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(54) **Improved connector assembly having low coupling force retractable stabilizer**

(57) An electrical connector assembly comprising a female connector and a male connector, the male connector including a shroud that includes a retractable stabilizer movable between a blade alignment position and a seated position, characterized in that the base includes:
- at least one position arm extending for securing the retractable stabilizer in the blade alignment position,
- at least one securing member configured to release the female connector when the retractable stabilizer is disposed at the blade alignment position during connector assembly unmating operation,
and in that said male connector further comprises at least one unlocking arm configured to unlock said securing member during connector assembly unmating operation for releasing the female connector.

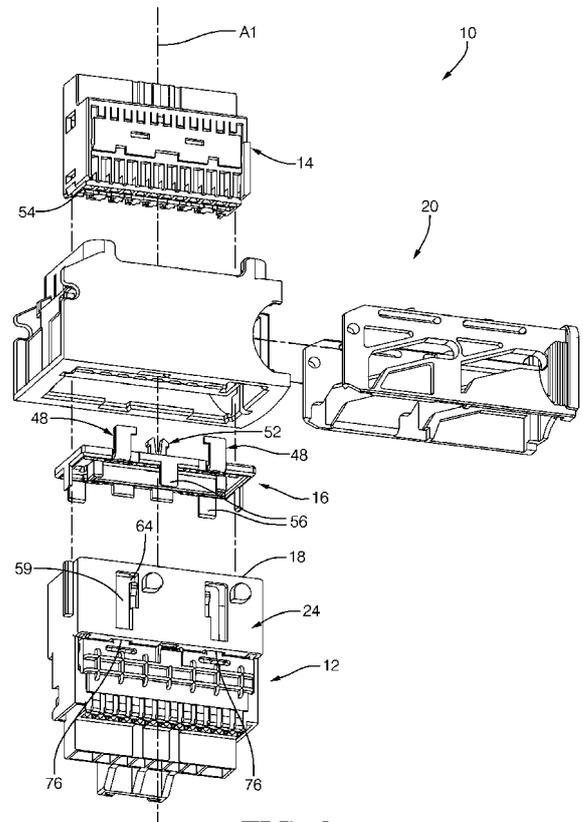


FIG. 2

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Description

TECHNICAL FIELD

[0001] The present invention relates to an electrical connector assembly, more particularly, an electrical connector assembly which employs a retractable stabilizer having a low coupling force.

BACKGROUND OF INVENTION

[0002] It is known to use a retractable stabilizer, also known as floating stabilizer, in an electrical connection system, such as may be found in automotive electrical wiring systems. The retractable stabilizer is disposed in a housing of a male connector and moves in the male connector to protect and stabilize male terminals during their connection with female terminals in a corresponding female connector when the male and the female connector are connected together. Stabilizers also assist to keep undesired foreign matter, or debris out of the connector system environment to prevent intermittent electrical connections between the mated terminals and prevent blockage between the connectors that may impede the mating of the connection system.

[0003] The retractable stabilizer is moveable between a blade alignment position and a seated position in a housing of the male connector. In the blade alignment position, distal tips of the male terminals are exposed above a surface of the stabilizer facing the incoming female terminals. With connection of the connection system, the female connector makes contact with the stabilizer and urges the stabilizer deep into the male connector that increasingly exposes the male terminals for electrical connection with the advancing insertion of the female terminals. When the connection system is unconnected, the female connector interacts with the stabilizer so that the stabilizer moves back to the blade alignment position for reuse when the connection system is again reconnected. The construction and manufacture of current retractable stabilizer connection systems is such that these systems have retractable stabilizers that require an undesired high coupling force to operate during the mating and unmating of the connection system. It is desirable to have a low coupling force of the connection system during manufacture of a vehicle as this makes it easier for an assembly operator to mate the connection system together and may result in decreased hand and arm fatigue for the assembly operator. Reducing the coupling force to operate the retractable stabilizer reduces the overall coupling force needed to mate and unmate the connection system. As current connection system configurations age over their useful service life in an application, such as a vehicular application, the elements of the connection system, including the retractable stabilizer, may become fatigued where the retractable stabilizer may not retract back to the blade alignment position for reuse when the connection system is unmated. If the retractable stabiliz-

er remains undesirably positioned deep in the male connector when the connection system is unconnected, an increased portion of the male terminals are exposed above the retractable stabilizer which increases the risk for male terminal damage, such as having bent or broken terminals, when connection system is reconnected. Damaged male terminals require servicing to the connection system which undesirably increases repair costs of the connection system.

[0004] Accordingly, what is needed is a reliable electrical connector assembly that has a retractable stabilizer that operates with less coupling force to protect the male terminals where the connector assembly mates and unmates while providing robust retractable stabilizer operation over a service life of the connector assembly.

SUMMARY OF THE INVENTION

[0005] The present invention proposes an electrical connector assembly comprising a female connector and a male connector releasably coupled to said female connector along a mating axis so that a plurality of female terminals disposed in the female connector are matable to a plurality of male terminals in the male connector, the male connector including a shroud that includes a generally planar retractable stabilizer perpendicular to said axis and disposed in the shroud, said shroud including at least one blocking feature, said retractable stabilizer being movable in said shroud between a blade alignment position when the connector assembly is unmated and a seated position when the connector assembly is mated together, the seated position being axially remote from the blade alignment position, said retractable stabilizer including a base defining a plurality of holes therethrough adapted for receiving the plurality of terminals, characterized in that the base includes at least one position arm extending from the base and cooperating with said shroud blocking feature for securing the retractable stabilizer in the blade alignment position when the connector assembly is unmated, at least one securing member extending from the base in cooperation with the female connector when the connector assembly is mated together and configured to release the female connector when the retractable stabilizer is disposed at the blade alignment position during connector assembly unmating operation, and in that said male connector further comprises at least one unlocking arm configured to unlock said securing member during connector assembly unmating operation for releasing the female connector.

[0006] According to an advantageous feature of the invention, the female connector comprises at least one intermediate unlocking arm having a cam surface configured to cooperate with an actuating surface of the male connector unlocking arm in order to unlock said securing member during connector assembly unmating operation. Preferably, said at least one securing member comprises at least one stop surface, said at least one stop surface being engaged with a shoulder of the female connector

when the connector assembly is mated together. The intermediate unlocking arm is configured to bend the securing member until said securing member stop surface is shifted with regard to the shoulder of the female connector during connector assembly unmating operation thereby unlocking said securing member.

[0007] Advantageously, said male connector unlocking arm extends along the mating axis through a slit provided in the base.

[0008] Advantageously, said position arm comprises at least one retaining lug, said retaining lug being received in a complementary notch of the shroud when the stabilizer is in the blade alignment position, in order to prevent the retractable stabilizer from moving beyond the blade alignment position in the shroud during connector assembly unmating operation and in order to retain the stabilizer in the blade alignment position. Preferably, said position arm comprises a cam surface which cooperates with the female connector during insertion of the female connector into the shroud, from the unmated position to the mated position, to provide outward bending of said position arm such that the retaining lug moves out of the complementary notch and releases the stabilizer from its blade alignment position.

[0009] According to an advantageous embodiment, said position arm is guided along the mating axis within a guiding slot provided in the shroud wall during mating and unmating operation of the connector assembly.

[0010] Advantageously, said base comprises at least four position arms extending from at least two opposite edges of the base, said base being substantially of rectangular shape. Preferably, said securing member comprises two extended members configured to cooperate respectively with two unlocking arms of the male connector.

[0011] Advantageously, said base comprises a plurality of anti-rocking members.

BRIEF DESCRIPTION OF THE DRAWINGS

[0012] This invention will be further described with reference to the accompanying drawings in which:

[0013] FIG. 1 shows a perspective view of an electrical connector assembly that includes a retractable stabilizer in accordance with the invention;

[0014] FIG. 2 shows an exploded perspective view of the electrical connector assembly of FIG. 1;

[0015] FIG. 3 shows an isometric view of the retractable stabilizer of FIG. 1;

[0016] FIG. 4 shows an isometric view of the male connector forming part of the electrical connector assembly of FIG. 1;

[0017] FIG. 5 shows an isometric view of the male connector of the connector assembly of FIG. 1, where the retractable stabilizer is in the blade alignment position and the connector assembly is unmated;

[0018] FIG. 6 shows a cross section view of the connector assembly of FIG. 1 through the lines 6-6, showing

details thereof, the female connector being inserted into the male connector and secured to the securing member on the retractable stabilizer;

[0019] FIG. 7 shows a cross section view similar to the one of FIG. 6, showing an intermediate position of the retractable stabilizer and of the female connector during unlocking of the securing member;

[0020] FIG. 8 shows a cross section view similar to the one of FIG. 6, showing an unmated position of the connector assembly, the female connector being released and the retractable stabilizer being in the blade alignment position.

DETAILED DESCRIPTION OF THE PREFERRED EMBODIMENTS

[0021] In accordance with a preferred embodiment of this invention, referring to FIG. 1 and FIG. 2, a multi-pin electrical connector assembly 10, such as is used in the motorized transportation industry to electrically connect electrical signals to electrical devices disposed in a vehicle includes a male connector 12, a female connector 14, and a retractable stabilizer 16 that is disposed in male connector 12 where retractable stabilizer 16 operates in connector assembly 10 having a low coupling force.

[0022] Female connector 14 is releasably coupled to male connector 12 through an open end 18 of male connector 12 to mate together along a mating axis A1. The coupling force is needed to couple, or mate connectors 12, 14 and uncouple, or unmate connectors 12, 14. Connectors 12, 14 are formed from an electrically nonconductive dielectric material. For example, the dielectric material may be a plastic material formed from nylon or polyester. Connectors 12, 14 are injection molded using techniques and methods known in the art. Connector assembly 10 is suitably large such that connectors 12, 14, respectively, include a plurality of female terminals (not shown) axially disposed in female connector 14 that electrically connect, or mate to a plurality of male terminals 13 axially disposed in male connector 12 when connectors 12, 14 are mated together.

[0023] For simplifying the drawings, male terminals 13 are not represented on all the figures but some are shown on FIG. 5. Male terminals 13 in male connector 12 may be different types where some may be a pin-type and others being a blade-type having different blade widths. The corresponding female terminals are different types having different widths that mate with male terminals 13. Male terminals 13 and female terminals are formed of a metallic material, preferably a non-ferrous material. Male terminals 13 are disposed in male connector 12 and may rock or laterally move slightly in male connector 12 in relation to a shroud 24 of male connector 12. Retractable stabilizer 16, best shown on FIG. 3 acts to prealign, and stabilize and prevent rocking of male terminals 13. Distal tips of the male terminals 13 project above upper surface 42 when retractable stabilizer 16 is in the blade alignment position shown on FIG. 5 and FIG. 8.

[0024] Alternately, the male and female terminals may be of a single blade type used in the connector assembly. Connector assembly 10 includes a connection position assurance lock assembly 20 that secures connectors 12, 14 to each other when connector assembly 10 is mated together. Said connection position assurance lock assembly 20 is mounted on the male connector 12 and operatively works in combination with female connector 14 to dislodge and unmate female connector 14 from male connector 12. Many configurations of the connection position assurance lock assembly may be used for connector assembly 10 and are known in the art.

[0025] Referring to FIG. 4, male connector 12 includes a forward projecting circumferential housing, or shroud 24. Shroud 24 defines a cavity, blind bore, or alcove 26 and the retractable stabilizer 16 is disposed in alcove 26 generally perpendicular to mating axis A1. Retractable stabilizer 16 is generally disposed between shroud 24 of male connector 12 and female connector 12 when connectors 12, 14 are mated together, as shown in FIG. 6. Retractable stabilizer 16 is formed of a similar material and injection molded similar to connectors 12, 14, as previously described herein.

[0026] Retractable stabilizer 16 is moveable between a blade alignment position, as best illustrated in FIG. 5 and FIG. 8, and a fully seated position, as best illustrated in FIG. 6, in alcove 26 of shroud 24. Blade alignment position is disposed along axis A1 in a middle or mid-portion of male connector 12. Seated position is disposed axially rearward of blade alignment position deep in a rear portion of alcove 26. In normal operation, retractable stabilizer 16 is disposed in blade alignment position when connector assembly 10 is unmated and disposed in seated position when connector assembly 10 is mated together. Retractable stabilizer 16 may be snap-fitted into alcove 26 of male connector 12 manually by a human operator or automatically by machine placement in an assembly process. Once retractable stabilizer 16 is snap-fitted into blade alignment position of male connector 12, retractable stabilizer 16 remains disposed in male connector 12. With usage and operation of connector assembly 10, retractable connector 26 still remains disposed in cavity 26, preferably in blade alignment position, when connector assembly 10 is unmated.

[0027] Referring to FIGS. 2 and 3, retractable stabilizer 16 includes a generally planar base 40 having a first, or upper surface 42 and a second, or lower surface 44 opposite upper surface 42. Base 40 has a rectangular shape and is about the size of a cross section area of alcove 26. Base 40 is sized so that base 40 does not make contact with inner surface 34 of shroud 24 when disposed at its blade alignment position and seated position in male connector 12. When retractable stabilizer 16 moves between the blade alignment position and the seated position, base 40 moves relatively freely in alcove 26 with little restriction so that base 40 does not provide frictional resistance to movement in shroud 24 during mating and unmating of connector assembly 10 such that the freely

moving base 40 assists retractable stabilizer 16 of connector assembly 10 to have a low coupling force. Base 40 defines a plurality of holes 46. Base 40 also includes a plurality of position arms 48, each of them being provided with a retention feature 49, at least one securing member 52, and a plurality of anti-rocking members 56. In the embodiment shown, each retention feature 49 includes a retention lug 50. Position arms 48 and securing member 52 extend from upper surface 42 of base 40 towards open end 18 of male connector 12 that receives female connector 14. Anti-rocking members 56 extend from lower surface 44 of base 40 in a direction away from open end 18. Female connector 14 is remote from retractable stabilizer 16 and open end 18 when connectors 12, 14 are unmated. Position arms 48 are slightly shifted outwardly from the edge of the base 40 and are received in associated guiding slots 59 provided in the shroud walls in order to ensure axial movement of retractable stabilizer 16 between blade alignment position and seated position. Said guiding slots 59 are constituted of substantially rectangular openings having a transversal width substantially similar to the transversal width of the position arms 48.

[0028] Holes 46 have a footprint on base 40 to align with positioned male terminals in male connector 12. Holes 46 have a corresponding size to accommodate and receive male terminals. Holes 46 are sufficiently sized to allow male terminals to fit through holes 46 where holes 46 do not provide an interference fit for terminals. Thus, holes 46 are sufficiently large for terminals to freely move through holes 46 with marginal frictional force restrictions as retractable stabilizer 16 moves from blade alignment position to seated position, yet are sufficiently small to provide support for terminals. Holes 46 are inwardly beveled so terminals are easily received in holes 46. Additionally, an area of each hole 46 that makes contact with terminal is minimized as terminal moves through hole 46 assisting to keep the coupling force of retractable stabilizer 16 low.

[0029] Referring to FIG. 3, position arms 48 are disposed along an edge 58 of base 40 on the long sides of rectangular base 40. Two position arms 48 are spaced apart along each long side of rectangular base 40. Each position arm 48 includes at its distal end a retention lug 50 extending in parallel to the long sides. Retention lugs 50 of the two position arms 48 arranged on the same side of the edge 58 are facing each other. Each position arm 48 includes an inwardly facing detent 60 at its distal end forming a cam surface for bending outwardly the position arms 48 and allowing the retention lugs 50 to disengage from a complementary associated slot 64 located in the shroud 24 during connector assembly mating operation. Position arms 48 have a length that is sufficient to allow arms 48 to have resilient outward flexure to allow engagement and disengagement of the retaining lugs 50 from their associated slots 64 when retractable stabilizer 16 moves from its blade alignment position to its seated position. The retaining lugs 50 provide axial retention of

the stabilizer 16 in the blade alignment position by engaging upper and lower surfaces of the corresponding notches 64. According to the embodiment shown in FIG. 4, each notch 64 is connected to an axial side of a guiding slot 59. Below each notch 64 there is a slide surface 65 configured to slidably receive the corresponding retaining lug 50 when the stabilizer 16 is moved from its blade alignment position to its seated position.

[0030] Securing member 52 is disposed inbound edge 58 of base 40 and is coaxially located at a center of base 40 to provide uniform draw of retractable stabilizer 16 back to blade alignment position 36. As shown in FIG. 6, securing member 52 is received into a cavity area 63 in female connector 14 when connectors 12, 14 are mated and, as shown in FIG. 7 and 8, securing member 52 is configured to release female connector 14 when retractable stabilizer 16 is disposed at blade alignment position as connector assembly 10 is unmated. Securing member 52 has a V-shape. A base portion of the V-shape is secured at upper surface 42 of base 40 and the extended members 53 of the V-shape extend outwardly angularly away from upper surface 42 of base 40. Ends of the extended members 53 include outwardly facing nibs 72 that engage with shoulders 74 of female connector 14 when connector assembly 10 is mated together. In the embodiment shown, shoulders 74 are located on tabs 73 provided on the inner walls of the cavity area 63 in the female connector. Nibs 72 and shoulders 74 form matching stop surfaces. A desired length of the extended members 53 of the V-shape of the securing member 52 are configured and sized so that the female connector 14 retains securing member 52 until retractable stabilizer 16 reaches blade alignment position and then the extended members 53 have inward flexure towards each other upon action of unlocking members. This is required for female connector 14 to disengage from securing member 52 and to leave retractable stabilizer 16 in blade alignment position.

[0031] Anti-rocking members 56 extending from lower surface 44 of base 40 fit into cavity spaces 76 created in male connector 14 when connectors 12, 14 are mated. Members 56 extend along a length of a long side of rectangular base 40 being spaced apart from one another. Another anti-rocking member extends from lower surface 44 opposite securing member 52 that also assists to structurally align male terminals 19 during movement of retractable stabilizer 16 between blade alignment position and seated position. Members 56 assist to prevent off-axial movement of retractable stabilizer 16 that may undesirably bend or damage male terminals. Members 56 and spaces 76 are sized to make contact only if retractable stabilizer is tilted off-axis during mating or unmating of female connector 14 from connector assembly 10. The sizing of cavity spaces 76 keeps retractable stabilizer 16 from being tilted sufficiently far that may bend and damage terminals. Since there is no frictional contact between members 56 and spaces 76 during mating an unmating of connector assembly 10, this assists retract-

able stabilizer 16 of connector assembly 10 to have a low coupling force. Anti-rocking members 56 ensure movement of retractable stabilizer 16 occurs in axial direction between position blade alignment position and seated position to best stabilize and protect male terminals when connector assembly 10 is mated and unmated.

[0032] According to the embodiment shown, the male connector 12 comprises two unlocking arms 78 extending in parallel to the mating axis A1 through corresponding slits 80 provided in the base 40. The unlocking arms 78 have actuating surfaces 82 in the form of bumps inwardly facing each other. The female connector 14 comprises two intermediate unlocking arms 84 having cam surfaces 86 configured to cooperate with the actuating surfaces 82 of the unlocking arms 78, during connector assembly unmating operation, in order to generate inward flexure of the securing member 52 and allow disengagement of the nibs 72 from the shoulders 74, as shown in FIG. 7. The cam surfaces 86 here have a bump shape similar to the actuating surfaces 82 in order to provide smooth low friction contact between them during mating and unmating operation. Unlocking arms 78 are received within corresponding cavities 88 of the female connector 14 when the connector assembly is mated, as shown in FIG. 6.

[0033] When male and female connector 12, 14 are not mated, female connector 14 is remote from open end 18 of male connector 12. Retractable stabilizer 16 is disposed in blade alignment position of alcove 26 of male connector 12. Retaining lugs 50 on position arms 48 are received in their corresponding notches 64.

[0034] Referring to FIGS. 6, 7 and 8, when male and female connector 12, 14 are unmated, female connector 14 is first inserted into open end 18. Female terminals (not shown) engage distal tips of male terminals disposed above upper surface 42 of retractable stabilizer 16. As the connection process continues, female connector 14 engages securing member 52 and reaches the initial insertion position shown in FIG. 7. From this initial insertion position to the mated position of FIG. 6, nibs 72 of extending members of securing member 52 slide along a surface of cavity area 63 of female connector 14 receiving securing member 52 and ride over tabs 73 in cavity area 63 to seat at shoulders 74. During this connection process, unlocking arms 84 enter into corresponding cavities 88 of the female connector 14 and actuate the intermediate unlocking arms 84 to flex the extending members of the securing member 52 inwardly and allow them to ride over tabs 73, as shown in the intermediate position of FIG. 7. A forward face 54 of female connector 14 engages the upper face 42 of base 40 of retractable stabilizer 16 urging retractable stabilizer 16 away from blade alignment position to seated position shown in FIG. 6. Also during this connection process, forward face 54 of female connector 12 engages detents 60 of position arms 48 flexing them outwardly such that retention lugs 50 disengage from their notches 64 in the shroud 24. Retractable stabilizer 16 attains seated position when lower

surface 44 of retractable stabilizer 16 contacts a surface of male connector 12 deep in cavity 26.

[0035] When male and female connector 12, 14 are unmated, female connector 14 pulls against securing member 52 locked at shoulders 74. Retractable stabilizer 16 moves from seated position 38 (FIG. 6) towards blade alignment position (FIG. 8). The female terminals (not shown) increasingly unconnect from male terminals as base 40 stabilizes male terminals while a decreasing portion of male terminals remain above upper surface 42. When the actuating surfaces 82 of unlocking arms 78 engage cam surfaces 86 of intermediate unlocking arms 84, intermediate unlocking arms 84 are flexed inwardly and engage nibs 72 of the securing member 52 (FIG. 7) to unlock securing member 52 and to allow disengagement of female connector 14 from stabilizer 16. In parallel, as forward face 54 of female connector 12 over ride detents 60, position arms 48 are released allowing them to flex back to their axial orientation wherein retention lugs 50 are received in corresponding notches 64 of the shroud 24, such that forward motion of retractable stabilizer 16 is halted in alcove 26 and retractable stabilizer 16 is secured at blade alignment position. As female connector 14 continues to disconnect from male connector 12, retention lugs 50 hold retractable stabilizer 16 at blade alignment position and extending members of securing member 52 engaging female connector 14 flex inward as tabs 73 ride over nibs 72. When tabs 73 are free of nibs 72, female connector 14 is free from retractable stabilizer 16. Female terminals (not shown) disconnect from distal ends of male terminals while female connector 14 disconnects from shroud 24 of male connector 12 making female connector 14 free from male connector 12 completing the uncoupling of connector assembly 10.

[0036] Alternately, for clarification and not by way of limitation, the geometries of the base, position arms, retention features, and the securing member and other elements of the low coupling force retractable stabilizer may be sized according to the geometries of the connector assembly being employed.

[0037] Thus, a reliable connector assembly is provided that includes a retractable stabilizer having low coupling force where the retractable stabilizer stabilizes the male terminals in the male connector when the connector assembly is mated and unmated. The retractable stabilizer only slidingly connects with an inner surface of the male connector along the faces of the position arms and retention feature when the retractable stabilizer moves between the blade alignment position and the seated position in an alcove of the male connector that assists the retractable stabilizer to have a low coupling force. The holes in the base receiving the male terminals are sized to not provide frictional forces during movement of the retractable stabilizer between the blade alignment position and the seated position that also assists to ensure the retractable stabilizer of the connector assembly has a low coupling force. Anti-rocking members of the retractable stabilizer prevent off-axis tilting of the retractable

stabilizer and ensure axial movement of the retractable stabilizer between the blade alignment and seated position over repeated cycles of operation of the connector assembly. The anti-rocking members may prevent damage to the male terminals in the male connector.

[0038] While this invention has been described in terms of the preferred embodiment thereof, it is not intended to be so limited, but rather only to the extent set forth in the claims that follow.

Claims

1. Electrical connector assembly (10) comprising a female connector (14) and a male connector (12) releasably coupled to said female connector (14) along a mating axis (A1) so that a plurality of female terminals disposed in the female connector (14) are matable to a plurality of male terminals in the male connector (12), the male connector (12) including a shroud (24) that includes a generally planar retractable stabilizer (16) perpendicular to said axis (A1) and disposed in the shroud (24), said shroud (24) including at least one blocking feature (64), said retractable stabilizer (16) being movable in said shroud (24) between a blade alignment position when the connector assembly (10) is unmated and a seated position when the connector assembly (10) is mated together, the seated position being axially remote from the blade alignment position, said retractable stabilizer (16) including a base (40) defining a plurality of holes (46) therethrough adapted for receiving the plurality of terminals,
characterized in that the base (40) includes:

- at least one position arm (48) extending from the base (40) and cooperating with said shroud blocking feature (64) for securing the retractable stabilizer (16) in the blade alignment position when the connector assembly (10) is unmated,
- at least one securing member (52) extending from the base (40) in cooperation with the female connector (14) when the connector assembly (10) is mated together and configured to release the female connector (14) when the retractable stabilizer (16) is disposed at the blade alignment position during connector assembly unmating operation,

and **in that** said male connector (12) further comprises at least one unlocking arm (78) configured to unlock said securing member (52) during connector assembly unmating operation for releasing the female connector (14).

2. Electrical connector assembly (10) according to the preceding claim wherein the female connector (14) comprises at least one intermediate unlocking arm

- (84) having a cam surface (86) configured to cooperate with an actuating surface (82) of the male connector unlocking arm (78) in order to unlock said securing member (52) during connector assembly unmating operation.
3. Electrical connector assembly (10) according to the preceding claim wherein said at least one securing member (52) comprises at least one stop surface (72), said at least one stop surface (72) being engaged with a shoulder (74) of the female connector (14) when the connector assembly (10) is mated together, and wherein the intermediate unlocking arm (84) is configured to bend the securing member (52) until said securing member stop surface (72) is shifted with regard to the shoulder (74) of the female connector (14) during connector assembly unmating operation thereby unlocking said securing member (52).
 4. Electrical connector assembly (10) according to anyone of the preceding claims wherein said male connector unlocking arm (78) extends along the mating axis (A1) through a slit (80) provided in the base (40).
 5. Electrical connector assembly (10) according to anyone of the preceding claims wherein said position arm (48) comprises at least one retaining lug (50), said retaining lug (50) being received in a complementary notch (64) of the shroud (24) when the stabilizer (16) is in the blade alignment position, in order to prevent the retractable stabilizer (16) from moving beyond the blade alignment position in the shroud (24) during connector assembly unmating operation and in order to retain the stabilizer (16) in the blade alignment position.
 6. Electrical connector assembly (10) according to the preceding claim wherein said position arm (48) comprises a cam surface (60) which cooperates with the female connector (14) during insertion of the female connector (14) into the shroud (24), from the unmated position to the mated position, to provide outward bending of said position arm (48) such that the retaining lug (50) moves out of the complementary notch (64) and releases the stabilizer (16) from its blade alignment position.
 7. Electrical connector assembly (10) according to anyone of the preceding claims wherein said position arm (48) is guided along the mating axis (A1) within a guiding slot (59) provided in the shroud wall during mating and unmating operation of the connector assembly (10).
 8. Electrical connector assembly (10) according to anyone of the preceding claims wherein said base (40) comprises at least four position arms (48) extending from at least two opposite edges of the base (40), said base (40) being substantially of rectangular shape.
 9. Electrical connector assembly (10) according to anyone of the preceding claims wherein said securing member (52) comprises two extended members (53) configured to cooperate respectively with two unlocking arms (78) of the male connector (12).
 10. Electrical connector assembly (10) according to anyone of the preceding claims wherein said base (40) comprises a plurality of anti-rocking members (56).

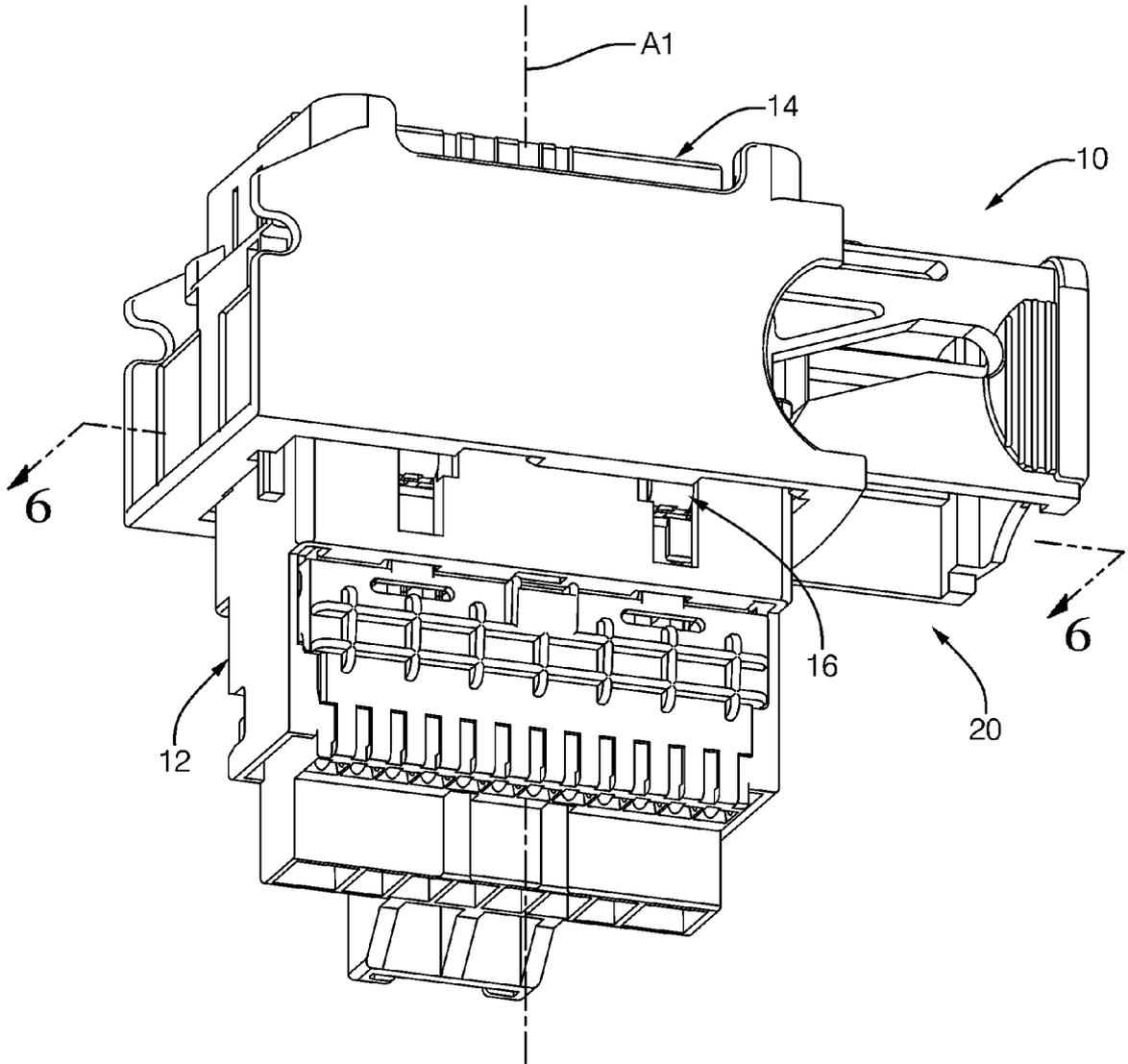


FIG. 1

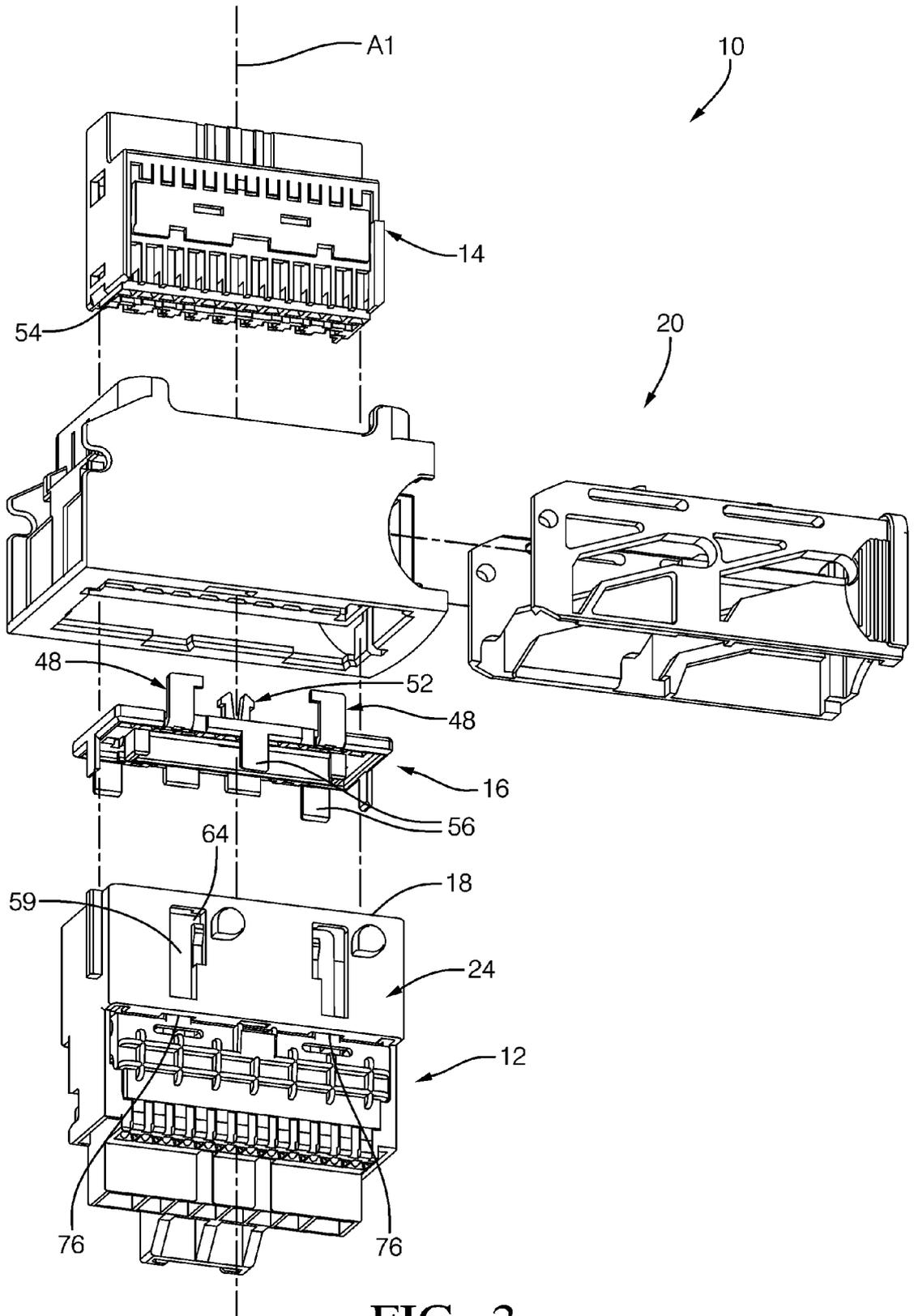


FIG. 2

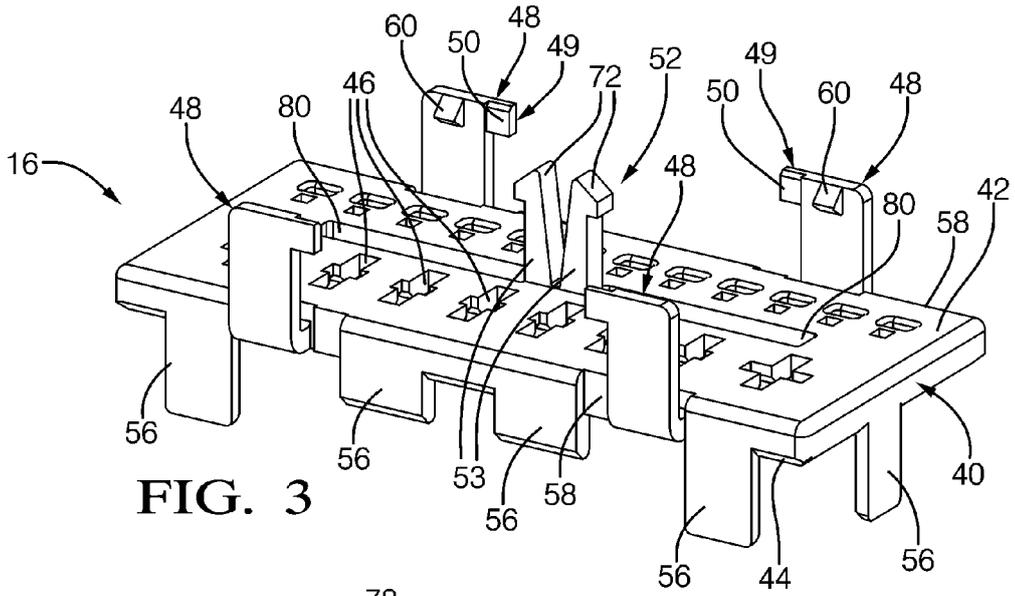


FIG. 3

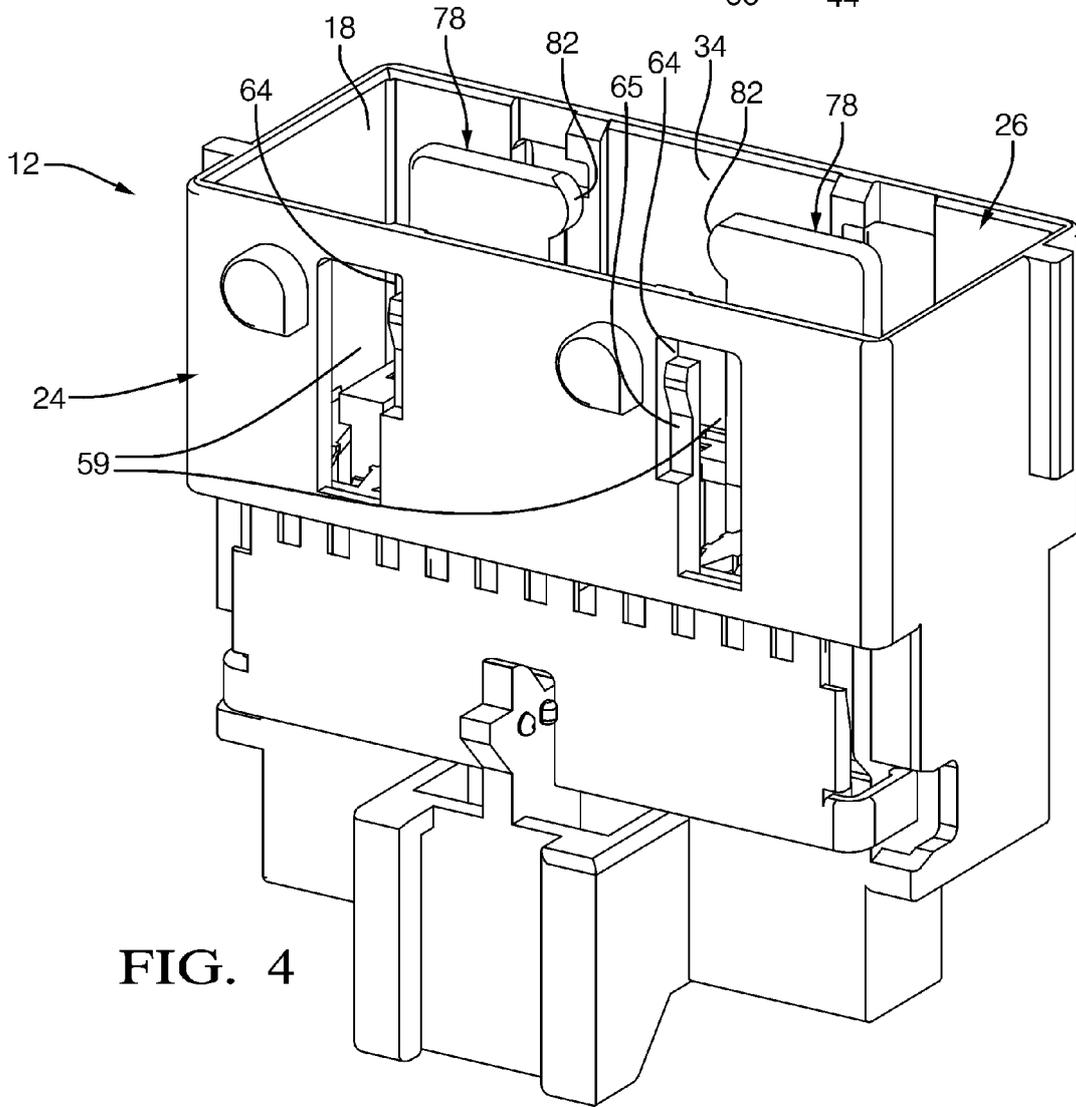


FIG. 4

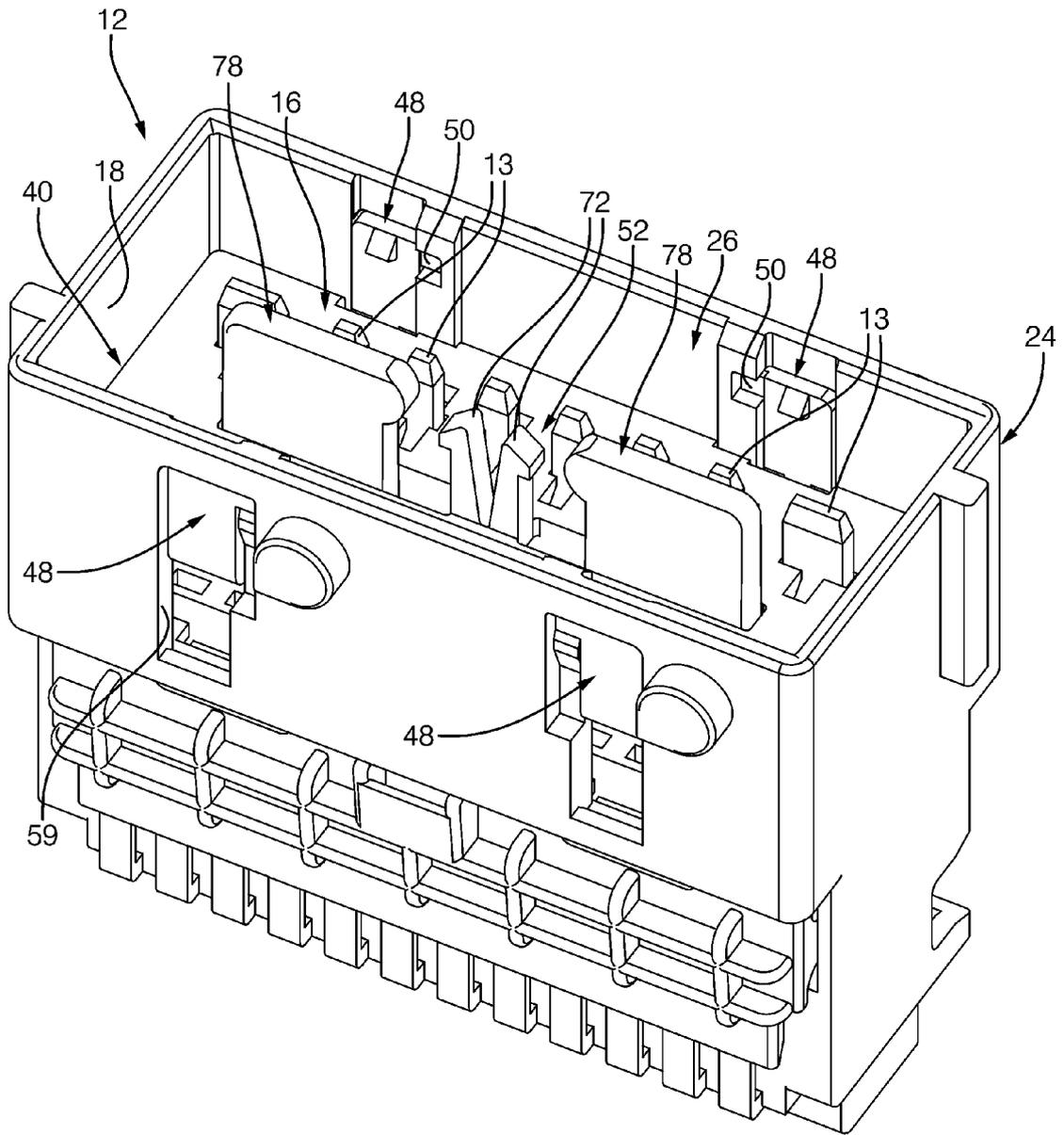


FIG. 5

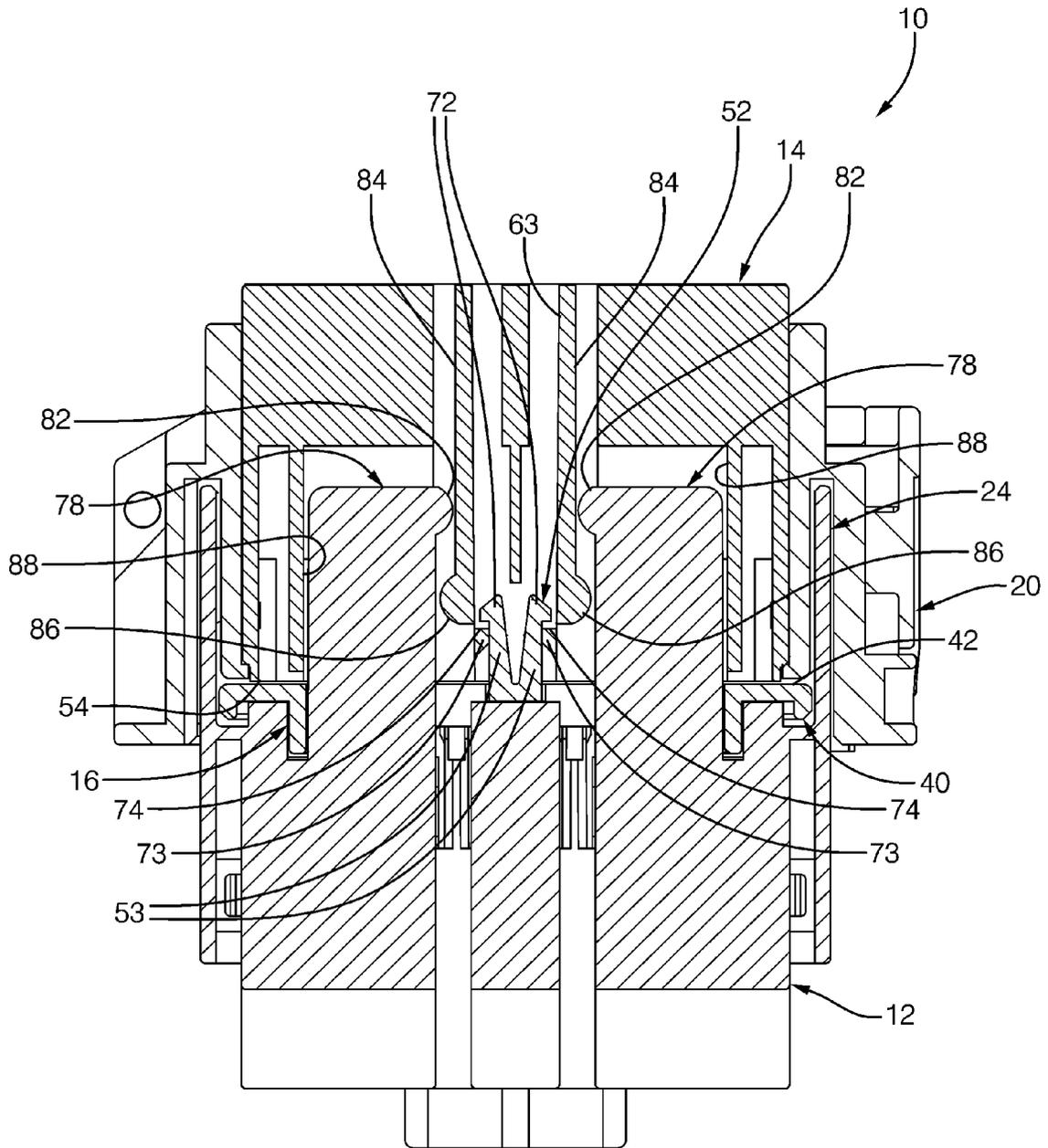


FIG. 6

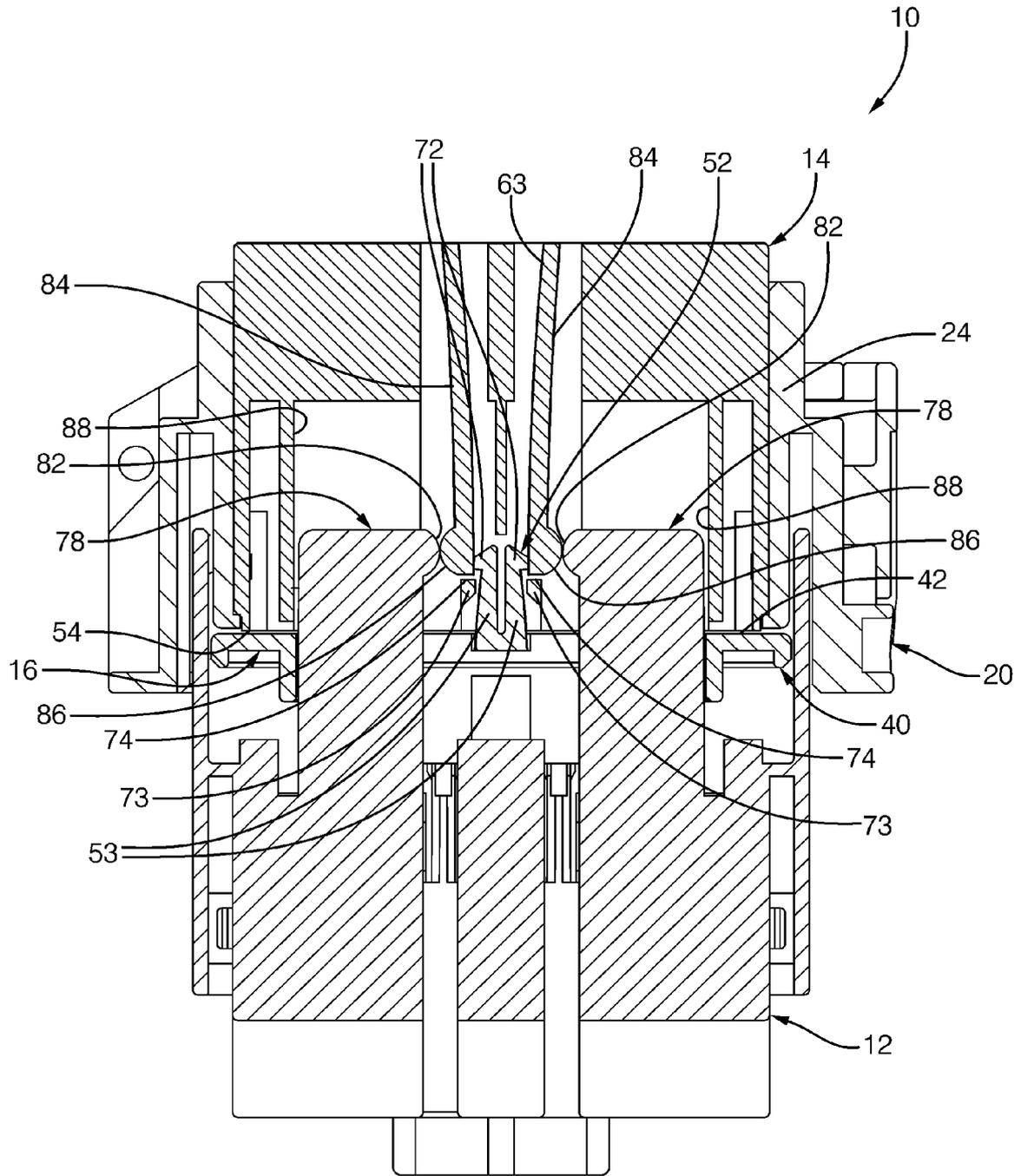


FIG. 7

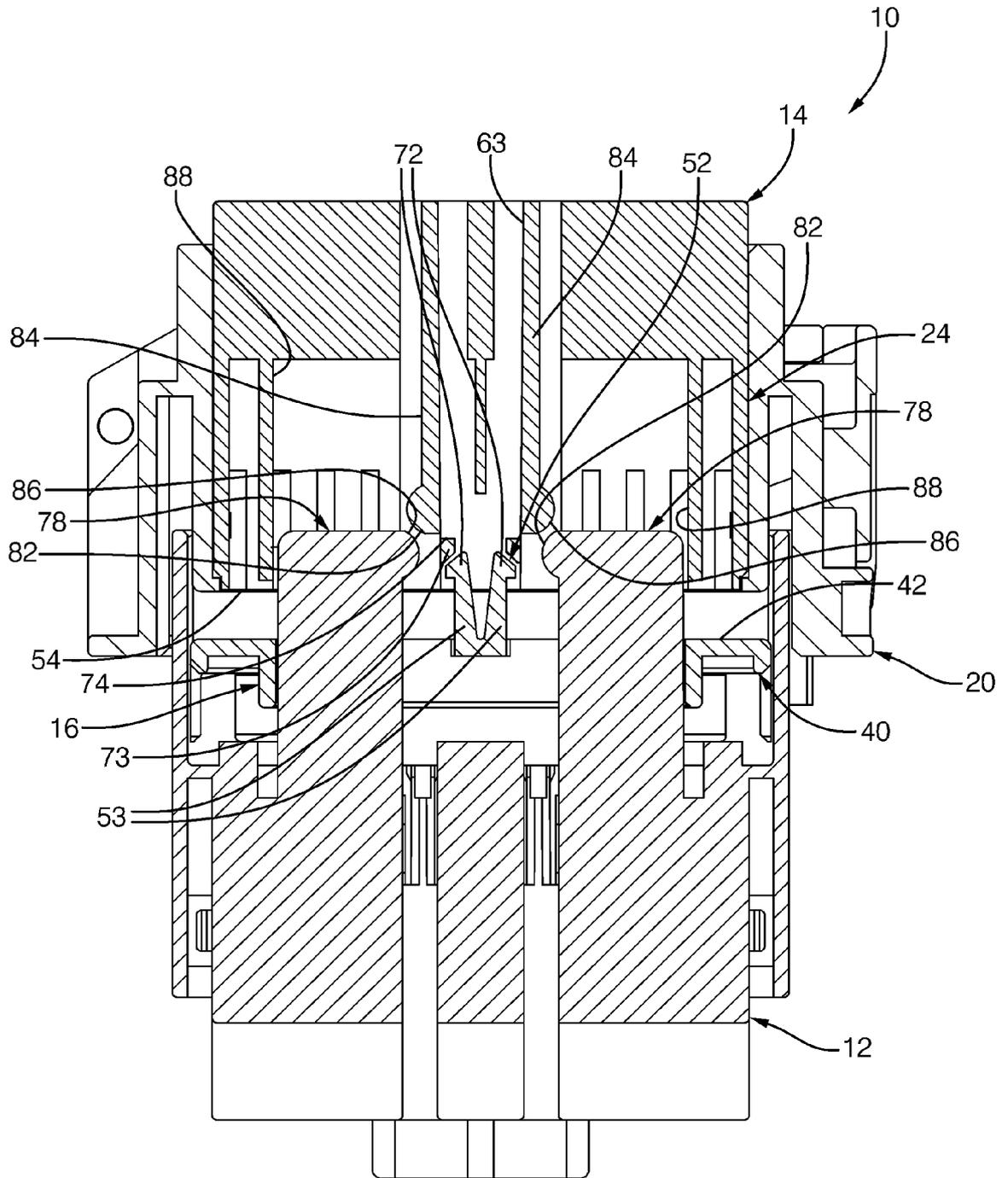


FIG. 8



EUROPEAN SEARCH REPORT

Application Number
EP 11 18 1933

DOCUMENTS CONSIDERED TO BE RELEVANT			
Category	Citation of document with indication, where appropriate, of relevant passages	Relevant to claim	CLASSIFICATION OF THE APPLICATION (IPC)
A	EP 1 443 607 A2 (DELPHI TECH INC [US]) 4 August 2004 (2004-08-04) * column 3 - column 7; figures 4-8 *	1-10	INV. H01R13/631
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