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(54) Hood top for a motor vehicle.

(57) A hood top (1) for a motor vehicle comprises an outer panel (2), an inner panel (13) secured to the outer panel (2), and a striker (20) for a latch mechanism (30) secured to the inner panel (13) towards the front of the hood top by welded joints (14,25). The striker (20) and the part of the inner panel (13) to which it is secured are so disposed relative to the outer panel (2) that when the hood top (1) is closed a substantial proportion of the reaction to the closing forces on the hood top (1) is transmitted to the welded joints (14,15) as shear forces. Since welded joints are capable of withstanding greater shear forces than compressive or tensile forces, the required durability of the connection between the strik-

er (20) and the inner panel (13) can be achieved without the necessity for additional reinforcements or complex shaping of the inner panel (13).

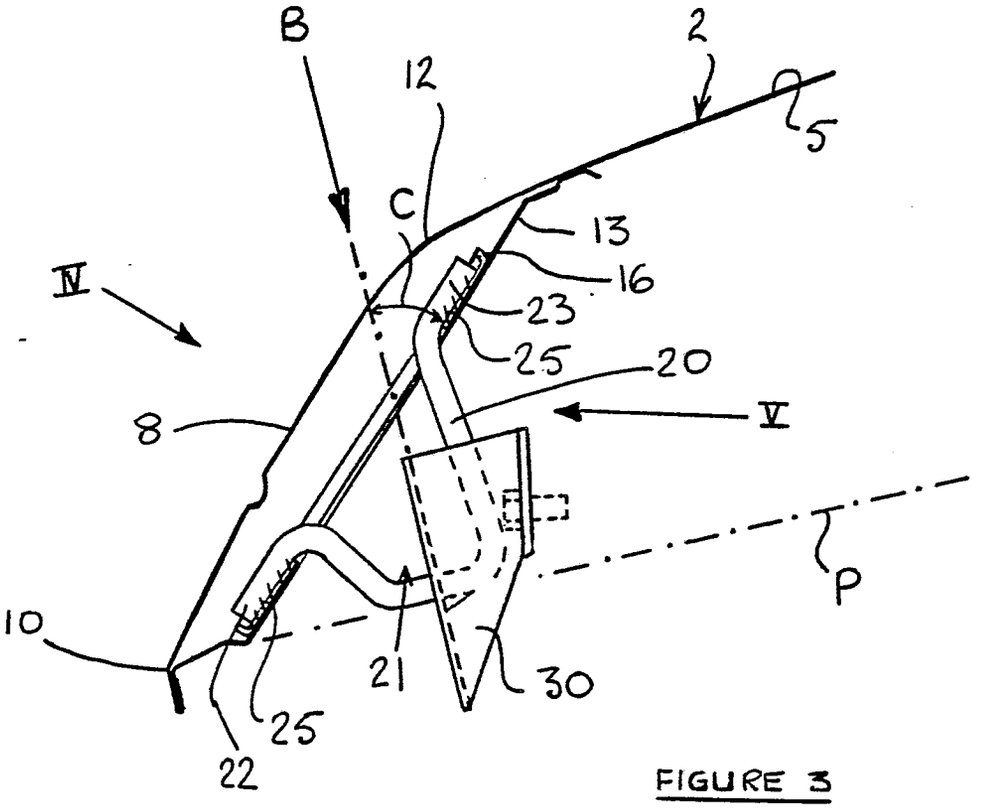

FIGURE 3

HOOD TOP FOR A MOTOR VEHICLE

This invention relates to hood tops for motor vehicles.

Known hood tops (or bonnets) for motor vehicles comprise an outer panel, an inner panel secured to the outer panel, and a striker for a latch mechanism secured to the inner panel towards the front of the hood top. Welded joints securing the striker to the inner panel may fail not only as a result of the application of excessively high opening forces on the hood top, but also as a result of the application of excessively high closing forces. In order to provide the required durability in relation to closing forces, joints between the striker and the inner panel have often been provided with additional reinforcement plates or pressings of complex shape in the inner panel.

According to the present invention there is provided a hood top for a motor vehicle comprising an outer panel, an inner panel secured to the outer panel, and a striker for a latch mechanism secured to the inner panel towards the front of the hood top by welded joints characterised in that the striker and the part of the inner panel to which the striker is secured are so disposed relative to the outer panel that when the hood top is closed a substantial proportion of the reaction to the closing forces on the hood top is transmitted to the welded joints as shear forces.

Since welded joints are capable of withstanding greater shear forces than compressive or tensile forces, the required durability of the connection between the striker and the inner panel can be achieved without the necessity for additional reinforcements or complex shaping of the inner panel.

The proportion of the reaction applied to the welded joints as shear forces will vary with the geometry of the hood top. In general, the welded joints preferably lie in planes inclined by no more than 65° to the direction in which the reaction to the closing forces is applied to the striker. As this angle decreases, the proportion of the reaction transmitted as shear forces will increase. However, as the angle approaches 0° the accomodation of the striker and the inner panel in the space available becomes more difficult. We have found that angles of 25-50°, especially about 45°, can most easily be accomodated, whilst ensuring that a significant proportion of the reaction is transmitted to the welded joints as shear forces.

The present invention is particularly suitable for a hood top in which the outer panel is symmetrical about a longitudinal central plane and has an upper surface extending forwardly from a transverse trailing edge generally parallel to a common plane of its hinge axis and a point of engagement of the striker with a latch mechanism, and a front surface extending at an angle in the central plane of from 30° to 65° (preferably 40-50°) to the said common plane upwardly and rearwardly from a transverse lower leading edge to meet the upper surface at a transverse upper leading edge. With a hood top of this configuration, the striker is preferably secured to a part of the inner panel that is disposed generally parallel to the front surface of the outer panel so that a significant proportion of the reaction to the closing forces is transmitted to the welded joints as shear forces.

Where the striker is in the form of an open loop projecting inwardly from the inner panel and terminating in legs secured to the inner panel by welded joints, the legs preferably lie in a plane parallel to the central plane of the hood top, thereby concentrating the reaction to the closing forces along the legs and maximising the shear forces applied to the welded joints.

In the preferred embodiment of the invention, the striker is secured by welded joints to a plate which is itself secured to the inner panel by welded joints. The plate preferably lies between the striker and the surface of the inner panel that faces the outer panel, so that opening forces on the hood top compress the plate between the striker and the inner panel.

A preferred hood top in accordance with the invention will now be described, by way of example only, with reference to the accompanying drawings, in which:-

Figure 1 is a side view of the hood top;

Figure 2 is a plan of the hood top of Figure 1;

Figure 3 is a cross-section through the hood top, taken on line III-III of Figure 2, on an enlarged scale and also illustrating part of a latch mechanism for the hood top;

Figure 4 is a view of the interior of the hood top along the arrow IV in Figure 3; and

Figure 5 is a view taken along the arrow V-V of Figure 4.

Referring to the drawings, a hood top (or bonnet) 1 for a motor vehicle is held shut by a releasable latch mechanism, part of which is illustrated in Figures 4 and 6, which engages with a striker 20 secured towards the front of the hood top. When the latch mechanism is released, the hood top may be tilted about a hinge axis 3 (Figure 1).

The hood top 1 comprises an outer panel 2, which is symmetrical about a longitudinal vertical central plane, and has an upper surface 5 that extends forwardly from a transverse trailing edge 6,

generally parallel to the common plane P of the hinge axis 3 and the point of engagement 4 of the striker and the latch mechanism 30. A front surface 8 of the outer panel 2 extends upwardly and rearwardly from a transverse lower leading edge 10 of the hood top 1 at an angle of about 45° to the plane P. The upper and front surfaces 5 and 8 meet at a transverse upper leading edge 12.

An inner panel 13 is secured to the outer panel 2 by spot welds and clinches. The inner panel 13 carries mounting plates for hinges towards the transverse trailing edge 6 of the outer panel. As best seen in Figure 3, part of the inner panel 13 in the central region of the hood top 1 immediately to the rear of the front surface 8 of the outer panel is disposed generally parallel to the front surface 8. This part of the inner panel 13 has a rectangular aperture 15 (Figures 4 and 5) which is surrounded by a mounting plate 16 secured to the surface of the inner panel 13 that faces the outer panel 2 by eight spot welded joints 14 20 indicated by crosses in Figure 4.

The striker 20 for the latch mechanism comprising a bar shaped to form an open loop 21 secured to the mounting plate 16 so that the loop 21 projects inwardly through the aperture 15 in the inner panel 13. The striker 20 terminates in legs 22,23 which are secured to the inner panel by welded joints indicated by the shaded areas 25 in Figures 3 and 4. The legs 22, 23 lie in the same plane as the loop 21 and and are secured so that they lie in a plane parallel to the central plane of the hood top 1. The welded joints 14 and 25 all lie in planes parallel to the part of the inner panel 13 shown in Figure 4.

A latch mechanism, part of which is illustrated at 30 in Figures 3 and 5 comprises a bracket 31 bolted to a cross-member (not shown) on the motor vehicle body. The bracket 31 defines a recess 33 for receiving the loop 21 of the striker 20. The recess 33 lies generally at right angles to the plane P.

In use, when the hood top 1 is moved into its closed position in the direction of the arrow B in Figure 4, the loop 21 of the striker 20 engages in the recess 31 of the latch mechanism 30. A reaction to the closing force will therefore be applied to the striker 20 in the opposite direction, at right angles to the plane P. Since the welded joints 14 and 25 connecting the legs 22,23 of the striker 20, the mounting plate 16 and the inner panel 13 lie in planes inclined at an acute angle C to the direction of the reaction to the closing force, a substantial proportion of the reaction force on the striker 20 will be transmitted to the welded joints 14 and 25 as shear forces.

The proportion of forces transmitted as shear forces will vary with the size of the angle C. In the embodiment of the invention illustrated, angle C is about 45°. The precise angle chosen in any particular case will depend on the space available for installation of the striker, which in turn depends on the shape of the outer panel 2 of the hood top 1. In accordance with the invention, the angle C is preferably no more than 65° and desirably less than 50°.

Forces tending to open the hood top 1 will place the striker 20 in tension. Since the legs of the striker 20 are positioned outwardly of the mounting plate 16 and the inner panel 13, such forces will place the mounting plate 16 in compression, and the forces on the striker 20 will be distributed over the whole area of the mounting plate 16, thereby increasing the effort required to separate the striker 20 from the inner panel.

Claims

1. A hood top (1) for a motor vehicle comprising an outer panel (2), an inner panel (13) secured to the outer panel (2), and a striker (20) for a latch mechanism (30) secured to the inner panel (13) towards the front of the hood top (1) by welded joints (14,25) characterised in that the striker (20) and the part of the inner panel (13) to which the striker (20) is secured are so disposed relative to the outer panel that when the hood top (1) is closed a substantial proportion of the reaction to the closing forces on the hood top (1) is transmitted to the welded joints (14,25) as shear forces.

2. A hood top according to Claim 1 wherein the welded joints (14,25) lie in planes inclined by no more than 65° to the direction in which the reaction to the closing forces is applied to the striker (20).

3. A hood top according to Claim 1 in which the outer panel (2) is symmetrical about a longitudinal central plane and has an upper surface (5) extending forwardly from a transverse trailing edge (6) generally parallel to a common plane (P) of its hinge axis (3) and a point (4) of engagement of the striker (20) with a latch mechanism (30), and a front surface (8) extending at an angle in the central plane of from 30° to 65° to the said common plane (P) upwardly and rearwardly from a transverse lower leading edge (10) to meet the upper surface (5) at a transverse upper leading edge (12); and the striker (20) is secured to a part of the inner panel (13) that is disposed generally parallel to the front surface (8) of the outer panel (2).

4. A hood top according to any one of Claims 1 to 3 wherein the striker (20) comprises an open loop (21) projecting inwardly from the inner panel (13) and terminating in legs (22,23) secured to the inner panel (13) by welded joints (14,25).

5. A hood top according to Claim 4 wherein the legs (22,23) lie in a plane parallel to the central vertical plane of the hood top (1).

6. A hood top according to any one of Claims 1 to 5 wherein the striker (20) is secured to a plate (16) which is secured to the inner panel (13) by welded joints (14).

7. A hood top according to Claim 6 wherein the striker (20) is secured to the plate (16) by welded joints (14).

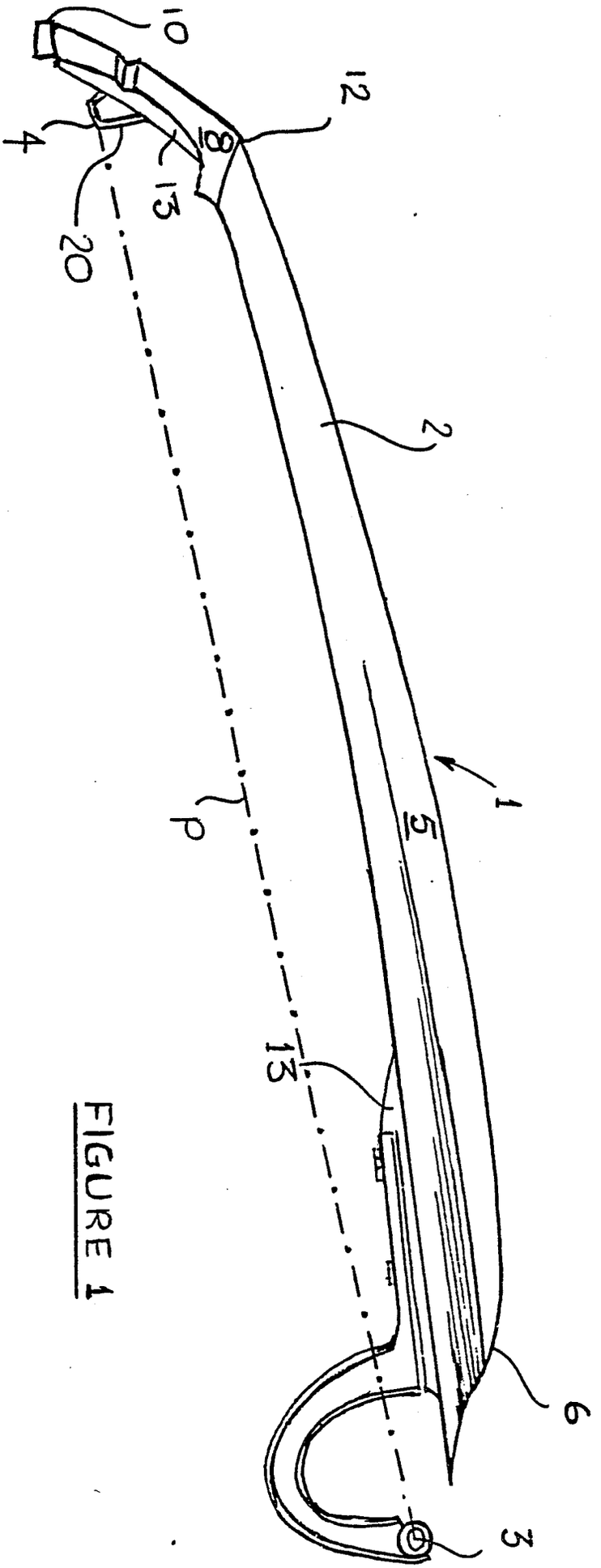

FIGURE 1

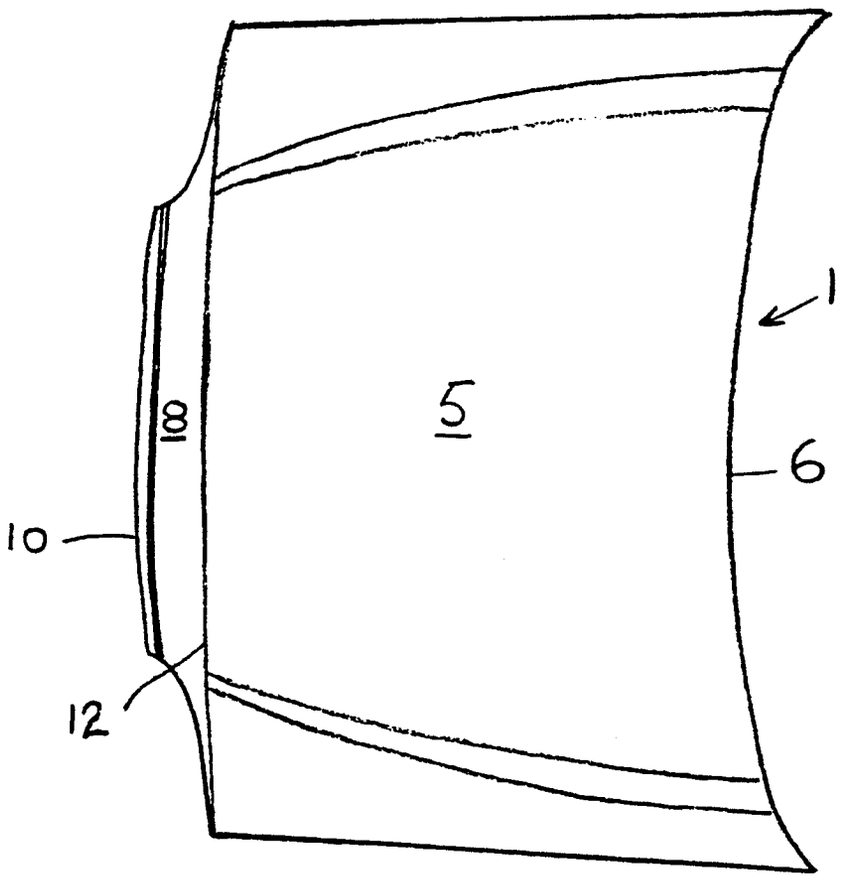

FIGURE 2

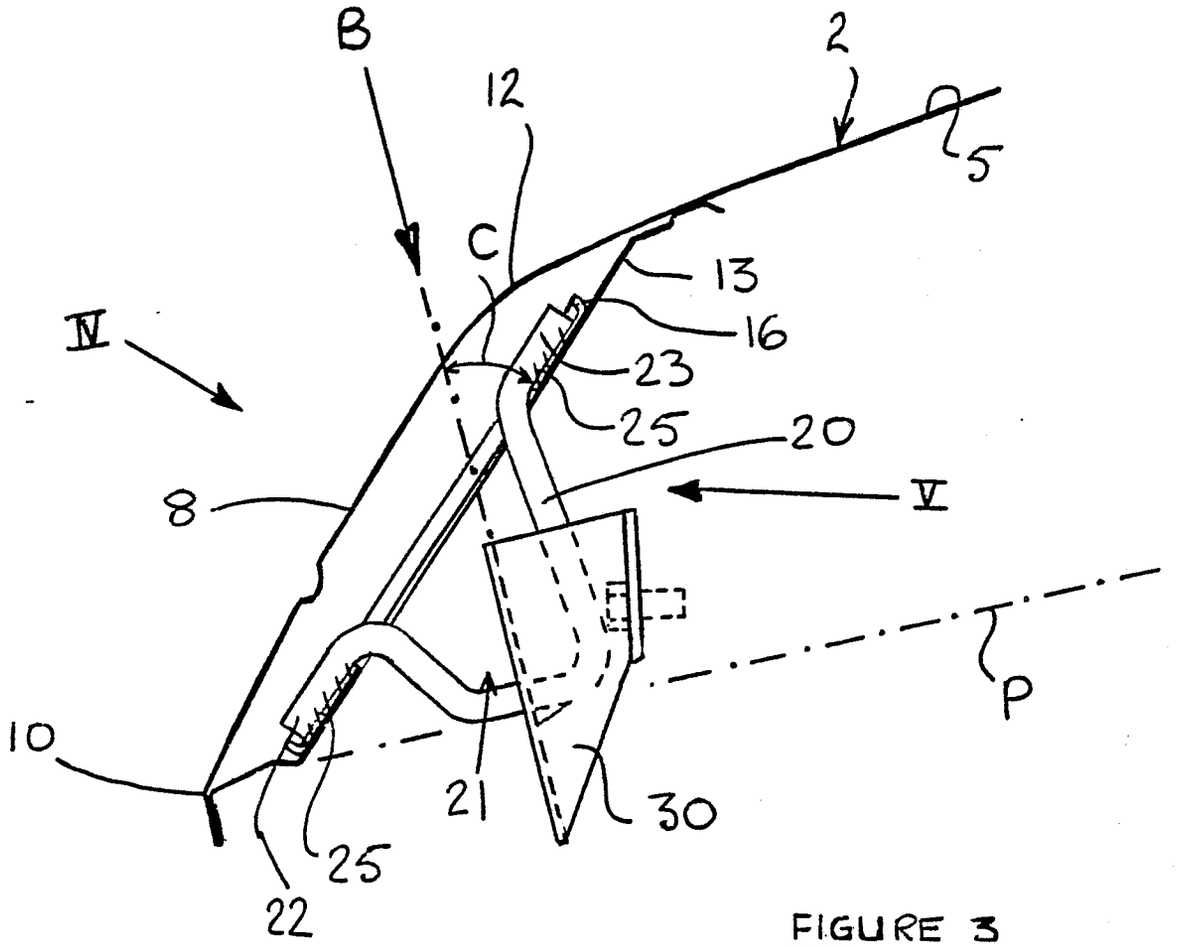

FIGURE 3

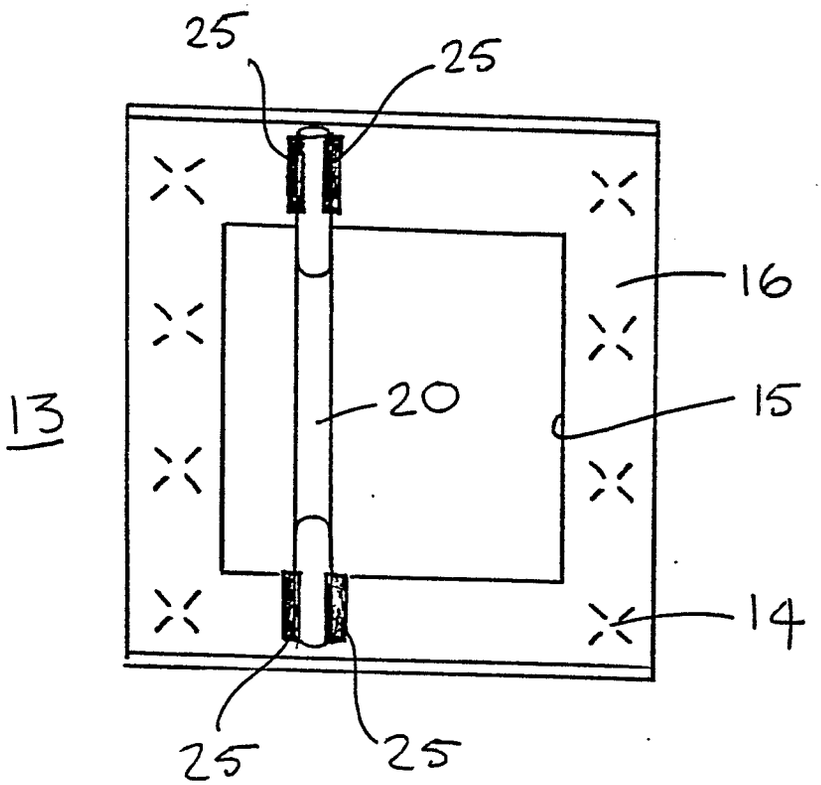

FIGURE 4

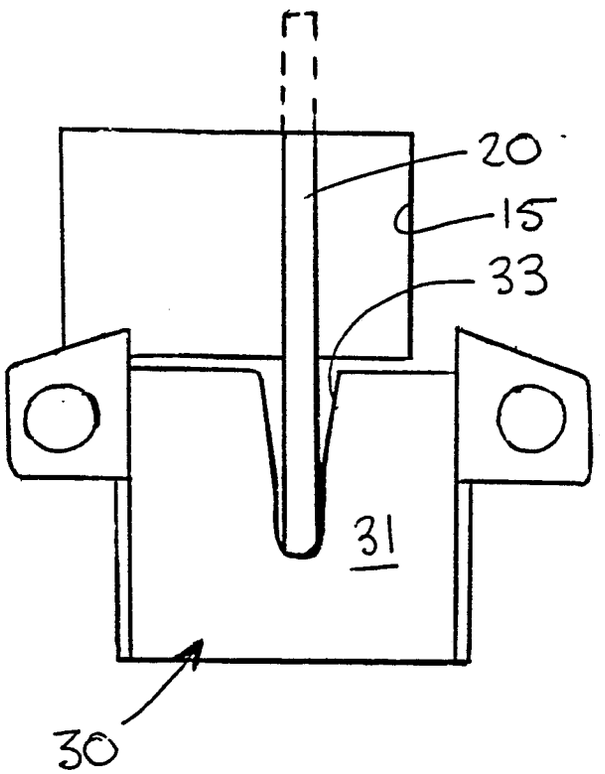

FIGURE 5

European Patent Office

EUROPEAN SEARCH REPORT

Application number

DOCUMENTS CONSIDERED TO BE RELEVANT

EP 88303363.1

Category	Citation of document with indication, where appropriate, of relevant passages	Relevant to claim	CLASSIFICATION OF THE APPLICATION (Int. Cl.4)
A	DE - A - 2 031 583 (DR. ING. H.C. F.PORSCHE KG) * Totality * ----	1,3	B 62 D 25/10

TECHNICAL FIELDS SEARCHED (Int Cl 4)

B 62 D

The present search report has been drawn up for all claims

Place of search	Date of completion of the search	Examiner
VIENNA	21-07-1988	SCHMICKL

CATEGORY OF CITED DOCUMENTS

X : particularly relevant if taken alone
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