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

(19) World Intellectual Property Organization
International Bureau

(43) International Publication Date
14 March 2013 (14.03.2013)

WIPO | PCT

(10) International Publication Number
WO 2013/034945 A1

(51) International Patent Classification:
F16C 1/26 (2006.01)

(21) International Application Number:
PCT/IB2011/002093

(22) International Filing Date:
7 September 2011 (07.09.2011)

(25) Filing Language: English

(26) Publication Language: English

(71) Applicant *(for all designated States except US)*: **KONGSBERG DRIVELINE SYSTEMS SAS** [FR/FR]; 650 Avenue de la République, BP 75, 74302 Cluses Cedex (FR).

(72) Inventor; and

(75) Inventor/Applicant *(for US only)*: **TROUVE, Damien** [FR/FR]; 52 Allée des Roitelets Bât. B, Apt 16, F-74300 Cluses (FR).

(74) Agent: **AHME, Johannes**; Uexküll & Stolberg, Beselerstr. 4, 22607 Hamburg (DE).

(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, 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, IS, JP, KE, KG, KM, KN, KP, KR, KZ, LA, LC, LK, LR, LS, LT, LU, LY, MA, MD, ME, MG, MK, MN, MW, MX, MY, MZ, NA, NG, NI, NO, NZ, OM, PE, PG, PH, PL, PT, QA, RO, RS, RU, RW, 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, SD, SL, SZ, TZ, UG, ZM, ZW), Eurasian (AM, AZ, BY, KG, KZ, MD, 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, ML, MR, NE, SN, TD, TG).

Published:

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

WO 2013/034945 A1

(54) Title: END FITTING ASSEMBLY FOR MOUNTING A CABLE TO A BRACKET

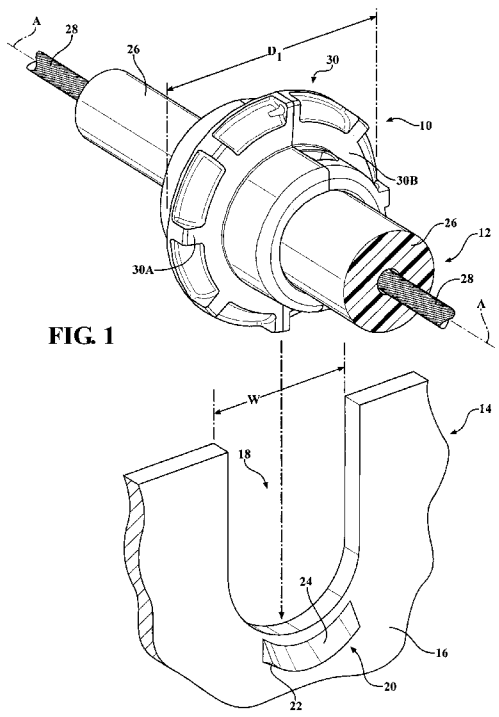


FIG. 1

(57) Abstract: An end fitting assembly (10) secures a cable (12) to a bracket (14). The bracket defines an open-ended slot (18) and has a retention tab (20). The end fitting assembly includes a body (30) configured to receive the cable. The body defines a channel (42) for receiving the bracket to allow the body to be inserted into the open-ended slot of the bracket. A flexible latch (44) is coupled to the body and has a finger portion (50). The flexible latch is rotatable between a disengaged position for allowing the body to be inserted into the open- ended slot and an engaged position for allowing the finger to engage the retention tab to secure the body to the bracket.

END FITTING ASSEMBLY FOR MOUNTING A CABLE TO A BRACKET

FIELD OF THE INVENTION

[0001] The present invention generally relates to an end fitting assembly for mounting a cable to a bracket.

BACKGROUND OF THE INVENTION

[0002] It is known to attach an end fitting assembly to secure a cable to a bracket, which is coupled to a vehicle. Typically, the bracket has a plate member defining an open-ended slot. The end fitting assembly is received vertically into the top of the open-ended slot at the plate edge. The bracket has a projection or upset that extends from a planar side surface of the bracket near the bottom of the slot. Conventional end fitting assemblies are provided with a collar that moves axially along an axis of the conventional end fitting assembly. The collar moves between an engaged position in which the upset is received inside the collar. The collar receives the upset to prevent the conventional end fitting assembly from being removed from the open-ended slot. The collar is moved axially from the engaged position to a disengaged position to allow the conventional end fitting assembly to be inserted into or removed from the open-ended slot.

[0003] Typically, the collar is slid or threadedly rotated into its engaged position, and may be biased towards its engaged position by a compression spring disposed between the collar and a retaining cap fixed to the conduit housing. However, package space is often at a premium, and cannot accommodate axially sliding collars, particularly those that required biasing spring mechanisms or collars,

which must be threadably rotated into their engaged position. Therefore, there remains a need to provide an improved fitting for mounting the cable conduit to the bracket.

SUMMARY OF THE INVENTION AND ADVANTAGES

[0004] An end fitting assembly secures a cable to a bracket. The bracket defines an open-ended slot and has a retention tab. The end fitting assembly is included in a motion transmitting remote control assembly. In addition to the end fitting, the motion transmitting remote control assembly includes the cable, which comprises a conduit and a core wire.

[0005] The end fitting assembly includes a body configured to receive the cable. The body defines a channel for receiving the bracket to allow the body to be inserted into the open-ended slot of the bracket. The end fitting assembly also includes a flexible latch having a base portion coupled to the body. The flexible latch also has a finger portion extending from the base portion. The finger portion has a generally hook-shaped configuration. The flexible latch is movable between a disengaged position and an engaged position for engaging the retention tab of the bracket to secure the body and the cable within the body to the bracket.

[0006] The body defines a cavity adjacent the flexible latch. The finger portion is housed within the cavity when in the disengaged position for allowing the body to be inserted into the open-ended slot of the bracket. The finger portion is rotatable from the disengaged position within the cavity to the engaged position to engage the retention tab of the bracket for securing the body within the open-ended slot of the bracket. Therefore, the end fitting assembly is automatically coupled to the

bracket via the engagement of the finger portion of the flexible latch and the retention tab of the bracket. Coupling the end fitting assembly to the bracket prevents the end fitting assembly, and therefore the cable that is received by the body, from moving relative to the bracket.

BRIEF DESCRIPTION OF THE DRAWINGS

[0007] Other advantages of the present invention will be readily appreciated, as the same becomes better understood by reference to the following detailed description when considered in connection with the accompanying drawings wherein:

[0008] Figure 1 is a perspective view of an end fitting assembly spaced from a bracket;

[0009] Figure 2 is a perspective view of a first end of the end fitting assembly;

[0010] Figure 3 is an exploded perspective view of the first end of the end fitting assembly;

[0011] Figure 4 is a perspective view of a second end of the end fitting assembly;

[0012] Figure 5 is an exploded perspective view of the second end of the end fitting assembly;

[0013] Figure 6 is a cross-sectional view of the end fitting assembly and the bracket showing a body partially inserted into the bracket;

[0014] Figure 7 is a cross-sectional view of the body partially inserted into the bracket with a flexible latch in a disengaged position; and

[0015] Figure 8 is a cross-sectional view of the body seated into the bracket with the flexible latch in an engaged position.

DETAILED DESCRIPTION OF THE INVENTION

[0016] Referring to the Figures, wherein like numerals indicate like or corresponding parts throughout the several views, an end fitting assembly is generally shown at 10. With reference to Figure 1, the end fitting assembly 10 is included in a motion transmitting remote control assembly. The motion transmitting remote control assembly includes a cable 12, such as a transmission cable of a vehicle. The motion transmitting remote control assembly mounts the cable 12 to a bracket 14 that is coupled to the vehicle.

[0017] Generally, the bracket 14 has at least one plate member 16 defining an open-ended slot 18. The end fitting assembly 10 is disposed within the open-ended slot 18 of the bracket 14 for coupling the end fitting assembly 10 to the bracket 14. Said differently, the end fitting assembly 10 is seated within the open-ended slot 18. Typically, the open-ended slot 18 of the bracket 14 has a U-shaped configuration, which is complementary to the end fitting assembly 10. However, it is to be appreciated that the open-ended slot 18 can be of any suitable configuration.

[0018] The bracket 14 includes a retention tab 20 extending from the plate member 16 of the bracket 14. The retention tab 20 is typically adjacent the open-ended slot 18 of the bracket 14. More typically, the retention tab 20 is located below the open-ended slot 18 of the bracket 14. The retention tab 20 has a shoulder surface 22 that extends perpendicularly from the plate member 16 of the bracket 14. The retention tab 20 also has a ramped surface 24 intersecting the shoulder surface 22. The ramped surface 24 is disposed proximate the open-ended slot 18 and the shoulder surface 22 is distal the open-ended slot 18 relative to the ramped surface 24. The end

fitting assembly 10 engages the retention tab 20 of the bracket 14 to couple the end fitting assembly 10 to the bracket 14. More specifically, the end fitting assembly 10 engages the shoulder surface 22 of the retention tab 20. The engagement of the end fitting assembly 10 with the retention tab 20 is described in greater detail below.

[0019] Generally, the cable 12 comprises a conduit 26 and a core wire 28 disposed thought the conduit 26. The conduit 26 of the cable 12 is coupled to the end fitting assembly 10 by disposing the conduit 26 through the end fitting assembly 10. As such, the cable 12 is mounted to the bracket 14 once the end fitting assembly 10 is coupled to the bracket 14. In other words, coupling the end fitting assembly 10 to the bracket 14 secures the conduit 26, and therefore the core wire 28, to the bracket 14. Mounting the conduit 26 to the bracket 14 prevents the cable 12 from moving relative to the bracket 14 while allowing the core wire 28 to move within the conduit 26 of the cable 12.

[0020] With reference to Figures 2-5, the end fitting assembly 10 includes a body 30 configured to receive the cable 12. More specifically, the body 30 defines a hollow core 32 for receiving the conduit 26 of the cable 12. The body 30 has a first end 34 and a second end 36 spaced from the first end 34 with the hollow core 32 of the body 30 extending along an axis A therebetween. Generally, the conduit 26 of the cable 12 is disposed within the hollow core 32 and extends beyond the first end 34 and the second end 36 of the body 30. It is to be appreciated that the conduit 26 may have multiple component or may be a single unitary component. It is also to be appreciated that body 30 may have a tapered wall 37 defining a portion of the hollow core 32 between the first end 34 and the second end 36 of the body 30, as shown in figure 6. The tapered wall 37 allows the cable 12 to pivot at the second end 36 of the

body 30. Said differently, the tapered wall 37 allows pivotal movement of the cable 12 at the second end 36 of the body 30 while the cable 12 at the first end 34 of the body 30 is prevented from pivoting. Additionally, the body 30 may include a bearing wall 39 within the hollow core 32, as shown in Figure 6, for securing the conduit 26 within the body 30 of the end fitting assembly 10.

[0021] The body 30 may have a first half 30A and a second half 30B removable from the first half 30A for allowing access to the hollow core 32 to insert the cable 12 within the hollow core 32. In such an embodiment, the first half 30A and the second half 30B are separated from each other and the conduit 26 of the cable 12 is disposed within the hollow core 32 of the first half 30A of the body 30. The second half 30B of the body 30 is then coupled to the first half 30A for trapping the conduit 26 of the cable 12 within the hollow core 32 of the body 30. However, it is to be appreciated that the conduit 26 may be coupled to the body 30 of the end fitting assembly 10 in any suitable manner, such as press-fitting the conduit 26 into the hollow core 32 of the body 30. Coupling the conduit 26 to the body 30 of the end fitting assembly 10 prevents the conduit 26 from undergoing longitudinal and lateral movement relative to the end fitting assembly 10.

[0022] When the body 30 include the first half 30A and the second half 30B, each of the first half 30A and the second half 30B may have a plurality of bosses 38 and defines a plurality of recesses 40 complementary to the plurality of bosses 38. The plurality of bosses 38 of the first half 30A of the body 30 are insertable into the plurality of recesses 40 of the second half 30B of the body 30 for coupling together the first half 30A and the second half 30B of the body 30.

[0023] With reference to Figure 6, the body 30 defines a channel 42 for receiving the bracket 14. More specifically, the channel 42 of the body 30 receives the plate member 16 of the bracket 14. The channel 42 allows the body 30 to be inserted into the open-ended slot 18 of the bracket 14. Said differently, the channel 42 receives the plate member 16 to allow the body 30 to be seated within the open-ended slot 18 of the bracket 14. The body 30 may have a cylindrical shape complementary to the open-ended slot 18. Additionally, the body 30 has a diameter D1 that is larger than a width W of the open-ended slot 18 for preventing the body 30 from passing through the open-ended slot 18 of the bracket 14. However, the channel 42 of the body 30 has a diameter D2 that is smaller than the diameter D1 of the body 30 adjacent the channel 42. Said differently, the channel 42 is recessed relative to the rest of the body 30 of the end fitting assembly 10. The diameter D2 of the channel 42 is also approximately equal to or less than the width W of the open-ended slot 18 for allowing the plate member 16 of the bracket 14 to be received by the body 30 to seat the body 30 in the open-ended slot 18 of the bracket 14. Said differently, once the plate member 16 is inserted into the channel 42 of the body 30, the diameter D1 of the body 30 on either side of the plate member 16 is larger than the width W of the open-ended slot 18 to prevent the body 30 from being pulled through the open-ended slot 18. Seating the body 30 in the open-ended slot 18 of the bracket 14 prevents the body 30, and therefore the conduit 26 coupled thereto, from moving laterally relative to the bracket 14.

[0024] With reference to Figures 6-8, the end fitting assembly 10 also includes a flexible latch 44 for engaging the shoulder surface 22 of the retention tab 20 of the bracket 14. Generally, the flexible latch 44 couples the body 30 of the end fitting

assembly 10 to the bracket 14. The flexible latch 44 has a base portion 46 coupled to the body 30. More specifically, the body 30 defines a pocket 48 for receiving the base portion 46 of the flexible latch 44 to couple the flexible latch 44 to the body 30. It is to be appreciated that the base portion 46 of the flexible latch 44 may be inserted into the pocket 48 by any suitable method. For example, the base portion 46 may be press-fit into the pocket 48. Additionally, the base portion 46 may be slid into the pocket 48 when the first half 30A and the second half 30B of the body 30 are separated from each other. Said differently, when the first half 30A and the second half 30B of the body 30 are separated from each other, an end of the pocket 48 is exposed and the base portion 46 of the flexible latch 44 may be slid into the end of the pocket 48 that is exposed.

[0025] The flexible latch 44 also has a finger portion 50 extending from the base portion 46. The finger portion 50 has a generally hook-shaped configuration terminating at an end 51. The generally hooked-shaped configuration of the finger portion 50 allows the flexible latch 44 to engage the shoulder surface 22 of the retention tab 20 of the bracket 14 to secure the body 30, and therefore the cable 12 received by the body 30, within the open-ended slot 18 of the bracket 14.

[0026] The body 30 defines a cavity 52 adjacent the flexible latch 44 for receiving the flexible latch 44 and, more specifically, the finger portion 50 of the flexible latch 44. The flexible latch 44 is rotatable between a disengaged position and an engaged position. As shown in Figure 7, when in the disengaged position, the finger portion 50 is housed within the cavity 52 defined by the body 30 for allowing the body 30 to be seated into the open-ended slot 18 of the bracket 14. The finger

portion 50 of the flexible latch 44 slides against the ramped surface 24 of the retention tab 20 as the body 30 is forced into the open-ended slot 18.

[0027] The ramped surface 24 of the retention tab 20 forces at least the finger portion 50 of the flexible latch 44 from the engaged position to the disengaged position such that the finger portion 50 is disposed within the cavity 52 of the body 30. As shown in Figure 8, once the body 30 is seated and the finger portion 50 clears the ramped surface 24 of the retention tab 20, the finger portion 50 rotates into the engaged position for engaging the shoulder surface 22 of the retention tab 20. Said differently, once the body 30 is seated, the flexible latch 44 rotates from the cavity 52 to engage the retention tab 20. When in the engaged position, the finger portion 50 of the flexible latch 44, and more specifically an engagement surface 53 of the finger portion 50, engages the shoulder surface 22 of the retention tab 20 of the bracket 14 to secure the body 30, and the cable 12 coupled to the body 30, within the open-ended slot 18 of the bracket 14. Additionally, when in the engaged position, the end 51 of the finger portion 50 of the flexible latch 44 contacts the plate member 16 of the bracket 14.

[0028] While the body 30 of the end fitting assembly 10 is easily insertable into the open-ended slot 18 of the bracket 14, the body 30 is not easily removable for the bracket 14 once the body 30 is seated within the open-ended slot 18. For example, the ramped surface 24 forces the finger portion 50 of the flexible latch 44 into the disengaged position to allow the body 30 to be seated within the open-ended slot 18. However, the engagement of the finger portion 50 of the flexible latch 44 prevents the body 30 from being uncoupled from the bracket 14 without the aid of a tool to force

the finger portion 50 of the flexible latch 44 from the engaged position to the disengaged position.

[0029] The flexible latch 44 may comprise a resilient material for allowing the flexible latch 44 to be rotated several times without undergoing permanent deformation. For example, the flexible latch 44 may comprise a polymeric material that is elastically deformable. However, it is to be appreciated that the flexible latch 44 may comprise any suitable material. For example, the flexible latch 44 may comprise a metal material. Additionally, when the flexible latch 44 is made from the metal material, the flexible latch 44 may include the polymeric material by over molding the metal material with the polymeric material.

[0030] When the flexible latch 44 comprises the polymeric material, the flexible latch 44 includes a living hinge coupling the finger portion 50 to the base portion 46. The living hinge allows the finger portion 50 to rotate relative to the base portion 46 at the living hinge between the disengaged position and the engaged position. However, it is to be appreciated that a simple hinge member may be used in place of the living hinge.

[0031] The body 30 may include a protruding wall 54 adjacent the flexible latch 44. The protruding wall 54 separates cavity 52 of the body 30 and the pocket 48. The protruding wall 54 terminates at the living hinge for allowing the flexible latch 44 to bias against it to rotate the finger portion 50 to rotate between the disengaged position and the engaged position. The protruding wall 54 also prevents the base portion 46 of the flexible latch 44 from rotating as the finger portion 50 of the flexible latch 44 rotates between the disengaged position and the engaged position. The protruding wall 54 may also help to partially encapsulate the base

portion 46 of the flexible latch 44 within the pocket 48 defined by the body 30 thereby retaining the base portion 46 within the pocket 48 of the body 30. Said differently, a portion of the protruding wall 54 and the body 30 define the pocket 48 for receiving the base portion 46 of the flexible latch 44.

[0032] The end fitting assembly 10 may include an abutment tab 56 disposed on the body 30 and extending between the flexible latch 44 and the channel 42. The abutment tab 56 is configured to engage the retention tab 20 of the bracket 14. The abutment tab 56 has a sloped surface 58 for engaging the ramped surface 24 of the retention tab 20. A tab space 60 is defined between the abutment tab 56 and the finger portion 50 of the flexible latch 44. More specifically, the tab space 60 is defined between the finger portion 50 of the flexible latch 44 and the sloped surface 58 of the abutment tab 56. The retention tab 20 is disposed in the tab space 60 when the finger portion 50 engages the shoulder surface 22 of the retention tab 20 of the bracket 14, i.e., in the engagement position. More specifically, the retention tab 20 is sandwiched between the abutment tab 56 and the finger portion 50 of the flexible latch 44 to prevent the body 30 from being removed from the open-ended slot 18 of the bracket 14. Sandwiching the retention tab 20 between the abutment tab 56 and the finger portion 50 of the flexible latch 44 ensures the body 30 remains coupled to the bracket 14. The abutment tab 56 also acts as a stop for indicating when the body 30 is seated within the open-ended slot 18.

[0033] With reference to Figures 2-5, the flexible latch 44 may surround a periphery of the body 30. More specifically, the base portion 46 of the flexible latch 44 may surround the periphery of the body 30. Additionally, the flexible latch 44 may include a plurality of the finger portions 50 with the finger portions 50 adjacent

each other and evenly spaced about the periphery of the body 30. Furthermore, the channel 42 may be defined about the periphery of the body 30. Providing the flexible latch 44 and the channel 42 about the periphery of the body 30 allows the body 30 to be insertable into the open-ended slot 18 of the bracket 14 in any rotational orientation while still providing engagement between the flexible latch 44 and the retention tab 20 of the bracket 14. For example, providing the channel 42 about the periphery of the body 30 allows the body 30 to be inserted into the open-ended slot 18 of the bracket 14 without having to rotate the body 30 about the axis A to properly align the channel 42 with the plate member 16 of the bracket 14. Furthermore, providing the flexible latch 44 about the periphery of the body 30 ensures that the once the body 30 is seated within the open-ended slot 18 of the bracket 14, the flexible latch 44 will engage the retention tab 20 without having to properly align the finger portion 50 with the retention tab 20. The plurality of finger portions 50 are closely spaced such that almost the entire periphery of the body 30 has the finger portions 50 present.

[0034] When the body 30 has the first half 30A and the second half 30B, the flexible latch 44 has a first segment 44A and a second segment 44B separable from the first segment 44A. The first segment 44A and the second segment 44B allow the first half 30A of the body 30 to be removable from the second half 30B of the body 30 even through the flexible latch 44 is coupled to the body 30. More specifically, the first segment 44A is coupled to the first half 30A of the body 30 and the second segment 44B of the flexible latch 44 is coupled to the second half 30B of the body 30. In such an arrangement, the first half 30A and the second half 30B of the body 30 can still be separated for allowing the cable 12 to be inserted into the hollow core 32 while still having the flexible latch 44 coupled to the body 30.

[0035] Obviously, many modifications and variations of the present invention are possible in light of the above teachings. The foregoing invention has been described in accordance with the relevant legal standards; thus, the description is exemplary rather than limiting in nature. Variations and modifications to the disclosed embodiment may become apparent to those skilled in the art and do come within the scope of the invention. Accordingly, the scope of legal protection afforded this invention may only be determined by studying the following claims.

CLAIMS

What is claimed is:

1. An end fitting assembly for mounting a cable to a bracket with the bracket defining an open-ended slot and having a retention tab, said end fitting assembly comprising:

a body configured to receive the cable and defining a channel for receiving the bracket to allow said body to be inserted into the open-ended slot of the bracket; and

a flexible latch having a base portion coupled to said body and having a finger portion extending from said base portion with said finger portion having a generally hook-shaped configuration with said flexible latch rotatable between a disengaged position and an engaged position for allowing said finger to engage the retention tab of the bracket to secure said body and the cable within the open-ended slot of the bracket;

wherein said body defines a cavity adjacent said flexible latch with said finger portion housed within said cavity when in said disengaged position for allowing said body to be inserted into the open-end of the slot of the bracket and said finger portion is rotatable from said disengaged position within said cavity to said engaged position to engage the retention tab of the bracket for securing the body within the open-ended slot of the bracket.

2. An end fitting assembly as set forth in claim 1 further comprising a living hinge coupling said finger portion to said base portion for allowing said finger portion to rotate relative to said base portion at said living hinge between said disengaged position and said engaged position.

3. An end fitting assembly as set forth in claim 2 wherein said flexible latch comprises a polymeric material that is elastically deformable at said living hinge for allowing said finger to rotate between said disengaged position and said engaged position.

4. An end fitting assembly as set forth in claim 1 wherein said body further defines a pocket for receiving said base portion of said flexible latch for coupling said flexible latch to said body.

5. An end fitting assembly as set forth in claim 4 wherein said body includes a protruding wall adjacent said flexible latch and separating said cavity of said body and said pocket.

6. An end fitting assembly as set forth in claim 5 wherein said protruding wall terminates at said living hinge for allowing said flexible latch to bias against said protruding wall thereby allowing said finger portion of said flexible latch to rotate between said disengaged position and said engaged position.

7. An end fitting assembly as set forth in claim 1 wherein said body has an abutment tab disposed between said flexible latch and said channel for at least partially engaging the retention tab of the bracket.

8. An end fitting assembly as set forth in claim 7 wherein a tab space is defined between said abutment tab and said finger portion of said flexible latch for receiving the retention tab when said finger is in said engaged position to prevent said body from being removed from the open-ended slot of the bracket.

9. An end fitting assembly as set forth in claim 1 wherein said finger portion of said flexible latch has an engagement wall for engaging a should surface of the

retention tab of the bracket to secure said body within the open-ended slot of the bracket.

10. An end fitting assembly as set forth in claim 9 wherein said finger portion of said flexible latch terminates at an end for contacting the bracket when said flexible latch is in said engaged position.

11. An end fitting assembly as set forth in claim 1 wherein said body has a hollow core for receiving the cable and said body has a first half and a second half removable from the first half for allowing access to said hollow core to insert said cable within said hollow core.

12. An end fitting assembly as set forth in claim 1 wherein said flexible latch has a first segment and a second segment separable from said first segment for allowing said first half of said body to be removable from said second half of said body with said flexible latch coupled to said body.

13. An end fitting assembly as set forth in claim 12 wherein each of said first half and said second half of said body has a plurality of bosses and defines a plurality of recesses complementary to said plurality of bosses for coupling together said first half and said second half of said body.

14. An end fitting assembly as set forth in claim 1 wherein said channel defines a diameter that is smaller than a diameter defined by said body adjacent said channel for preventing said body from moving laterally within the open-ended slot of the bracket.

15. An end fitting assembly as set forth in claim 1 wherein said base portion of said flexible latch surrounds a periphery of said body and said flexible latch includes a plurality of finger portions adjacent each other and evenly spaced about said periphery

for allowing said flexible latch to engage the retention tab of the bracket in any rotational orientation.

16. A motion transmitting remote control assembly for coupling with a bracket with the bracket defining an open-ended slot and having a retention tab, said motion transmitting remote control assembly comprising:

a core wire;

a conduit having a hollow interior for receiving said core wire;

an end fitting comprising;

a body configured to receive said conduit and defining a channel for receiving the bracket to allow said body to be inserted into the open-ended slot of the bracket, and

a flexible latch having a base portion coupled to said body and having a finger portion extending from said base portion with said finger portion having a generally hook-shaped configuration and being movable between a disengaged position and an engaged position for engaging the retention tab of the bracket to secure said body and the cable within the open-ended slot of the bracket;

wherein said body defines a cavity adjacent said flexible latch with said finger portion housed within said cavity when in said disengaged position for allowing said body to be inserted into the open-end of the slot of the bracket and said finger portion is rotatable from said disengaged position within said cavity to said engaged position to engage the retention tab of the bracket for securing the body within the open-ended slot of the bracket.

17. A motion transmitting remote control assembly as set forth in claim 16 further comprising a living hinge coupling said finger portion to said base portion for allowing said finger portion to rotate relative to said base portion at said living hinge between said disengaged position and said engaged position.

18. A motion transmitting remote control assembly as set forth in claim 17 wherein said flexible latch comprises a polymeric material that is elastically deformable at said living hinge for allowing said finger to rotate between said disengaged position and said engaged position.

19. A motion transmitting remote control assembly as set forth in claim 16 wherein said body further defines a pocket for receiving said base portion of said flexible latch for coupling said flexible latch to said body.

20. A motion transmitting remote control assembly as set forth in claim 19 wherein said body includes a protruding wall adjacent said flexible latch and separating said cavity of said body and said pocket.

21. A motion transmitting remote control assembly as set forth in claim 20 wherein said protruding wall terminates at said living hinge for allowing said flexible latch to bias against said protruding wall thereby allowing said finger portion of said flexible latch to rotate between said disengaged position and said engaged position.

22. A motion transmitting remote control assembly as set forth in claim 15 wherein said body has an abutment tab disposed between said flexible latch and said channel for at least partially engaging the retention tab of the bracket.

23. A motion transmitting remote control assembly as set forth in claim 22 wherein a tab space is defined between said abutment tab and said finger portion of said flexible latch for receiving the retention tab when said finger is in said engaged

position to prevent said body from being removed from the open-ended slot of the bracket.

24. A motion transmitting remote control assembly as set forth in claim 1 wherein said finger portion of said flexible latch has an engagement wall for engaging a should surface of the retention tab of the bracket to secure said body within the open-ended slot of the bracket.

25. A motion transmitting remote control assembly as set forth in claim 24 wherein said finger portion of said flexible latch terminates at an end for contacting the bracket when said flexible latch is in said engaged position.

26. A motion transmitting remote control assembly as set forth in claim 15 wherein said body has a hollow core for receiving said conduit and said core wire and said body has a first half and a second half removable from the first half for allowing access to said hollow core to insert said cable within said hollow core.

27. A motion transmitting remote control assembly as set forth in claim 26 wherein said flexible latch has a first segment and a second segment separable from said first segment for allowing said first half of said body to be removable from said second half of said body with said flexible latch coupled to said body.

28. A motion transmitting remote control assembly as set forth in claim 15 wherein said base portion of said flexible latch surrounds a periphery of said body and said flexible latch includes a plurality of finger portions adjacent each other and evenly spaced about said periphery for allowing said flexible latch to engage the retention tab of the bracket in any rotational orientation.

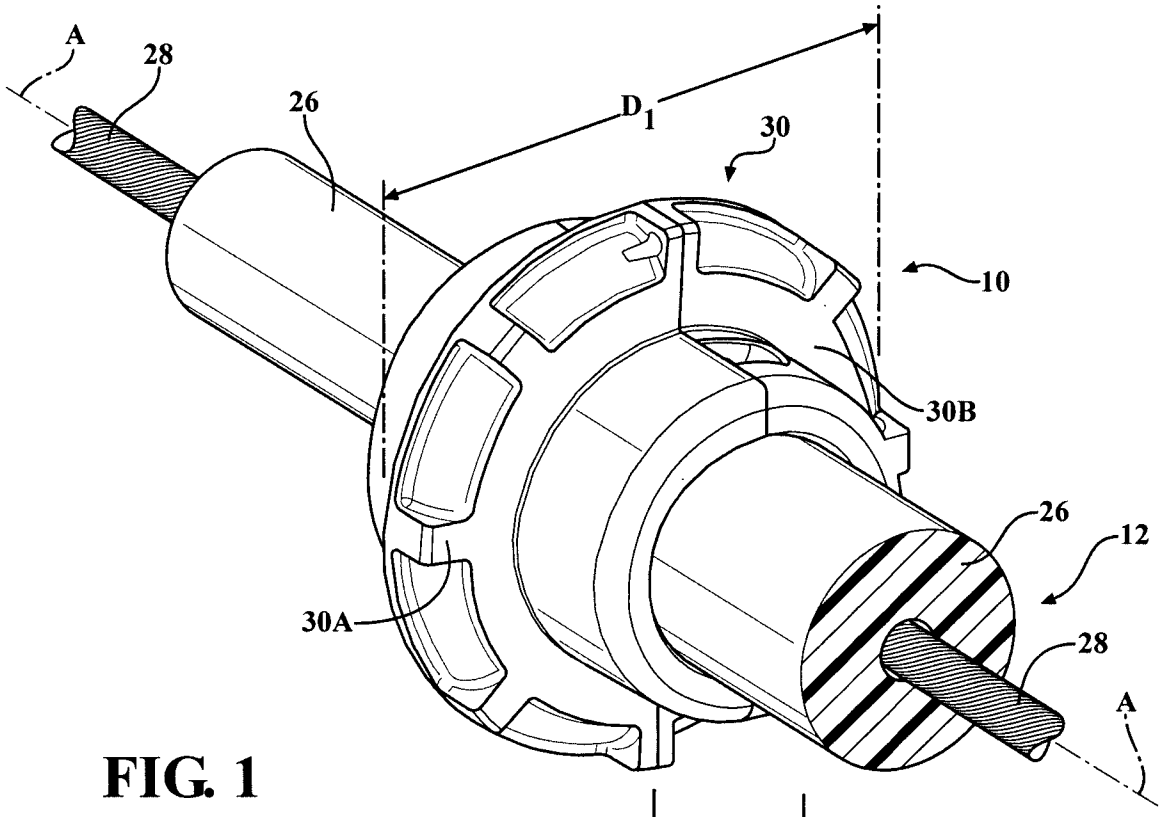
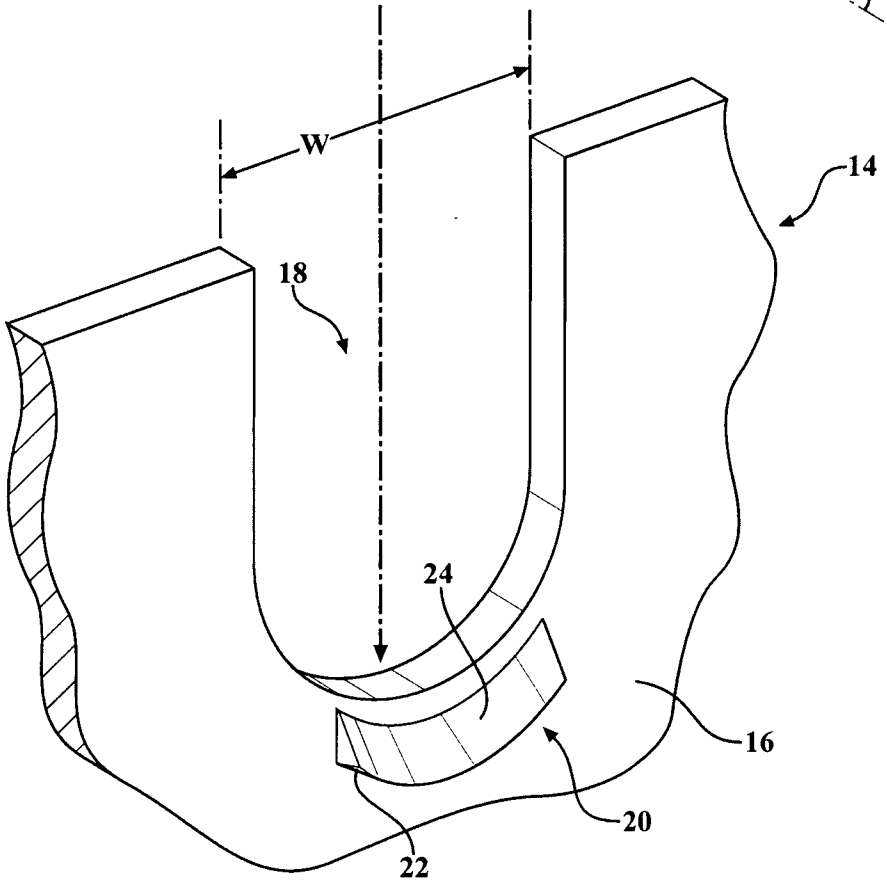


FIG. 1



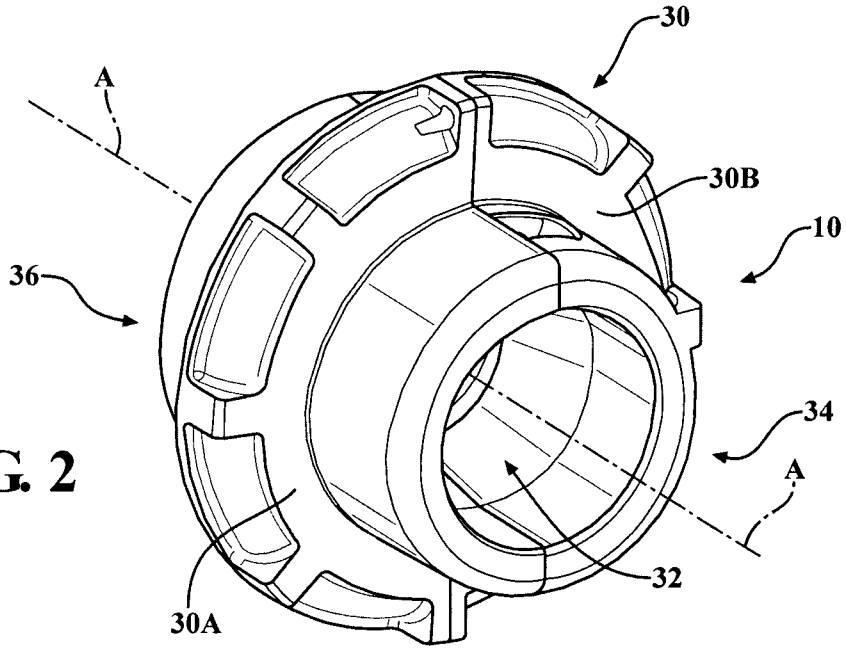

30
A
30B
10
36
34
A
32
30A

FIG. 2

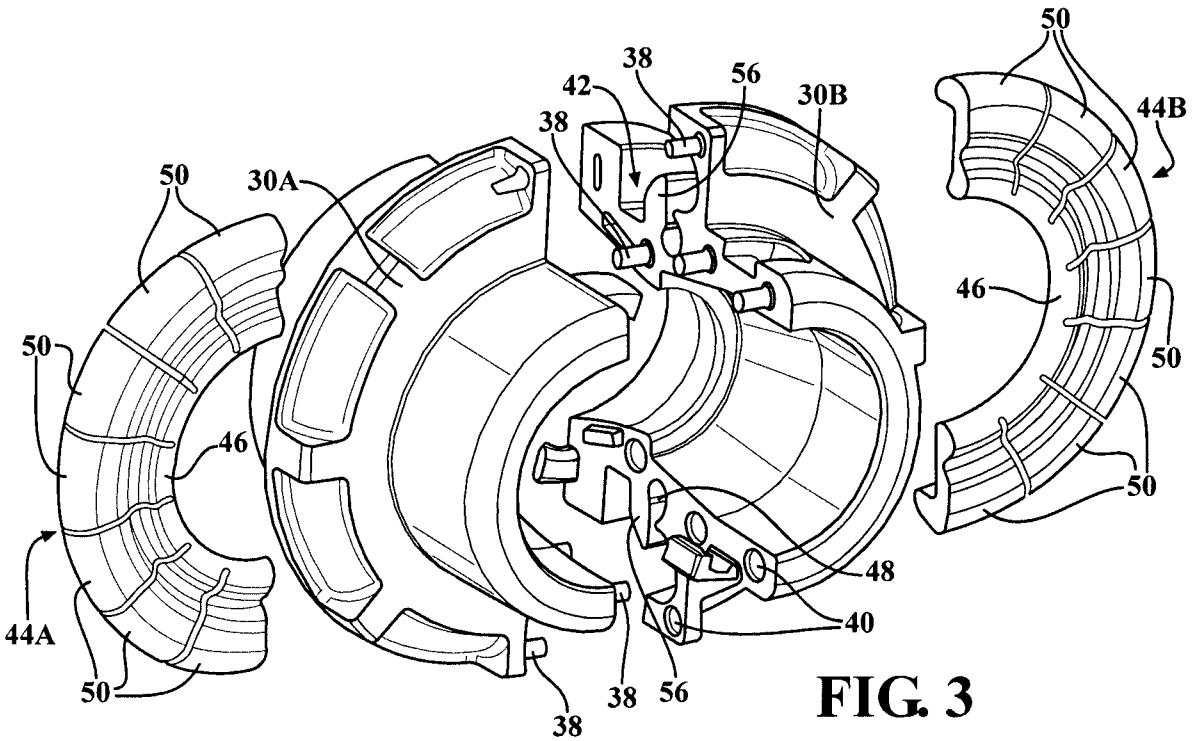
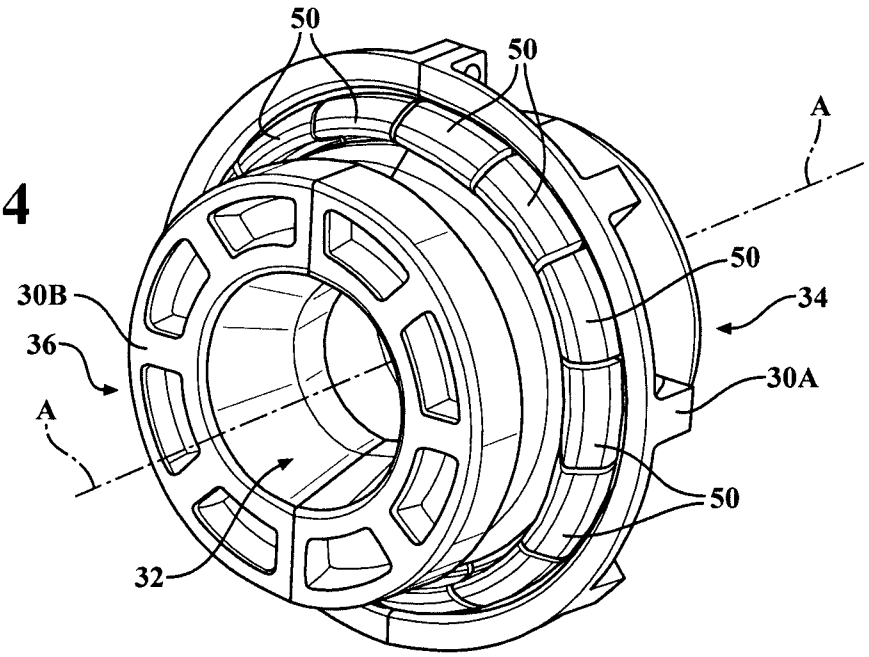

50
38
42
56
30B
38
44B
50
30A
46
50
50
44A
48
40
50
38
56
38

FIG. 3

FIG. 4


50
50
A
50
34
30B
36
30A
A
50
32

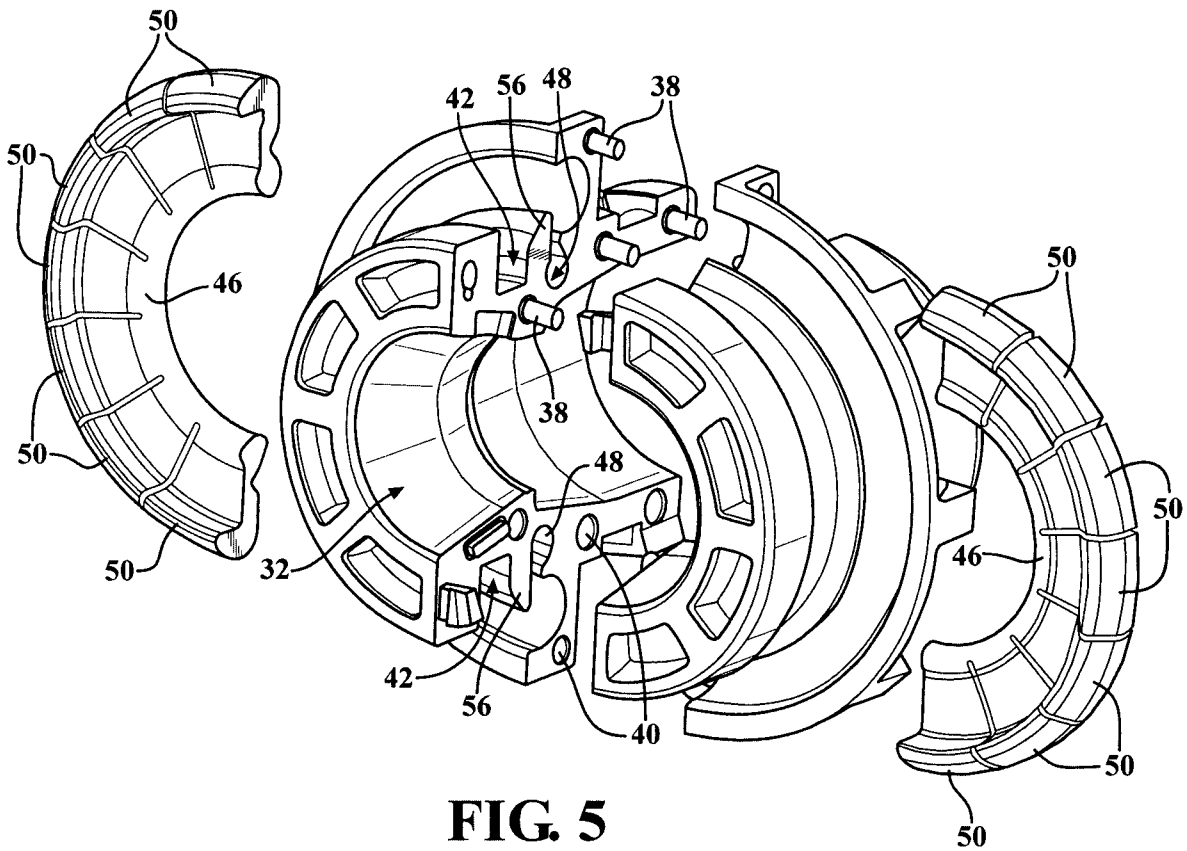

50
50
42
56
48
38
46
38
50
48
50
32
50
46
50
42
56
40
50
50

FIG. 5

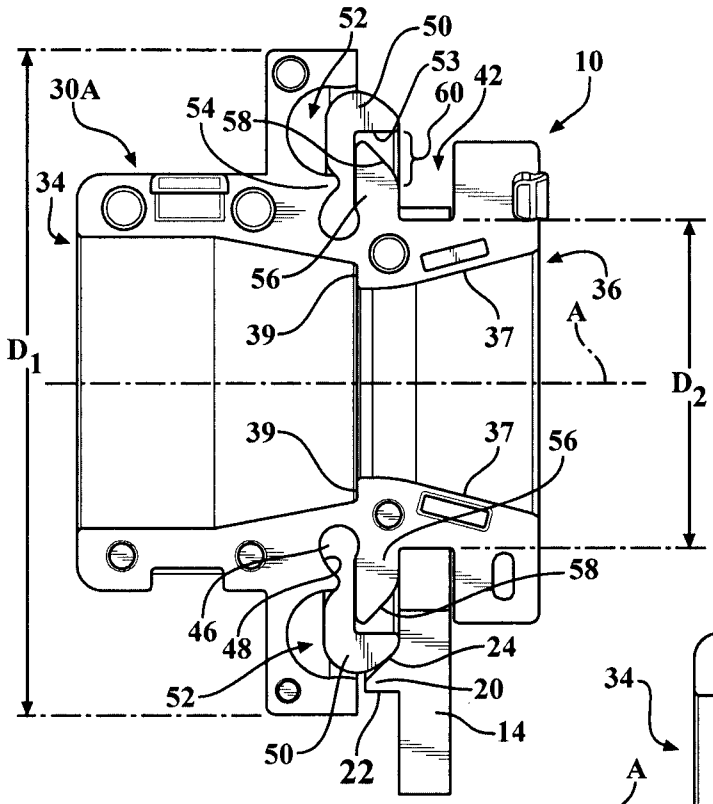


FIG. 6

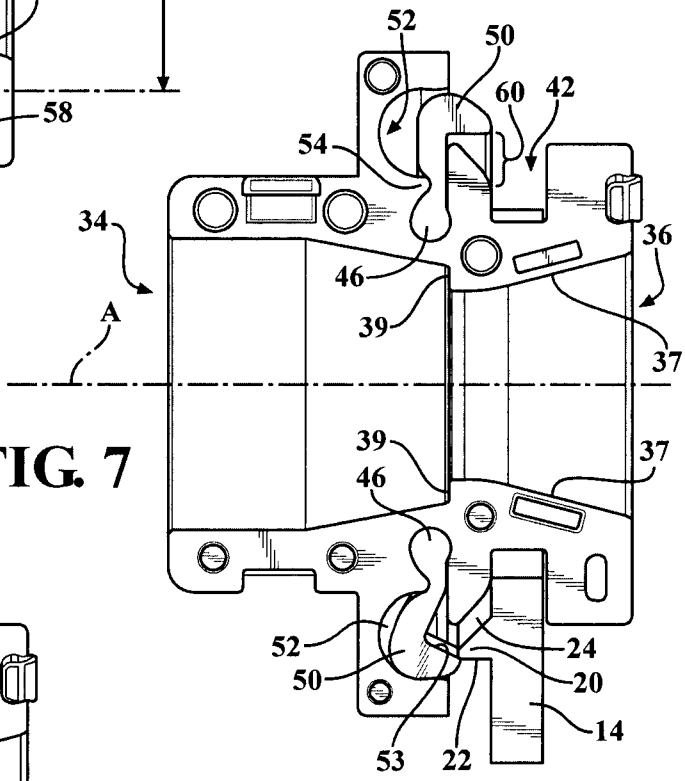


FIG. 7

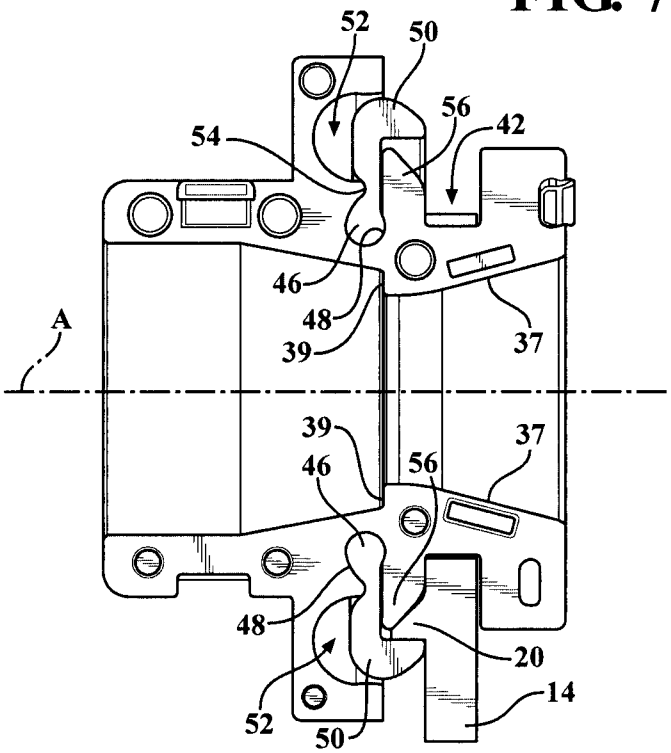


FIG. 8

INTERNATIONAL SEARCH REPORT

International application No
PCT/IB2011/002093

A. CLASSIFICATION OF SUBJECT MATTER
INV. F16C1/26
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)
F16C

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.
A	WO 2010/077871 A2 (KONGSBERG AUTOMOTIVE INC [US]; TROUVE DAMIEN [FR]; KOONTZ HARRY EDWARD) 8 July 2010 (2010-07-08) paragraph [0036] - paragraph [0063] figures 1-3,5,7,14-17 -----	1,3,10, 14,16, 18,25
A	US 4 339 213 A (GILMORE WILLIAM J) 13 July 1982 (1982-07-13) figures 1-4 column 2, line 17 - column 3, line 5 -----	1,16

☐ 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	Date of mailing of the international search report
3 May 2012	30/05/2012

Name and mailing address of the ISA/	Authorized officer
European Patent Office, P.B. 5818 Patentlaan 2 NL - 2280 HV Rijswijk Tel. (+31-70) 340-2040, Fax: (+31-70) 340-3016	Prieto Sanz, M

1

INTERNATIONAL SEARCH REPORT

Information on patent family members

International application No
PCT/IB2011/002093

Patent document cited in search report	Publication date	Patent family member(s)	Publication date
WO 2010077871 A2	08-07-2010	CN 102317636 A	11-01-2012
		EP 2368052 A2	28-09-2011
		US 2011290949 A1	01-12-2011
		WO 2010077871 A2	08-07-2010
US 4339213 A	13-07-1982	NONE	