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(54) IMPROVEMENTS RELATING TO SCREEN WIPERS FOR VEHICLES

(71) We, ROBERT BOSCH GMBH, a German Company of Postfach 50, 7 Stuttgart 1, Federal Republic of Germany, 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:

The invention relates to a screen wiper for a motor vehicle.

A known wiper comprises a driven wiper arm having pivoted thereon a wiper blade including a two-part yoke whose two parts engage a common hinge pin arranged transversely of the wiper blade so as to penetrate the two yoke parts.

In a known wiper of this type, the two yoke parts or members are made of bent sheet metal and have a U-shaped cross section, being of identical shape. The cross-piece connecting the two legs of each U-shape is recessed or removed over half its width in the region of the joint between the two yoke members, and the leg of the first yoke member so exposed is displaced inwardly by the thickness of the sheet metal so that after assembly of the wiper this leg rests against the inside of one leg of the second yoke member. Hence the two yoke members must be inserted into one another in a specific manner, with the cross-piece remainder of the one yoke member coming to rest in the region freed of the cross-piece of the other yoke member. In such a mutual arrangement of the yoke members it is necessary in a separate operation to form the one leg of the one yoke member so that it fits between the legs of the other yoke member. This forming requires particularly high dimensional accuracy because on the one hand the gap between the cross-piece remainders, now neighbouring one another should not be too great, and on the other hand hooking onto one another of the edges of the two cross-piece remainders should be

avoided when the yoke members in the joint are pivoted against one another.

It is an aim of the invention to develop the known wiper in such a manner that the yoke members can be assembled without meeting special criteria, and that furthermore trouble-free operation of the wiper is assured.

In accordance with the invention, a harness for a wiper blade for a screen wiper of a motor vehicle comprises a two member elongate yoke whose two members engage a common hinge pin arranged transversely of the yoke and passing through the two yoke members, each of which has a laterally open recess providing the respective member with a stepped profile and presenting a sliding surface pierced by the pin, the recess of each member serving to accommodate a respective projection formed by the stepped profile on the other member such that the two sliding surfaces face one another.

The two sliding surfaces may contact one another which allows trouble-free pivoting of the yoke members because the sliding surfaces cannot catch on one another. Alternatively an element of substantially frictionless material may be interposed between the juxtaposed surfaces.

In a harness wherein the yoke members are made of sheet metal and have substantially U-shaped cross-sections, each yoke member may have on one end facing the other yoke member, a tongue, the outer surface of which forms the sliding surface of the yoke member.

For reinforcement of each yoke member, a stiffening bead is conveniently impressed in the cross-piece by which the limbs of the U-shaped cross-section are joined to one another and in an extension of this cross-piece, the tongue being bent down from such extension.

For reasons of fabrication technique the two yoke members are advantageously made completely identical.

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If a secondary yoke situation underneath the yoke members is to be provided and pivoted on the hinge-pin, the second yoke is provided with an opening extending in its longitudinal centre plane to accommodate the downwardly bent tongues of the yoke members.

The invention will now be described further, by way of example, with reference to the accompanying drawings, wherein:

Figure 1 shows a partial view of two yoke members made of synthetic plastics material in assembly position in perspective representation,

Figure 2 is an enlarged representation of the mating ends of a pair of unassembled yoke members formed from sheet metal and the associated hinge pin in perspective representation, and

Figure 3 shows a partial view of a secondary yoke for bridging the hinge joint of the two yoke members according to Figure 2, in perspective representation.

The wiper harness of Figure 1 comprises a two-part or member yoke 10 of a wiper blade, not shown on the drawing. The yoke is formed of two yoke members 11 and 12 made of synthetic plastics material. The yoke members 11 and 12 have, on the ends facing one another, a laterally open, stepped recess 13 and 14 respectively, which serves to accommodate the remaining stepped projection 15 and 16 respectively of the other yoke member. The two projections 15 and 16 have sliding surfaces 17 facing one another which are situated in the longitudinal centre plane of the particular yoke member. The stepped projections 15, 16 of the yoke members 11, 12 are each provided with a bore 18, which extends transversely to the longitudinal direction of the wiper harness and in which is received a hinge pin, not shown in Figure 1 of the drawings. The bores 18 and the hinge-pin form a joint about which the yoke members 11 and 12 are pivoted for relative movement.

In the embodiment according to Figure 2, the harness for the wiper blade is made of yoke members 20 and 21 of identical shape, with a U-shaped cross-section and fabricated from sheet metal. The yoke members 20 and 21 have, at their ends facing one another, a laterally open, stepped recess 22 which is formed by lug 23 cut free from the yoke member body and bent downwardly until it is parallel with one limb 24 of the U-shape of the yoke member 20, 21. The lug 23 in bent condition forms a tongue 25 situated parallel to the longitudinal extension of the yoke member, the face 26 of which, remote from the limb 24, forms a sliding surface for the identical sliding surface of the other yoke member 21. To reduce friction it may be advantageous if, inbetween the sliding surfaces 26 of the yoke

members 20 and 21 facing one another in assembled condition, an intermediate layer, for example a polytetrafluoroethylene element, is placed. The sliding surfaces 26 of the tongues 25 are situated in the longitudinal centre planes of the yoke members 20 and 21 respectively, so that in assembled condition of the completely identically formed yoke members 20 and 21, the limbs 24 of each of the yoke members 20 and 21 are aligned with, but slightly spaced from, the limbs 27 of the other yoke member 20 or 21 respectively. The limb 24 of the U-shaped yoke member 20 or 21 respectively, situated on the same side of the longitudinal centre plane as the tongue, has an extension 28 which lies parallel with the tongue 25 and whose shape corresponds to that of the sliding surface 26 of the tongue 25.

The limbs 24 and 27 of the yoke members 20 and 21 are joined to one another by a cross-piece 29, to complete the U-shape, and cross-piece 29 has an extension 30 joining together the extension 28 of the leg 24 and the tongue 25. In the tongues 25 and the extensions 28 bores 31 are provided which are mutually aligned and arranged transversely to the longitudinal extension of the wiper harness, which bores 31 serve to receive a hinge-pin 32. To this end it is necessary that in the assembled condition of the yoke members 20 and 21, the bores 31 of the one member should be aligned with the bores 31 of the other member. For a stiffening of the yoke members 20 and 21 respectively stiffening beads 33 and 34 respectively are impressed in the extensions 30. By way of example, the stiffening bead 33 of the yoke member 20 is shown extending from the limb 27 across cross-piece 29 and into extension 30, whilst the stiffening bead 34 of the yoke member 21 is shown extending only over the region of transition of cross-piece 29 to extension 30. The length of the stiffening bead is in practice the same on both yoke members and is adapted to the particular requirements. If an a second yoke 35 (Figure 3) is to be arranged underneath the harness formed of the main yoke members 20 and 21, which secondary yoke is also to be pivoted on the hinge-pin 32, then this secondary yoke 35, which may likewise be of U-shaped cross-section, is provided in its cross-piece 36 with a slot 38 in its longitudinal centre plane extending transversely to the pin journal bores 37 formed in the side limbs of the U-shaped yoke 35, through which slot 38 the tongues 25 of the yoke members 20 and 21 extend.

WHAT WE CLAIM IS:-

1. A harness for a wiper blade for a screen wiper of a motor vehicle, comprising a two-member elongate yoke whose two members engage a common hinge pin arranged transversely of the yoke to pass

through the two yoke members, each of which has a laterally open recess providing the respective member with a stepped profile and presenting a sliding surface pierced by the pin, the recess of each member serving to accommodate a respective projection formed by the stepped profile on the other member such that the two sliding surfaces face one another.

2. A harness as claimed in claim 1, in which each sliding surface is situated at least approximately in the longitudinal centre plane of the associated yoke member.

3. A harness as claimed in claim 1 or 2, wherein the yoke members are made from sheet metal and have substantially U-shaped cross-sections, each yoke member having, on one end facing the other yoke member, a tongue, one surface of which comprises the sliding surface.

4. A harness as claimed in claim 3, in which each tongue comprises a bent lug of the associated yoke member.

5. A harness as claimed in claim 3 or 4, in which one leg of each yoke member has an extension which, viewed in the direction of the axis of the pin, corresponds in shape to that of the tongue on the same member.

6. A harness as claimed in claim 5, in which each tongue and the associated extension of the leg are joined together by an extension of the cross-piece which joins together the legs of the U-shape of the respective yoke member.

7. A harness as claimed in claim 6, in which, in the region of each extension and cross-piece adjacent to the associated tongue, a respective stiffening bead is impressed.

8. A harness as claimed in any of claims 1 to 7, in which the yoke members are of identical construction.

9. A harness as claimed in any of claims 3 to 8, wherein an auxiliary elongate yoke is hinged on the pin and has an opening extending in its longitudinal centre plane transversely to the pin to accommodate the tongues of the said yoke members.

10. A harness for a wiper blade constructed substantially as herein particularly described with reference to and as illustrated in the accompanying drawings.

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Fig.1

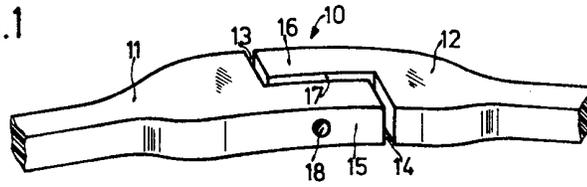


Fig.2

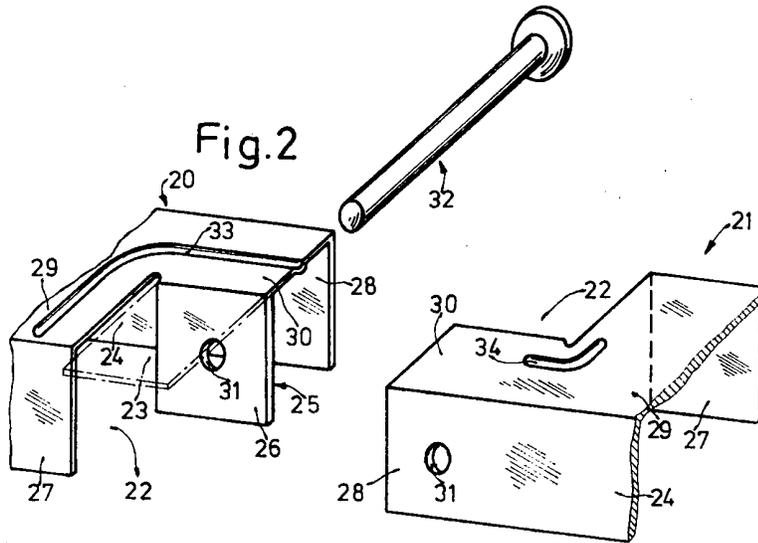


Fig.3

