(19) Europäisches Patentamt
European Patent Office
Office européen des brevets

(11) EP 0 977 321 A1

(12) EUROPEAN PATENT APPLICATION

(43) Date of publication:
02.02.2000 Bulletin 2000/05

(51) Int. Cl.[7]: **H01R 13/506**

(21) Application number: **99202103.0**

(22) Date of filing: **29.06.1999**

(84) Designated Contracting States:
AT BE CH CY DE DK ES FI FR GB GR IE IT LI LU MC NL PT SE
Designated Extension States:
AL LT LV MK RO SI

(30) Priority: **29.07.1998 DE 19834203**

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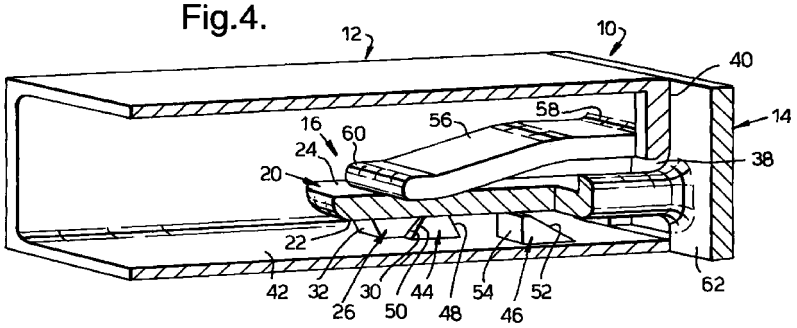
(54) Two-part electrical connector housing

(57) A two-part housing (10) for an electrical connector comprising a first part (12) having a surface (40) with an opening (38) therethrough, and a second part (14) having a substantially rigid arm (20) extending from a surface (62) of the second part, the rigid arm being capable of passing through the opening to latch the first and second parts together; the rigid arm having a first side (22) and a second side (24), the first side having a first tab (26) with a first surface (30) directed towards the surface of the second part and a second surface (32) directed away from the surface of the second part, the second surface being at an angle to the first side; the first part having a wall (42) adjacent the opening and extending away from the surface, the wall having a first tab (44) with a first surface (48) directed towards the opening and a second surface (50) directed away from the opening, the first surface being at an angle to the wall; the first surface of the first tab on the wall engaging the second surface on the first tab on the rigid arm during latching of the first and second parts, and the second surface of the first tab on the wall being positioned adjacent the first surface on the first tab on the rigid arm after latching of the first and second parts; and a resilient arm (56) positioned on the opposite side of the opening to the wall and overlying the first tab on the wall, the resilient arm engaging the second side of the rigid arm during and after latching of the first and second parts to bias the first side of the rigid arm towards the wall. Ensures positive latching of the first and second parts.

Fig.4.



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Description

Technical Field

[0001] The present invention relates to a two-part housing for an electrical connector.

Background of the Invention

[0002] It is known to provide a two-part housing for an electrical connector in which the two parts of the housing make a sliding snap fit together. One of the parts of the housing has a substantially rigid arm with a latching tab. The other part has a corresponding opening adjacent a wall with a corresponding latching tab. To latch the two parts of the housing together, the arm is pushed through the opening and the tab on the arm makes a snap fit behind the tab on the wall. However, if the two parts are not accurately positioned relative to one another, for example, when the arm is at an angle to the wall, the tabs may fail to latch together.

Summary of the Invention

[0003] It is an object of the present invention to overcome the above mentioned disadvantage.

[0004] A two-part housing in accordance with the present invention for an electrical connector comprises a first part having a surface with an opening therethrough, and a second part having a substantially rigid arm extending from a surface of the second part, the rigid arm being capable of passing through the opening to latch the first and second parts together; the rigid arm having a first side and a second side, the first side having a first tab with a first surface directed towards the surface of the second part and a second surface directed away from the surface of the second part, the second surface being at an angle to the first side; the first part having a wall adjacent the opening and extending away from the surface, the wall having a first tab with a first surface directed towards the opening and a second surface directed away from the opening, the first surface being at an angle to the wall; the first surface of the first tab on the wall engaging the second surface on the first tab on the rigid arm during latching of the first and second parts, and the second surface of the first tab on the wall being positioned adjacent the first surface on the first tab on the rigid arm after latching of the first and second parts; and a resilient arm positioned on the opposite side of the opening to the wall and overlying the first tab on the wall, the resilient arm engaging the second side of the rigid arm during and after latching of the first and second parts to bias the first side of the rigid arm towards the wall.

[0005] The resilient arm ensures that the rigid arm is biased towards the wall to maintain the latch engagement between the first tabs.

Brief Description of the Drawings

[0006] The present invention will now be described, by way of example, with reference to the accompanying drawings, in which:-

Figure 1 is an exploded view of a two-part housing in accordance with the present invention;
Figure 2 is a cross-sectional view of the latching means on the two parts of the housing of Figure 1 prior to latching;
Figure 3 is a cross-sectional view similar to Figure 2 with the two parts of the housing in an initial latched positioned; and
Figure 4 is a cross-sectional view similar to Figure 2 with the two parts of the housing in a final latched position.

Description of the Preferred Embodiment

[0007] Referring to Figure 1, the two-part housing 10 in accordance with the present invention comprises a first part 12 and a second part 14 which makes a snap fit with the first part by one (as shown) or more latching means 16 (described in more detail below). The housing 10 is part of an electrical connector and the first part 12 typically houses electrical terminals and components (not shown for the sake of clarity), and the second part 14 (when latched to the first part) retains the terminals and components in the first part. The second part 14 typically has apertures 18 therein through which corresponding electrical terminals may extend to make an electrical connection with terminals inside the housing 10.

[0008] Referring to Figure 2 to 4, the latching means 16 includes a substantially rigid arm 20 which is attached to, preferably integrally moulded with, a surface 62 of the second part 14 of the housing 10 and extends away from the surface in a direction A. The arm 20 has a first side 22 and an opposed second side 24. A first tab 26 and a second tab 28 are formed on the first side 22 of the arm 20 and positioned substantially adjacent one another in a direction substantially perpendicular to direction A. The first tab 26 has a first surface 30 facing the surface 62 of the second part 14 and a second surface 32 facing away from the surface of the second part. The first and second surfaces 30,32 are preferably at an acute angle to the first side 22 of the arm 20 such that the first tab 26 has a substantially trapezoidal shape. The second tab 28 has a first surface 34 facing the surface 62 of the second part 14 and a second surface 36 facing away from the surface of the second part. The first surface 34 is preferably substantially perpendicular to the first side 22 of the arm 20, and the second surface 36 is preferably at an acute angle to the first side. The first and second tabs 26,28 may be integrally connected.

[0009] The latching means 16 further includes an

opening 38 formed in a surface 40 of the first part 12 of the housing 10. A wall 42 is integrally formed with the first part 12 and is positioned adjacent to, and internally of, the opening 38. The wall 42 extends away from the opening 38 in a direction B substantially perpendicular to the surface 40. A first tab 44 and a second tab 46 are formed on the wall 42 with the second tab positioned closer to the opening 38 than the first tab in the direction B, and offset from one another in a direction substantially perpendicular to direction B. The first tab 44 has a first surface 48 facing the opening 38 and a second surface 50 facing away from the opening. The first and second surfaces 48,50 are preferably at an acute angle to the wall 42 such that the first tab 44 has a substantially trapezoidal shape. The second tab 46 has a first surface 52 facing the opening 38 and a second surface 54 facing away from the opening 38. The first surface 52 is preferably at an acute angle to the wall 42, and the second surface 54 is preferably substantially perpendicular to the wall.

[0010] The latching means 16 still further includes a resilient arm 56 positioned on the opposite side of the opening 38 to the wall 42, and preferably integrally moulded with the first part 12 of the housing 10. The resilient arm 56 overlies the first and second tabs 44,46 on the wall 42, and has a fixed end 58 adjacent the opening 38 and a free end 60 which is normally closer to the wall than the fixed end. The minimum gap between the free end 60 of the resilient arm 56, or any other portion of the resilient arm, and the first tab 44 is substantially the same as or less than the distance between the first and second sides 22,24 of the rigid arm 20.

[0011] The latching means 16 operates by pushing the second part 14 of the housing 10 towards the first part 12 such that the rigid arm 20 passes through the opening 38 as shown in Figure 2, and directions A and B are substantially aligned.

[0012] Further relative movement of the first and second parts 12,14 towards one another initially causes the second surface 36 of the second tab 28 on the rigid arm 20 to engage the first surface 52 of the second tab 46 on the wall 42, then slide relative to one another until the second tabs pass one another and make a snap fit. In this position, as shown in Figure 3, the first surface 34 of the second tab 28 on the rigid arm 20 is positioned adjacent the second surface 54 of the second tab 46 on the wall 42, and the resilient arm 56 engages the second side 24 of the rigid arm 20 to bias the rigid arm towards the wall to exert a retaining force on the rigid arm.

[0013] Still further movement of the first and second parts 12,14 towards one another initially causes the second surface 32 of the first tab 26 on the rigid arm 20 to engage the first surface 48 of the first tab 44 on the wall 42, then slide relative to one another until the first tabs pass one another and make a snap fit. In this position, as shown in Figure 4, the first surface 30 of the first tab 26 on the rigid arm 20 is positioned adjacent the second surface 50 of the first tab 44 on the wall 42, and the resilient arm 56 continues to engage the second side 24 of the rigid arm 20 to bias the rigid arm towards the wall to exert a retaining force on the rigid arm.

[0014] The presence of the resilient arm 56 ensures that the first and second parts 12,14 of the housing 10 remain accurately aligned (that is, directions A and B remain aligned) during and after the latching process, and retain the two parts in latching engagement.

[0015] The first surface 30 of the first tab 26 on the rigid arm 20 and the second surface 50 of the first tab 44 on the wall 42 being at an angle is optional and may be replaced by perpendicular surfaces. However, the angled surfaces 30,50 allow easier disassembly from the final latched position shown in Figure 4 to the initial latched position shown in Figure 3. The presence of the second tabs 28,46 on the rigid arm 20 and the wall 42 is optional and may be omitted.

Claims

1. A two-part housing (10) for an electrical connector comprising a first part (12) having a surface (40) with an opening (38) therethrough, and a second part (14) having a substantially rigid arm (20) extending from a surface (62) of the second part, the rigid arm being capable of passing through the opening to latch the first and second parts together; the rigid arm having a first side (22) and a second side (24), the first side having a first tab (26) with a first surface (30) directed towards the surface of the second part and a second surface (32) directed away from the surface of the second part, the second surface being at an angle to the first side; the first part having a wall (42) adjacent the opening and extending away from the surface, the wall having a first tab (44) with a first surface (48) directed towards the opening and a second surface (50) directed away from the opening, the first surface being at an angle to the wall; the first surface of the first tab on the wall engaging the second surface on the first tab on the rigid arm during latching of the first and second parts, and the second surface of the first tab on the wall being positioned adjacent the first surface on the first tab on the rigid arm after latching of the first and second parts; and a resilient arm (56) positioned on the opposite side of the opening to the wall and overlying the first tab on the wall, the resilient arm engaging the second side of the rigid arm during and after latching of the first and second parts to bias the first side of the rigid arm towards the wall.

2. A two-part housing as claimed in Claim 1, wherein the first surface (30) of the first tab (26) on the rigid arm (20) is at an angle to the first side (22) of the rigid arm; and wherein the second surface (50) of the first tab (44) on the wall (42) is at an angle to the

wall.

3. A two-part housing as claimed in Claim 1 or Claim 2; wherein the rigid arm (20) has a second tab (28) on the first side (22), the second tab having a first surface (34) directed towards the surface (62) of the second part (14) and a second surface (36) directed away from the surface of the second part, the second surface being at an angle to the first side; and wherein the wall (42) has a second tab (46), the second tab having a first surface (52) directed towards the opening (38) and a second surface (54) directed away from the opening, the first surface being at an angle to the wall; the first surface of the second tab on the wall engaging the second surface on the second tab on the rigid arm during latching of the first and second parts, and the second surface of the second tab on the wall being positioned adjacent the first surface on the second tab on the rigid arm before the first surface (48) of the first tab (44) on the wall engages the second surface (32) on the first tab (26) on the rigid arm during latching of the first and second parts.

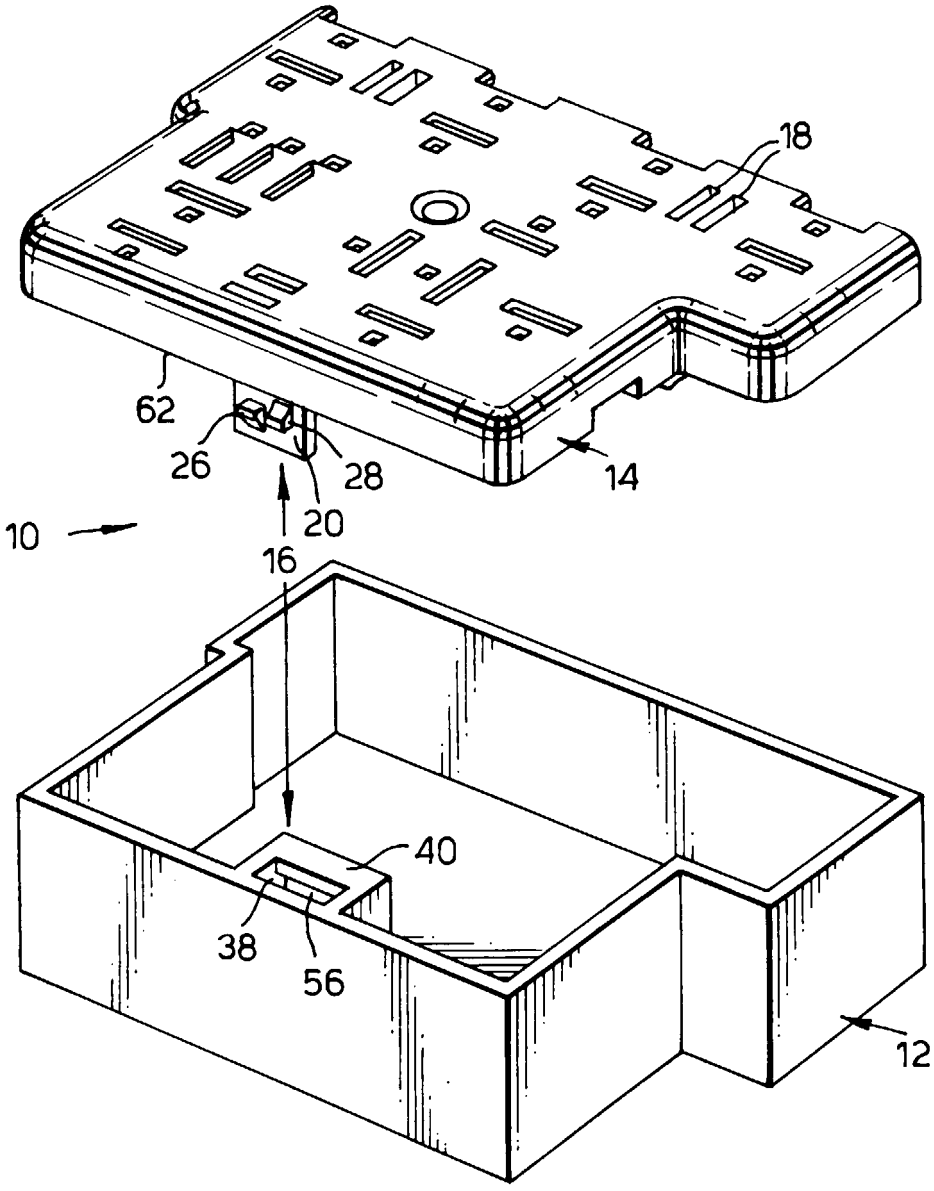
4. A two-part housing as claimed in Claim 3, wherein the first and second tabs (26,28) on the first side (22) of the rigid arm (20) are positioned adjacent one another.

5. A two-part housing as claimed in Claim 3 or Claim 4, wherein the first surface (34) on the second tab (28) on the rigid arm (20) is substantially perpendicular to the first side (22); and wherein the second surface (54) on the second tab (46) on the wall (42) is substantially perpendicular to the wall.

6. A two-part housing as claimed in any one of Claims 1 to 5, wherein the first part (12) and the resilient arm (56) are integrally moulded from plastics material.

7. A two-part housing as claimed in any one of Claims 1 to 5, wherein the second part (14) and the rigid arm (20) are integrally moulded from plastics material.

Fig.1.



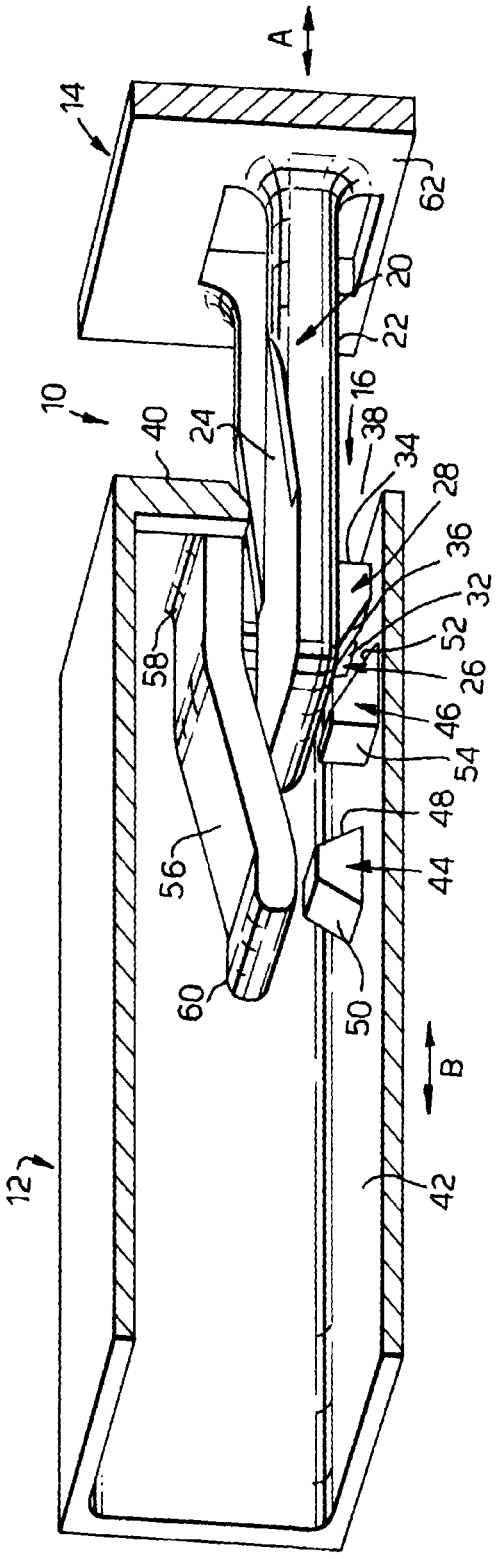

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Fig.2

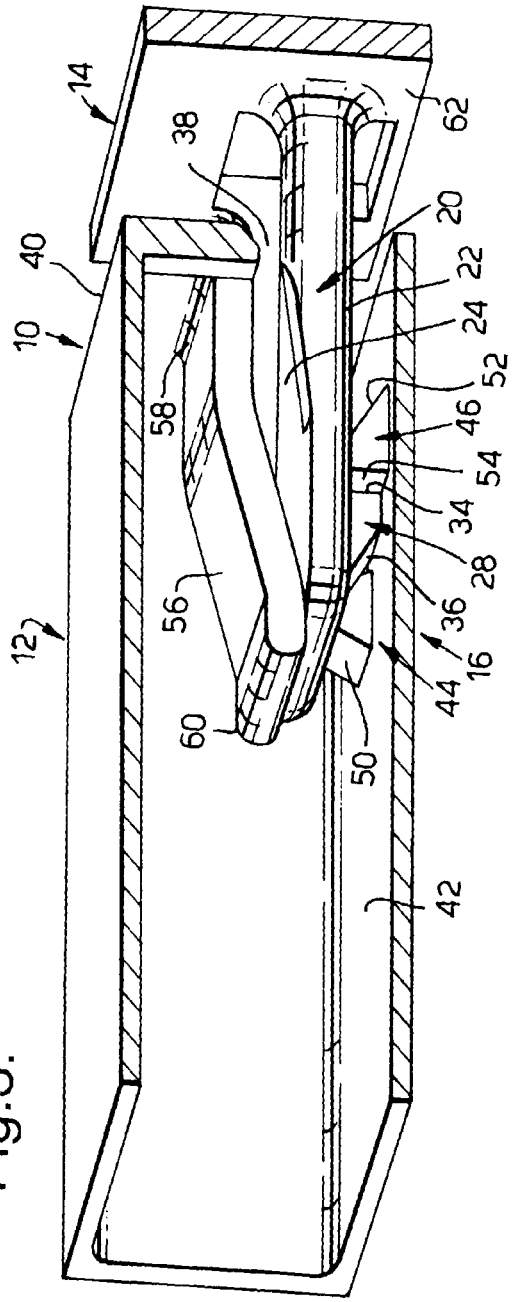
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Fig.3.

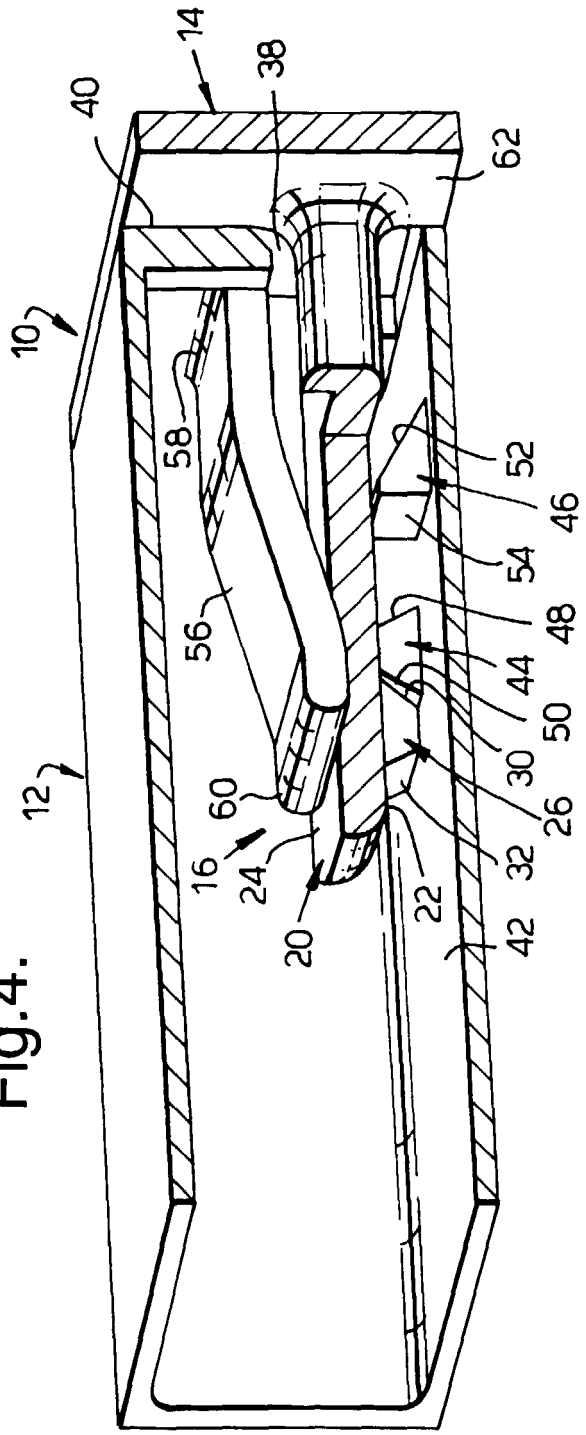

Fig.4.

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EUROPEAN SEARCH REPORT

Application Number
EP 99 20 2103

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The present search report has been drawn up for all claims

Place of search	Date of completion of the search	Examiner
BERLIN	18 October 1999	Alexatos, G

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