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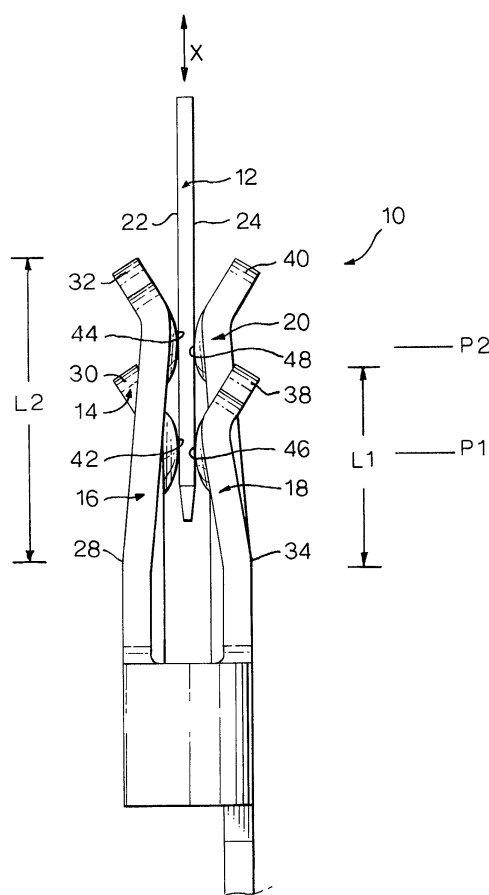
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(54) **Female electrical terminal**

(57) A female electrical terminal (10) for mating with a flat blade contact (12) comprising first and second arms (14,16) positionable on one side (22) of the flat blade contact and extending in the mating direction (X); and third and fourth arms (18,20) positionable on the other side (24) of the flat blade contact and extending in the mating direction; wherein the first arm and the second arm are pivotally mounted at one end (26,28) on a first pivot axis (A); wherein the first and second arms have a free end (30,32) opposed to said one end; wherein the third arm and the fourth arm are pivotally mounted at one end (34,36) on a second pivot axis (B); wherein the third and fourth arms have a free end (38,40) opposed to said one end; wherein the first arm is positioned opposed to said fourth arm; wherein the second arm is positioned opposed to said third arm; wherein each arm has a contact area (42-48) formed adjacent the free end thereof directed towards the opposed arm; wherein the first and third arms have a first predetermined length (L1) between said one end and said free end thereof; wherein the second and fourth arms have a second predetermined length (L2) between said one end and said free end thereof, the second length being greater than said first length; wherein the contact areas of the first and third arms are substantially aligned, on a first plane (P1) extending substantially perpendicular to the mating direction; and wherein the contact areas of the second and fourth arms are substantially aligned on a second plane (P2) which is substantially parallel to and offset from the first plane.

Fig.3.



Description

Technical Field

[0001] The present invention relates to a female electrical terminal for mating with a flat blade contact.

Background of the Invention

[0002] A female electrical terminal for mating with a flat blade contact is known. The known female terminal comprises four substantially identical arms, two on each side of the blade contact. Each arm acts like a cantilever beam with one end being pivotally mounted, and the other end being free. A contact area is formed in each arm adjacent the free end thereof. The contact areas are aligned on a plane substantially perpendicular to the mating axis between the terminal and the blade contact. A disadvantage of this known design is that the blade contact can pivot (relative to the terminal) about the axis on which the contact areas are aligned. This risks loss of contact, and damage to the surface of the blade contact and/or the contact areas of the arms of the female terminal.

Summary of the Invention

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

[0004] A female electrical terminal in accordance with the present invention is characterised by the features specified in Claim 1.

[0005] The present invention provides a female electrical terminal in which the risk of the blade contact pivoting relative to the female terminal during mating and during use is substantially reduced.

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 a perspective view of a female electrical terminal in accordance with the present invention; Figure 2 is an end view of the female electrical terminal of Figure 1; and

Figure 3 is an end view as shown in Figure 2 with a flat blade contact mated with the female electrical terminal.

Description of the Preferred Embodiment

[0007] Referring to the drawings, the female electrical terminal 10 in accordance with the present invention is for mating with a flat blade contact 12. The terminal 10 comprises first, second, third and fourth arms 14, 16, 18, 20 respectively. The first and second arms 14, 16

are positioned on one side 22 of the flat blade contact 12 and extend in the mating direction X. The third and fourth arms 18, 20 are positioned on the other side 24 of the flat blade contact 12 and also extend in the mating direction X. The first and second arms 14, 16 are pivotally mounted at one end 26, 28 respectively on a first pivot axis A, and have a free end 30, 32 respectively opposed to their pivot end. The third and fourth arms 18, 20 are pivotally mounted at one end 34, 36 respectively on a second pivot axis B, and have a free end 38, 40 respectively opposed to their pivot end. The arms 14-20 therefore act like a cantilever beam. As can be seen from the drawings, the first arm 14 is positioned opposed to the fourth arm 20, and the second arm 16 is positioned opposed to the third arm 18. Each arm 14-20 has a contact area 42, 44, 46, 48 respectively formed adjacent the free end 30, 32, 38, 40 respectively thereof which is directed towards the opposed arm.

[0008] In accordance with the present invention, the first and third arms 14, 18 have a first predetermined length L1 between their pivot end 26, 34 and their free end 30, 38. The second and fourth arms 16, 20 have a second predetermined length L2 between their pivot end 28, 36 and their free end 32, 40. The second length L2 is greater than the first length L1. The contact areas 42, 46 of the first and third arms 14, 18 are substantially aligned on a first plane P1 extending substantially perpendicular to the mating direction X. The contact areas 44, 48 of the second and fourth arms 16, 20 are substantially aligned on a second plane P2. The second plane P2 is substantially parallel to, but offset from, the first plane P1. With this arrangement, the contact areas 42, 46 of the first and third arms 14, 18 are aligned in the first plane P1, and are offset from (in the mating direction X) from the contact areas 44, 48 of the second and fourth arms 16, 20. On mating with the blade contact 12, the four points of contact between the blade contact and the female terminal 10, are offset from one another when viewed from one side 22 (or the other side 24) of the blade contact. Such an arrangement substantially reduces the risk of the blade contact 12 pivoting relative to the female terminal 10. An additional advantage of the present invention is that the mating force is reduced (compared to the previously known arrangement described above), whereas the unmating force is substantially unchanged.

[0009] The female terminal 10 is preferably formed in one piece by stamping and folding from sheet metallic material. Each arm 14-20 is preferably directly inwardly towards the opposed arm from its pivot end 26, 28, 34, 36 to its contact area 42-48 respectively; and is preferably directly outwardly away from the opposed arm from its contact area to its free end 30, 32, 38, 40 respectively. This arrangement improves the contact pressure between the female terminal 10 and the blade contact 12, and provides a tapered opening for the female terminal to assist with alignment of the blade contact on initial mating. The second and fourth arms 16, 20 preferably

have a groove 50 formed therein which extends in the mating direction X to increase the resilience of the arm about its pivot end 28, 36. The first and second pivot axes A, B preferably lie on a plane which is substantially parallel to the first and second planes P1, P2.

Claims

1. A female electrical terminal (10) for mating with a flat blade contact (12) comprising first and second arms (14,16) positionable on one side (22) of the flat blade contact and extending in the mating direction (X); and third and fourth arms (18,20) positionable on the other side (24) of the flat blade contact and extending in the mating direction; wherein the first arm and the second arm are pivotally mounted at one end (26,28) on a first pivot axis (A); wherein the first and second arms have a free end (30,32) opposed to said one end; wherein the third arm and the fourth arm are pivotally mounted at one end (34,36) on a second pivot axis (B); wherein the third and fourth arms have a free end (38,40) opposed to said one end; wherein the first arm is positioned opposed to said fourth arm; wherein the second arm is positioned opposed to said third arm; wherein each arm has a contact area (42-48) formed adjacent the free end thereof directed towards the opposed arm; wherein the first and third arms have a first predetermined length (L1) between said one end and said free end thereof; wherein the second and fourth arms have a second predetermined length (L2) between said one end and said free end thereof, the second length being greater than said first length; wherein the contact areas of the first and third arms are substantially aligned on a first plane (P1) extending substantially perpendicular to the mating direction; and wherein the contact areas of the second and fourth arms are substantially aligned on a second plane (P2) which is substantially parallel to and offset from the first plane.
2. A female electrical terminal as claimed in Claim 1, wherein each arm (14-20) is directed inwardly towards its opposed arm from its respective pivot axis (26,28,34,36) to its respective contact area (42-48).
3. A female electrical terminal as claimed in Claim 2, wherein each arm (14-20) is directed outwardly away from its opposed arm from its respective contact area (42-48) to its respective free end (30,32,38,40).
4. A female electrical terminal as claimed in any one of Claims 1 to 3, wherein the second and fourth arms (16,20) have a groove (50) formed therein which extends in the mating direction (X).
5. A female electrical terminal as claimed in any one of Claims 1 to 4, wherein the first and second pivot axes (A,B) lie on a plane which is substantially parallel to the first and second planes (P1,P2).
6. A female electrical terminal as claimed in any one of Claims 1 to 5, wherein the female terminal is formed in one-piece by stamping and folding from sheet metallic material.

Fig.1.

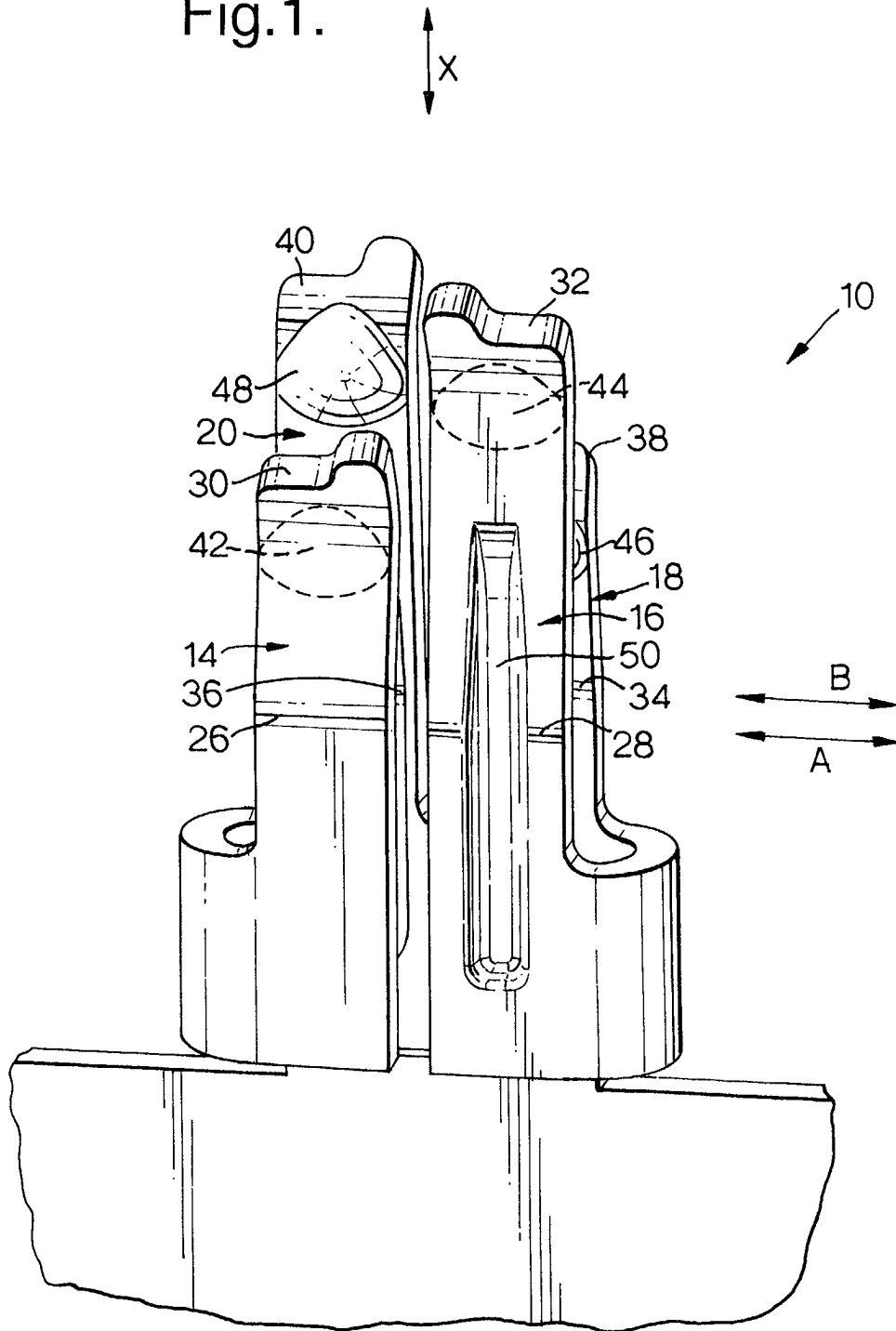


Fig.2.

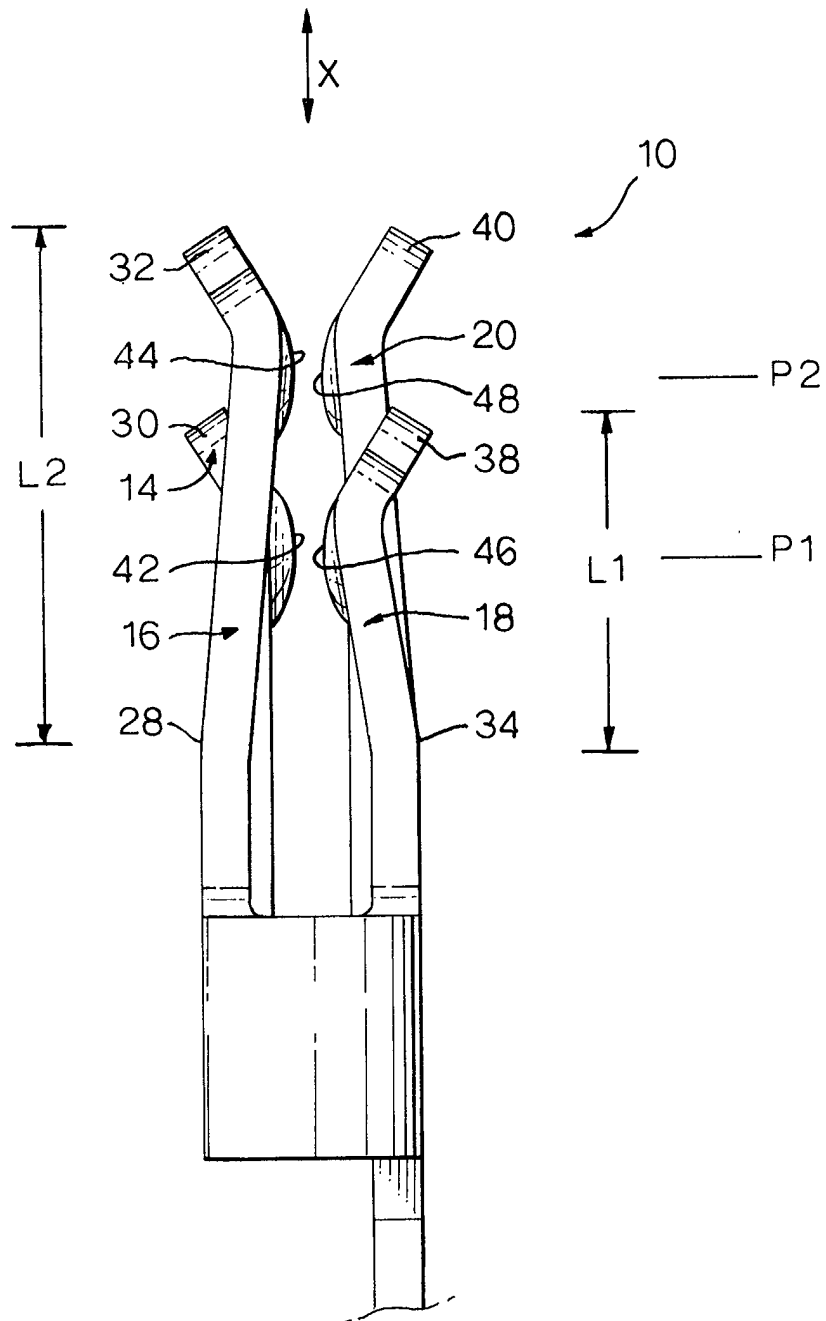
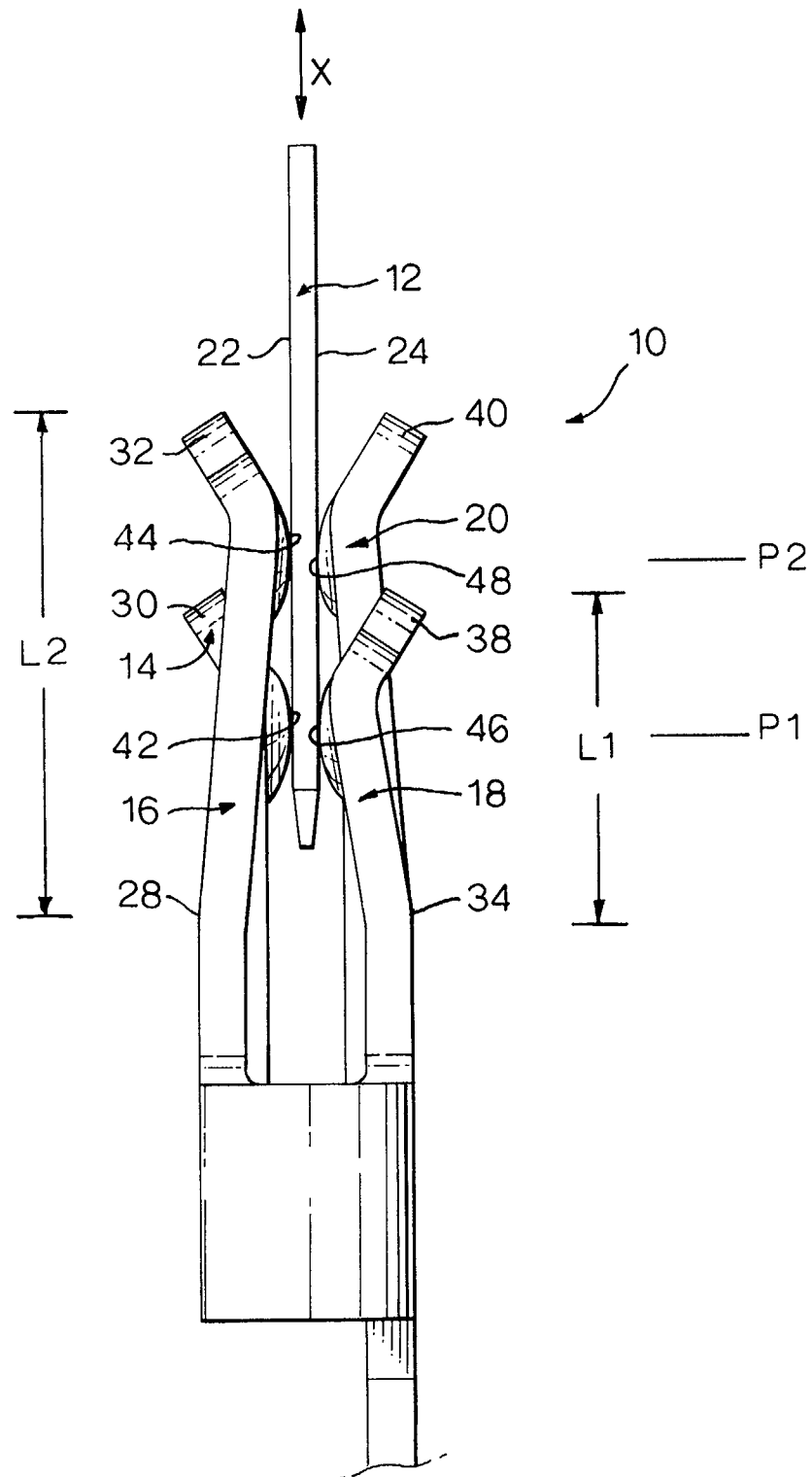


Fig.3.





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EUROPEAN SEARCH REPORT

Application Number
EP 02 07 6493

DOCUMENTS CONSIDERED TO BE RELEVANT			
Category	Citation of document with indication, where appropriate, of relevant passages	Relevant to claim	CLASSIFICATION OF THE APPLICATION (Int.Cl.7)
X	EP 0 726 615 A (OSRAM SYLVANIA INC) 14 August 1996 (1996-08-14) * column 2, line 51 - column 4, line 46; figures 1,3 *	1-3,5,6	H01R13/115
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			TECHNICAL FIELDS SEARCHED (Int.Cl.7)
			H01R
The present search report has been drawn up for all claims			
Place of search BERLIN		Date of completion of the search 7 August 2002	Examiner Stirn, J-P
CATEGORY OF CITED DOCUMENTS X : particularly relevant if taken alone Y : particularly relevant if combined with another document of the same category A : technological background O : non-written disclosure P : intermediate document T : theory or principle underlying the invention E : earlier patent document, but published on, or after the filing date D : document cited in the application L : document cited for other reasons & : member of the same patent family, corresponding document			

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**ANNEX TO THE EUROPEAN SEARCH REPORT
ON EUROPEAN PATENT APPLICATION NO.**

EP 02 07 6493

This annex lists the patent family members relating to the patent documents cited in the above-mentioned European search report.
The members are as contained in the European Patent Office EDP file on
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