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

(11) EP 1 180 824 A2

(12) EUROPEAN PATENT APPLICATION

(43) Date of publication:
20.02.2002 Bulletin 2002/08

(51) Int Cl.[7]: **H01R 13/627**

(21) Application number: **01118678.0**

(22) Date of filing: **03.08.2001**

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

(30) Priority: **08.08.2000 DE 10038684**

(71) Applicant: **Tyco Electronics AMP GmbH**
64625 Bensheim (DE)

(72) Inventor: **Gimbel, Markus**
85139 Wettstetten (DE)

(74) Representative: **Heinz-Schäfer, Marion**
Tyco Electronics Logistics AG Ampèrestrasse 3
9323 Steinach (CH)

(54) Plug for a connector arrangement

(57) Plug for a connector assembly, consisting of a plug and an accompanying mating plug, the plug having a connector housing (20) on which a locking latch (10) is arranged which, during the mating of the connector assembly, the locking latch comes into contact with a portion of the mating plug, whereby the locking latch is designed as a separate part which can be connected to the housing.

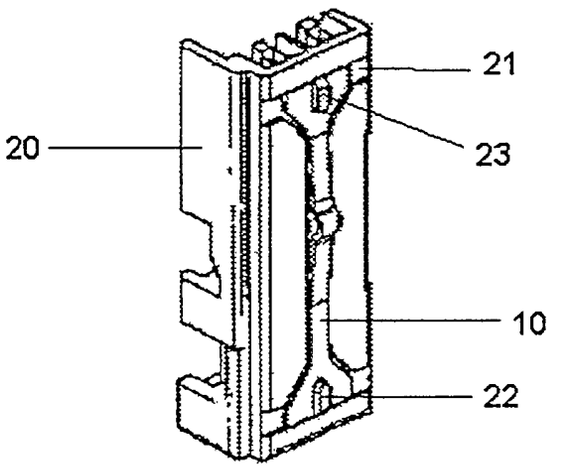

Fig. 2

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Description

[0001] The invention relates to a plug for a connector arrangement consisting of a plug and an accompanying mating plug according to the preamble of claim 1.

[0002] Connector arrangements are common components in electrical networks, for instance telecommunication networks or on board networks in motor vehicles. By means of a plug and an accompanying mating plug of the connector arrangement, a cable is connected to another cable or to further components of the electrical network.

[0003] In any environment, the plug and mating plug are securely held together to insure for a positive electrical connection. One such method of securing or locking the components together utilizes a locking latch in the connector housing. As the plug and mating plug are mated together, the plug comes into contact with a correspondingly formed recess of the mating plug.

[0004] The plug and the mating plug of the connector arrangement are not always produced by the same manufacturer and are rarely standardised in their concrete embodiment. Therefore connector arrangements are typically developed with varying permissible variations (tolerances). Therefore, during the mating and unmating of the connector components, i.e. the plug and the mating plug, there is a danger that the tolerances will vary and the locking means will not function properly, i.e. the locking latch of the plug could be shorn off. In addition, as plugging behaviour can vary, and since the necessary force for joining or detaching the locking varies noticeably, the problem of ineffective latching is magnified.

[0005] It is the object of the invention to provide a plug for use in a connector assembly, which displays a more standardised plugging behaviour with relation to mating plugs manufactured with permissible tolerances.

[0006] This object is achieved by a plug displaying the characterising features of claim 1. The subclaims describe preferred embodiments of the invention.

[0007] In accordance with the invention, a plug for a connector arrangement or assembly has a connector housing with a locking latch secured thereto, such that during mating of the plug to a mating receptacle or plug, the locking latch comes into contact with part of the mating plug. The locking latch is a separate part which can be connected to the housing. The locking latch can be designed independently of the housing and can therefore be connected to mating plugs with varying permissible variations.

[0008] The locking latch may be made of a material which displays greater strength characteristics than the material of the housing. This enables a secure connection of the plug and mating plug, over many cycles (insertion/withdrawal) and prevents the shearing off of the locking latch after only a few cycles, as is the case with conventional plugs.

[0009] The connector housing may be manufactured from a synthetic material, since it is easy to manufacture and has a low net weight.

[0010] An alternate embodiment of the plug is achieved when the locking latch is designed as a metal member with a locking projection. In comparison with customary synthetic materials, the metal does not wear off as easily and can be manufactured at a low cost due to an easily accomplished punching or deep-drawing process.

[0011] In one embodiment, the locking latch is arranged on an outside wall of the housing and comprises a fastening device for fastening the locking latch to the housing wall.

[0012] According to another embodiment of the plug, a recess is provided in the side wall of the housing and extends under part of the locking latch, enabling the mating plug to press the locking latch into the recess in a resilient manner. In this embodiment, the insertion forces required for locking the plug with the mating plug can be reduced.

[0013] Embodiments of the invention will be described hereinafter with reference to the figures, in which:

Figure 1a and 1b shows perspective views of the locking latch;
Figure 2 shows a sectional drawing of a connector housing part with a locking latch secured to it;
Figure 3 shows a perspective view of the connector housing part with a housing cover; and
Figure 4a and 4b shows a front and sectional view of the connector housing part with the locking latch.

[0014] Figure 1 shows a separate locking latch which can be connected to a housing (as shown in Figure 2). In this embodiment, the locking latch is a metal member 10 with a locking projection 11. The metal member 10 has parts or arms 12, 13 which extend in opposite directions from the projection 11. V-shaped widened sections are provided at free ends of arms 12, 13, the sections have recesses extending therethrough.

[0015] As is shown in Figure 2, the metal member 10 is secured to a side wall of a connector housing part 20 of a connector assembly. The metal member extends in a direction which is essentially parallel to the longitudinal axis of the housing part 20 and to the axis of mating of the plug and mating plug. A recess or indentation 21 is formed in the side wall of the housing part 20 in such a manner that it can accommodate the metal member 10. With the locking latch positioned in the housing recess 21, the recesses 14 and 15 cooperate with projections 22, 23 extending from the sidewall to secure the metal member to the housing part 20. Alternatively, the fastening of the locking latch to the connector housing can also be achieved by means of ultrasonic or heat caulking.

[0016] Figure 3 shows a perspective view of the housing part 20 with the housing cover 30. When joined together, they form a two-pin synthetic socket housing of

the plug and are suitable for receiving metallic sockets or plug contacts for connecting with cables.

[0017] Referring to Figure 4b, a cross-sectional view of the metal member 10 secured to the side wall of the housing part 20 is illustrated. Under the locking projection 11 and the slightly outwardly arched arms 12 and 13 of the metal member 10, a recess 24 is arranged in the side wall of the housing part 20.

[0018] During the mating of the connector assembly, the projection 11 recedes into the recess 24 under the pressure of a correspondingly formed part of a mating plug (not shown) of the connector assembly. As the projection 11 and 12, 13 can resiliently deform into the recess 24, the force required to move the mating plug beyond the projection 11 is reduced. Consequently, the mating force for mating the plug and mating plug is significantly reduced over the prior art.

[0019] The arrangements and characteristic features of the described embodiments can be easily combined with one another.

Claims

1. A plug for a connector assembly, consisting of a plug and an accompanying mating plug, the plug comprising:

   a connector housing;
   a locking latch which is arranged on the housing, and which, during a mating of the plug and the mating plug, comes into contact with a part of the mating plug;

   characterised in that:
   the locking latch is designed as a separate part (10) which can be connected to the housing.

2. The plug according to claim 1, **characterised in that** the locking latch is made of a material which has greater strength characteristics than the material of the housing.

3. The plug according to claim 1 or 2, **characterised in that** the connector housing is made from a synthetic material.

4. The plug according to one of claims 1 to 3, **characterised in that** the locking latch is a metal member (10) with a locking projection (11) projecting therefrom.

5. The plug according to one of claims 1 to 4, **characterised in that** the locking latch is arranged on an outside wall of the housing and comprises a fastening device (14, 15) for fastening to the housing wall.

6. The plug according claim 5, **characterised in that** the side wall of the housing has a recess (24) which extends under part of the locking latch whereby the locking latch is moved into the recess (24) in a resilient manner when the mating plug is mated to the plug.

7. The plug according to one of claims 5 or 6, **characterised in that** the fastening device (14, 15) comprises a recess in the metal member (10), which can be latched to a projection (22, 23) extending from the housing.

8. The plug according to one of claims 5 to 7, **characterised in that** the side wall of the housing comprises indentations (21), to accommodate the locking latch.

9. The plug according to at least claim 4, **characterised in that** the metal member extends in the direction parallel to the axis of a mating of the plug with the mating plug.

10. Connector arrangement, consisting of a plug according to one of claims 1 to 9 and an accompanying mating plug.

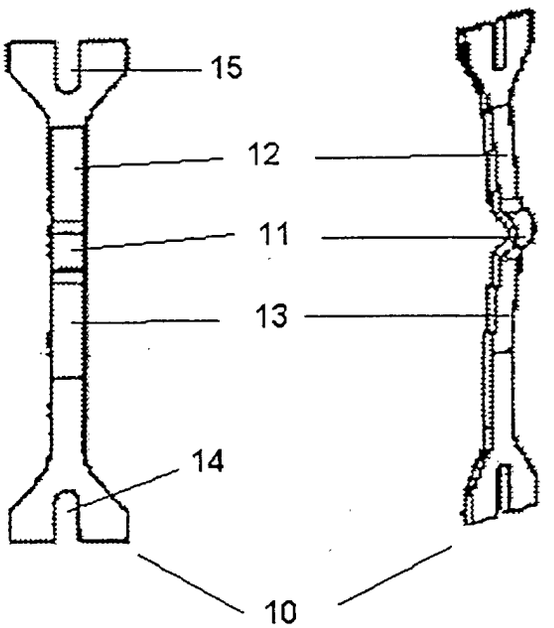

Fig. 1

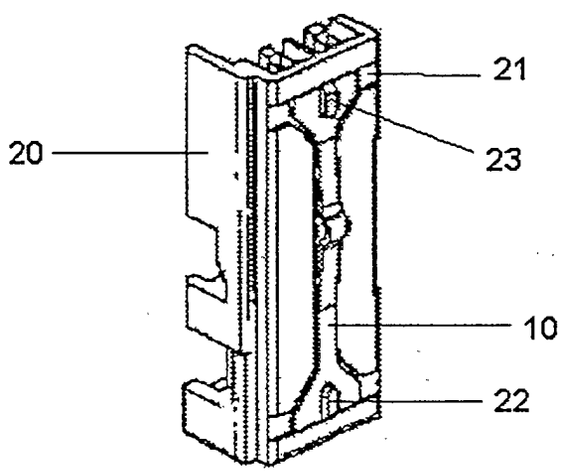

Fig. 2

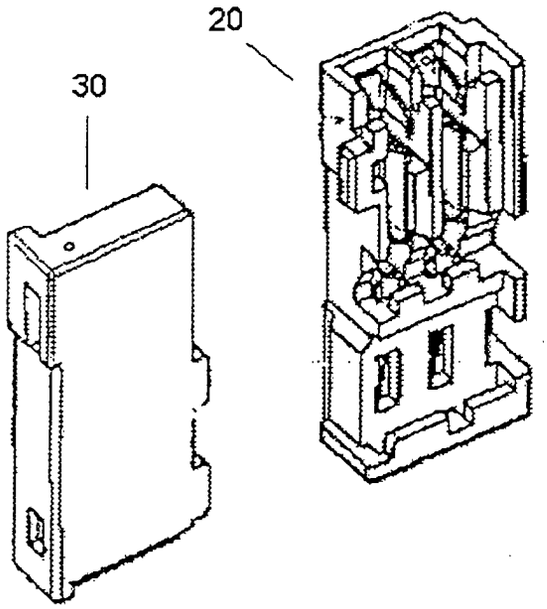

Fig. 3

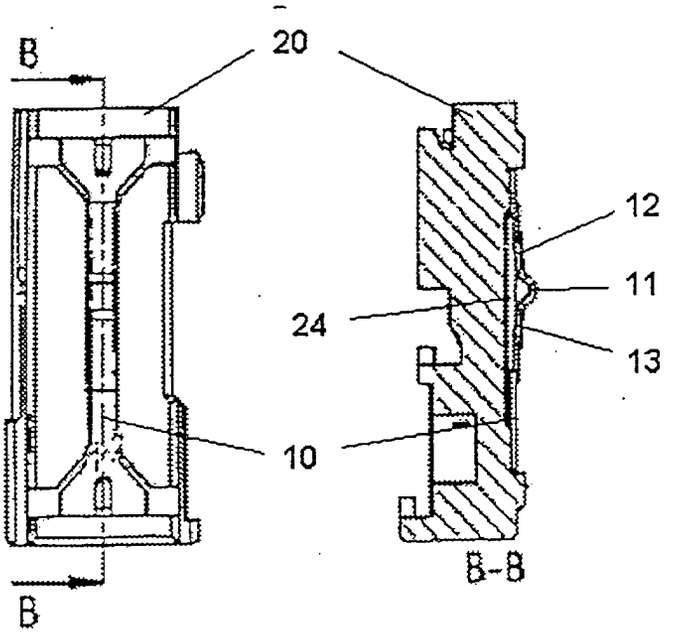

Fig. 4