rotate around each other only and distortions in other directions are excluded, and that the movement of the back 4 is limited by means of the aforesaid abutment surfaces 31 to 38.

The use of leaf springs 11 which are composed of several lamellae offers the advantage that a solid coupling is formed between the parts 9 and 10, while a sufficiently supple spring effect is maintained. Moreover, it causes the advantage that such coupling is not broken when a rupture occurs in one lamella.

It is clear that the frame 2 can adapt different shapes and for example can be composed of a closed under-frame. The invention can also be applied to chairs of which the back 4 is secured to only one support instead of to the aforesaid two supports 5 - 6.

The present invention is in no way limited to the embodiments described above and represented in the drawings, but such a seat can be realised in different variants, without leaving the scope of the invention.

Claims

1. Seat, consisting of a frame, and a bottom and back supported hereby, characterized in that the back (4) is attached to the frame (2) by means of one or more connecting elements (7-8) which allow a torsional spring movement of the back (4) around a mainly horizontal axis (12).

2. Seat according to claim 1, characterized in that each connecting element (7-8) shows two parts (9-10), which are respectively connected with the frame (2) and with the back (4), a leaf spring (11) which can undergo a torsion being applied between these parts (9-10).

3. Seat according to claim 2, characterized in that the leaf spring (11) shows a rectangular oblong shape and extends in its longitudinal direction mainly according to the aforesaid axis (12).

4. Seat according to claim 2 or 3, characterized in that the leaf spring (11) is composed of several lamellae (43-44-45) joined to each other.

5. Seat according to any one of the claims 2 to 4, characterized in that the leaf spring (11) is caught with its extremities (16-17) in seatings (16-17) which are applied in the sides facing each other of the aforesaid parts (9-10).

6. Seat according to claim 5, characterized in that the leaf spring (11) is fixedly connected with its extremities (16-17) to the aforesaid parts (9-10) by means of connecting elements, such as rivets (18-19).

7. Seat according to any one of the claims 2 to 6, characterized in that the connecting elements (7-8) are provided with abutment means which limit the rotation of the back (4).

8. Seat according to any one of the claims 2 to 7, characterized in that the connecting elements (7-8) are provided with guiding means allowing the two parts (9-10) to hinge with respect to each other.

9. Seat according to any one of the claims 2 to 8, characterized in that the connecting elements (7-8) are provided with a housing which surrounds the leaf spring (11).

10. Seat according to claims 7, 8 and 9, characterized in that the housing is composed of cylindrical parts (20-21) which are provided at each of the aforesaid parts (5-6) and that the abutment means, as well as the guiding means, are formed by elements (22-23-24-25) which are applied, two by two, diagonally opposed to each other, to the aforesaid cylindrical parts (20-21), which, on the one hand, fit between each other and can come into contact with each other by twisting and, on the other hand, show guiding faces (39-40-41-42) allowing to fit the rotatable parts (5-6) into each other in a mutually rotatable manner.

11. Seat according to any one of the preceding claims, characterized in that it is composed of a chair with

on both sides a support (5-6) to which the back (4) is connected, each time by means of one of the aforesaid connecting elements (7-8), these connecting elements (7-8) forming the sole movable connections of the seat.

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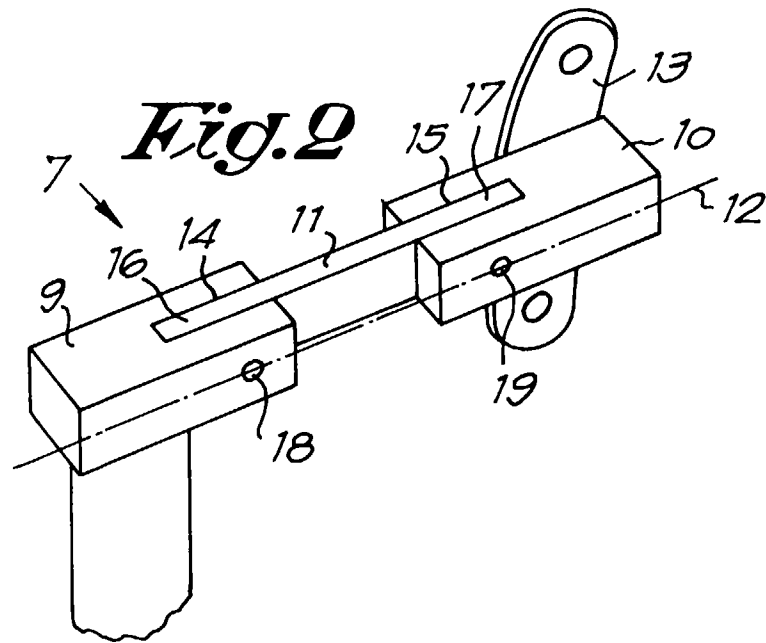
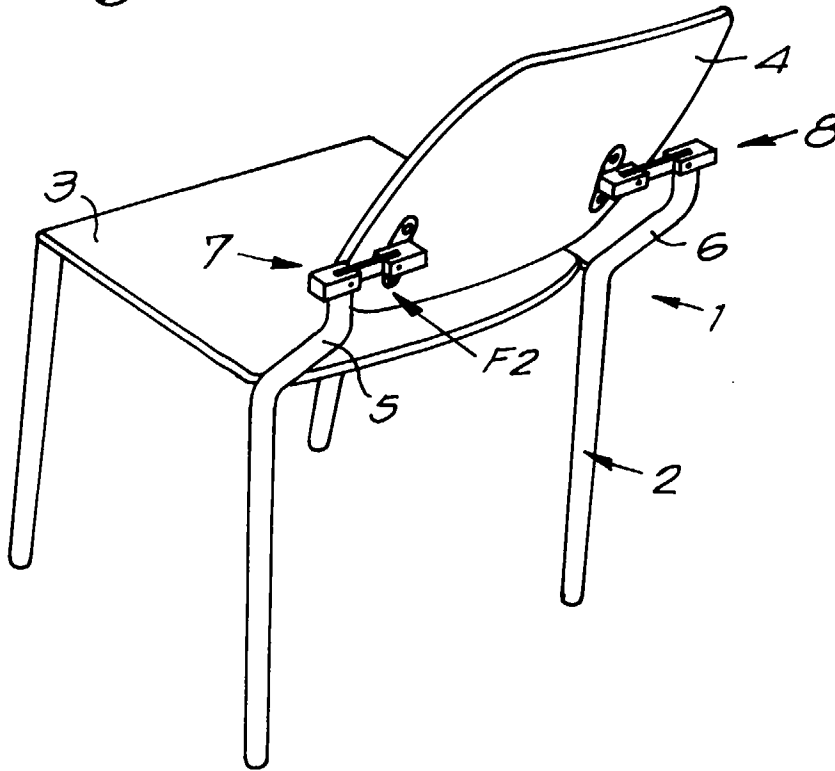
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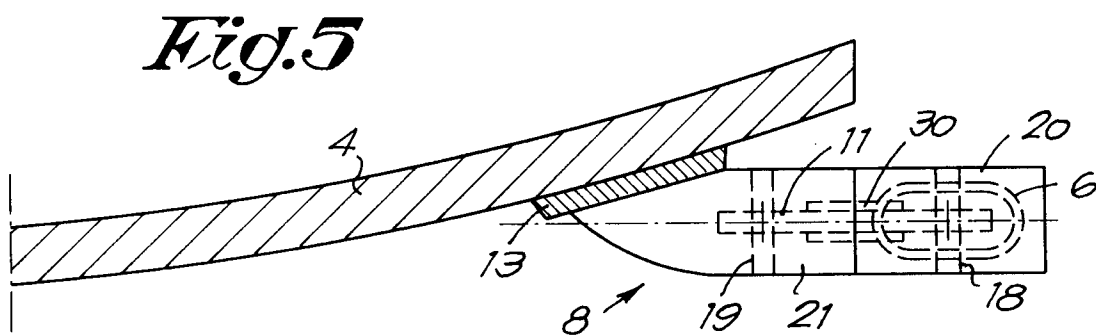
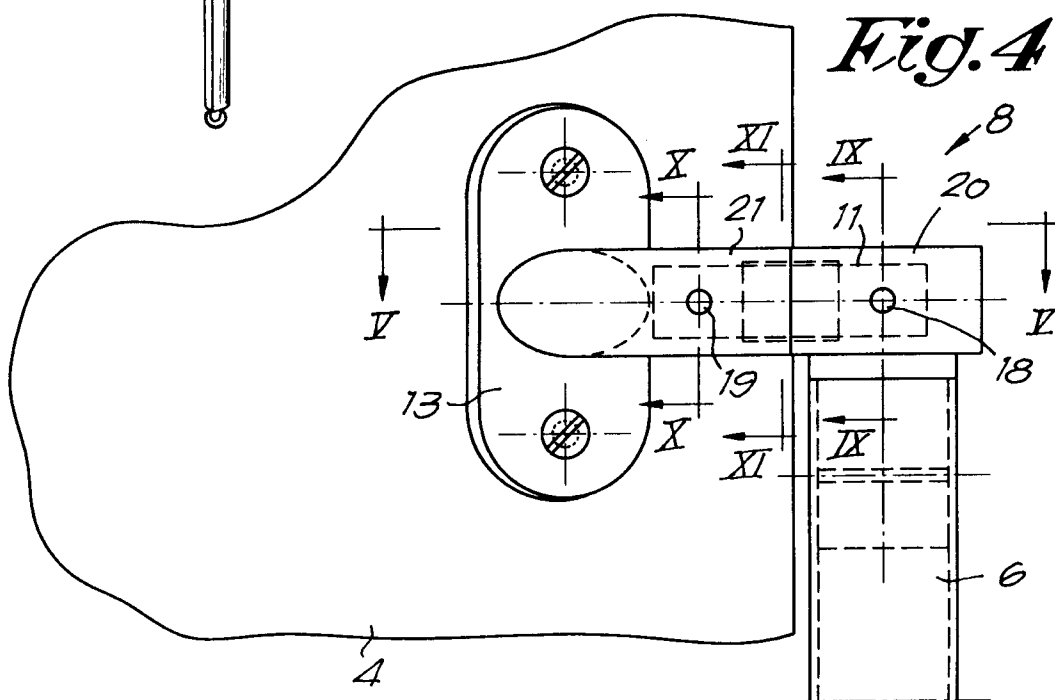
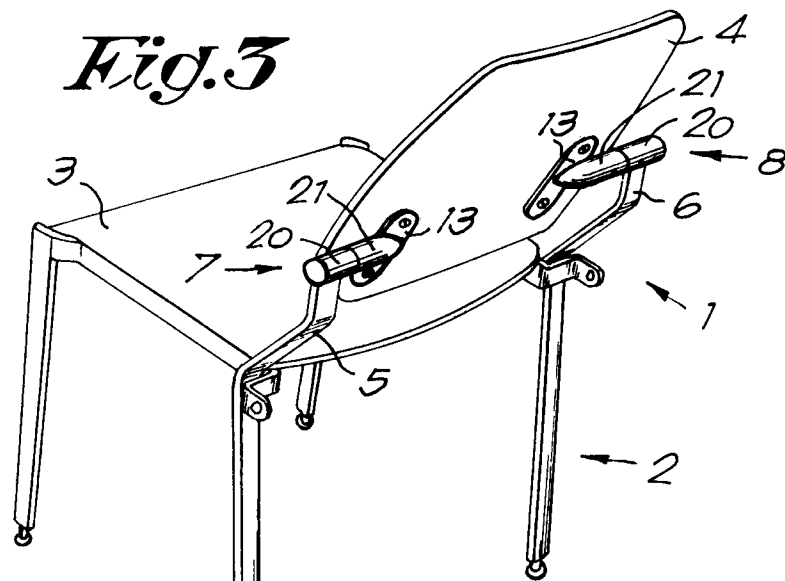
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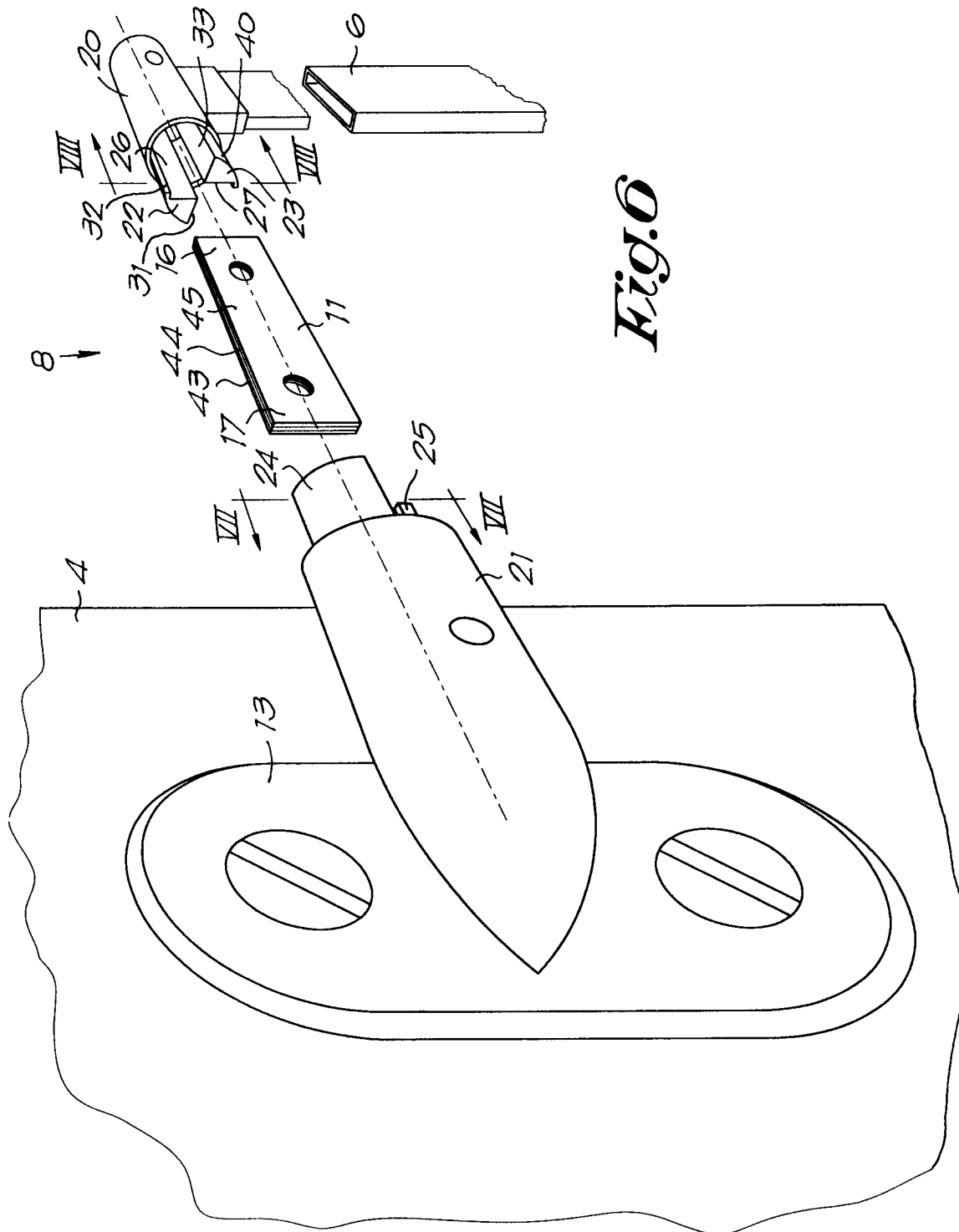
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Fig. 1







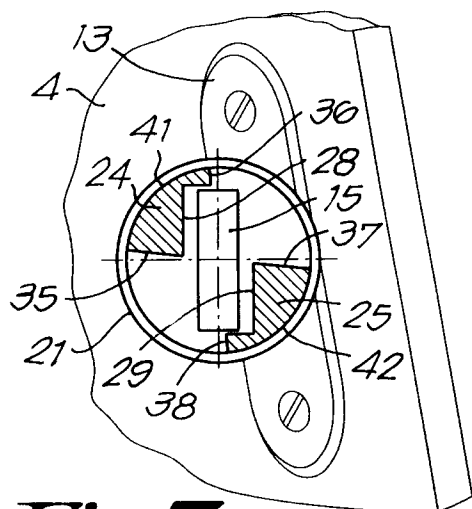


Fig. 7

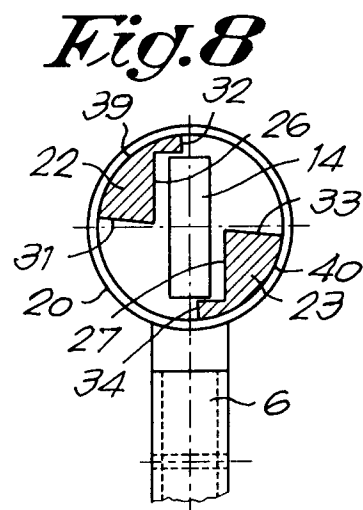


Fig. 8

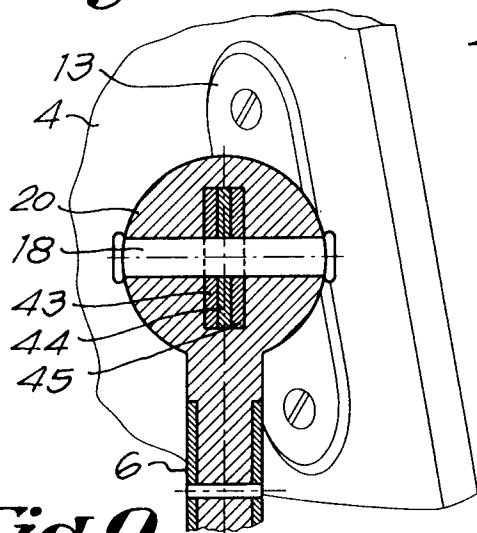


Fig. 9

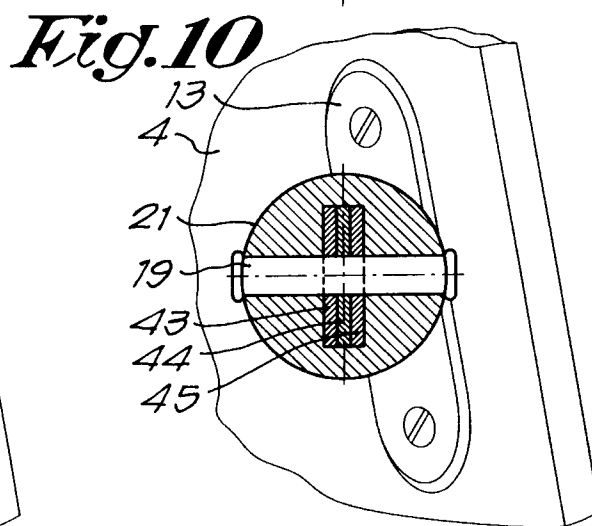


Fig. 10

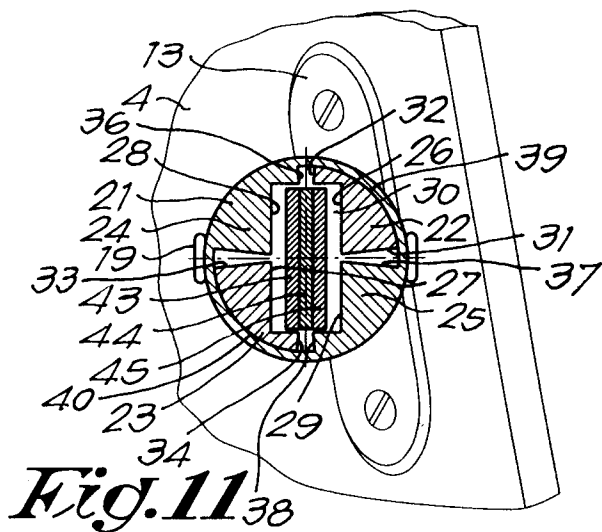


Fig. 11

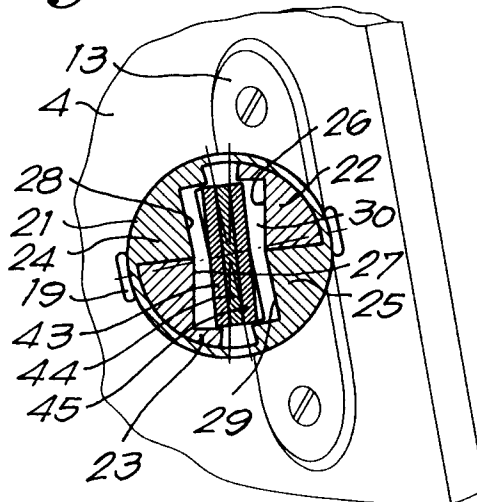


Fig. 12