(12) UK Patent Application (19) GB (11) 2 349 666 (13) A

(43) Date of A Publication 08.11.2000

(21) Application No 9907732.3

(22) Date of Filing 01.04.1999

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(51) INT CL[7]
B60J 10/00

(52) UK CL (Edition R)
E1J JGN

(56) Documents Cited
GB 1240441 A **EP 0666191 A** **US 5125185 A**

(58) Field of Search
UK CL (Edition R) **E1J JGN**
INT CL[7] **B60J 10/00 10/02 10/04**
ONLINE: WPI; EPODOC; JAPIO

(54) Abstract Title
Sealing and guiding strips

(57) A sealing or guiding strip 26,28 for contacting a moveable member 6 , preferably the window of a vehicle, comprising a mounting part 30, 48 and a sealing portion 32, 54, 56 connected to the mounting part by intermediate portions 40, 42, 58, 60. The sealing or guiding portion is made of soft flexible material which may be non-cellular; it may also be in the form of a loop 32 connected to the mounting part by two connecting portions 40, 42 or at least one sealing lip 54, 56 connected to the mounting part 48 by intermediate portions 58, 60. The intermediate portion is made of expanded or monocellular plastics or rubber. The mounting part may be of a channel-shaped flexible material. The parts of the sealing or guiding strip may be extruded together.

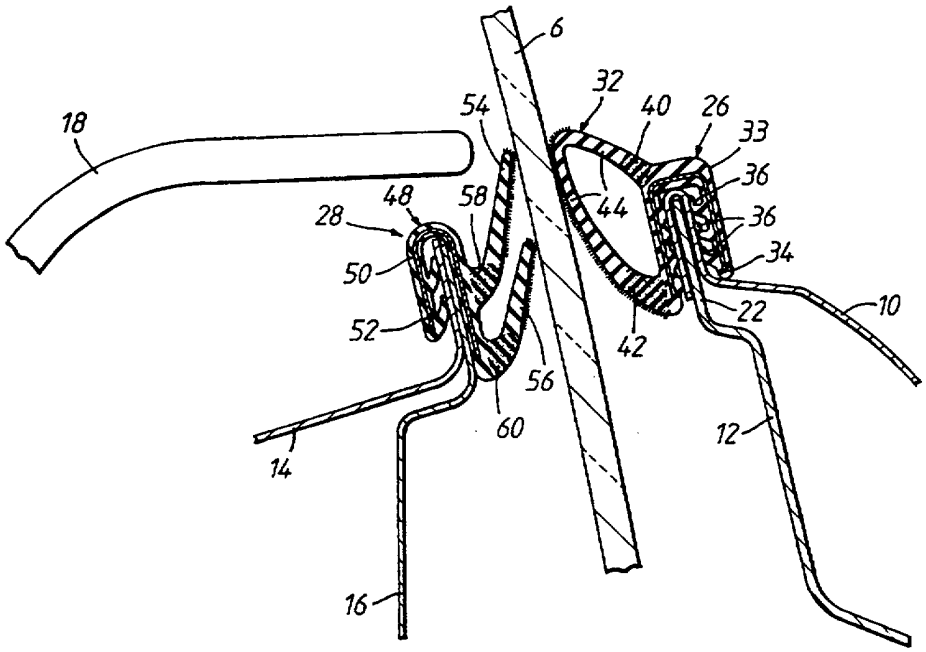

Fig.2

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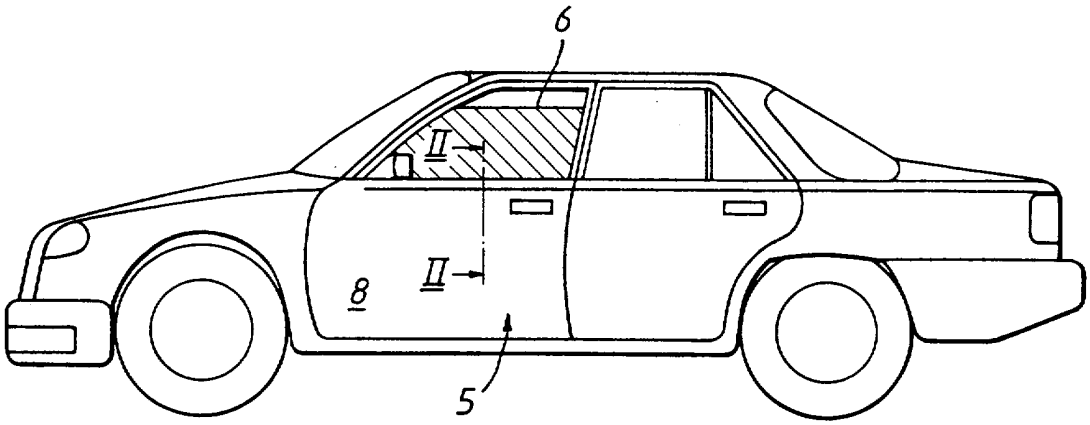
6
II
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8
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Fig.1

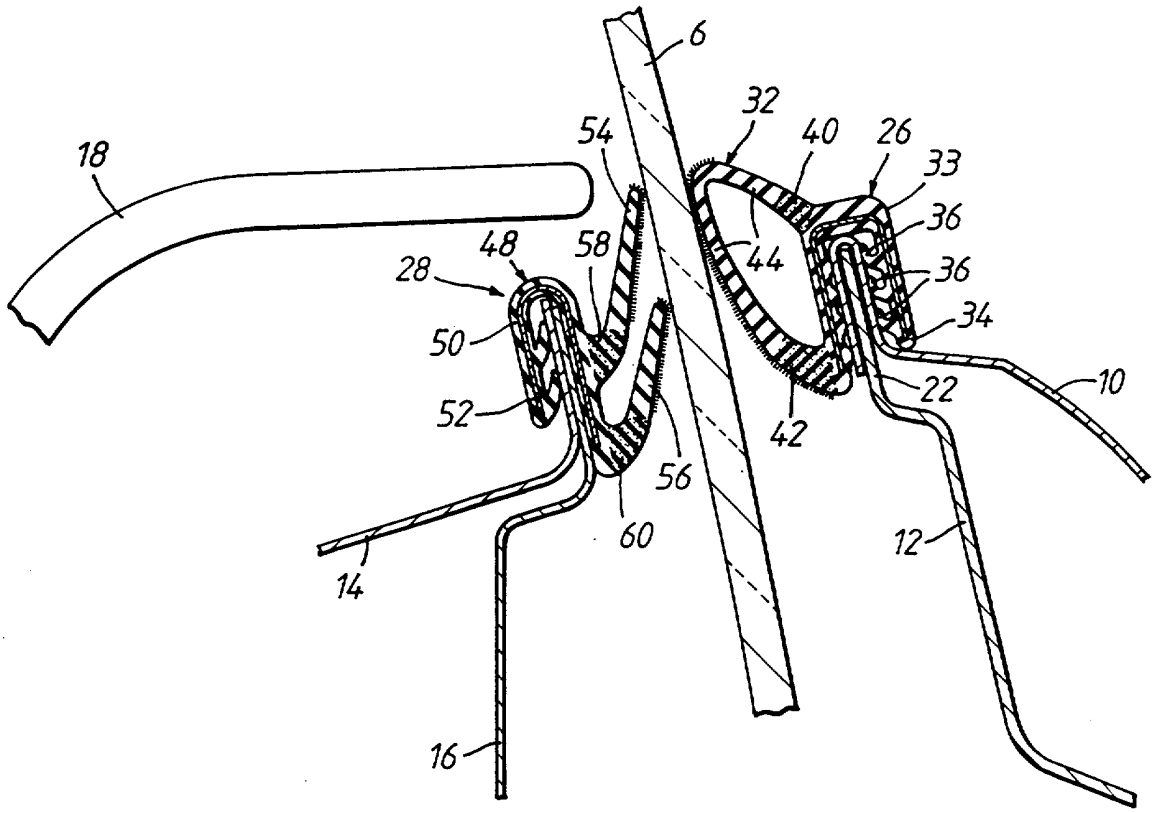
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Fig.2

SEALING AND GUIDING STRIPS

The invention relates to sealing and guiding strips. Sealing and guiding strips embodying the invention, and to be described in more detail below by way of example only, are for sealing and guiding a movable window pane in a motor vehicle body.

According to the invention, there is provided a sealing or guiding strip for making sealing or guiding contact with a member movable in a predetermined path, comprising a mounting part for mounting the strip adjacent the said path a sealing or guiding portion made of soft flexible material for contacting the said surface, and an intermediate portion connecting the sealing or guiding portion to the mounting part, the intermediate portion being made of expanded or monocellular plastics or rubber.

According to the invention, there is further provided a sealing or guiding arrangement for making sealing or guiding contact with a surface of a movable window glass in a motor vehicle body door, comprising a sealing or guiding strip having a mounting part made of extruded plastics or rubber material for mounting the strip to extend along and adjacent to one longitudinally extending edge of a waist line aperture in the door through which the window glass moves, a sealing or guiding portion made of non-cellular plastics or rubber material having a face for making sealing or guiding contact with the surface of the window glass, and an intermediate portion made of expanded or monocellular plastics or rubber material integrally connecting the sealing or guiding portion to the mounting part,

the intermediate portion tending to reduce the production of any squeaking noise caused by sliding movement of the window glass against the sealing or guiding portion.

Sealing and guiding strips embodying the invention will now be described, by way of example only, with reference to the accompanying diagrammatic drawings in which:

Figure 1 is a side view of a motor vehicle incorporating one of the sealing and guiding strips; and

Figure 2 is a scrap section on the line II-II of Figure 1.

As shown in Figure 1, the motor vehicle has a door 5 with the normal vertically movable window glass 6, the window glass 6 being lowerable into the lower part 8 of the vehicle door and raisable therefrom.

Figure 2 shows a scrap section on the line II-II of Figure 1 taken at the waist line of the vehicle door. Figure 2 shows the outer panels 10 and 12 of the door and the inner panels 14,16 which are overlapped by the inner door trim 18. A gap 20 is thus defined between the door panels 12 and 16 and through which the window glass 6 slides into and from the lower part 8 of the vehicle door.

The door panels 10 and 12 on the outside of the door are joined together, preferably by spot-welding, to provide a flange 22 running along the waist line of the door on the outside

of the window glass. Similarly, the inner door panels 14,16 form a corresponding flange 24 running along the waist line on the inside of the door.

A sealing strip 26 is mounted on the flange 22 for sealing against the outside face of the window glass 6.

A sealing strip 28 is mounted on the flange 24 for sealing against the inside face of the window glass.

The sealing strip 26 comprises a channel-shaped gripping or mounting part 30 and a hollow sealing part 32.

The gripping part 30 is made of extruded plastics or rubber material 33 in channel-form and incorporates a metal core or carrier 34. The carrier 34 is also generally channel-shape in cross-section. It may be made of resilient metal and may be in the form of a continuous unapertured channel or a channel provided with apertures to increase its flexibility. For example, it may be in the form of a series of side-by-side U-shaped metal elements integrally connected together by short connecting links. Instead, it could comprise a series of such U-shaped elements entirely disconnected from each other. Wire looped to and fro across the width of the channel could be used instead. However, many other forms of carrier can be used.

Advantageously, the carrier 34 is incorporated into the extruded material by means of a

known cross-head extrusion process.

As shown in the Figure, the extruded material 33 incorporates integral lips 36 on one side of the channel. These contact the face of the flange 22 and help to locate the gripping part 30 firmly in position on the flange.

The sealing part 32 is advantageously made of rubber. It may be produced separately and then attached to the outside of the gripping part 30 such as by adhesive. Advantageously, however, and particularly in the case when the extruded material 33 of the gripping part 30 is rubber, it is extruded integrally with the gripping part 30.

In accordance with a feature of the sealing strip being described, the gripping part 32 has portions indicated at 40 and 42 which are made of expanded or monocellular rubber, these portions attaching the remaining portion 44 of the sealing part 32 to the gripping part 30. The remaining portion 44 is made of non-cellular rubber and, as shown in Figure 2, makes contact with the outside face of the window glass 6.

The rubber of the part 44 of the sealing part 32 is advantageously relatively soft and flexible to provide good sealing. It may be softer than the channel-shaped extruded material of the gripping part 30.

The outside face of the sealing part 32 is advantageously covered with flock or other low-friction material to assist the sliding movement of the glass 6.

The sealing strip 28 on the inside of the window glass has a gripping or mounting part 48 which is of channel-shape and may be generally constructed in the same manner as the gripping part 30 of the sealing strip 26. As shown, it comprises extruded material 50 in which is embedded a reinforcing carrier 52. It has two gripping lips 36 instead of the three gripping lips of the sealing strip 26 but the number of such gripping lips can be varied as desired.

The sealing strip 28 also includes two sealing lips 54 and 56. Each of these is preferably integrally extruded with the material 50 of the gripping part 48. Each gripping lip incorporates a root region 58,60 which is made of expanded or monocellular rubber. The remainder of each gripping lip 54,56 is of non-cellular rubber, preferably relatively soft and, as shown, each lip makes contact with the inside face of the window glass 6. Advantageously, the surfaces of the lips 54 and 56 in contact with the window glass 6 are covered with low-friction material such as flock.

In use, the sealing part 32 and the sealing lips 54,56 make low-friction sealing and guiding contact with the window glass 6 as it is raised and lowered and also prevent water or moisture from entering the lower part 8 of the vehicle door.

The expanded or monocellular rubber portions 40,42, 58 and 60 of the two sealing strips 26,28 are found to eliminate or minimise the production of squeaky noise during window closing or opening. Such noise is annoying, particularly in more expensive vehicles in which various steps have been taken to minimise all other noises. Although the exact

reason for the reduction in the production of such squeaky noise is not yet fully established, it is believed that the expanded or monocellular rubber portions help to prevent vibration of the sealing part and also block the transmission of noise through the sealing parts to the gripping parts.

The remaining portion 44 of the sealing strip 26, being made of non-cellular rubber, is sufficiently resilient to maintain its shape and position when the window glass 6 is lowered; if it were to be made of expanded or cellular rubber like the portions 42 and 44, there would be a tendency for the sealing part 32 to be dragged downwardly, towards the gap 20, as the window glass moves downwardly. For the same reason, the distal parts of the lips 54,56 are made of non-cellular rubber.

It will be understood that the forms of sealing strip illustrated in Figure 2 are purely by way of example. The sealing strips on both the inside and the outside of the glass could be of the same form if required. The shapes of the sealing parts could be altered as required. There could be more or less than the two sealing lips 54, 56 illustrated. If desired, a sealing strip incorporating the noise-reducing expanded or monocellular rubber portions could be mounted on only one side of the window glass, the sealing strip on the other side perhaps being of conventional form. In such a case, the reduction in noise might not be so great as would be achieved by the use of sealing strips with expanded or monocellular rubber regions on both sides of the window glass, but might be adequate for some applications.

CLAIMS

1. A sealing or guiding strip for making sealing or guiding contact with a member movable in a predetermined path, comprising a mounting part for mounting the strip adjacent the said path a sealing or guiding portion made of soft flexible material for contacting the said surface, and an intermediate portion connecting the sealing or guiding portion to the mounting part, the intermediate portion being made of expanded or monocellular plastics or rubber.

2. A strip according to claim 1, in which the material of the sealing or guiding portion is non-cellular.

3. A strip according to claim 1 or 2, in which the mounting part is channel-shaped for gripping a mounting flange or the like.

4. A strip according to claim 3, in which the mounting part comprises channel-shaped flexible material.

5. A strip according to any preceding claim, in which the sealing or guiding portion and the intermediate portion are integrally extruded.

6. A strip according to claim 4, in which the material of the mounting part, the

material of the sealing or guiding portion and the material of the intermediate portion are all integrally extruded.

7. A strip according to any preceding claim, in which the sealing or guiding portion is in the form of a wall embracing a hollow interior, the intermediate portion comprising two expanded monocellular plastics or rubber portions respectively connecting the wall to the mounting part at two positions spaced apart across the holllow interior.

8. A strip according to any one of claims 1 to 6, in which the sealing or guiding portion comprises at least one sealing lip extending away from the mounting part towards the said path, the intermediate portion comprising a portion of expanded or monocellular plastics or rubber connecting the root of the lip to the mounting part.

9. A strip according to any preceding claim, including low-friction material such as flock on a face of the sealing or guiding portion contacted by movable member.

10. A sealing or guiding arrangement for making sealing or guiding contact with a surface of a movable window glass in a motor vehicle body door, comprising a sealing or guiding strip having a mounting part made of extruded plastics or rubber material for mounting the strip to extend along and adjacent to one longitudinally extending edge of a waist line aperture in the door through which the window glass moves, a sealing or guiding portion made of non-cellular plastics or rubber material having a face for making sealing or guiding contact with the surface of the window glass, and an intermediate portion made

of expanded or monocellular plastics or rubber material integrally connecting the sealing or guiding portion to the mounting part, the intermediate portion tending to reduce the production of any squeaking noise caused by sliding movement of the window glass against the sealing or guiding portion.

11. An arrangement according to claim 10, including a further said sealing or guiding strip mounted to extend along and adjacent to the opposite longitudinally extending edge of the waist line aperture.

12. An arrangement according to claim 10 or 11, in which the sealing or guiding portion of the or at least one of the strips comprises a wall made of the non-cellular rubber embracing a hollow interior, and the intermediate portion comprises two separate portions of the expanded or monocellular material connecting the wall to the mounting part at respective positions spaced apart across the hollow interior.

13. An arrangement according to any one of claims 10 to 12, in which the sealing or guiding portion of the or one of the strips comprises at least one lip made of the non-cellular material, and the intermediate portion comprises a portion of the expanded or monocellular material connecting the root of the lip to the mounting part.

14. An arrangement according to any one of claims 10 to 13, in which the mounting part is of channel-shape for embracingly gripping a mounting flange or the like.

15. An arrangement according to any preceding claim, including a reinforcing carrier embedded within the material of the mounting part.

16. A sealing or guiding strip, substantially as described with reference to Figure 2 of the accompanying drawings.

17. A sealing or guiding arrangement, substantially as described with reference to Figure 2 of the accompanying drawings.

Application No: GB 9907732.3
Claims searched: 1 - 15

Examiner: David Hotchkiss
Date of search: 1 September 2000

Patents Act 1977
Search Report under Section 17

Databases searched:

UK Patent Office collections, including GB, EP, WO & US patent specifications, in:

UK Cl (Ed.R): E1J (JGN)

Int Cl (Ed.7): B60J (10/00, 10/02, 10/04)

Other: Online: WPI; EPODOC; JAPIO

Documents considered to be relevant:

Category	Identity of document and relevant passage		Relevant to claims
X	GB 1240441 A	(Ford Motor Company Limited) Figure 1 body portion 13, wiping member 23 & bead 20.	1, 2, 5, 6, 8, 9, 10, 11,13,
X	US 5125185 A	(Shiota et al) Figure 3 weather strip 11, root portion 11c &door belt moulding 14c	1 - 6, 8 - 11 & 13 - 15
X	EP 0666191 A	(Cholot, Robert) Figures 1 & 2 gripper 1, tubular portion 9 & main tubular portion 2	1 - 6 & 15

X	Document indicating lack of novelty or inventive step	A	Document indicating technological background and/or state of the art.
Y	Document indicating lack of inventive step if combined with one or more other documents of same category.	P	Document published on or after the declared priority date but before the filing date of this invention.
&	Member of the same patent family	E	Patent document published on or after, but with priority date earlier than, the filing date of this application.