(12) INTERNATIONAL APPLICATION PUBLISHED UNDER THE PATENT COOPERATION TREATY (PCT)

(19) World Intellectual Property Organization
International Bureau

(43) International Publication Date
02 January 2020 (02.01.2020)

WIPO | PCT

(10) International Publication Number
WO 2020/005188 A2

(51) International Patent Classification:
Not classified

(21) International Application Number:
PCT/TR2019/050451

(22) International Filing Date:
18 June 2019 (18.06.2019)

(25) Filing Language: English

(26) Publication Language: English

(30) Priority Data:
2018/08931 25 June 2018 (25.06.2018) TR

(71) Applicant: **TOFAS TURK OTOMOBIL FABRIKASI ANONIM SIRKETI** [TR/TR]; Yeni Yalova Yolu No:574, Osmangazi/Bursa (TR).

(72) Inventors: **KAVRUK, Kadir Onder**; Tofas Turk Otomobil Fabrikası A.S., Yeni Yalova Yolu Cad. No:574, Osmangazi/Bursa (TR). **MALGAZ, Ugurcan**; Tofas Turk Otomobil Fabrikası A.S., Yeni Yalova Yolu Cad. No:574, Osmangazi/Bursa (TR).

(74) Agent: **ANKARA PATENT BUREAU**; Bestekar Sokak No:10, Kavaklıdere, 06680 Ankara (TR).

(81) Designated States *(unless otherwise indicated, for every kind of national protection available)*: AE, AG, AL, AM, AO, AT, AU, AZ, BA, BB, BG, BH, BN, BR, BW, BY, BZ, CA, CH, CL, CN, CO, CR, CU, CZ, DE, DJ, DK, DM, DO, DZ, EC, EE, EG, ES, FI, GB, GD, GE, GH, GM, GT, HN, HR, HU, ID, IL, IN, IR, IS, JO, JP, KE, KG, KH, KN, KP, KR, KW, KZ, LA, LC, LK, LR, LS, LU, LY, MA, MD, ME, MG, MK, MN, MW, MX, MY, MZ, NA, NG, NI, NO, NZ, OM, PA, PE, PG, PH, PL, PT, QA, RO, RS, RU, RW, SA, SC, SD, SE, SG, SK, SL, SM, ST, SV, SY, TH, TJ, TM, TN, TR, TT, TZ, UA, UG, US, UZ, VC, VN, ZA, ZM, ZW.

(84) Designated States *(unless otherwise indicated, for every kind of regional protection available)*: ARIPO (BW, GH, GM, KE, LR, LS, MW, MZ, NA, RW, SD, SL, ST, SZ, TZ, UG, ZM, ZW), Eurasian (AM, AZ, BY, KG, KZ, RU, TJ, TM), European (AL, AT, BE, BG, CH, CY, CZ, DE, DK, EE, ES, FI, FR, GB, GR, HR, HU, IE, IS, IT, LT, LU, LV, MC, MK, MT, NL, NO, PL, PT, RO, RS, SE, SI, SK, SM, TR), OAPI (BF, BJ, CF, CG, CI, CM, GA, GN, GQ, GW, KM, ML, MR, NE, SN, TD, TG).

(54) Title: WING MIRROR VIBRATION DAMPING SYSTEM

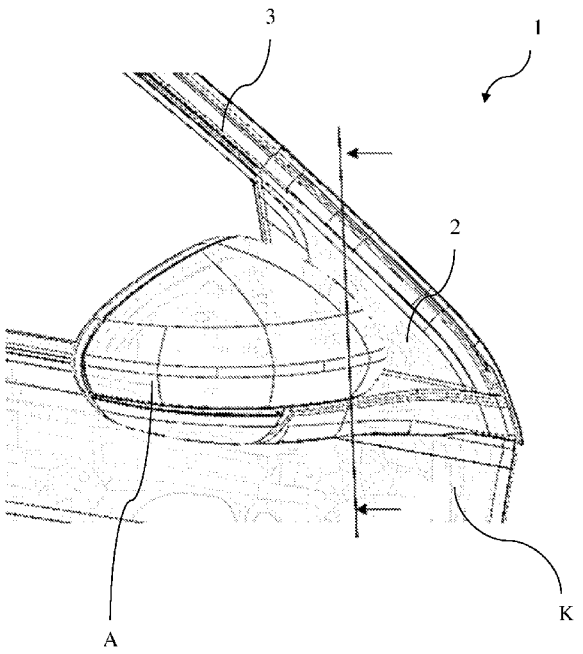

FIGURE 1

(57) Abstract: The present invention relates to a vibration damping system (1), which is used for connecting the vehicle wing mirror (A) on the vehicle door (K) such that it will prevent vibration, essentially comprising at least one mirror connection body (2) on which the wing mirror (A) is attached and which is used for the connection of the wing mirror (A) with the vehicle door (K), at least one roving (3) which is provided on the vehicle door (K) and which has a connection duct (31) in form of at least one recess on its surface facing the outside of the vehicle, at least one covering extension (21) which extends through the part of the mirror connection body (2) fixed on the door (K), and which is used by means of attaching its end part on the connection duct (31) on the roving (3).

WO 2020/005188 A2

[Continued on next page]

Published:

— *without international search report and to be republished upon receipt of that report (Rule 48.2(g))*

— *in black and white; the international application as filed contained color or greyscale and is available for download from PATENTSCOPE*

WING MIRROR VIBRATION DAMPING SYSTEM

Field of the Invention

The present invention relates to a wing mirror connection system which is used in preventing vibration occurring in wing mirrors of vehicles.

Background of the Invention

In the prior art, the wing mirrors of the vehicles are used to monitor the situation of the traffic behind the driver. The wing mirrors are located outside the vehicle and extend the exterior volume of the vehicle depending on its dimensions. Today, the wing mirrors comprise several electronic systems, which significantly increase the driver's comfort. In the prior art, in order to reduce the weight of the vehicle, the connection parts of the mirrors on the vehicle are reduced or the weight connecting parts is decreased. However, the wing mirrors, after their weight is reduced, vibrate more with the effect of the wind, and the vibrating mirrors can cause faults in terms of quality and cause the connection members to deform. In addition, the noise caused by the vibration in the mirrors may disturb the user.

In the current technique, mirrors are fixed on the vehicle by means of bolts. Furthermore, plastic parts are placed around the connection parts of the mirror for preventing vibration occurring in the mirror and for sealing purposes. However, these methods require the use of additional parts creating extra weight on the vehicle and the plastic parts placed only in the connection parts are not sufficient to prevent vibration.

The Chinese patent document no CN202130383U, an application known in the state of the art, relates to the use of plastic strip for the sealing and damping effect in the fixing bracket of vehicle wing mirror. In the said document, there is a plastic structure on the surface on which the wing mirror bracket is fixed on the vehicle, and the plastic structure has effect on vibration damping. However, these methods require the use of additional parts creating extra weight on the vehicle and the plastic parts placed only in the connection parts are not sufficient to prevent vibration.

The Problems Solved with the Invention

The objective of the present invention is to provide a wing mirror vibration damping system which prevents the vibration occurring in wing mirrors of vehicles and which is used fixing the wing mirror on the vehicle.

The objective of the present invention is to provide a wing mirror vibration damping system which is formed without adding extra members on the vehicle for damping vibration.

The objective of the present invention is to provide a wing mirror vibration damping system which is realized in addition to the connection members and used in preventing vibration.

Detailed Description of the Invention

A wing mirror vibration damping system realized to fulfill the objective of the present invention is illustrated in the accompanying figures, in which:

Figure 1 is the perspective view of the inventive vibration damping system which is mounted on the vehicle door and wing mirror.

Figure 2 is the front cross-sectional view of the inventive vibration damping system which is mounted on the vehicle door and wing mirror.

The components given in the figures are individually numbered where the numbers refer to the following:

1. Vibration damping system
2. Mirror connection body
21. Covering extension
211. Tab
22. Lower support
3. Roving
31. Connection duct
4. Connection slot
5. Connecting member
A. Wing mirror
K. Door

A vibration damping system (1), which is used for connecting the vehicle wing mirror (A) on the vehicle door (K) such that it will prevent vibration, comprises

- at least one mirror connection body (2) on which the wing mirror (A) is attached and which is used for the connection of the wing mirror (A) with the vehicle door (K),
- at least one roving (3) which is provided on the vehicle door (K) and which has a connection duct (31) in form of at least one recess on its surface facing the outside of the vehicle,
- at least one covering extension (21) which extends through the part of the mirror connection body (2) fixed on the door (K), and which is used by means of attaching its end part on the connection duct (31) on the roving (3).

The vibration damping system (1) of the present invention is comprised of a mirror connection body (2) which is used for fixing the wing mirrors (A) provided on side part of the vehicle on the vehicle door (K), on which the wing mirror (A) is attached and which is fixed on the vehicle door (K); a covering extension which extends from the edge part of the mirror connection body (2) and engages to the roving (3) connection duct (31) provided on the vehicle door (K).

The mirror connection body (2) provided on the vibration damping system (1) of the present invention comprises the related mechanism so that the wing mirror (A) can connect to the vehicle in a rotating manner, and it is fixed on a slot provided on the vehicle door (K). The mirror connection body (2) is preferably fixed around the door (K) window opening of the vehicle door (K). The covering extension (21) preferably extends to the upper part of the door (K) window from one edge of the mirror connection body (2), and it is positioned such that it will cover the corner of the narrowing front part of the window. The end portion of the covering extension (21) is fixed to the door (K) by passing over the connecting duct (31) of the roving (3) which already present on the door (K). The vibrations that may occur in the mirror connection body (2) upon the end portion of the covering extension (21) being pressed into the roving (3) by engaging are damped on the roving (3).

In one embodiment of the invention, there is at least one lower support (22) which extends from the lower part of the mirror connection body (2), and creates a force point here by contacting the outer sheet plate of the vehicle door (K). The mirror connection body (2) forms the connection points on the door (K) with the covering extension (21) from the top and the lower support (22) from the bottom. With the said force fields formed in different areas by the lower support (22) and the covering extension (21), the vibration will not be reflected on the side mirror (A) by damping the frequency coming from the road.

In one embodiment of the invention, the covering extension (21) extends around the mirror connection body (2) and the door (K) on which it is fixed covers a portion of the window opening.

In one embodiment of the present invention, there is at least one tab (211) which is provided at the end portion of the covering extension (21) and which is used to engage in form of a hook from its end part to the connecting duct (31) of the door (K) roving (3).

In another embodiment of the present invention, the covering extension (21) and the tab (211) are a single piece. In another embodiment of the present invention, the tab (211) is formed by bending the covering extension (21).

A vibration damping system (1), which is used for connecting the vehicle wing mirror (A) on the vehicle door (K) such that it will prevent vibration, comprises

- at least one mirror connection body (2) on which the wing mirror (A) is attached and which is used for the connection of the wing mirror (A) with the vehicle door (K),
- at least damping member which is provided on the vehicle door (K) and which has at least one recess on its surface facing the outside of the vehicle,
- at least one covering extension (21) which extends through the part of the mirror connection body (2) fixed on the door (K), and which is used by means of engaging its end part on the flexible dampener recess.

In one embodiment of the present invention, the damping member is made of plastic or rubber material having a flexible structure.

In one embodiment of the present invention, there is at least one connection slot (4) on the surface of the mirror connection body (2) facing the vehicle door (K) and through which a connecting element (5) can pass. The mirror connecting body

(2) is fixed to the vehicle door (K) by means of the connection slot (4) and the connecting member (5) and used as an addition to the covering extension (21).

In one embodiment of the invention, the covering extension (21) extends over the vehicle door (K) at an angle from the periphery of the mirror connection body (2) edge parts and has a twist at its end part.

In one embodiment of the present invention, the roving (3) is a vehicle door roving located between the vehicle door (K) and the vehicle body and used for preventing outer factors such as water, moisture, dirt, wind, sound, cold air, etc.

In one embodiment of the invention, the roving (3) is a window gasket located around the vehicle door (K) window.

CLAIMS

1. A vibration damping system (1), which is used for connecting the vehicle wing mirror (A) on the vehicle door (K) such that it will prevent vibration, **comprising**

- at least one mirror connection body (2) on which the wing mirror (A) is attached and which is used for the connection of the wing mirror (A) with the vehicle door (K), and **characterized by**
- at least one roving (3) which is provided on the vehicle door (K) and which has a connection duct (31) in form of at least one recess on its surface facing the outside of the vehicle,
- at least one covering extension (21) which extends through the part of the mirror connection body (2) fixed on the door (K), and which is used by means of attaching its end part on the connection duct (31) on the roving (3).

2. A vibration damping system (1) according to claim 1, **comprising** a roving (3) which is a vehicle door roving located between the vehicle door (K) and the vehicle body and used for preventing outer factors such as water, moisture, dirt, wind, sound, cold air, etc.

3. A vibration damping system (1) according to claim 1, **comprising** roving (3) which is a window gasket located around the vehicle door (K) window.

4. A vibration damping system (1), which is used for connecting the vehicle wing mirror (A) on the vehicle door (K) such that it will prevent vibration, **comprising**

- at least one mirror connection body (2) on which the wing mirror (A) is attached and which is used for the connection of the wing mirror (A) with the vehicle door (K), and **characterized by**

- at least damping member which is provided on the vehicle door (K) and which has at least one recess on its surface facing the outside of the vehicle,
- at least one covering extension (21) which extends through the part of the mirror connection body (2) fixed on the door (K), and which is used by means of attaching its end part on the flexible dampener recess.

5. A vibration damping system (1) according to claim 4, **comprising** damping member which is made of plastic material having flexible structure.

6. A vibration damping system (1) according to claim 1 or 4, **comprising** at least one lower support (22) which extends from the lower part of the mirror connection body (2) and creates a force point here by contacting the outer sheet plate of the vehicle door (K).

7. A vibration damping system (1) according to claim 1 or 4, **comprising** covering extension (21) which extends towards the periphery of the mirror connection body (2) and cover a portion of the door (K) window opening.

8. A vibration damping system (1) according to claim 1, **comprising** at least one tab (211) which is provided at the end part of the covering extension (21) used for engaging the end part to the connection duct (31) of the door (K) roving (3).

9. A vibration damping system (1) according to claim 8, **comprising** covering extension (21) and tab (211) which are single piece.

10. A vibration damping system (1) according to claim 1 or 4, **comprising** at least one connection slot (4) which is provided on the surface of the mirror connection body (2) facing the vehicle door (K) and through which a connecting member (5) passes.

11. A vibration damping system (1) according to claim 1 or 4, **comprising** covering extension (21) which extends over the vehicle door (K) at an angle from the periphery of the mirror connection body (2) edge parts.

FIGURE 1

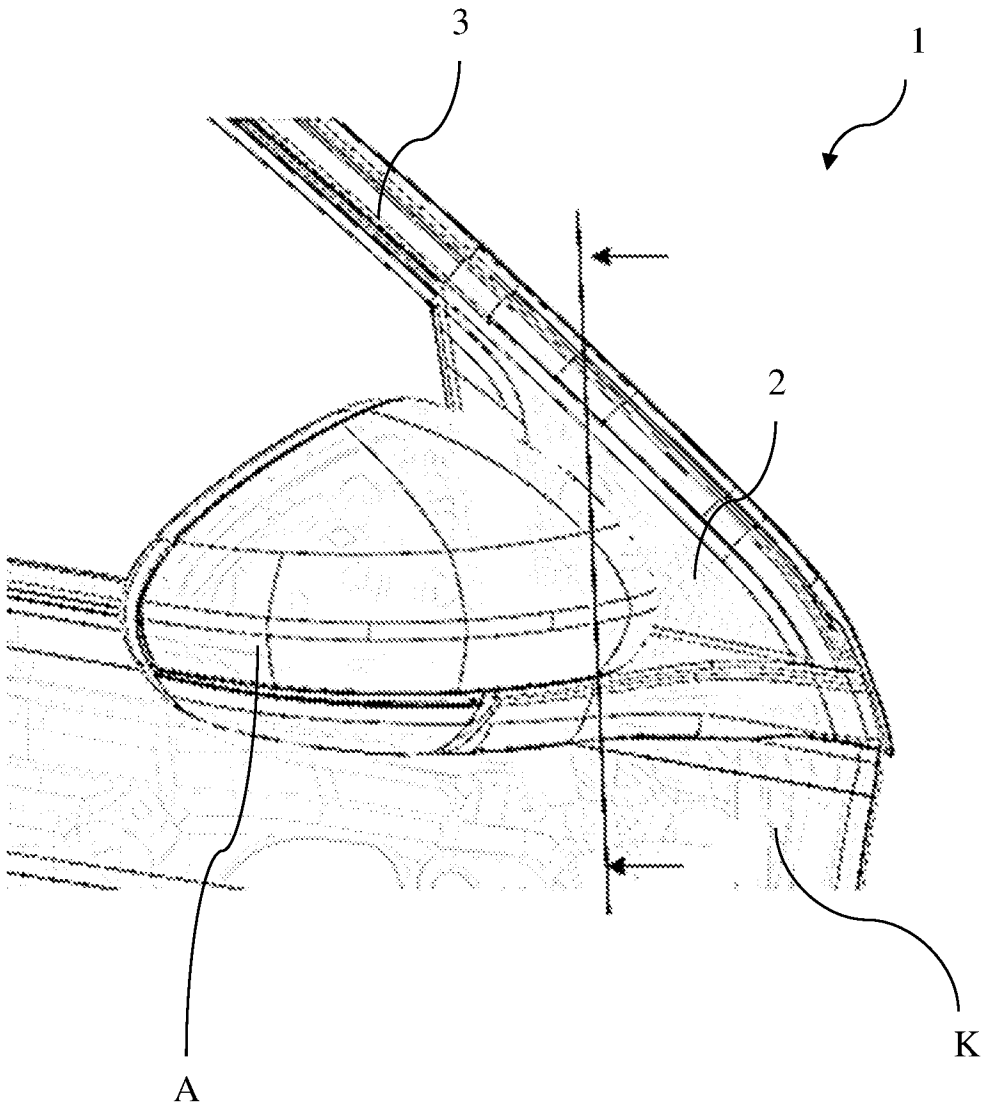

FIGURE 2