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(54) LOCK STRIKER MEMBER

(71) We, REGIE NATIONALE DES USINES RENAULT, a company incorporated according to the laws of the Republic of France, of 92109 Boulogne-Billancourt, France, do hereby declare the invention, for which we pray that a patent may be granted to us, and the method by which it is to be performed to be particularly described in and by the following statement:—

10 The present invention relates generally to a lock for example for the rear boot or luggage compartment of a motor vehicle, more particularly to a striker member for such a lock.

15 In many motor vehicles the rear boot or load-carrying compartment is held closed by a lock assembly comprising a lock bolt with actuating mechanism, which are mounted on the movable closure panel or boot lid, and a striker member which is secured to a transverse member of the vehicle body, inside the boot. Striker members of such previously proposed assemblies generally fall into two groups:

20 — striker members which cannot be dismantled, being made directly by stamping or punching in the sheet metal of the body or being formed by additional members which are welded to the sheet metal member. No adjustment of the striker is possible;

25 — dismantlable striker members which comprise an assembly of a plurality of small members such as a striker element in the form of a member which has a slot to receive the lock bolt, a set of packing members of different thicknesses, screws, washers and nuts or anchor plates. Adjustment can be effected in two or three orthogonal directions, by changing the number of packing

30 members and by virtue of the screws having clearance in suitable slots in the sheet metal member or in the striker element.

35 The need for adjustment can result from 1) defective alignment of the lock bolt with the striker projection, as correct position of

the retaining point, i.e. the point of which the lock bolt bears against the retaining projection of the striker member, should permit closure without play of the movable panel or lid, or 2) defective engagement, as 50 penetration of the lock bolt behind the striker projection should be sufficient to prevent untimely opening of the bolt lid.

For the purpose of adjustment of the previously proposed striker members of the 55 second group, either during first assembly of the vehicle or e.g. during subsequent maintenance operations, it is necessary to unscrew all the fixing screws, to interpose, as necessary, an adjusting packing member 60 between the striker member and its support surface, and to adjust the striker member on the screws before re-tightening the screws.

These different operations require a substantial amount of time, both for assembly, 65 because of the number of components to be assembled, and for adjustment. In addition, it is always possible that the assembly will go out of adjustment, due for example to 70 vibration of the vehicle on the road.

According to the invention, there is provided a striker member which in use is mounted on a first of two members which are relatively movable one with respect to 75 the other, and which in use is co-operable with a bolt of a lock mechanism mounted on the second member, thereby to secure the first and second members relative to each other, which striker member is in one piece 80 and is of polygonal section with pairs of oppositely disposed parallel edges whereby it is capable of assuming a plurality of adjustment positions in a mounting recess in said first member, the striker member having a plurality of striker projections co-operable selectively with said bolt according to the adjustment position of the striker member, and having means for fixing the striker member to said first member in said 85 90

mounting access by a clipping action in a so selected as to take up clearance between respective one of said adjustment positions said bolt and the respective retaining striker 5 projection in the said secured condition of the first and second members and to bring the point of contact between said bolt and the respective striker projection to a fixed pre-determined position.

10 The invention will now be described by way of example with reference to the accompanying drawings, in which:

Figures 1 and 2 are perspective and plan views of the striker member,

15 Figure 3 is a view of the striker member in section taken along line III-III in Figure 2,

20 Figure 4 shows a view in cross-section of the mounting of the striker member in a transverse member of a vehicle body, and its co-operation with a lock bolt,

25 Figure 5 is a plan view of the stamping of a sheet metal member for mounting the striker member, also showing the outline of the striker member relative to the stamping.

Figures 1 to 3 show a one-piece striker member 1 which comprises a thin body portion 2 of irregular hexagonal shape, or more 30 precisely of triangular shape in which the apexes are truncated. It will be seen from Figure 2 that the body portion 2 thus comprises three pairs of oppositely disposed parallel faces, one face of each pair being 35 a long face as at 2a and the other face being shorter face as at 2b. Along the edges of the body portion 2 are disposed projecting shoulder or flange portions 3 and 4. The portions 3 are disposed on the shorter faces 40 at 2b, while the portions 4 are disposed on the faces as at 2a. Figure 3 shows that the portions 3 and 4 project beyond the large or major faces of the body portion 2.

The striker member 1 is preferably of 45 plastics material, being e.g. moulded, in one piece.

As shown in Figure 3, each shoulder portion 3 and 4 has a flat internal face 3a and 4a, at the body portion side, and a 50 convex outer face 3b and 4b, each of which, approximately at its centre, is interrupted by a groove 5 and 6 substantially parallel to the plane of the body portion 2. The grooves 5 and 6 are provided for clipping 55 the striker member onto a support sheet-metal member, as will be described below.

The right-hand portion 4, as viewed in Figure 3, forms a striker projection and is a solid portion which, like all the portions 60 4, extends over the entire length of the respective face 2a of the body portion, and even therebeyond. The left-hand portion 3 as viewed in Figure 3 is a resilient portion which may be hollow as shown to increase 65 its degree of elasticity, as it is more partic-

ularly intended for fitting the striker member 1 in place by a clipping action, by displacement of the body portion 2 in the plane thereof (as will be described below in greater detail). The portion 3 is disposed on 70 a respective one of the truncated faces 2b of the body portion, therefore being of a length which is less than the length of the face 2a. The portions 4 which form striker projections join together externally in twos 75 at respective surfaces 7 (Figure 2) so that the member 1 viewed in plan view (Figure 2) shows a regular hexagonal outline with parallel faces, circumscribed on the body portion 2 of the striker member.

80 The thickness of the portions 4 is smaller at the truncated apex faces 2b of the body portion 2, than at other positions, and the hollow portions 3 project relative to the faces 7, in the manner of a bridge which is 85 supported by its ends as at 8 in Figure 1.

85 The striker member 1 therefore provides three striker projections at 4, which are separated by as many portions 3, as shown 90 in Figure 2 most clearly, the two operative shoulder portions 3, 4 of each pair being arranged opposite to each other and being arranged on three axes of symmetry X1, X2, X3 of the striker member.

95 As can be seen from Figure 3, the portions 3 and 4 project to different extents at respective sides of the body portion 2, i.e. each portion 4 forms two different heights of striker projections as at 4a and 4c. The 100 striker projections 4a and 4c can be used selectively by turning the striker member 1 over.

This structure thus corresponds to two 105 possible adjustment positions as regards engagement of the lock bolt 9 against the striker projection 4, that is to say, adjustment of the distance by which the lock bolt 9 penetrates into the striker member towards the body portion 2 (Figure 4).

110 The distance between the vertical inner walls of the two opposite portions 3 and 4 of the respective pairs of the body are not equal. Thus, as shown in Figure 2, the three distances a1, a2 and a3, as measured 115 along the respective axes X1, X2 and X3, correspond to three distinct adjustment positions for alignment of the lock bolt for fixing the position of the retaining point P on the axis in question.

120 The choice of the lock bolt alignment position is therefore determined by the three possible permutations of the striker member about its vertical axis of symmetry Y (Figure 3).

125 In Figure 2, the body portion 2 of the striker member is defined by two series of parallel lines, one series of line at 10 being broken lines. This distinction between the solid lines and the broken lines 10 represent-

ing the outline of the body portion, shows the difference between the distances between shoulder portions 3 and 4 (which moreover could be equal) at respective sides of the 5 body portion, in the same cross-sectional plane (Figure 3), thus adding three other possible adjustment positions a_4 , a_5 and a_6 , for alignment of the lock bolt, after the 10 striker member 1 has been turned over (only position a_4 is shown).

In total, for each of two engagement 15 adjustments, there are three adjustments in respect of alignment, that is to say, there are six possible pairs of these two kinds of 20 adjustment, and therefore six distinct positions of the striker member in its housing.

Figures 4 and 5 illustrate the mounting 25 and mode of operation of the above-described arrangement.

20 A punching or stamping 11 in a horizontal transverse sheet-metal member 12 of the boot of a motor vehicle body is over-dimensioned relative to the outside dimensions of the striker member 1 whose outlines 25 it follows, except for the pair of operative portions 3 and 4 which are clipped by means of their oppositely disposed grooves 5 and 6 onto the edge of the sheet metal.

Thus, after the resilient portion 3 has 30 been introduced into and centred in a corresponding recess 13 of the stamping 11, it is sufficient to press against the oppositely disposed portion 4, perpendicularly to the body portion 2, to cause the respective outside inclined surface 4b to move against the edge of the sheet-metal member 12, until the 35 striker member 1 has been clipped in position, by the metal engaging into the groove 6. The clearance is taken up by the resilient portion 3, and only the faces 14 on respective sides of the portion 3 bear against the recess 13 to prevent the striker member 40 from moving by the action of the lock bolt 9 during closure of the boot lid 15.

45 Figure 4 shows the lock bolt 9 projecting from an actuating mechanism 16 of the lock which is fixed on a movable panel or lid 15 of the boot and which is illustrated diagrammatically by dash-dotted lines. The lock 50 bolt 9 is shown in three successive positions, a first position $9''$ corresponding to the position before closure, a second position at $9'$ corresponding to engagement against the striker member at the outside inclined surface 4b of the shoulder portion 4, and a 55 third or closed position 9 in which the lock bolt is engaged and retained by the striker projection 4, at the contact point P.

Figure 3 shows the position P1 of the contact point, which corresponds to correct adjustment of the striker member, both as regards alignment and as regards engagement of the lock bolt 9, and adjacent positions P2 to P6 which are produced by the five 65 other possible combinations of adjustment

positions of the striker member. It will be understood that in general there is only a single correct adjustment position, which is fixed in space, and that the purpose of moving the striker member is to choose between the six positions P1 to P6 to bring the point of contact P of the lock bolt 9 to the correct position. In this case in Figure 3, this is point P1.

In practice, it is recommended that the 75 spacing distances in the grid P1 to P6 should be as follows: 2.5 millimeters between each two alignment position (horizontal) and 5 millimeters between the two engagement 80 positions (vertical), but these values only indicate a general order of magnitude.

Referring to Figure 5, it will be seen that 85 there is sufficient clearance 17 between the stamping 11 and the striker member 1 for movement of the striker member, outside of the portions 3 and 4 which are provided to secure the striker member in position. Indeed, insertion of the striker member into its operative position should not be impeded by the existence of other adjustment positions, and the variations in the space occupied by the striker member after each circular permutation of the striker member must be foreseen in order to avoid any impeding 90 of adjustment.

In an alternative form, the striker member 95 1 could be of a quadrangular shape, without departing from the scope of the invention as defined by the appended claims. In that case there would only be four different adjustment positions. In the same manner, it would be possible to extend the possibilities of adjustment, e.g. with an octagonal striker member, operating on the same principle, or with a striker member 100 of other polygonal shape with parallel faces. It will be apparent that the above-described striker member may readily be used in combination with a lock of conventional type.

Apart from the fact that the one-piece 105 striker member as described above can advantageously be manufactured of plastics material and rapidly mounted after having been tried in different adjustment positions, the striker member which is mounted in this way cannot then generally go out of adjustment, being held firmly in its suitable stamping, without any other fixing member. This 115 striker member is therefore highly suitable for mass production and mass assembly, thus 120 substantially reducing production costs.

WHAT WE CLAIM IS:

1. A striker member which in use is 125 mounted on a first of two members which are relatively movable one with respect to the other, and which in use is co-operable with a bolt of a lock mechanism mounted on the second member, thereby to secure 130

the first and second members relative to each other, which striker member is in one piece and is of polygonal section with pairs of oppositely disposed parallel edges where- 45

5 by it is capable of assuming a plurality of adjustment positions in a mounting recess in said first member, the striker member having a plurality of striker projections co- operable selectively with said bolt according 10 to the adjustment position of the striker member, and having means for fixing the striker member to said first member in said mounting recess by a clipping action in a respective one of said adjustment positions 15 so selected as to take up clearance between said bolt and the respective retaining striker projection in the said secured condition of the first and secod members and to bring the point of contact between said bolt and the 20 respective striker projection to a fixed pre- determined position.

2. A striker member according to claim 1 which comprises a thin body portion of polygonal outline with parallel faces, which 25 is bordered at each of its faces by a respective shoulder portion, each of which projects transverse at respective sides of the body portion and each of which has a respective groove substantially parallel to the plane of 30 the body portion for clipping the striker member onto a corresponding edge of said recess.

3. A striker member according to claim 2 wherein each two oppositely disposed 35 shoulder portions form a pair correspond- ing to two adjustment positions of the striker member, one of said shoulder portions forming the striker projection which extends over the whole length of the respective edge of 40 the polygon, and the other shoulder portion which is provided for clipping the striker member in place extending only over a portion of the length of the respective edge of the polygon, each said other shoulder

portion being in the form of a resilient pro- 45 jecting bridge member which is supported at its ends relative to said edge of the polygon.

4. A striker member according to claim 3 wherein each said other shoulder portion, 50 by virtue of its reduced length, forms on respective sides thereof recesses which bear on edges of the recess in the first member.

5. A striker member according to claim 3 or claim 4 which is moulded in plastics 55 material.

6. A striker member according to any one of claims 2 to 5 wherein the shoulder portions extend by different distances at respective sides of the body portion, all the 60 shoulder portions disposed at the same side of the body portion being of equal height.

7. A striker member according to claim 5 wherein the inside distances between the two oppositely disposed shoulder portions 65 of the respective pairs are different at the same side of the body portion and are also different at each side of the body portion.

8. A striker member according to any one of the preceding claims which is of a 70 hexagonal shape, thus providing three adjustment positions by rotation of the striker member about its vertical axis of symmetry and three other positions by turning over the striker member and then rotating it about 75 said axis.

9. A striker member substantially as hereinbefore described with reference to the accompanying drawings.

10. In combination, a lock actuating 80 mechanism with bolt, and a striker member according to any one of the preceding claims.

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COMPLETE SPECIFICATION

3 SHEETS

*This drawing is a reproduction of
the Original on a reduced scale*

Sheet 1

FIG.1

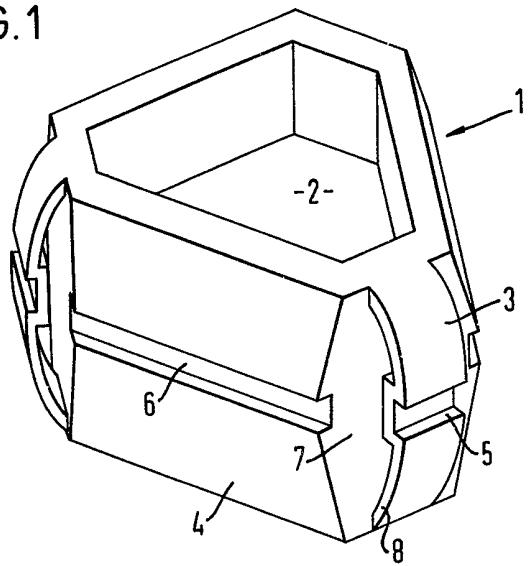


FIG. 2

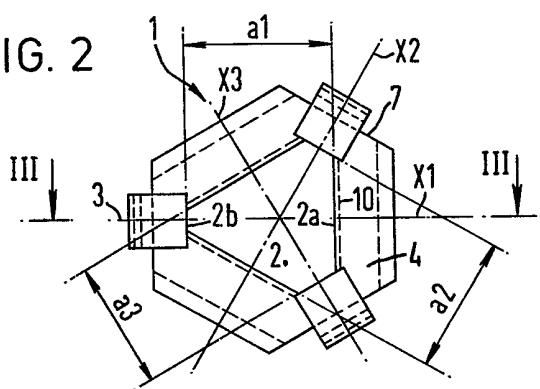


FIG. 3

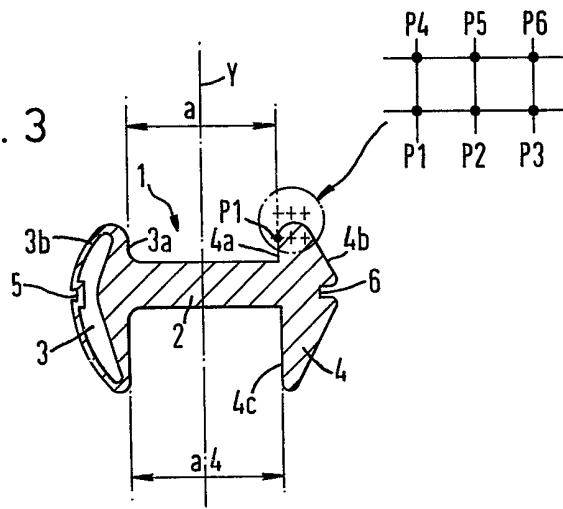


FIG. 4

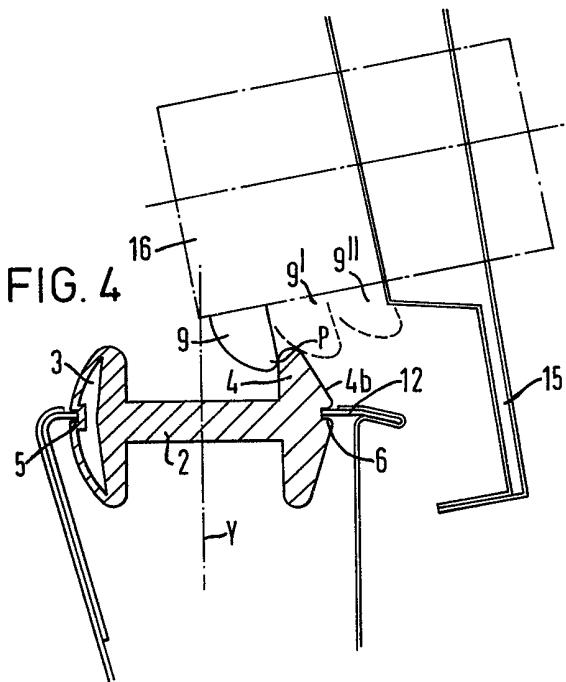


FIG. 5

