

# PATENT SPECIFICATION

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## COMPLETE SPECIFICATION

### Windscreen Wiper having a Wide Sweeping Action

We, SOCIÉTÉ ANONYME: ANDRÉ CITROËN a French Body Corporate, of 143, Quai de Javel, Paris, (Seine Department), France, do hereby declare the nature of this invention and in what manner the same is to be performed, to be particularly described and ascertained in and by the following statement:—

The present invention has for object a windscreen wiper so arranged as to sweep a large portion of the wind-shield surface of a motor vehicle.

This apparatus is of the type having a single wiper carrier by an arm to which is imparted a rocking movement about a fixed pivot which is mounted on the body or on the wind-shield itself.

Up to now, the wiper is connected to a given point of the rocking arm by a pivotal joint ensuring its satisfactory contact with the windscreen and it sweeps a zone concentric with the fixed pivot carrying the rocking arm. This zone is compulsorily rather limited as said pivot pin cannot practically be located far from the edge of the wind-shield.

According to the present invention, the wiper is movable along the rocking arm which carries it and is guided on the latter so as to be invariably orientated relatively to said arm during its rocking movement about the fixed pivot; a kinematic connection provided between the wiper, the body and the rocking arm or its driving mechanism, compels the wiper to move along the arm in function of its inclination to the right or to the left from the vertical, in such a manner that the wiper passes no longer over a zone concentric with the pivotal axis of the wiper-carrying arm, but a surface which is appreciably wider and more elongated in the horizontal direction, for one and the same angle of oscillation of said arm.

This kinematic connection can be constituted for instance, by a simple connecting-rod pivoted, on the one hand, to the wiper and, on the other hand, to the body at a suitable distance from the pivotal axis of the wiper-carrier.

However, the invention includes the utilisation of any other kinematic con-

nections capable of guiding, over a path elongated in the horizontal direction, the wiper sliding along the rocking wiper-carrying arm.

The windscreen wiper thus devised can be actuated by hand or by any driving mechanism, acting either on the pivot pin of the wiper-carrying arm, or on the connecting-rod previously mentioned, or on any other movable part of the windscreen wiper.

By way of example, the accompanying drawing illustrates two embodiments of the windscreen wiper according to the invention.

Fig. 1 is a front elevation of the windscreen wiper seen from the front.

Fig. 2 is a side view thereof.

Fig. 3 is a diagram indicating the successive positions of the members and the extent of the portion swept on the wind-shield.

Fig. 4 is a corresponding plan view showing the increase of the field of vision obtained owing to the invention.

Fig. 5 is a diagrammatic elevation of the second embodiment.

Fig. 6 shows a detail.

In Figs. 1 to 4, 1 designates the body of the vehicle, 2 the wind-shield, 3 the wiper-carrying arm secured on a spindle 4 which is journaled in a bearing 5 secured to the body below the wind-shield. Said spindle 4 is actuated for instance by hand by means of a handle 6.

According to the invention, the arm 3 is provided with a slide-way 4a along which slides a slide-block 7 on which the wiper 8 is pivoted so as to press well against the wind-shield whilst remaining continually in the plane passing through the spindle 4 and through the median line of the arm 3.

The slide-block 7 is provided with a trunnion 7a on which is pivoted a connecting-rod 9 which connects it to another trunnion 10 secured to the front of the body at a certain distance below the spindle 4. In Fig. 3,  $x-x$  indicates the outline of the vertical plane passing through the axis of the handwheel and  $y-y$  the outline of the vertical median plane of the body. 0 designates the posi-

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tion generally adopted for the spindle 4, which position was compulsorily not far from the plane  $x-x$ , so that the hand-wheel hindered the operation of the handle.

According to the invention, the pivot pin 10 of the connecting-rod 9 and the pivot pin 4 of arm 3 are, on the contrary, placed near the median plane  $y-y$  of the body. However, the length of the connecting-rod is such that the arc of circle A B C described by the trunnion 7a, that is to say by the centre of the wiper 8 extends on the driver's side at least as far as the arc A<sup>1</sup> B<sup>1</sup> C<sup>1</sup> described before by the centre of the wiper about the point O.

In Fig. 3, the field of the sweeping action obtained according to the invention is indicated in thick dot and dash lines, and that obtained by an ordinary windscreen wiper in thin dot and dash lines; it will be seen that the field swept over is now considerably increased and extends opposite the person seated next to the driver. If the pivot pin 10 was located in the plane  $y-y^1$ , the field swept over would be quite symmetrical relatively to the latter, but in the example illustrated, the pivot pin 10 is offset towards the driver so as to give the latter a slightly more extended field of vision.

Fig. 4 shows in plan the increase in lateral extent of the field of vision of the wiper.

It is to be noted that as the handle 6 is now adjacent to the median plane  $y-y^1$ , it can be operated without the handwheel causing any constraint.

In some cases, and in particular, if the field of the sweeping action is very wide, it may be necessary to assist the lifting, at the ends of the stroke, by completing the kinematic device thus set forth by a complementary resilient connection. For that purpose, it suffices to provide a resilient abutment which is compressed or tensioned at the end of the movement of the slide-block 7 in the slideway 4a.

Fig. 6 illustrates a resilient abutment of this type.

On the arm 3 can slide a member 11 rigid with a rod 12 which freely passes through a support 13 secured on said arm. At the end of its stroke, the slide-block 7 abuts against the member 11 and pushes back the latter by compressing a spring 14 along a distance  $a$ . At the return stroke, said spring assists the slide-block 7 along the same distance  $a$ . The stroke of member 11 in this direction is limited by a head 15 rigid with the rod 12 and abutting on the support 13.

The embodiment illustrated in Fig. 5

differs from the preceding one by the fact that the connecting-rod 9 pivoted on the wiper-carrying slide-blocks at 7a comprises at its base two pivots 10a and 10b spaced from each other according to a distance  $d$  and taking a bearing on two fixed bearings 11a and 11b, from which they can disengage upwardly, in antagonism to the action of a spring 12 which pulls the connecting-rod downwardly.

The drawing clearly shows that when the arm 3 is in its median position, the connecting-rod 9 rests on both its bearings and that if it is moved towards the left about the pivot pin 4, it draws along the slide-block 7 which, in its turn, compels the collecting-rod to rock on its pivot 10a and is thus guided according to an arc B A concentric with the bearing 11a; if the arm is moved towards the right, the connecting-rod rocks on its pivot 10b and the journal 7a describes an arc B C concentric with the bearing 11b.

The wiper is thus moved in such a manner that it cleans a very wide zone on either side of the vertical plane passing through the pivot pin 4, which can be located in the median plane of the car or near said plane.

It will be understood that instead of causing the connecting-rod 9 to rock alternately on two bearings, its base might be provided with a segment, toothed or not, and the latter might be caused to roll on a rail secured to the car body and having a suitably chosen shape.

The invention also includes the utilisation of any other kinematic means suitable for guiding the trunnion 7a according to a path elongated in the horizontal direction, provided that these means are compact.

In the embodiment illustrated, the device according to the invention can be very simply and strongly constructed; it allows of nearly completely sweeping the wind-shield; the sweeping curve can be varied by modifying the length of the connecting rod, that of the slideway 4a and the position of the bearing point or points of the connecting-rod; moreover it is possible to arrange the control for the windscreen wiper at a place which is most suitable to the constructor or to the client; in particular, said control may be reversed and the axes of rotation placed at the top of the wind-shield.

Having now particularly described and ascertained the nature of our said invention and in what manner the same is to be performed, we declare that what we claim is:—

1. A windscreen wiper for the wind-shield of motor vehicles and the like, comprising a single wiper driven by an

arm rocking about a fixed axis, characterised by the fact that said wiper is slidably mounted on the rocking arm and is compelled by guiding means to move  
5 along said rocking arm in function of the angular displacements of the latter, so that the sweeping curve is longer in the horizontal direction than the arc passing through the middle of said curve and con-  
10 centric with the axis of rotation of the wiper-carrying arm.

2. A windscreen wiper as claimed in Claim 1, in which said wiper is mounted on a slide-block which slides along the  
15 rocking arm and which is attached to a

connecting-rod the opposite end of which, pivots, rocks or rolls on one or more fixed bearings.

3. A windscreen wiper as claimed in Claim 1, in which a resilient member is  
20 interposed between the slide-block and the end of a longitudinal slideway provided in said rocking arm, said resilient member being adapted to assist the lifting of the device at the ends of the stroke. 25

4. A windscreen wiper substantially as described and illustrated.

Dated this 11th day of December, 1939.

MARKS & CLERK.

[This Drawing is a reproduction of the Original on a reduced scale.]

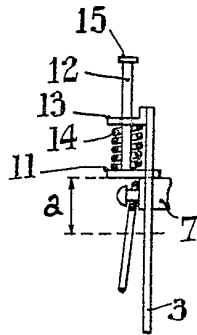
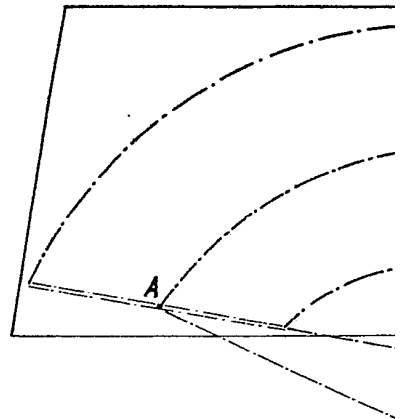
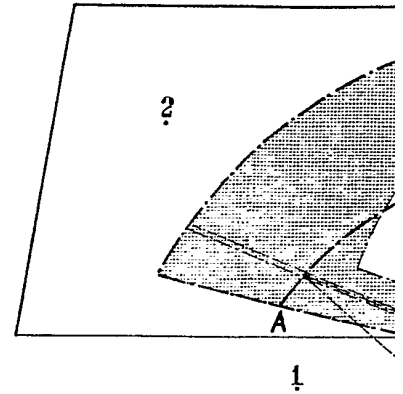
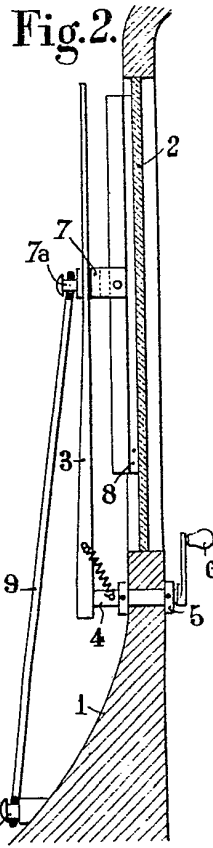
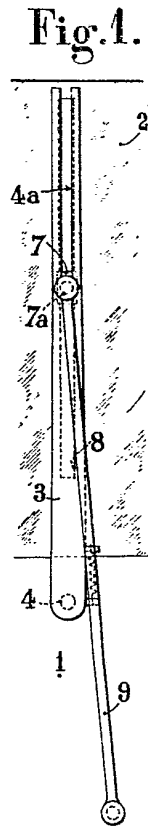


Fig. 6

Fig. 3.

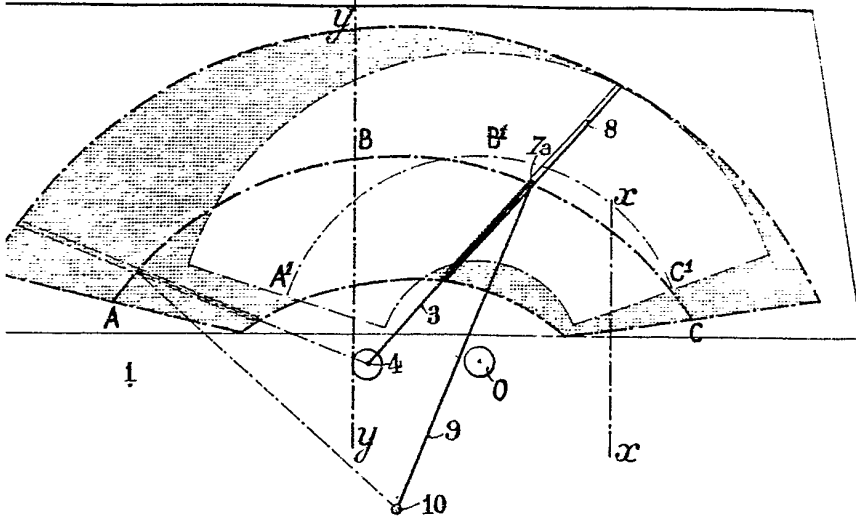


Fig. 4.

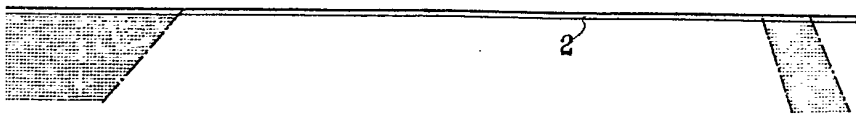


Fig. 5.

