



- (51) **International Patent Classification:**
B60K 37/02 (2006.01) *G01D 13/26* (2006.01)
- (21) **International Application Number:**
PCT/EP2016/065285
- (22) **International Filing Date:**
30 June 2016 (30.06.2016)
- (25) **Filing Language:** English
- (26) **Publication Language:** English
- (30) **Priority Data:**
10-2015-0093872 1 July 2015 (01.07.2015) KR
- (71) **Applicant:** CONTINENTAL AUTOMOTIVE GMBH
[DE/DE]; Vahrenwalder Straße 9, 30165 Hannover (DE).
- (72) **Inventor:** LEE, Byeonghoon; Hanuri APT 111-104; Seogu, Tanbang-dong, Daejeon city, 305-768 (KR).
- (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, DK, DM, DO, DZ, EC, EE, EG, ES, FI, GB, GD, GE, GH, GM, GT, HN, HR, HU, ID, IL, IN, IR, IS, JP, KE, KG, KN, KP, 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.

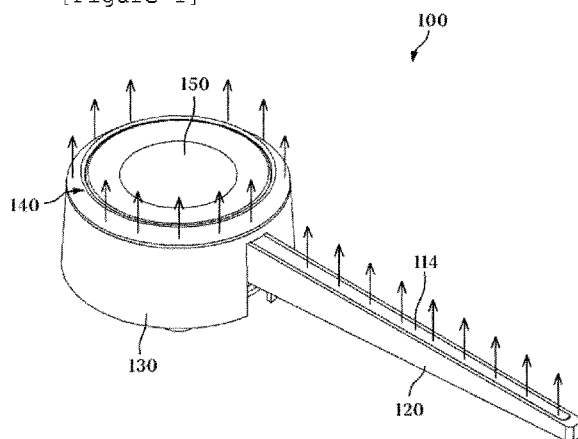
- (84) **Designated States** (unless otherwise indicated, for every kind of regional protection available): ARIPO (BW, GH, GM, KE, LR, LS, MW, MZ, NA, RW, SD, SL, ST, SZ, TZ, UG, ZM, ZW), Eurasian (AM, AZ, BY, KG, KZ, RU, TJ, TM), European (AL, AT, BE, BG, CH, CY, CZ, DE, DK, EE, ES, FI, FR, GB, GR, 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).

Published:

— with international search report (Art. 21(3))

(54) **Title:** POINTER FOR VEHICLE

[Figure 1]



(57) **Abstract:** The present invention relates to a pointer (100) for a vehicle characterized by comprising: a blade (110) which extends the rotation axis downwards, points with said rotation axis as a center, extends to the pointer needle (114), and allows light to transmit because of being made of a transparent material; a cover (120) which determines the direction of light transmission by covering a part of said blade and a part of said pointer; a ring member (120) which is supported by said cover, surrounds said blade to prevent transmitted light from being leaked in the lateral direction, and is open at the top-side thereof; and a ring prism (140) which covers the open top-side of said ring member, and together with said pointer allows light transmission so as to expand the indirect lighting area. The present invention is different from the prior art in that the light-emitting position of the pointer is expanded so as to emit light from the pointer position of the prior art to the central point of rotation, and thus, the visibility of the pointer can be guaranteed and the interior design effect of the vehicle can be improved.



[Description]

[Title of the invention]

5 Pointer for vehicle

[Technical Field]

[0001] The present invention relates to a pointer for a vehicle.
10 More specifically, the present invention relates to a pointer for
a vehicle in which a ring prism is installed on the pointer blade
so that the light-emitting position is expanded so as to emit
light from the pointer position of the prior art to the central
point of rotation, and thus, the visibility of the pointer is
15 guaranteed and the interior design effect of the vehicle is
improved by use of this simple method.

[Background art]

20 [0002] Usually, mounted on the front of the dashboard is the
instrument cluster at the front of a vehicle so that the driver
on board can learn information such as vehicle speed, revolutions
per minute (RPM), water temperature, and fuel volume etc. at any
time.

25 [0003] The information such as current vehicle speed, RPM, water
temperature, and fuel volume displayed respectively on the
dashboard can be seen more easily by the driver via the pointers
on the dashboard.

30 [0004] Lighting devices are set in the dashboard so that the
driver or passenger can easily confirm the current state values
through the respective pointers even when traveling at night.

35 [0005] Said technical features are used to help to understand the
background art of the present invention, but do not represent the
well-known prior technologies in the technical field of the
present invention.

[0006] As a background art of pointers used in the dashboard of a vehicle, the related content is described in public patent gazette No. 10-2012-0067248 (title of the invention: pointers in
5 the dashboard of a vehicle).

[Summary of the Invention]

[Technical Problems to Be Solved]

10

[0007] The pointers for a dashboard of a vehicle in the prior art propagate the light of light sources emitted from light receiving parts to only the pointer zones and then induce light diffusion, and the problem is that extensive lighting of the lighting areas
15 cannot be realized. Therefore, it is necessary to improve the lighting of lighting areas.

[0008] To solve the above-mentioned problem, the present invention is presented. The objective provided by the pointer for
20 vehicles in the present invention lies in that a ring prism is installed on the pointer blade so that the light-emitting position is expanded so as to emit light from the pointer position of the prior art to the central point of rotation, and thus, the visibility of the pointer is guaranteed by use of this simple
25 method and the interior design effect of the vehicle is improved by expanding indirect lighting areas.

[Means for solving the problems]

[0009] The pointer for vehicles according to the present invention comprises: a blade which extends points the rotation axis
30 downwards, with said rotation axis as a center, extends to form the pointer, and allows light to transmit because of being made of a transparent material; a cover which determines the direction of light transmission by covering a part of said blade and a part
35 of said pointer; a ring member which is supported by said cover, surrounds said blade to prevent transmitted light from being leaked in the lateral direction, and is opened at the top-side

thereof; and a ring prism which covers the open top-side of said ring member, and together with said pointer allows light transmission so as to expand the indirect lighting area.

5 [0010] The present invention comprises a roof made of an opaque material which covers some of the light transmitting part of said ring prism in order to enhance the illuminance of indirect lighting.

10 [0011] A first opening can be formed on said cover so that light is irradiated on said blade and said pointer.

[0012] A second opening can be formed on said cover so that light is irradiated on said ring prism.

15

[0013] Said roof can be extended to form a leg in order to bind together said ring prism, said blade, and said cover.

[0014] Said ring prism can be dented to form an accommodation
20 groove part in order to accommodate said roof.

[0015] Said ring prism comprises: a sidewall member which is inserted into said ring member; and an upper plate member which is provided on the top-side of said sidewall member, is con-
25 stituted so as to be of a size which contacts and supports the top-side of said ring member, is prevented from being inserted into the inner side of said ring member, and expands the indirect lighting area.

30 [Effect of the Invention]

[0016] As mentioned above, the pointer for vehicles according to the present invention is different from the prior art in that a ring prism is installed on the pointer blade so that the
35 light-emitting position is expanded so as to emit light from the pointer position of the prior art to the central point of rotation, and thus, the visibility of the pointer can be

guaranteed by use of this simple method and the interior design effect can be improved by expanding indirect lighting areas.

[Brief Description of the Drawings]

5

[0017] Figure 1 is a perspective view of the pointer for vehicles in an embodiment of the present invention.

Figure 2 is a perspective view of the bottom surface of the pointer
10 for vehicles in an embodiment of the present invention.

Figure 3 is an exploded perspective view of the pointer for vehicles in an embodiment of the present invention.

15 Figure 4 is a sectional view of the mounted cluster of the pointer for vehicles in an embodiment of the present invention.

[Detailed Description of the Invention]

20 [0018] The following describes the embodiment of the pointer for vehicles in the present invention with reference to the attached drawings. For the clarity and convenience of the description, the thickness of lines or the sizes of the elements etc. shown in the drawings may be exaggeratedly expressed in the description. In
25 addition, the below terms defined in consideration of the functions of the present invention may be different from the intentions or practice of the user or operator. Therefore, these terms should be defined on the basis of the entire content of the description.

30

[0019] Figure 1 is a perspective view of the pointer for vehicles in an embodiment of the present invention, and Figure 2 is a perspective view of the bottom surface of the pointer for vehicles in an embodiment of the present invention.

35

[0020] Figure 3 is an exploded perspective view of the pointer for vehicles in an embodiment of the present invention, and Figure

4 is a sectional view of the mounted cluster of the pointer for vehicles in an embodiment of the present invention.

[0021] As shown in Figure 1 through Figure 4, the pointer (100)
5 for vehicles in an embodiment of the present invention comprises a blade (110), a cover (120), a ring member (130), and a ring prism (140).

[0022] The blade (110) is rotatably assembled in the housing (10)
10 forming the profile of the dashboard. That is to say, a partition space (12) is formed in the housing (10), the blade (110) extends the rotation axis (112) downward, and the rotation axis (112) is rotatably mounted in the partition space (12).

[0023] Particularly, the rotation axis (112) can be formed in the
15 shape of a pipe to guarantee light inflow.

[0024] In addition, the blade (110) extends to one side to form
the pointer (114). Then, when the rotation axis (112) rotates,
20 the pointer (114) rotates in the center of the rotation axis (112) and pointing is effected.

[0025] Here, the blade (110), the rotation axis (112), and the
pointer (114) are all made of transparent materials so as to allow
25 light transmission.

[0026] In addition, light source members (20) which emit light
are set in the partition space (12) of the housing (10). The light
source members (20) used can be LEDs and the like and the number
30 of light source members is not restricted. Of course, the partition space (12) can be opened at the top and bottom sides thereof and light source members (20) can be set in the bottom-side of the housing (10) corresponding to the partition space (12) of the housing (10).

35 [0027] Since the blade (110) and the pointer (114) are made of transparent materials, when light source members (20) emit light,

light is emitted from the inside of the blade (110) and the pointer (114) to the surroundings thereof.

5 [0028] In particular, light emitted to the surroundings thereof should be concentrated in a specific direction. The concentration of light is to improve the illuminance and to improve the design effect.

10 [0029] Therefore, a cover (120) is provided. The cover (120) is similarly formed to a planar blade (110) and a pointer (114), and is set in the bottom-side of the blade (110) and the pointer (114). In addition, the cover (120) is made of an opaque material.

15 [0030] Therefore, the cover (120) covers the bottom-side surface of the blade (110) and the bottom-side surface and circumferential surface of the pointer (114) to determine the direction of light transmission. Since the cover (120) overlappingly surrounds the bottom-side surface and the circumferential surface of the pointer (114), light is emitted from light source members (20) via the top side surface.

20 [0031] In addition, the ring member (130) supported by the cover (120) surrounds the blade (110) to prevent transmitted light from being leaked in the lateral direction. The ring member (130) is formed in an open manner at the top and bottom sides thereof. Therefore, the blade (110) is placed on the inner side of the ring member (130). Of course, the ring member (130) can be variously formed.

30 [0032] In addition, the ring prism (140) covers the open top-side of the ring member (130) and, together with the pointer (114), allows light to transmit and performs the function of expanding the indirect lighting area. Therefore, the ring prism (140) is to be made of a transparent material.

35 [0033] In particular, a first opening (122) is formed in the position where the cover (120) contacts the blade (110) to guide illuminance of the light from the light source members (20) to

the blade (110) and the pointer (114), and a second opening (124) is formed to irradiate light from light source members (20) to the ring prism (140) side.

5 [0034] That is to say, a part of the light irradiated by light source members (20) are guided by the first opening (122) and are transmitted in a concentrated way to the blade (110) and the pointer (114), and the rest of the light is guided by the second opening (124) and is transmitted in a concentrated way to the ring
10 prism (140).

[0035] Of course, the shapes and the quantity of the first opening (122) and the second opening (124) are not restricted. In this case, the rotation axis (112) is inserted into the first opening
15 (122).

[0036] In addition, the pointer (100) for vehicles in an embodiment of the present invention comprises a roof (150).

20 [0037] The roof (150) covers some of the light transmitting part of the ring prism (140) to enhance the illuminance of indirect lighting. To prevent light transmittance, the roof should be made of an opaque material.

25 [0038] In particular, the diameter of the roof (150) is smaller than the diameter of the planar ring prism (140). Therefore, the ring prism (140) transmits light along its edges, except for the part covered by the roof (150). That is to say, the ring prism (140) transmits light along the ring orbit to maximize the
30 interior design effect.

[0039] In addition, the ring prism (140) comprises a sidewall member (142) and an upper plate member (144).

35 [0040] The sidewall member (142) is inserted into the ring member (130) to perform the function of flowing in light irradiated from light source members (20) and guiding light transmission. In particular, the sidewall member (142) is formed in the shape of

a circular pipe so that the light inflow is maximized. Of course, the sidewall member (142) can be made of a transparent material and can be transformed into a variety of shapes.

5 [0041] In addition, the upper plate member (144) is provided on the top-side of the sidewall member (142), is constituted so as to be of a size which contacts and supports the top-side of the ring member (130). Therefore, the ring prism (140) is prevented from being completely inserted into the inner side of the ring
10 member (130).

[0042] The upper plate member (144) transmits the light spread via the sidewall member (142), and expands the indirect lighting area, compared the light emission from only the pointer (114) in
15 the prior art.

[0043] In particular, since the upper plate member (144) contacts the upper-side edge of the ring member (130), the directionality of transmitted light is increased. In addition, since the roof
20 (150) has a circular diameter that is smaller than the diameter of the upper plate member (144), light is transmitted along the edge of the upper plate member (144).

[0044] In addition, seen from the plane, the light-emitting
25 position of the pointer (114) and the light-emitting position of the upper plate member (144) seem to be continuous since the edge of the upper plate member (144) contacts the top-side edge of the ring member (130). This further improves the interior design effect.

30 [0045] Of course, the upper plate member (144) is made of a transparent material and can be transformed into various shapes.

[0046] In addition, the roof (150) needs to be fixedly assembled
35 into the ring prism (140) etc..

[0047] According to an embodiment, the roof (150) extends to form a leg (152), which is inserted or embedded into the ring prism

(140), blade (110), and cover (120) in sequence. Then, the roof (150), the upper plate member (144) of the ring prism (140), the blade (110), and the cover (120) are bound together by the leg (152).

5

[0048] Therefore, the ring member (130) is firmly fixed between the upper plate member (144) and the cover (120).

[0049] In addition, the ring prism (140) is dented to form an accommodation groove part (141) to accommodate said roof (150). After being accommodated in the accommodation groove part (141), the roof (150) is prevented from protruding from the top-side of the ring prism (140). Therefore, poor assembly caused by a collision and damage is prevented when the roof (150) is assembled.

10

15

[0050] In addition, since the roof (150) is accommodated in the accommodation groove part (141), the edge of the upper plate member (144) can transmit light upward, without any light interference.

20

[0051] In addition, the light transmitted to the pointer (114) can be different from the light transmitted to the upper plate member (144) of the ring prism (140). Therefore, the light source member (20) irradiating light to the pointer (114) and the light source member (20) irradiating light to the upper plate member (144) can employ LEDs that emit light in different colors. Or, the pointer (114) and the upper plate member (144) can have films of different colors attached thereto or coated thereon.

25

30

[0052] In addition, the light transmitted to the pointer (114) can be the same as the light transmitted to the upper plate member (144).

[0053] The above gives only an exemplary description of the present invention by reference to the embodiment shown in the drawings and those skilled in the art should understand that various changes thereto or equivalent embodiments are possible.

35

Therefore, the actual technical protection scope of the present invention should be defined by the claims below.

[Description of reference numbers in the drawings]

5

	[0054]	10:	Housing
		12:	Partition space
		20:	Light source members
10		100:	Pointer
		110:	Blade
		112:	Rotation axis
		114:	Pointer
		120:	Cover
15		122:	First opening
		124:	Second opening
		130:	Ring member
		140:	Ring prism
		141:	Accommodation groove part
20		142:	Sidewall member
		144:	Upper plate member
		150:	Roof
		152:	Leg

[Claims]

1. A pointer for a vehicle, characterized in that it comprises:
a blade, which extends the rotation axis downwards, points
5 with said rotation axis as a center, extends the pointer,
and allows light to transmit because of being made of a
transparent material,
a cover, which determines the direction of light trans-
mission by covering a part of said blade and a part of said
10 pointer,
a ring member, which is supported by said cover, surrounds
said blade to prevent transmitted light from being leaked
in the lateral direction, and is open at the top-side, and
a ring prism, which covers the open top-side of said ring
15 member, and together with said pointer allows light
transmission to expand the indirect lighting area.
2. The pointer for vehicles as claimed in claim 1, charac-
terized in that
20 the pointer comprises a roof made of an opaque material which
covers some of the light transmitting part of said ring prism
in order to enhance the illuminance of indirect lighting.
3. The pointer for vehicles according to claim 1, characterized
25 in that
a first opening is formed on said cover so that light is
irradiated on said blade and said pointer.
4. The pointer for vehicles according to claim 2 or 3,
30 characterized in that
a second opening is formed on said cover so that light is
irradiated on said ring prism.
5. The pointer for vehicles according to claim 2, characterized
35 in that
said roof extends to form a leg to bind together said ring
prism, said blade, and said cover.

6. The pointer for vehicles according to claim 2 or 5,
characterized in that
said ring prism is dented to form an accommodation groove
part to accommodate said roof.

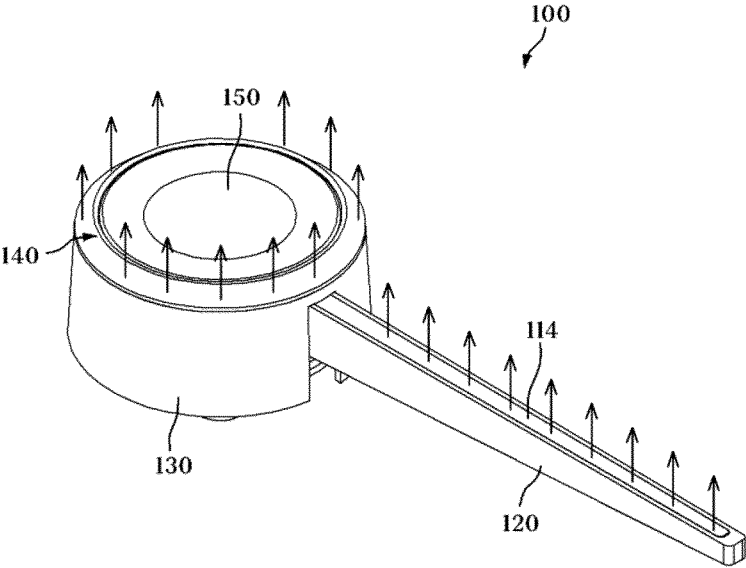
5

7. The pointer for vehicles according to any of claim 1 through
claim 3, characterized in that said ring prism comprises:
a sidewall member, which is inserted into said ring member,
and

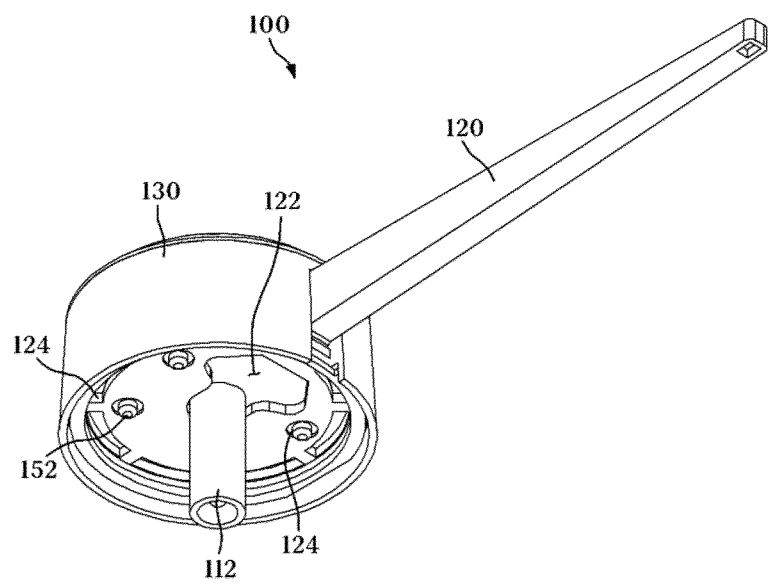
10 an upper plate member, which is provided on the top-side of
said sidewall member, is constituted so as to be of a size
which contacts and supports the top-side of said ring
member, is prevented from being inserted into the inner side
of said ring member, and expands the indirect lighting area.

15

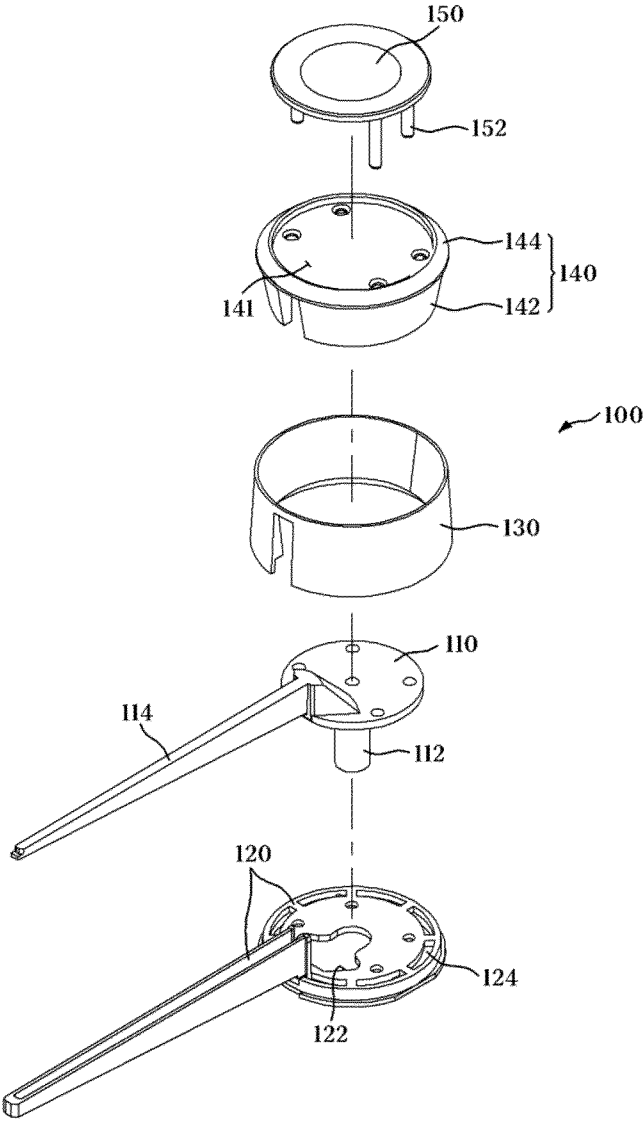
[Figure 1]



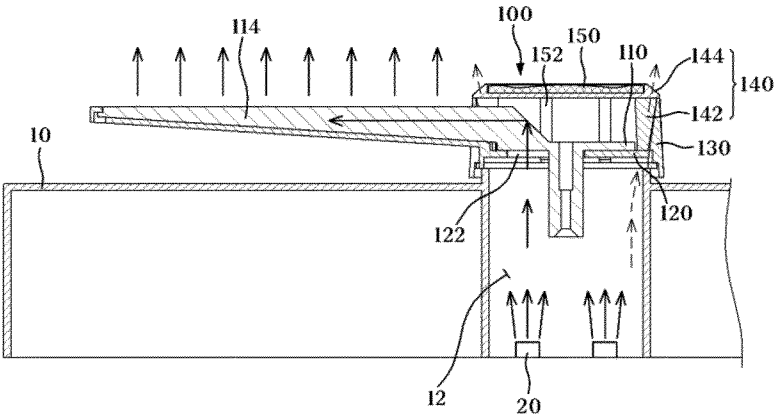
[Figure 2]



[Figure 3]



[Figure 4]



INTERNATIONAL SEARCH REPORT

International application No
PCT/EP2016/065285

A. CLASSIFICATION OF SUBJECT MATTER
INV. B60K37/02 G01D13/26
ADD.

According to International Patent Classification (IPC) or to both national classification and IPC

B. FIELDS SEARCHED

Minimum documentation searched (classification system followed by classification symbols)
B60K G01D

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched

Electronic data base consulted during the international search (name of data base and, where practicable, search terms used)

EPO-Internal, WPI Data

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X	JP 2014 153277 A (DENSO CORP) 25 August 2014 (2014-08-25) Machine Translation of par. [0052]: 1 Vehicle meter, 2 Display board, 3 Parameter index, 4 Pointer guide body, 10 Cap components, 120 Opening window, 16 1st latching locking part, 16a, 16b, 16c Protrusion, 18, 2018 2nd latching locking part, 18a, 18b, 18c, 2018c Protrusion, 20 Light guide components, 22 Light guide boss hub part, 30, 2030 Light-diffusion components, 32, 2032 Exposed part, 40 Light-shielding components, 50 Cover component, -/--	1-4,6,7



Further documents are listed in the continuation of Box C.



See patent family annex.

* Special categories of cited documents :

"A" document defining the general state of the art which is not considered to be of particular relevance

"E" earlier application or patent but published on or after the international filing date

"L" document which may throw doubts on priority claim(s) or which is cited to establish the publication date of another citation or other special reason (as specified)

"O" document referring to an oral disclosure, use, exhibition or other means

"P" document published prior to the international filing date but later than the priority date claimed

"T" later document published after the international filing date or priority date and not in conflict with the application but cited to understand the principle or theory underlying the invention

"X" document of particular relevance; the claimed invention cannot be considered novel or cannot be considered to involve an inventive step when the document is taken alone

"Y" document of particular relevance; the claimed invention cannot be considered to involve an inventive step when the document is combined with one or more other such documents, such combination being obvious to a person skilled in the art

"&" document member of the same patent family

Date of the actual completion of the international search

1 September 2016

Date of mailing of the international search report

14/09/2016

Name and mailing address of the ISA/

European Patent Office, P.B. 5818 Patentlaan 2
NL - 2280 HV Rijswijk
Tel. (+31-70) 340-2040,
Fax: (+31-70) 340-3016

Authorized officer

Schombacher, Hanno

INTERNATIONAL SEARCH REPORT

International application No
PCT/EP2016/065285

C(Continuation). DOCUMENTS CONSIDERED TO BE RELEVANT		
Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X	60 Pointer guide balancer; figures 6-8 ----- US 2014/165903 A1 (BIRMAN VYACHESLAV B [US] ET AL) 19 June 2014 (2014-06-19) paragraphs [0015] - [0024]; figure 2 -----	1,2

INTERNATIONAL SEARCH REPORT

Information on patent family members

International application No

PCT/EP2016/065285

Patent document cited in search report	Publication date	Patent family member(s)	Publication date
JP 2014153277 A	25-08-2014	NONE	
US 2014165903 A1	19-06-2014	NONE	