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Wing mirror unit, drive construction, and rotation sensor.

(57)

The invention relates to a wing mirror unit for a motor vehicle. The unit comprises a mirror housing support for attachment to a body of the motor vehicle. The wing mirror unit further comprises a mirror housing supported by the mirror housing support and pivotably arranged with respect to said support around a rotation axis extending substantially in an upward direction. Furthermore, the unit comprises a drive, preferably an electric drive, for pivoting the mirror housing between a folded-out position of the mirror housing, in which the mirror housing extends substantially in a direction away from the body of the motor vehicle, and a folded-in position of the mirror housing, in which the mirror housing projects less far and extends in a substantially rearward direction more alongside the body of the motor vehicle, and/or for pivoting the mirror housing between the folded-in position and the folded-out position. The wing mirror unit also comprises a rotation sensor, preferably a potentiometer, having a sensor axis. Said unit is arranged for rotating the sensor axis during a limited part of the pivoting route between the folded-out position and the folded-in position and/or during a limited part of the pivoting route between the folded-in position and the folded-out position.

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Title: Wing mirror unit, drive construction, and rotation sensor

The invention relates to a wing mirror unit for a motor vehicle,
5 comprising a mirror housing support for attachment to a body of the motor
vehicle, a mirror housing supported by said support and pivotably arranged
around a rotation axis extending substantially in an upward direction, and a
drive, preferably an electric drive, for pivoting the mirror housing between a
folded-out position of the mirror housing, in which the mirror housing
10 extends substantially in a direction away from the body of the motor vehicle,
and a folded-in position of the mirror housing, in which the mirror housing
projects less far and extends in a substantially rearward direction more
alongside the body of the motor vehicle.

For example, in the folded-in position, an angle between a mirror
15 housing and a longitudinal direction of the vehicle can be between -10° and
 $+20^\circ$, especially about 0° or about 10° , seen in a direction substantially from
above, whereas, in the folded-out position, the angle between the mirror
housing and said longitudinal direction of the vehicle can for instance be
between $+45^\circ$ and $+100^\circ$, especially about 50° or about 60° , seen in a
20 direction substantially from above.

Such a wing mirror unit is generally known. Usually, the wing
mirror unit comprises cooperating stop surfaces limiting how far the mirror
housing can be folded-out. For example, a first stop surface is associated
with the mirror housing and a second stop surface is associated with the
25 mirror housing support. Normally, the wing mirror unit is arranged such
that, when the mirror housing reaches its maximum folded-out position, the
electric drive is cut off by means of a cut-off circuit based on a current
strength limitation when the cooperating stop surfaces abut. It is noted that
the mirror housing may then for instance be held in said folded-out position,
30 e.g. by means of a spring, especially a spring biasing the stop surfaces
towards each other in said maximum folded-out position.

Further, the known wing mirror unit generally comprises a mirror glass held by a mirror glass holder provided in the mirror housing. It is noted that an angular position of the mirror glass holder may be adjustable in order to facilitate meeting personal preferences of a user, e.g. in order to fit a distance between a driver and a driving controls, which distance may change when repositioning a driver's seat. Therefore, the mirror glass holder can be pivotably arranged around a second substantially upwardly extending rotation axis. Hence, in the folded-out position of the mirror housing, an angle between the mirror glass and the vehicle body can be adjusted or fine-tuned, wherein said angle is seen in a direction substantially from above, i.e. said angle can lie in a substantially horizontal plane. Usually, the wing mirror unit may then also comprise a drive train including a second electric drive for pivoting the mirror glass holder between different angular fine-tune positions, which fine-tune positions may for instance range from -12° to $+12^\circ$ with respect to a medium position or neutral position of the mirror glass holder in the folded-out position of the mirror housing. Generally, one of the elements of said drive train can be coupled with a sensor axis of a rotation sensor, preferably a potentiometer. Since the ratio between the angle of the measured rotation of the sensor axis and the pivoting angle of the mirror glass holder is known, the rotation sensor can provide feedback regarding the angular fine-tune position of the mirror glass holder. Said feedback may for instance be used when the wing mirror unit and/or the vehicle is provided with a memory for saving one or more preferred angular positions of the mirror glass and is for instance also arranged for putting the mirror glass holder and the mirror glass at least partly automatically back into such a saved angular position of the mirror glass (holder).

In this context, is noted that the feedback of a rotation sensor can normally be relatively accurate when a sensor axis thereof is rotated over a relatively large part of its maximum rotation. For example, the feedback of a

potentiometer can be relatively accurate when a relatively large part of
 path, along which a sliding contact or so-called wiper of a potentiometer can
 move along a resistive element of said potentiometer, is used to measure a
 certain angular rotation, e.g. a rotation of a mirror glass holder. It is further
 5 noted that a resistive element of a potentiometer often extends over more
 than 50%, especially more than 75% of a perimeter of a potentiometer, e.g.
 over between about 250° and about 350° , e.g. over about 300° . When the
 sliding contact of the potentiometer can for example move along
 substantially the full length of such a path, e.g. a substantially 300° path,
 10 while the mirror glass holder can be adjusted over about 25° , e.g. in a range
 from -12.5° to $+12.5^\circ$ with respect to the neutral position of the mirror glass
 holder, an angular rotation of the sensor axis of about 300° can correspond
 with an angular rotation of the mirror glass holder of about 25° . In such
 case, an angular rotation of the sensor axis of 12° can thus correspond with
 15 an angular rotation of the mirror glass holder of 1° . However, in a case that
 the rotation of the axis of potentiometer corresponds to the rotation of the
 mirror glass holder in a one to one ratio, an angular rotation of the sensor
 axis of only 1° corresponds with an angular rotation of the mirror glass
 holder of 1° . The relative accuracy of measurement of a potentiometer can
 20 thus be higher when the potentiometer is rotated along a relatively large
 part of the length of its resistive element.

A disadvantage of such known wing mirror units for wing mirror
 units is that at least two drives are needed, a first one for moving the mirror
 housing and the mirror glass provided therein from a folded-in position to a
 25 folded-out position and a second one to fine-tune the mirror glass held by a
 pivotable mirror glass holder. Two drives for pivoting around a substantially
 upwardly extending rotation axis may for instance make the wing mirror
 unit more complex and/or error-prone, may be more expensive than a single
 drive, may take up more space, and/or may be more difficult to be controlled.
 30 For example, it may be difficult and/or undesirable to provide relatively

much space for disposing cables when also a second drive for pivoting the mirror glass holder has to be provided, when said second drive is provided within the mirror housing.

The inventor of the present invention contemplated to provide a wing mirror unit, wherein the second drive for adjusting the mirror glass holder could be omitted. In such a contemplated wing mirror unit, the first drive could then for instance not only be used for bringing the mirror housing from a folded-in position into a folded-out position, but could also be used to fine-tune the angular position of the mirror housing between different folded-out positions, thereby thus fine-tuning the angular position of a mirror glass housed in said housing. Since an angle between a mirror glass in a folded-in position and a mirror glass in a neutral position of a folded-out mirror housing can for instance be about 60° , and since it should then for instance be able to fine-tune the angle of the folded-out mirror housing in a range of e.g. -12° to $+12^\circ$ with respect to said neutral position, the drive should for example be able to pivot the mirror housing from 0° (corresponding to a folded-in position) to 72° (60° plus 12° , i.e. a neutral folded-out position plus a maximum fine-tune pivoting away from the folded-in position). Since standard rotation sensors, such as standard potentiometers, are relatively cheap, it is desirable to use such a rotation sensor, e.g. a standard potentiometer, for measuring the angular position of the mirror housing of such a contemplated wing mirror unit. However, when a standard rotation sensor, e.g. a standard potentiometer, is to be used for following a rotation of the mirror housing over for instance at least about 72° , the axis of a standard rotation sensor that for instance may measure over about 300° can only rotate about 4° for any 1° of rotation of the mirror housing, whereas the axis of the same rotation sensor can rotate about 12° for any 1° of rotation of the mirror glass holder when two separate drives are used such as in the above described known situation. Hence, when a standard rotation sensor, such as a standard potentiometer, would be used

to follow the rotation of the mirror housing between the folded-in position and the maximum folded-out position of said mirror housing (e.g. over about 72° of rotation), the accuracy of the measurement of the rotation of the mirror housing (and thus the mirror glass held thereby) would be relatively poor.

It is an object of the invention to provide an alternative wing mirror unit. In particular, the invention aims at providing a wing mirror unit, wherein at least one of the disadvantages of one or more prior art wing mirror units is counteracted. More in particular, the invention may aim to provide a wing mirror unit, wherein at least one of the disadvantages mentioned above is counteracted. In embodiments, the invention aims at providing a wing mirror unit comprising a drive for pivoting a mirror housing between a folded-in position and a folded-out position and/or vice versa, wherein fine-tuning of the mirror glass can at least partly be done by means of said same drive, preferably wherein a rotation sensor, especially a standard potentiometer, can be used to perform a relative accurate measurement of the angular rotation of the mirror glass and/or mirror housing when being fine-tuned.

Thereto, in embodiments, the invention provides for a wing mirror unit for a motor vehicle, comprising: a mirror housing support for attachment to a body of the motor vehicle; a mirror housing supported by the mirror housing support and pivotably arranged with respect to said support around a rotation axis extending substantially in an upward direction; and a drive, preferably an electric drive, for pivoting the mirror housing between a folded-out position of the mirror housing, in which the mirror housing extends substantially in a direction away from the body of the motor vehicle, and a folded-in position of the mirror housing, in which the mirror housing projects less far and extends in a substantially rearward direction more alongside the body of the motor vehicle, and/or for pivoting the mirror housing between the folded-in position and the folded-out

position, wherein the wing mirror unit further comprises a rotation sensor, preferably a potentiometer, having a sensor axis, and wherein the wing mirror unit is arranged for rotating the sensor axis during a limited part of the pivoting route between the folded-out position and the folded-in position and/or during a limited part of the pivoting route between the folded-in position and the folded-out position.

For example, when the mirror housing is pivoted from 0° , i.e. a folded-in position, towards a minimum folded-out position, e.g. 48° (60° minus 12° , e.g. a neutral folded-out position minus a maximum fine-tune pivoting towards the folded-in position), the sensor axis may be kept substantially stationary, e.g. may not be rotated then. It is noted that the sensor may thus not be able to measure the angular position of the mirror housing when it is pivoted within said range from the folded-in position to the minimum folded-out position. However, the wing mirror unit is thus arranged such that it can rotate the sensor axis when the mirror housing is fine-tuned, i.e. when the mirror housing is pivoted between different folded-out positions, e.g. when being pivoted from its minimum folded-out position (e.g. 48°) towards its maximum folded-out position, e.g. 72° (60° plus 12° , i.e. a neutral folded-out position plus a maximum fine-tune pivoting in a direction away from the folded-in position).

By arranging the wing mirror unit such that it drives rotation of the sensor axis during a limited part of the pivoting route between the folded-in position and the folded-out position, it is made possible to rotate the sensor axis only or mainly during fine-tuning of the mirror housing. As a result, a relatively small part (e.g. 48° to 72°) of an angular rotation of the mirror housing rotating between its folded-in position and its maximum folded-out position (e.g. 0° to 72°) may correspond with a relatively large angular rotation (e.g. 0° to 300°) of the sensor axis. Consequently, the axis of the sensor may for instance rotate a relatively many degrees for any 1° of rotation of the mirror housing within the fine-tuning route. For example,

the axis of the sensor may for instance rotate about 12° for any 1° of rotation of the mirror housing within the fine-tuning route (e.g. from 48° to 72° , i.e. from 60° minus 12° towards 60° plus 12°). Therefore, in embodiments, the invention can provide for a wing mirror unit comprising a drive for pivoting
5 a mirror housing between a folded-in position and a folded-out position and/or vice versa, wherein the fine-tuning of the mirror glass can at least partly be done by means of the same drive, wherein a rotation sensor, especially a standard potentiometer, can be used to perform a relative accurate measurement of the angular rotation of the mirror glass and/or the
10 mirror housing when being fine-tuned between different folded-out positions.

The invention also relates to a drive construction for driving a sensor axis of a rotation sensor of a wing mirror unit. Further, the invention relates to a rotation sensor.

15 Advantageous embodiments according to the invention are described in the appended claims.

By way of non-limiting examples only, embodiments of the present invention will now be described with reference to the accompanying figures in which:

20 Fig. 1a shows a schematic partly cutaway top view of a vehicle provided with an exemplary embodiment of a wing mirror unit according to an aspect of the invention in a first position corresponding to a folded-in position of a mirror housing of said wing mirror unit;

Fig. 1b shows a schematic partly cutaway top view of the vehicle
25 of Fig. 1a with the wing mirror unit in a second position;

Fig. 1c shows a schematic partly cutaway top view of the vehicle of Figs. 1a and 1b with the wing mirror unit in a third position;

Fig. 1d shows a schematic partly cutaway top view of the vehicle of Figs. 1a-1c with the wing mirror unit in a fourth position; and

Fig. 2 shows a schematic perspective view of an exemplary embodiment of a rotation sensor according to an aspect of the invention.

It is noted that the figures show merely preferred embodiments according to the invention. In the figures, the same or similar reference
5 signs or numbers refer to equal or corresponding parts.

Figures 1a-1d show a wing mirror unit 1 for a motor vehicle 2 in four different positions. The wing mirror unit 1 comprises a mirror housing support 3 for attachment to a body 4 of the motor vehicle 2, such as for instance a car, van, bus, coach, motorcycle, tractor or truck. For example,
10 said support 3 can be attached to the vehicle body 4, e.g. on the side of the vehicle, for instance on a door of the vehicle. Advantageously, a vehicle 2 can be provided with at least two wing mirror units 1, one provided on the left side and one provided at the right side. Although the wing mirror unit 1 is a right side wing mirror unit in the embodiment shown here in Figs. 1a-1d, it
15 is apparent that the wing mirror unit 1 can in alternative embodiments be a left side wing mirror unit.

It is noted that the wing mirror unit 1 comprises a mirror housing 5. The mirror housing 5 is supported by the mirror housing support 3. The mirror housing is pivotably arranged with respect to the
20 mirror housing support 3 around a rotation axis 6 extending substantially in an upward direction, preferably substantially transverses to the horizontal plane. In embodiments, said rotation axis 6 extending substantially in an upward direction may be tilted to some extent with respect to the horizontal plane, e.g. even when the vehicle is in an upright position.

Further, the wing mirror unit 1 comprises a drive for pivoting the
25 mirror housing 3 between a folded-out position of the mirror housing, in which the mirror housing 5 extends substantially in a direction 7 away from the body 4 of the motor vehicle 2, such as for instance can be seen in Fig. 1c and Fig. 1d, and a folded-in position of the mirror housing 5, such as for
30 instance can be seen in Fig. 1a. It is noted that the mirror housing 5

extending substantially in a direction 7 away from the vehicle body 4 could at least be understood as a direction of the mirror housing 5 in which a mirror glass 10 held by and/or in said mirror housing 5 is extending in a direction substantially away from the vehicle body 4, and/or projecting
 5 and/or extending at least further away than in the folded-in position. Additionally or alternatively, the drive may be for pivoting the mirror housing 5 between a folded-in position and a folded-out position. Advantageously, the drive can be for pivoting the mirror housing 5 both from a folded-in position to a folded-out position and vice versa. Moreover, in
 10 embodiments, said drive may be used for moving the mirror housing 5 and/or the mirror glass 10 held by said housing 5 from one folded-out position to another folded-out position.

In the folded-in position of the mirror housing 5, the mirror housing 5 projects less far and extends in a substantially rearward direction
 15 8 more alongside the body 4 of the motor vehicle 2, such as for instance can be seen in Fig. 1a. It is noted that the substantially rearward direction 8 in which the mirror housing can extend could at least be understood as a direction of the mirror housing 5 in which the mirror glass 10 held by and/or in the mirror housing 5 extends substantially in a rearward direction. In the
 20 exemplary embodiment of Fig. 1a, an angle α_i between the substantially rearward direction 8 of the mirror housing and a longitudinal direction of the vehicle and/or a direction 11 along which a side of the vehicle extends is about $+7^\circ$. However, in other embodiments, said angle α_i corresponding with the folded-in position of the mirror housing 5 can for instance be between
 25 -10° and $+25^\circ$, preferably between 0° and 15° .

Preferably, the drive can comprise an actuator, such as for instance an electric motor. For example, the drive can be an electric drive. In embodiments, an output axis of the electric motor can be coupled, directly or indirectly, to the mirror housing 5, whereas a housing of the electric
 30 motor can be substantially fixed, at least against rotation, within the mirror

housing support 3. Alternatively, the motor housing can be substantially fixed, at least against rotation, within the mirror housing 5, whereas the output axis of the motor can be connected, directly or indirectly, to the mirror housing support 3.

5 It is noted that the output axis of the electric motor may be in line with, may be, and/or may form the rotation axis 6 of the wing mirror unit 1.

 In embodiments, the wing mirror unit 1 may be provided with a stop or so-called stop means, for instance comprising a first stop surface provided at and/or associated with the mirror housing support 3 and a
10 second stop surface provided at and/or associated with the mirror housing 5, such that the mirror housing 5 can be stopped in a certain predetermined position when being folded-in, e.g. in its folded-in position. It is noted that whereas the mirror housing may be arranged to be held in one of its multiple possible folded-out positions, the mirror housing may thus be
15 arranged to be brought only in substantially a single folded-in position. It is further noted that the drive, e.g. an electric drive, can in embodiments be cut off by means of a cut-off circuit based on a current strength limitation when the cooperating stop surfaces abut. Additionally or alternatively, the wing mirror unit 1 may comprise a biasing means, e.g. a spring or spring
20 means, for keeping the wing mirror housing 5 substantially in its folded-in position.

 Furthermore, the wing mirror unit 1 comprises a rotation sensor 8. The rotation sensor 8 has a sensor axis 9. Preferably, the rotation sensor 8 can be a potentiometer or so-called pot. However, in alternative
25 embodiments the rotation sensor 8 can be or comprise another sensor. For example, the rotation sensor 8 can be a Hall effect sensor or the rotation sensor 8 may comprise a pressure sensor or a strain gauge, which for example may cooperate with a spiral torsion spring in order to sense a rotation.

Furthermore, the wing mirror unit 1 is arranged for rotating the sensor axis 9 during a limited part of the pivoting route between the folded-out position and the folded-in position and/or during a limited part of the pivoting route between the folded-in position and the folded-out position.

5 In the exemplary embodiment shown in Figs. 1a-1d, the rotation sensor 8 is fixed at or in the mirror housing 5 at least rotationally with respect to the rotation axis 6. As a result, in such embodiment, the sensor 8 may pivot along with the mirror housing 5 around the rotation axis 6 of the wing mirror unit 1 between the folded-in position and the folded-out position
10 of the mirror housing 5 and/or between the folded-out position and the folded-in position. The wing mirror unit 1 may further comprise a sensor driving element 12 or so-called driving element for driving the sensor axis 9. For example, said driving element 12 can comprise and/or can be formed by a specially arranged gear wheel or so-called cogwheel. Advantageously, said
15 driving element 12 can be at least rotationally fixed at or in the mirror housing 5 with respect to the rotation axis 6. For example, the sensor driving element 12 can be provided at or near a top surface of the mirror housing support 5. In embodiments, the driving element 12 can be rotationally fixed with respect to a shaft of the mirror unit 1, e.g. by means
20 of protrusions 18 and/or indentations 19, e.g. provided at an inside perimeter 23 of the driving element 12, for cooperation with corresponding indentations and/or protrusions provided at an outside perimeter of the shaft. For example, said shaft can rotationally fixed at or on the mirror support 3 and/or may at least partly extend into a cavity in the mirror
25 housing 5, wherein the mirror housing 5 may be arranged such that it can pivot around said shaft. The driving element 12 may then thus be associated with and/or attached to the mirror housing support 3 and/or a shaft thereof, but may be located substantially within the mirror housing 5. It is noted that the wing mirror unit 1 can be arranged such that the sensor driving
30 element 12 rotates the sensor axis 9 during a limited part of the pivoting

movement of the sensor 8 pivoting along with the mirror housing 5 between the folded-in position and the folded-out position and/or between the folded-out position and the folded-in position.

However, in alternative embodiments, the wing mirror unit 1 can be arranged differently. For example, the rotation sensor 8 can be at least rotationally fixed with respect to the rotation axis 6, i.e. fixed against rotation with respect to the rotation axis 6, at or in the mirror housing support 3, e.g. such that said sensor 8 can substantially not pivot along with the mirror housing 5 when the mirror housing 5 pivots around the rotation axis 6 of the wing mirror unit 1. The wing mirror unit 1 can further comprise a sensor driving element 12 or so-called driving element 12 for driving the sensor axis 9. Said driving element 12, which advantageously can be similar to the one described above, may be arranged such that it pivots along with the mirror housing 5 between the folded-in position and the folded-out position of said mirror housing 5 and/or along with rotation in the opposite direction. Advantageously, the sensor driving element 12 is coupled and/or attached to the mirror housing 5, e.g. at or near an underside of the mirror housing 5, and/or is integrally formed as a part of the mirror housing 5. In embodiments, the driving element 12 can be rotationally fixed with respect to a shaft of the mirror unit 1, e.g. by means of protrusions 18 and/or indentations 19, e.g. provided at an inside perimeter 23 of the driving element 12, for cooperation with corresponding indentations and/or protrusions provided at an outside perimeter of the shaft. For example, said shaft can be coupled to an output axis of an electric motor of the drive and/or can be rotationally fixed with respect to the wing mirror housing 5. It is noted that, additionally or alternatively, said shaft may then at least partly extend into a cavity in the mirror housing support 3. The driving element 12 may then thus be associated with and/or attached to the mirror housing 5, but may be located substantially within the mirror housing support 3. Further, the wing mirror unit 1 may be arranged such that the

driving element 12 rotates the sensor axis 9 during a limited part of the pivoting movement of the driving element 12 pivoting along with the mirror housing 5 between the folded-in position and the folded-out position and/or between the folded-out position and the folded-in position.

5 In embodiments, the sensor driving element 12 can substantially extend at least partly around the rotation axis 6 of the wing mirror unit 1. For example, said driving element 12 may comprise and/or may be formed substantially by a wheel and/or a gear wheel, of which only a portion of its perimeter is provided with gear teeth 13 for cooperation with corresponding
10 gear teeth 15 provided at the sensor axis 9 or at a driven element 14 coupled with said sensor axis 9.

 As noted, in embodiments, the sensor axis 9 can be coupled to and/or provided with a driven element 14 for cooperation with the sensor driving element 12. For example, said driven element 14 can comprise
15 and/or can be formed by a specially arranged gear wheel or so-called cogwheel. Additionally or alternatively, said driving element 12 and said driven element 14 can be provided with corresponding gear teeth 13, 15, such that the driving element 12 can drive the driven element 14 during the limited part of the pivoting movement of the mirror housing 5 between the
20 folded-in position and the folded-out position and/or during the limited part of the pivoting movement of the mirror housing 5 between the folded-out position and the folded-in position. Advantageously, the gear teeth 13, 15 can be involute gear teeth or so-called evolvent gear teeth. However, the gear teeth can be of different design. For instance, the gear design can be of
25 an epicycloid or Novikov-Wildhaber type.

 Additionally, the driven element 14 can comprise a blocking part 16 for cooperation with a corresponding locking part 17 of the driving element 12, said blocking part 16 and said locking part 17 being of such design that the driving element 12 can lock the driven element 14 during a
30 part of the pivoting movement of the mirror housing 5 between the folded-in

position and the folded-out position and/or vice versa. It is noted that in this context locking should be understood at least such as that the driven element 14 cannot substantially rotate with respect of a central axis of the sensor axis 9 when being locked. In embodiments, the driven element 14 may for instance thus be able to move along its central axis when being locked. In order to enable that the locking part 17 of the driving element 12 can lock rotation of the driven element 14, the blocking part 16 and the locking part 17 may for instance comprise one or more corresponding guiding surfaces 16a, 17a such that a portion of the guiding surface 17a of the blocking part 17 of the driving element 12 can be guided and/or can move along the guiding surface 16a of the locking part 16 of the driven element 14, thereby counteracting rotation of the driven element 14 about a central axis of the sensor axis 9. It is noted that said guiding surfaces 16a, 17a can preferably be round guiding surfaces or so-called circular guiding surfaces, e.g. surfaces substantially defined by a part of a circular cylinder surface.

Advantageously, the driven element 14 can comprise at least one tooth 15l which protrudes further outwardly than the other teeth 15 of the driven element. This can for instance be seen in Fig. 2 which shows a schematic perspective view of an exemplary embodiment of a rotation sensor 8 with a sensor axis 9 coupled to and/or provided with a driven element 14 according to an aspect of the invention. The so-called top land 15l' of said tooth 15l protruding relatively far can form the guiding surface 16a of the locking part 16a of the driven element 14. Preferably, said top land 15l' can form a substantially circular guiding surface 16a, and can preferably be substantially concave. Additionally or alternatively, the tooth 15l defining the guiding surface 16a of the locking part 16 of the driven element 14 has a relatively large circular thickness or a relatively large pitch 20, e.g. circular pitch, with respect to the circular thickness or the pitch 21 of the other teeth, which can have a relatively small pitch 21.

In embodiments, the pitch 20 of the outwardly protruding tooth 15l can extend for instance over about 30° to about 120° of the perimeter of the driven element 14, preferably over about 40° to about 90° , such as over about 50° to about 70° , for instance over about 60° . Additionally or
5 alternatively, the other ones 15a-15k of the teeth 15, i.e. the so-called normal gear teeth 15a-15k, can extend over about 240° to about 330° of the perimeter of the driven element 14, preferably over about 270° to about 320° , such as over about 290° to about 310° , for instance over about 300° .
Additionally or alternatively, said so-called normal gear teeth 15a-15k of the
10 driven element and/or tooth faces 15", 15'" of the teeth 15a-15l of the driven element 14 for contacting or meshing with tooth faces 13", 13'" of the driving element 12 (including the tooth faces 15l", 15l'" of the outwardly protruding tooth 15l) can be positioned along a relatively large part of a perimeter, e.g. an outer perimeter, of the driven element 14. For example, said relatively
15 large part may extend over between 50% and 90% of the perimeter, more preferably over at least 75%, at least 80%, or at least 85% of the perimeter, such as for instance along about $5/6$ of the perimeter. As a result, a relatively large part of the range (e.g. between about 250° and about 350° , such as about 300°) in which the rotation sensor 8, e.g. a standard
20 potentiometer 8, works can be utilized, because a relatively large rotation of the driven element 14 may be utilized.

In preferred embodiments, the number of teeth 13 of the driving element 12 can be equal to the number of teeth 15 of the driven element 14, wherein said number of teeth 15 of the driven element 14 includes the
25 tooth 15l defining the guiding surface 16a. The number of teeth 13 of the driving element 12 can thus be one larger than the number of the so-called normal teeth 15a-15k of the driven element. Additionally or alternatively, the driving element 12 may comprise a second guiding surface 17b, which can be provided beyond a last one 13l of the teeth 13 of the
30 driving element 12. This can facilitate that the driving element 12 can pivot

beyond the point where the last tooth 13l of the driving element 12 is meshing with the last normal tooth 15k of the driven element 14. As a result, it can for instance be facilitated in a relatively elegant manner that the wing mirror unit 1 can be provided with an over-fold mechanism for enabling that the mirror housing 5 can be folded-over, e.g. in case of a pedestrian or biker hitting the mirror housing 5 from behind. For example, the second guiding surface 17b of the driving element 12 and the first guiding surface 17a of the driving element 12 can be integrated into a single guiding surface extending substantially from the last tooth 13l of the driving element to the first tooth 13a of the driving element 12, e.g. from a recess 22b provided substantially directly behind the last tooth 13l up to a recess 22a substantially directly in front of the first tooth 13a.

It is noted that the teeth 13a-13l of the driving element 12 can be positioned along a relatively small part of a perimeter, e.g. a relatively small part of an outer perimeter such as a periphery, of the driving element 12, preferably along between $1/24$ and $1/6$ of the perimeter, more preferably along between $1/18$ and $1/12$, such as for instance along about $1/14$ or about $1/15$ of the perimeter. As another example, the teeth 13 of the driving element 12 for meshing with the teeth 15 of the driven element 14 may in embodiments cover at most 50° or at most 40° , preferably at most about 35° , at most about 30° or at most about 25° of the perimeter of the driving element 12. As a result, it can be facilitated that only in a relatively small part of the perimeter of the driving element 12 the driven element 14 and/or the sensor axis 9 of the rotation sensor 8 is driven by means of the teeth 13 of the driving element 12 cooperating teeth 15 of the driven element 14. Advantageously, the wing mirror unit 1 can be arranged such that said relatively small part corresponds with the range in which a folded-out mirror housing can be fine-tuned, e.g. it can correspond with a route between a minimum folded-out position and a maximum folded-out position.

A preferred use of a wing mirror unit 1 according to the invention will now be elucidated by means of the Figs. 1a-1d. In Fig. 1a, the unit 1 is shown in a folded-in position of the mirror housing 5. For example, the wing mirror unit 1 can have only one folded-in position, e.g. defined by means of cooperating stop surfaces. The mirror housing 5 can for instance be in the folded-in position while the vehicle is parked. When the motor vehicle 2 is to be prepared for use or departure, the wing mirror housing 5 can be folded-out to a folded-out position. For example, a drive, e.g. an electric drive, can pivot the mirror housing around a rotation axis 6 of the unit 1, e.g. by pivoting the driving element 12 around said axis 6. As can be seen in Fig. 1b, which shows the wing mirror housing 5 being in a position between the folded-in position of Fig. 1a and a folded-out position when being moved from said folded-in position to a folded-out position, a guiding surface 17a of the blocking part 17 of the driving element 12 can then move along a corresponding guiding surface 16a of the locking part 16 of the driven element 14. This can be done in a manner in which the driven element 14 is not driven by the driving element 12. Actually, the guiding surfaces 16a, 17a may prevent that the driven element 14 is pivoted around the sensor axis 9 then. This is, said guiding surfaces 16a, 17a can keep the driven element 14 substantially stationary then.

In the process of pivoting the mirror housing 5, a first tooth 13a of the driving element 12 can reach driven element 14. Then, a first tooth face 15l" of the outwardly protruding tooth 15l of the driven element 14 may abut a first tooth face 13a" of the first tooth 13a of the driving element 12. It is noted that in embodiments, the teeth 13 of the driving element 12, or at least the first tooth 13a, may, for instance therefore, protrude further outwardly than the one or more guiding surfaces 17a, 17b. Further, it is noted that, additionally or alternatively, a recess 22a provided before the first tooth 13a and/or a recess 22b provided behind the last tooth 13l of the driving element 12 can be relatively large, e.g. relatively wide and/or

relatively deep, in order to provide enough space for the relatively large tooth 15l of the driven element 14. From the moment that the first tooth face 15l" of the outwardly protruding tooth 15l of the driven element 14 meshes with the first tooth face 13a" of the first tooth 13a of the driving element 12 the driven element 14 is driven by the driving element 12. It can then thus be known that the mirror housing has reached its minimum folded-out position and from then on, the sensor axis 9 can thus rotate when the mirror housing is pivoted further towards its maximum folded-out position, and the sensor 8 can then thus provide data regarding further rotation of the driving element 12, and therefore regarding further rotation of the mirror housing 5 holding the mirror glass 10.

In embodiments, the wing mirror unit 1 may be arranged such that at the moment that the driven element 14 is first rotated by the driving element 12 corresponds to a minimum folded-out position of the wing mirror housing 5. For example, the route along which the housing 5 can be pivoted between its folded-in position and said minimum folded-out position can for example correspond with a rotation in a range between about 25° and about 75°, for example in a range between about 35° and about 50°, such as for instance about 37° or about 48°. Additionally or alternatively, the route along which the housing 5 can be pivoted between its minimum folded-out position and its maximum folded-out position can for example correspond with a rotation in a range between about 15° and about 50°, for example in a range between about 20° and about 30° or 35° or 40°, such as for instance about 25°, about 30°, or about 35°.

As can be seen when comparing Figs. 1c and 1d, which both show the mirror housing 5 in a respective folded-out position, the driven element 14 can be pivoted relatively far (e.g. over an angle of about 80°) while the mirror housing 5 is only pivoted over a relatively small angle (e.g. over about 8°) when pivoting from one folded-out position (e.g. position in Fig. 1c) to another folded-out position (e.g. position in Fig. 1d).

In embodiments, data provided by the rotation sensor 8 can be used to control the drive for moving the mirror housing 5 from the folded-in position or from a first folded-out position towards a certain folded-out position. For example, the mirror housing 5 may be folded-out to a medium
5 folded-out position, such as for instance shown in Fig. 1d. Alternatively or additionally, the wing mirror unit 1 or a system (not shown) for controlling the wing mirror unit 1 may be provided with a memory (not shown) for storing one or more predetermined rotation settings, e.g. settings corresponding to a certain user of the motor vehicle and/or corresponding to
10 certain adjustments of a driver seat and/or driving controls such as a steering wheel. For example in such a case, the wing mirror unit 1 or said system may control the drive for driving the mirror housing and may stop the mirror housing in the predetermined folded-out position based at least partly on feedback provided by the rotation sensor 8.

15 The rotation sensor 8 may thus provide feedback usable for controlling the drive for pivoting the mirror housing 5. Said information may for instance be used when fine-tuning the mirror housing, i.e. moving the mirror housing from one folded-out position to another folded-out position.

20 The invention also relates to a drive construction 12, 14 for driving a sensor axis 9 of a rotation sensor 8, preferably a potentiometer, of a wing mirror unit 1 as disclosed herein. Said drive construction 12, 14 comprises a driving element 12 for a wing mirror unit 1 and a corresponding driven element 14 which can be provided on said sensor axis 9.

25 Furthermore, the invention relates to a rotation sensor 8, of which an exemplary embodiment is shown in Fig. 2. Said sensor 8 according to an aspect of the invention comprises a rotation axis 8 coupled to and/or provided with a driven element 14 having a perimeter provided with a plurality of gear teeth 15 or so-called cocks 15 and a locking part 16 having
30 a circular guiding surface 16a for cooperation with a circular guiding

surface 17a of a blocking part 17 of a corresponding driving element 12 of a wing mirror unit 1, wherein said driving element 12 is arranged for driving said driven element 14, during a part of a pivoting movement of said driving element 12.

5 It is noted that for the purpose of clarity and a concise description features are described herein as part of the same or separate embodiments, however, it will be appreciated that the scope of the invention may include embodiments having combinations of all or some of the features described.

 Further, it is noted that the invention is not restricted to the
10 embodiments described herein. It will be understood that many variants are possible.

 For example, the mirror glass 10 may for instance be held by the mirror housing 5, e.g. by means of a mirror glass holder, in a manner in which the mirror glass 10 is substantially fixed with respect to said
15 housing 5. However, in alternatively embodiments, the mirror glass may be movable with respect to the mirror housing 5 to some extent, e.g. in order to move around a substantially horizontal axis, preferably extending substantially parallel with the mirror glass, such that the mirror glass can be fine-tuned to face at least a little bit more upwards or at least a little bit
20 more downwards.

 As another example, it is noted that although the driven element 14 cooperates with an outside perimeter of the driving element 12 in the exemplary embodiment shown in the figures, the driven element 14 may in alternative embodiments cooperate with an inside perimeter 23 of
25 the driving element 12, which then may be provided with teeth 13 or so-called cocks 13 and one or more suitable guiding surfaces 17a. In such case, the guiding surface 16a of the locking part 16 of driven element 14 can for instance be convex, whereas the corresponding guiding surface 17a of the blocking part 17 of the driving element 12 can then be concave.

Such and other variants will be apparent for the person skilled in the art and are considered to lie within in the scope of the invention as formulated in the following claims.

Conclusies

1. Buitenspiegeleenheid voor een motorvoertuig, omvattende:
een spiegelhuisdrager voor bevestiging aan een lichaam of carrosserie van het motorvoertuig;
een spiegelhuis dat wordt gedragen door de spiegelhuisdrager en dat
5 ten opzichte van genoemde drager draaibaar is opgesteld rond een draaias die zich in hoofdzaak in een opwaartse richting uitstrekt; en
een aandrijving, bij voorkeur een elektrische aandrijving, voor het verdraaien van het spiegelhuis tussen een uitgeklapte stand van het spiegelhuis, waarin het spiegelhuis zich in hoofdzaak in een richting weg
10 van het lichaam van het motorvoertuig uitstrekt, en een ingeklapte stand van het spiegelhuis, waarin het spiegelhuis minder ver uitsteekt en zich in hoofdzaak in een achterwaartse richting uitstrekt meer langs het lichaam van het motorvoertuig, en/of voor het verdraaien van het spiegelhuis tussen de ingeklapte stand en de uitgeklapte stand,
15 waarbij de buitenspiegeleenheid verder een draaisensor omvat, bij voorkeur een potentiometer, die een sensoras heeft, en waarbij de buitenspiegeleenheid is ingericht voor het verdraaien van de sensoras tijdens een beperkt gedeelte van de draairoute tussen de uitgeklapte stand en de ingeklapte stand en/of tijdens een beperkt gedeelte van de draairoute
20 tussen de ingeklapte stand en de uitgeklapte stand.
2. Buitenspiegeleenheid volgens conclusie 1, waarbij de sensor ten minste tegen verdraaiing ten opzichte van de draaias is vastgezet aan of in het spiegelhuis teneinde met het spiegelhuis mee te draaien rond de draaias van de buitenspiegeleenheid tussen de ingeklapte stand en de uitgeklapte
25 stand van het spiegelhuis en/of tussen de uitgeklapte stand en de ingeklapte stand, waarbij de buitenspiegeleenheid verder een sensor aandrijvend

- element omvat voor het aandrijven van de sensoras, waarbij genoemde aandrijvende element ten minste tegen verdraaiing ten opzichte van de draaias is vastgezet aan of in de spiegelhuisdrager, en waarbij de buitenspiegeleenheid zodanig is ingericht dat het sensor aandrijvende
- 5 element de sensoras verdraait tijdens een beperkt gedeelte van de draaibeweging van de met het spiegelhuis tussen de ingeklapte stand en de uitgeklapte stand en/of tussen de uitgeklapte stand en de ingeklapte stand meedraaiende sensor.
3. Buitenspiegeleenheid volgens conclusie 1, waarbij de sensor ten
- 10 minste tegen verdraaiing ten opzichte van de draaias is vastgezet in de spiegelhuisdrager, waarbij de buitenspiegeleenheid een sensor aandrijvend element omvat voor het aandrijven van de sensoras, waarbij genoemde aandrijvende element met het spiegelhuis meedraait tussen de ingeklapte stand en de uitgeklapte stand van het spiegelhuis en/of vice versa, en
- 15 waarbij de buitenspiegeleenheid zodanig is ingericht dat het aandrijvende element de sensoras verdraait tijdens een beperkt gedeelte van de draaibeweging van het aandrijvende element dat meedraait met het spiegelhuis tussen de ingeklapte stand en de uitgeklapte stand en/of tussen de uitgeklapte stand en de ingeklapte stand.
- 20 4. Buitenspiegeleenheid volgens conclusie 2 of 3, waarbij de sensoras is gekoppeld aan en/of voorzien van een aangedreven element voor samenwerking met het aandrijvende element, waarbij het aandrijvende element en het aangedreven element zijn voorzien van corresponderende vertanding, zodanig dat het aandrijvende element het aangedreven element
- 25 aandrijft tijdens het beperkte gedeelte van de draaibeweging van het spiegelhuis tussen de ingeklapte stand en de uitgeklapte stand en/of tijdens het beperkte gedeelte van de draaibeweging van het spiegelhuis tussen de uitgeklapte stand en de ingeklapte stand.

5. Buitenspiegeleenheid volgens conclusie 4, waarbij de vertanding involute vertanding of zogenaamde evolvente vertanding is.
6. Buitenspiegeleenheid volgens één van de conclusies 2-5, waarbij het aangedreven element een blokkerend gedeelte omvat voor samenwerking met een corresponderend vergrendelend gedeelte van het aandrijvende element, waarbij genoemde blokkerende gedeelte en genoemde vergrendelende gedeelte zodanig zijn uitgevoerd dat het aandrijvende element het aangedreven element tegen verdraaiing vergrendelt tijdens een gedeelte van de draaibeweging van het spiegelhuis tussen de ingeklapte stand en de uitgeklapte stand en/of vice versa.
7. Buitenspiegeleenheid volgens conclusie 6, waarbij het blokkerende gedeelte en het vergrendelende gedeelte corresponderende ronde geleidingsvlakken omvatten, zodanig dat een gedeelte van het ronde geleidingsvlak van het blokkerende gedeelte van het aandrijvende element langs het ronde geleidingsvlak van het vergrendelende gedeelte van het aangedreven element kan worden geleid, daarbij verdraaiing van het aangedreven element rond een centrale as van de sensoras tegengaand.
8. Buitenspiegeleenheid volgens conclusie 7, waarbij het aangedreven element ten minste één tand omvat die verder buitenwaarts uitsteekt dan de andere tanden van het aangedreven element, waarbij het zogenaamde bovenvlak of 'top land' van genoemde relatief ver uitstekende tand het ronde geleidingsvlak van het vergrendelende gedeelte van het aangedreven element vormt.
9. Buitenspiegeleenheid volgens conclusie 8, waarbij de tand die het ronde geleidingsvlak van het vergrendelende gedeelte van het aangedreven element definieert een relatief grote tanddikte of zogenaamde 'circular thickness' heeft ten opzichte van de tanddikte of de steek van de andere tanden of zogenaamde normale tanden van het aangedreven element.

10. Buitenspiegeleenheid volgens één van de conclusies 4-9, waarbij het aantal tanden van het aandrijvende element gelijk is aan het aantal tanden van het aangedreven element, bij voorkeur waarbij het geleidingsvlak van het aandrijvende element zich in hoofdzaak uitstrekt vanaf de laatste tand van het aandrijvende element tot aan de eerste tand van het aandrijvende element.

11. Buitenspiegeleenheid volgens één van de conclusies 2-10, waarbij de tanden van het aandrijvende element zijn geplaatst langs een relatief klein gedeelte van een omtrek, bijvoorbeeld een buitenomtrek, van het aandrijvende element, bij voorkeur langs tussen $1/24$ en $1/6$ van de omtrek, bij grotere voorkeur langs tussen $1/18$ en $1/12$, zoals bijvoorbeeld langs ongeveer $1/14$ of ongeveer $1/15$ van de omtrek.

12. Buitenspiegeleenheid volgens één van de conclusies 2-11, waarbij tand-contactvlakken van de tanden van het aangedreven element langs een relatief groot gedeelte van de omtrek, bijvoorbeeld een buitenomtrek, van het aangedreven element zijn geplaatst, bij voorkeur langs tussen $1/2$ en $9/10$ van de omtrek, liever langs ten minste $3/4$ van de omtrek, zoals bijvoorbeeld langs ongeveer $5/6$ van de omtrek.

13. Buitenspiegeleenheid volgens één van de voorgaande conclusies, waarbij de draaisensor feedback verschaft die bruikbaar is voor het besturen van de aandrijving voor het verdraaien van het spiegelhuis.

14. Aandrijfconstructie voor het aandrijven van een sensoras van een draaisensor, bij voorkeur een potentiometer, van een buitenspiegeleenheid volgens één van de voorgaande conclusies, waarbij de aandrijfconstructie een aandrijvend element omvat voor een buitenspiegeleenheid volgens één van de conclusies 2-13 en corresponderend aangedreven element omvat voor een buitenspiegeleenheid volgens één van de conclusies 2-13.

15. Draaisensor ingericht voor een buitenspiegeleenheid volgens één van de conclusies 1-13, omvattende een draaias gekoppeld aan en/of voorzien van een aangedreven element met een omtrek voorzien van een meervoudig aantal tanden en een vergrendelend gedeelte met een rond
- 5 geleidingsoppervlak voor samenwerking met een rond geleidingsvlak van een blokkerend gedeelte van een aandrijvend element van een buitenspiegeleenheid, waarbij genoemde aandrijvende element is voor het aandrijven van genoemde aangedreven element tijdens een gedeelte van een draaiende beweging van genoemde aandrijvende element.

1/5

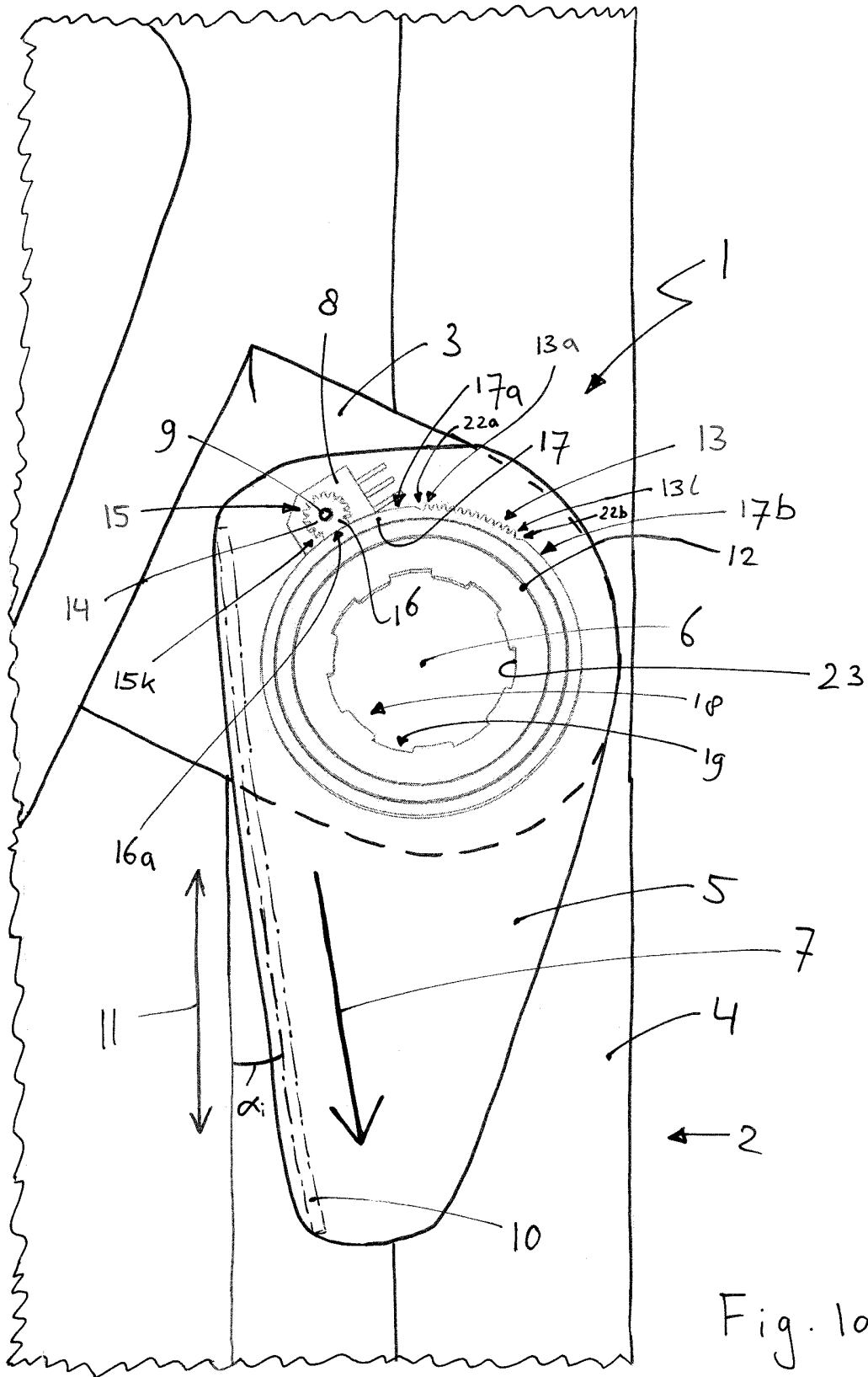
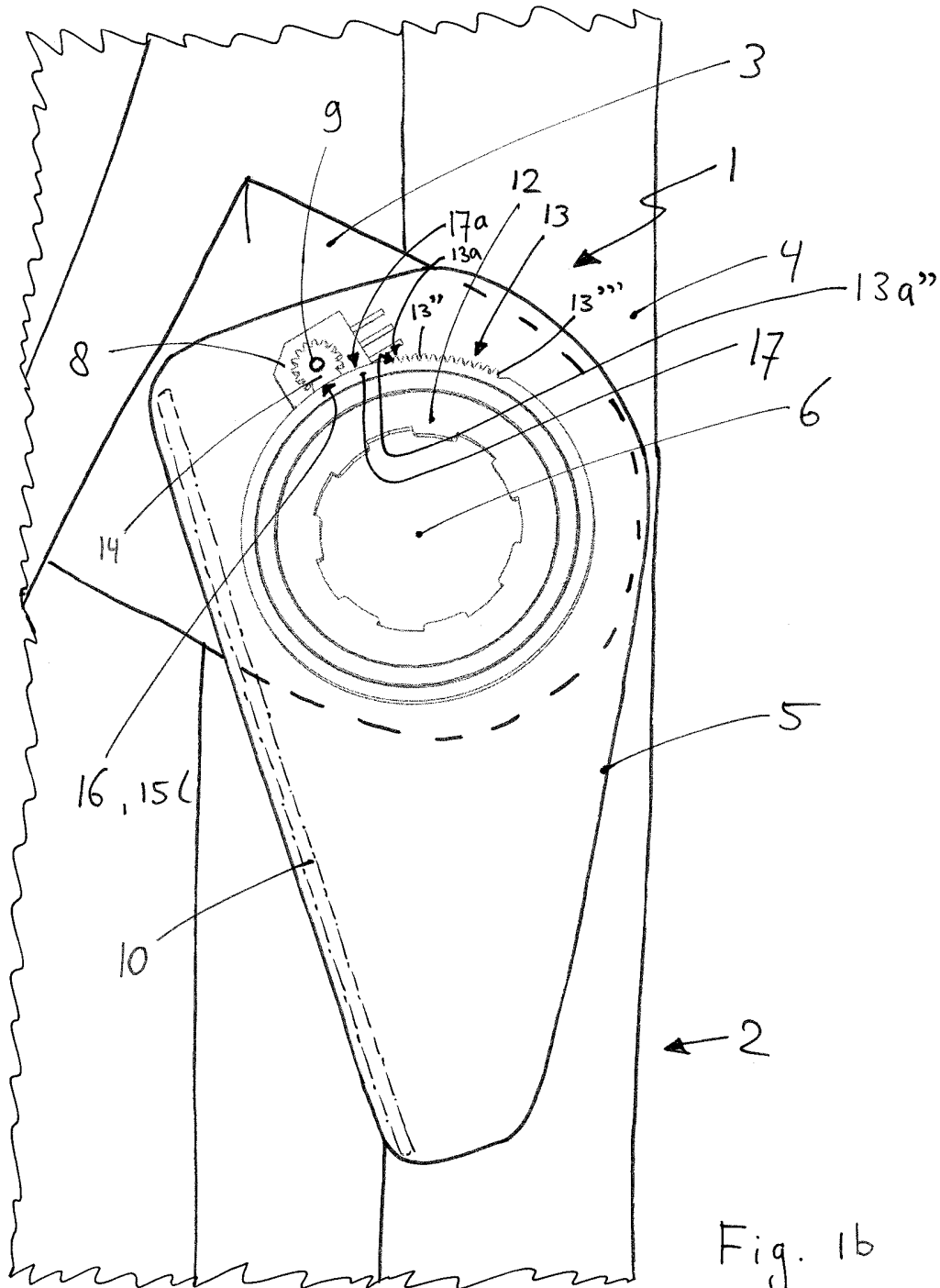


Fig. 1a

2/5



3/5

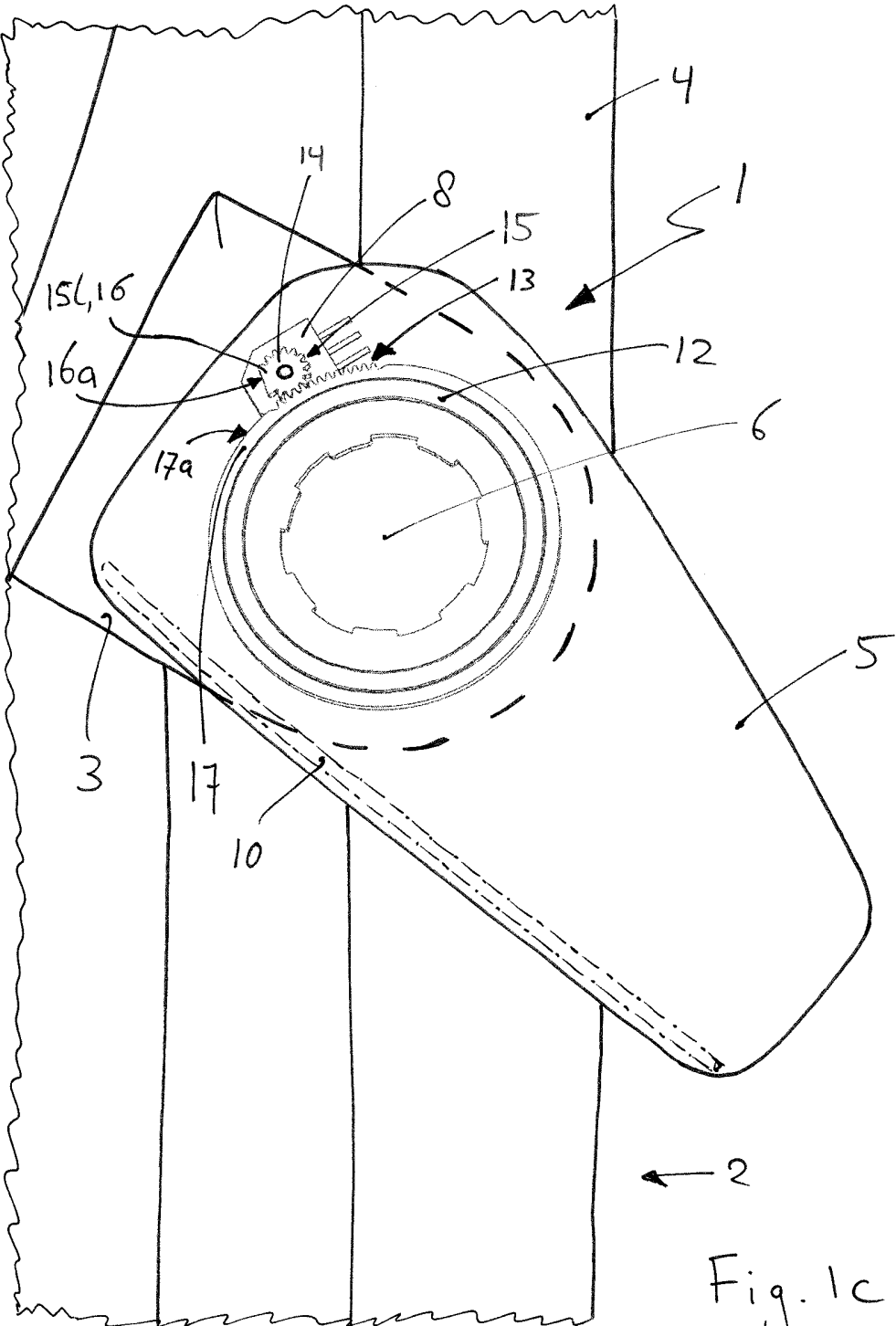
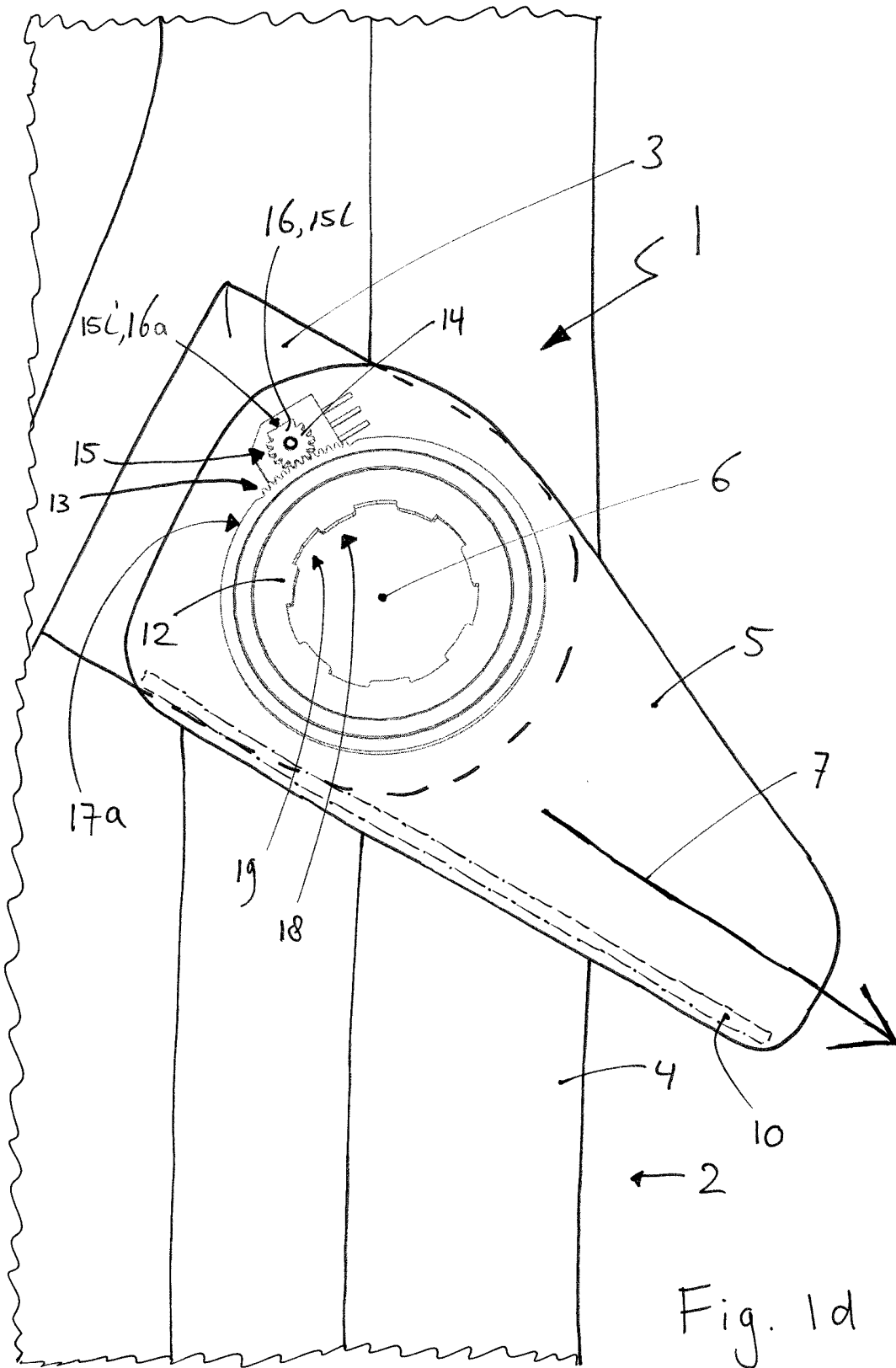


Fig. 1c

4/5



5/5

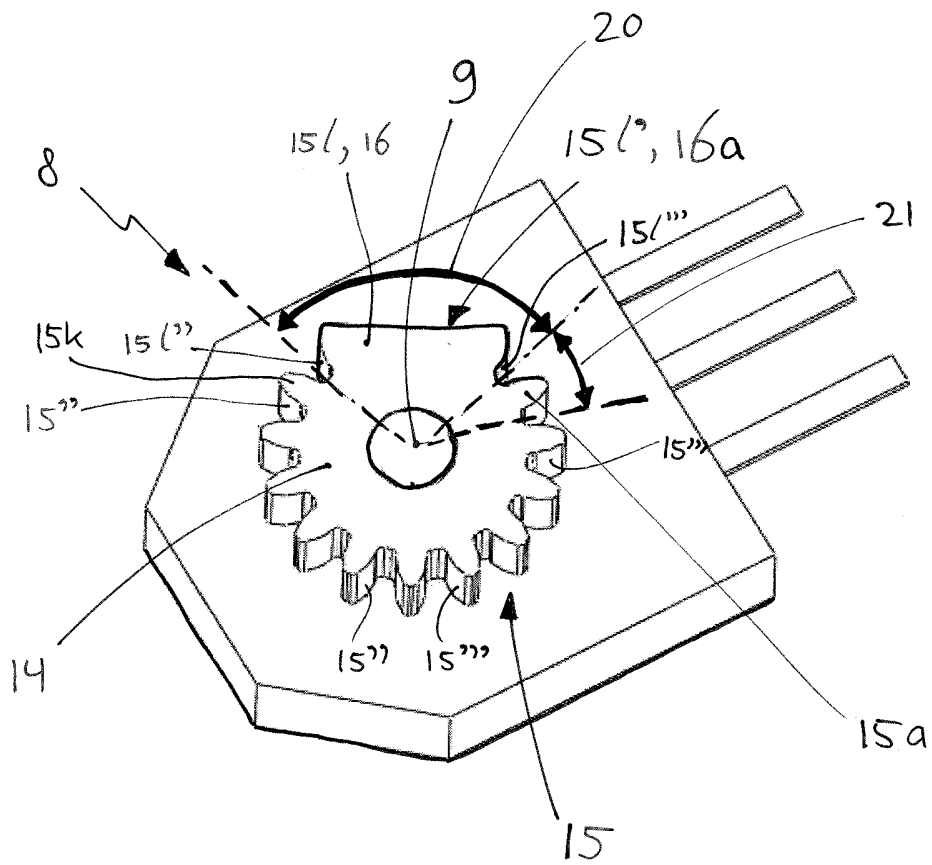


Fig. 2

Title: Wing mirror unit, drive construction, and rotation sensor

Abstract

The invention relates to a wing mirror unit for a motor vehicle. The unit comprises a mirror housing support for attachment to a body of the motor vehicle. The wing mirror unit further comprises a mirror housing supported by the mirror housing support and pivotably arranged with respect to said support around a rotation axis extending substantially in an upward direction. Furthermore, the unit comprises a drive, preferably an electric drive, for pivoting the mirror housing between a folded-out position of the mirror housing, in which the mirror housing extends substantially in a direction away from the body of the motor vehicle, and a folded-in position of the mirror housing, in which the mirror housing projects less far and extends in a substantially rearward direction more alongside the body of the motor vehicle, and/or for pivoting the mirror housing between the folded-in position and the folded-out position. The wing mirror unit also comprises a rotation sensor, preferably a potentiometer, having a sensor axis. Said unit is arranged for rotating the sensor axis during a limited part of the pivoting route between the folded-out position and the folded-in position and/or during a limited part of the pivoting route between the folded-in position and the folded-out position.

SAMENWERKINGSVERDRAG (PCT)

RAPPORT BETREFFENDE NIEUWHEIDSONDERZOEK VAN INTERNATIONAAL TYPE

IDENTIFICATIE VAN DE NATIONALE AANVRAGE	KENMERK VAN DE AANVRAGER OF VAN DE GEMACHTIGDE
	P104526NL00
Nederlands aanvraag nr.	Indieningsdatum
2012808	13-05-2014
	Ingeroepen voorrangsdatum
Aanvrager (Naam)	
MCi (Mirror Controls International) Netherlands B.V.	
Datum van het verzoek voor een onderzoek van internationaal type	Door de Instantie voor Internationaal Onderzoek aan het verzoek voor een onderzoek van internationaal type toegekend nr.
14-06-2014	SN 62204
I. CLASSIFICATIE VAN HET ONDERWERP (bij toepassing van verschillende classificaties, alle classificatiesymbolen opgeven)	
Volgens de internationale classificatie (IPC)	
B60R1/074	
II. ONDERZOCHETE GEBIEDEN VAN DE TECHNIEK	
Onderzochte minimumdocumentatie	
Classificatiesysteem	Classificatiesymbolen
IPC	B60R
Onderzochte andere documentatie dan de minimum documentatie, voor zover dergelijke documenten in de onderzochte gebieden zijn opgenomen	
III. ☐	GEEN ONDERZOEK MOGELIJK VOOR BEPAALDE CONCLUSIES (opmerkingen op aanvullingsblad)
IV. ☐	GEBREK AAN EENHEID (opmerkingen op aanvullingsblad)

**ONDERZOEKSRAPPORT BETREFFENDE HET
RESULTAAT VAN HET ONDERZOEK NAAR DE STAND
VAN DE TECHNIEK VAN HET INTERNATIONALE TYPE**

Nummer van het verzoek om een onderzoek naar
de stand van de techniek
NL 2012808

A. CLASSIFICATIE VAN HET ONDERWERP
INV. B60R1/074
ADD.

Volgens de Internationale Classificatie van octrooien (IPC) of zowel volgens de nationale classificatie als volgens de IPC.

B. ONDERZOCHETE GEBIEDEN VAN DE TECHNIEK

Onderzochte minimum documentatie (classificatie gevolgd door classificatiesymbolen)
B60R

Onderzochte andere documentatie dan de minimum documentatie, voor dergelijke documenten, voor zover dergelijke documenten in de onderzochte gebieden zijn opgenomen

Tijdens het onderzoek geraadpleegde elektronische gegevensbestanden (naam van de gegevensbestanden en, waar uitvoerbaar, gebruikte trefwoorden)

EPO-Internal, WPI Data

C. VAN BELANG GEACHTE DOCUMENTEN

Categorie °	Geciteerde documenten, eventueel met aanduiding van speciaal van belang zijnde passages	Van belang voor conclusie nr.
X	EP 0 838 371 A1 (HOHE GMBH & CO KG [DE]) 29 april 1998 (1998-04-29) * kolom 4, regel 19 - kolom 5, alinea 38; figuren 1,2 *	1-15
X	JP 2000 264131 A (HONDA LOCK MFG CO LTD) 26 september 2000 (2000-09-26) * alinea [0022] - alinea [0024]; figuren 1-4 *	1-15
A	WO 00/47447 A1 (MAGNA REFLEX HOLDING GMBH [DE]; HEINZ JUERGEN A [DE]) 17 augustus 2000 (2000-08-17) * figuren 1a-1c *	1,14,15

☐ Verdere documenten worden vermeld in het vervolg van vak C.

☒ Leden van dezelfde octrooifamilie zijn vermeld in een bijlage

° Speciale categorieën van aangehaalde documenten

"A" niet tot de categorie X of Y behorende literatuur die de stand van de techniek beschrijft

"D" in de octrooiaanvraag vermeld

"E" eerdere octrooi(aanvraag), gepubliceerd op of na de indieningsdatum, waarin dezelfde uitvinding wordt beschreven

"L" om andere redenen vermelde literatuur

"O" niet-schriftelijke stand van de techniek

"P" tussen de voorrangsdatum en de indieningsdatum gepubliceerde literatuur

"T" na de indieningsdatum of de voorrangsdatum gepubliceerde literatuur die niet bezwarend is voor de octrooiaanvraag, maar wordt vermeld ter verheldering van de theorie of het principe dat ten grondslag ligt aan de uitvinding

"X" de conclusie wordt als niet nieuw of niet inventief beschouwd ten opzichte van deze literatuur

"Y" de conclusie wordt als niet inventief beschouwd ten opzichte van de combinatie van deze literatuur met andere geciteerde literatuur van dezelfde categorie, waarbij de combinatie voor de vakman voor de hand liggend wordt geacht

"&" lid van dezelfde octrooifamilie of overeenkomstige octrooipublicatie

Datum waarop het onderzoek naar de stand van de techniek van internationaal type werd voltooid

24 november 2014

Verzenddatum van het rapport van het onderzoek naar de stand van de techniek van internationaal type

Naam en adres van de instantie

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De bevoegde ambtenaar

Topolski, Jan

**ONDERZOEKSRAPPORT BETREFFENDE HET
RESULTAAT VAN HET ONDERZOEK NAAR DE STAND
VAN DE TECHNIEK VAN HET INTERNATIONALE TYPE**

Informatie over leden van dezelfde octrooifamilie

Nummer van het verzoek om een onderzoek naar
de stand van de techniek

NL 2012808

In het rapport genoemd octrooigeschrift	Datum van publicatie	Overeenkomend(e) geschrift(en)	Datum van publicatie
EP 0838371	A1	29-04-1998	AT 202043 T 15-06-2001
			DE 19644658 A1 07-05-1998
			EP 0838371 A1 29-04-1998

JP 2000264131	A	26-09-2000	JP 4129096 B2 30-07-2008
			JP 2000264131 A 26-09-2000

WO 0047447	A1	17-08-2000	AT 226159 T 15-11-2002
			AU 2802300 A 29-08-2000
			BR 0008126 A 06-11-2001
			CA 2360546 A1 17-08-2000
			CN 1339000 A 06-03-2002
			CZ 20012556 A3 16-01-2002
			DE 19906150 A1 07-09-2000
			EP 1150862 A1 07-11-2001
			ES 2187444 T3 16-06-2003
			JP 2002536240 A 29-10-2002
			MX PA01008076 A 30-07-2002
			PL 349225 A1 01-07-2002
			SK 11412001 A3 05-02-2002
			WO 0047447 A1 17-08-2000

WRITTEN OPINION

File No. SN62204	Filing date <i>(day/month/year)</i> 13.05.2014	Priority date <i>(day/month/year)</i>	Application No. NL2012808
International Patent Classification (IPC) INV. B60R1/074			
Applicant MCi (Mirror Controls International) Netherlands B.V.			

This opinion contains indications relating to the following items:

- ☒ Box No. I Basis of the opinion
- ☐ Box No. II Priority
- ☐ Box No. III Non-establishment of opinion with regard to novelty, inventive step and industrial applicability
- ☐ Box No. IV Lack of unity of invention
- ☒ Box No. V Reasoned statement with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement
- ☐ Box No. VI Certain documents cited
- ☐ Box No. VII Certain defects in the application
- ☒ Box No. VIII Certain observations on the application

	Examiner Topolski, Jan
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WRITTEN OPINION

Application number
NL2012808

Box No. I Basis of this opinion

1. This opinion has been established on the basis of the latest set of claims filed before the start of the search.
2. With regard to any **nucleotide and/or amino acid sequence** disclosed in the application and necessary to the claimed invention, this opinion has been established on the basis of:
 - a. type of material:
 - ☐ a sequence listing
 - ☐ table(s) related to the sequence listing
 - b. format of material:
 - ☐ on paper
 - ☐ in electronic form
 - c. time of filing/furnishing:
 - ☐ contained in the application as filed.
 - ☐ filed together with the application in electronic form.
 - ☐ furnished subsequently for the purposes of search.
3. ☐ In addition, in the case that more than one version or copy of a sequence listing and/or table relating thereto has been filed or furnished, the required statements that the information in the subsequent or additional copies is identical to that in the application as filed or does not go beyond the application as filed, as appropriate, were furnished.
4. Additional comments:

Box No. V Reasoned statement with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement

1. Statement

Novelty	Yes: Claims	
	No: Claims	1-15
Inventive step	Yes: Claims	
	No: Claims	1-15
Industrial applicability	Yes: Claims	1-15
	No: Claims	

2. Citations and explanations

see separate sheet

WRITTEN OPINION

Application number
NL2012808

Box No. VIII Certain observations on the application

see separate sheet

Re Item V

1. Reference is made to the following documents:

- D1 EP 0 838 371 A1 (HOHE GMBH & CO KG [DE]) 29 april 1998
 (1998-04-29)
- D2 JP 2000 264131 A (HONDA LOCK MFG CO LTD) 26 september 2000
 (2000-09-26)

2. The present application does not satisfy the criterion relating to patentability because the subject-matter of claims 1, 14 and 15 is not new in respect of the prior art.

2.1 With respect to independent claim 1:

Document D1 discloses (the reference signs in parenthesis applying to this document):

Buitenspiegeleenheid voor een motorvoertuig, omvattende:
een spiegelhuisdrager (2) voor bevestiging aan een lichaam of carrosserie (1) van het motorvoertuig;
een spiegelhuis (10) dat wordt gedragen door de spiegelhuisdrager en dat ten opzichte van genoemde drager draaibaar is opgesteld rond een draaias (5) die zich in hoofdzaak in een opwaartse richting uitstrekt; en
een aandrijving, **[bij voorkeur een elektrische aandrijving (40)]**, voor het verdraaien van het spiegelhuis tussen een uitgeklapte stand van het spiegelhuis, waarin het spiegelhuis zich in hoofdzaak in een richting weg van het lichaam van het motorvoertuig uitstrekt, en een ingeklapte stand van het spiegelhuis, waarin het spiegelhuis minder ver uitsteekt en zich in hoofdzaak in een achterwaartse richting uitstrekt meer langs het lichaam van het motorvoertuig, en/of voor het verdraaien van het spiegelhuis tussen de ingeklapte stand en de uitgeklapte stand, waarbij de buitenspiegeleenheid verder een draaisensor (50) omvat, **[bij voorkeur een potentiometer]**, die een sensoras (5) heeft, en waarbij de buitenspiegeleenheid is ingericht voor het verdraaien van de sensoras tijdens een beperkt gedeelte van de

draairoute tussen de uitgeklapte stand en de ingeklapte stand en/of tijdens een beperkt gedeelte van de draairoute tussen de ingeklapte stand en de uitgeklapte stand.

The subject matter of claim 1 is also not new over D2.

2.2 With respect to independent claim 14:

Document D1 discloses (the reference signs in parenthesis applying to this document):

Aandrijfconstructie (40, 44, 45, 46...) [voor het aandrijven van een sensoras van een draaisensor, bij voorkeur een potentiometer, van een buitenspiegeleenheid volgens één van de voorgaande conclusies], waarbij de aandrijfconstructie een aandrijvend element (40...) omvat [voor een buitenspiegeleenheid volgens één van de conclusies 2-13] en corresponderend aangedreven element (46...) omvat [voor een buitenspiegeleenheid volgens één van de conclusies 2-13].

The subject matter of claim 14 is also not new over D2.

2.3 With respect to independent claim 15:

Document D2 discloses (the reference signs in parenthesis applying to this document):

Draaisensor **[ingericht voor een buitenspiegeleenheid volgens één van de conclusies 1-13]**, omvattende een draaias gekoppeld aan en/of voorzien van een aangedreven element (5a) met een omtrek voorzien van een meervoudig aantal tanden en een vergrendelend gedeelte met een rond geleidingsoppervlak voor samenwerking met een rond geleidingsvlak van een blokkerend gedeelte van een aandrijvend element (18) van een buitenspiegeleenheid, waarbij genoemde aandrijvende element is voor het aandrijven van genoemde aangedreven element tijdens een gedeelte van een draaiende beweging van genoemde aandrijvende element.

The subject matter of claim 15 is also not new over D1.

3 Dependent claims 2-13:

The dependent claims 2-13 do not appear to contain any additional features which, in combination with features of any claim to which they refer, meet the requirements with respect to novelty and/or inventive step, as all the features introduced with these

claims seem to be either known from D1 or D2, or known while used with a known corresponding effect and/or seem to introduce slight constructional changes without inventive meaning and which come within the scope of the customary practice followed by persons skilled in the art.

RE Item VIII

1. Independent claims 1, 14 and 15 are not in the two-part form, which in the present case would be appropriate, with those features known in combination from the prior art being placed in the preamble and the remaining features being included in the characterising part.
2. The features of the claims are not provided with reference signs placed in parentheses.
3. In several claims expressions like "bij voorkeur" have been used and these have no limiting effect on the scope of the claim and hence the feature following any such expression is to be regarded as entirely optional.