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GUIDE SHOES FOR SLIDING ALONG RAILS

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Fig. 1.

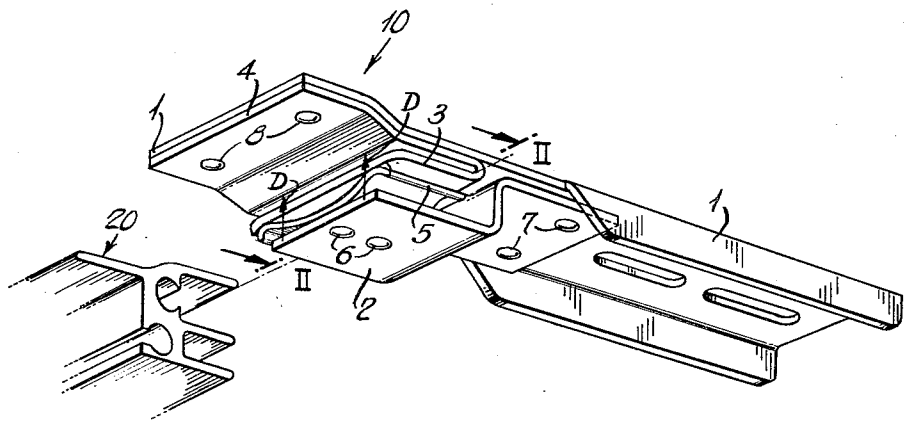
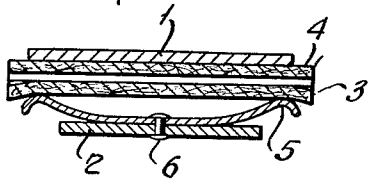


Fig. 2.



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GUIDE SHOES FOR SLIDING ALONG RAILS

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7 Claims. (Cl. 308—3)

This invention relates to a guide shoe sliding along a guide rail e.g. in the roof structure of motor vehicles.

It is conventional for the roof of a motor vehicle to have a sliding portion which moves on guide rails by way of guide shoes. In order to avoid sliding of metal on metal and thus to prevent rattling noises, it is known to provide the guide shoes with yieldable linings which slide on the guide rails. Such linings consist of felt, leather, or thermo-plastic material, for example. All these materials have the disadvantage that the compressive forces acting on them during their use tends to permanently deform them. Particularly disadvantageous in this respect are changes in thickness, resulting in the formation of clearances between the guide shoes and the guide rails. Consequently, when the vehicle is travelling, the sliding roof may oscillate and thus produce considerable noise.

According to the present invention, there is provided a guide shoe, for guiding a movable roof along a guide rail, comprising a first guide shoe part having two opposite side surfaces for positioning near two opposite side surfaces of a guide rail, two parts of flexible lining material disposed adjacent the respective opposite side surfaces aforementioned of the first guide shoe part for sliding on the aforementioned two opposite side surfaces of the guide rail, means connecting said portions of lining material with said first guide shoe part, portions of one of said two opposite side surfaces aforementioned of the first guide shoe part defining, together with portions of one part of lining material facing said one of said two opposite side surfaces, a gap therebetween, and a spring disposed in said gap for urging said one part of lining material away from said one of said two opposite side surfaces.

In order that the invention may be clearly understood and readily carried into effect, reference will now be made, by way of example, to the accompanying drawing, wherein:

FIGURE 1 is a perspective view, from below, of a guide shoe for sliding along a guide rail for a sliding roof of a motor vehicle, and

FIGURE 2 is a cross-section taken on the line II—II in FIGURE 1.

Referring to the drawing, the guide shoe **10** includes a trough-shaped part for receiving the guide rail **20**, the trough-shaped part being formed by portions of an upper member **1** and portions of a lower member **2**, the portions **1** and **2** being to the left in FIGURE 1. The members **1** and **2** are connected by rivets **7**. A member of flexible lining material, in this case felt, is mounted inside the trough-shaped part, two parts **3** and **4** of the lining material member being disposed inwardly of the respective side walls of the trough-shaped part and being intended to slide on the lowermost and uppermost side surfaces, respectively, of the guide rail. The lining material member is connected to the trough-shaped part by fastening members **8** and there is a gap between the part **3** and the adjacent side wall of the trough-shaped part, a slightly curved plate spring **5** being disposed in the gap, with one curved surface thereof facing the part **3** and with the other curved surface facing the adjacent side wall of the trough-shaped part. When the shoe **10** is mounted on the rail **20**, the spring **5** presses the part **3** in the direction of the arrows D (see FIGURE 1) and so maintains the part **3** in contact with the rail, whereby any change in the thickness of the parts **3** and **4** is automatically taken up. The members **1** and **2** can be made of metal, for example.

FIGURE 2 shows that the spring **5** is in the form of a flat sinusoidal curve having two peaks and a valley between the two peaks, the curve extending in the longitudinal direction of the trough-shaped part. The peaks are in contact with the part **3**, whilst the valley is in contact with the adjacent side wall of the trough-shaped part and is connected rigidly thereto by rivets **6**. The arrangement of the shoe **10** on the rail **20** is preferably such that the spring **5** is attached to the lower side wall of the trough-shaped part, i.e. such that the spring does not carry part of the weight of the sliding roof but only has to act on the light-weight lining part **3**. The spring need not, therefore, be very strong nor need it be very large. Furthermore, the force needed to displace the sliding roof along the guide rail need not be much larger than that required in the case of known guide shoes.

The spring shown has the advantage that it occupies little space, particularly in respect of its overall height. This advantage is of importance in connection with vehicle roofs, since the larger the overall height, the less headroom there is for the occupants of the vehicle.

In a further embodiment, the present invention can be applied with advantage to guide shoes for sliding in guide rails of U-shaped cross-section.

I claim:

1. A guide shoe for guiding a movable roof along a guide rail, comprising a guide shoe part having two opposite side surfaces for positioning near two opposite side surfaces of the guide rail, two portions of yielding lining material disposed adjacent the respective ones of said surfaces of the guide shoe part for sliding on said two surfaces of the guide rail, means connecting said portions of lining material with said guide shoe part, portions of one of said surfaces of the guide shoe part defining, together with parts of one portion of said lining material facing said one surface, a gap therebetween, and a curved spring disposed in said gap for urging said one portion of lining material away from said one surface, the curve of said spring extending in the longitudinal direction of said guide shoe part, said spring including two lateral contact surfaces in engagement with said one portion of said lining material and an intermediate contact surface on the side of said spring opposite said two lateral surfaces in engagement with the portions of said one surface of the guide shoe.

2. A guide shoe according to claim 1, wherein said curve is sinusoidal.

3. A guide shoe according to claim 1, wherein said one surface of the guide shoe and said one portion of the lining material are located underneath said guide rail.

4. A guide shoe for guiding a movable roof along a guide rail, comprising a trough-shaped part for receiving the guide rail, two portions of yielding lining material disposed inwardly of the respective side walls of said trough-shaped part for sliding on respective opposite side surfaces of said guide rail, means connecting said portions of lining material with said trough-shaped part, portions of one of said side walls defining, together with parts of one portion of said lining material facing said one side wall, a gap therebetween, a curved plate spring of sinusoidal shape disposed in said gap with one curved surface thereof facing said one portion of lining material and

with the other curved surface facing said one side wall for urging said one portion of lining material away from said one wall.

5. A guide shoe according to claim 4, wherein said one curved surface of the spring touches said lining material at two peripheral portions and said other curved surface touches said one side wall at one portion intermediate said two peripheral portions.

6. A guide shoe according to claim 4, wherein the curve in said plate spring extends in the longitudinal direction of said trough-shaped part.

7. A guide shoe according to claim 4, wherein said one wall is situated below the other side wall of said trough-shaped part.

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