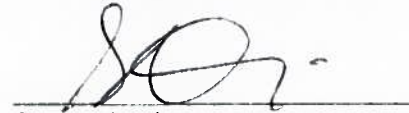


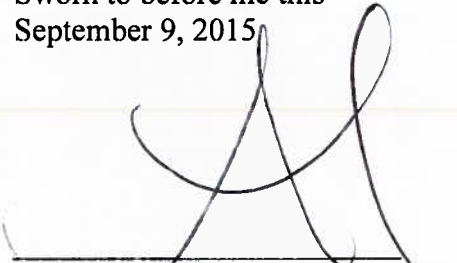
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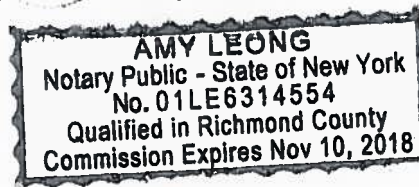


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Attachment to the
patent and utility model
Auxiliary application

ROBERT BOSCH GMBH, Stuttgart

Wiper assembly for cleaning round, convex panes

The invention relates to a wiper assembly for cleaning round, convex panes, particularly headlight diffusers, having a wiper arm and a rubber wiping strip which is attached with articulation and supported at only one point on the wiper arm, and is made rigid by a spring rail arranged in a plane which is parallel to the wiper plane, wherein this spring rail is convex in this plane and is elastically resilient only perpendicular to this plane.

In known wiper assemblies for cleaning convex panes, the rubber wiping strip has, to date, been suspended on a support bracket system which itself is attached to the wiper arm with articulation. The wiper arm in such designs is pressed by a spring force against the pane to be cleaned, and this contact force is transmitted by the support bracket system to multiple points on the rubber wiping strip. Rubber wiping strips which are supported in this way therefore nestle very well against the convex contour of a pane to be cleaned – for example, the known front windshields. However, this support bracket system is very expensive, and also fails to produce satisfactory results if the rubber wiping strip is relatively short.

In the field of headlight cleaning systems, another known approach is to insert a spring rail into the rubber wiping strip, said spring rail being convex in a plane which is parallel to the surface being cleaned, according to the outer contour of the headlight. Such a design is practical because the rubber wiping strip, when in the unused position, contacts the edge of the pane it cleans, and therefore does not compromise the functioning of the headlight. In this known wiper assembly, the wiping strip is relatively short, such that it is not worth it to attach a separate support bracket system. Because the rubber wiping strip is elastic perpendicular to the wiping direction, and the wiping edge molded on the rubber wiping strip is also very elastic, the assumption was made that such a wiper assembly is also suitable for cleaning convex panes. However, in practice, it has been found that, at least with highly convex panes, the edge regions are not adequately cleaned because the contact pressure of the rubber wiping strip against the pane to be cleaned is too low on the ends thereof.

The problem addressed by the present invention is that of overcoming these disadvantages and creating a wiper assembly in which the rubber wiping strip is pressed against the pane with sufficient pressure, over the entire length thereof, even in the case of highly convex panes.

This problem is solved according to the invention in that the spring rail is curved in a plane perpendicular to the wiping direction when it is not stressed.

The spring rail is therefore essentially pretensioned toward the end regions thereof, such that the rubber wiping strip contacts the pane to be cleaned over its entire length, with no hindrances.

In one advantageous implementation of the invention, the curvature of the spring rail in the plane perpendicular to the wiping direction has a smaller curve radius than the curvature of the pane to be cleaned.

In such a design, the wiping strip is pressed by a spring force against the pane to be cleaned by the arm which is attached primarily in the middle of the wiping strip. The required contact pressure is applied in the middle of the rubber wiping strip by the elastic wiper arm, while in the end region the contact pressure depends on the extent to which the spring rail is pretensioned when it is not stressed.

The invention is described below in greater detail with reference to one embodiment illustrated in the drawings, wherein:

- Fig. 1 shows a perspective view of the rubber wiping strip,
- Fig. 2 shows a cutaway view along the line I-I in Fig. 1,
- Fig. 3 shows a view of the spring rail, and
- Fig. 4 shows a view in the wiping direction of the pretensioned spring rail which is contacting a pane to be cleaned.

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