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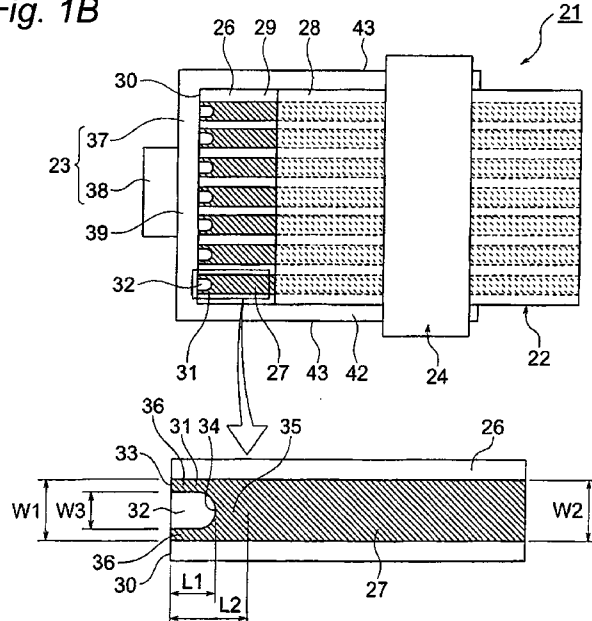
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(54) Title: CIRCUIT BODY AND CONNECTOR STRUCTURE

Fig. 1B



(57) Abstract: A circuit body includes a conductor and plated leads. The conductor includes a two-pronged part having two extended portions. The plated leads are arranged at the extended portions respectively.

DESCRIPTION

Circuit Body and Connector Structure

Technical Field

5 The present invention is related to a circuit body having a plated lead, and a connector structure including this circuit body.

Background Art

10 A connector structure disclosed in the following PTL 1 includes a housing, a fork terminal, a slider, a flat cable and a cable press member. According to the connector structure of PTL 1, the fork terminal is included as a terminal accommodated in the housing. The slider is included as an insertion member. The flat cable is included as a circuit body. Also, the cable press member is included as a member for fixing the flat cable and being
15 fitted into the slider.

 The flat cable is fixed to a lower surface of the slider by the cable press member. The fork terminal accommodated inside the housing has insertion space of the slider between an upside terminal part and a downside terminal part of this fork terminal. When the slider is inserted into the insertion
20 space, the flat cable is in the fixed state, so that a cable conductor makes contact with the downside terminal part and is electrically connected to the downside terminal part.

 When the slider in a state of fixing the flat cable is inserted into the insertion space, the fork terminal flexes and is pushed out in a direction in
25 which the upside terminal part and the downside terminal part separate with

this insertion. Then, when pinching is performed by a reaction force of this flexure, connection between the downside terminal part and the cable conductor is maintained.

5 The downside terminal part is connected with the cable conductor in a state where a top of a protrusion formed on the downside terminal part rides on the cable conductor.

Citation List

[Patent Literature]

10 [PTL 1] JP-A-2003-45558

Summary of Invention

Technical Problem

15 The connector structure of the conventional art of PTL 1 probably causes following problem when the flat cable is formed as, for example, an FPC (Flexible Printed Circuit) and also the cable conductor of this FPC is provided with a plated lead. That is, in the case of connecting the fork terminal to the cable conductor through the plated lead, a situation in which the fork terminal does not ride on the plated lead properly is considered. In this
20 case, runout of the fork terminal or runout of the FPC may occur. When the runout of the fork terminal or the runout of the FPC may occur, defect of conduction occurs. The occurrence of defect of conduction will hereinafter be described concretely with reference to the drawings.

25 Figs. 6A and 6B show a part of the FPC. In the drawings, reference numeral 1 shows a base material. Also, reference numeral 2 shows a

conductor made of metal foil. Further, reference numeral 3 shows a plated lead continuous with the conductor 2. The conductors 2 with which the plated leads 3 are conducted are juxtaposed on the base material 1 at a predetermined spacing. An end 4 of the plated lead 3 is disposed so as to match with an end 5 of the base material 1. A line width of the plated lead 3 is formed sufficiently thinner than a line width of the conductor 2. This is because at the time of manufacturing the FPC, an external shape of the FPC is cut out by cutting equipment and wear of the cutting equipment advances rapidly in a case that the line width of the plated lead 3 is wide. Because of this, the line width is formed wide in order to slow this wear procedure. The line width of the plated lead 3 is set according to a terminal width of, for example, a fork terminal 6 (see Fig. 6C) used as the mating side of electrical connection.

The fork terminal 6 is accommodated and fixed in a housing. Also, the FPC is fixed to an insertion member fitted into the housing. The housing and the insertion member have a structure of connector fitting.

In the structure described above, when the connector fitting between the housing and the insertion member is started, the FPC is inserted into the fork terminal 6 of the inside of the housing and in this case, a connection part of the fork terminal 6 becomes riding over the plated lead 3. Then, when the FPC is inserted to a predetermined position, electrical connection is completed.

Incidentally, when a position of the fork terminal 6 does not match with a position of the plated lead 3, the fork terminal 6 does not ride over a thickness T of the plated lead 3 and as shown by arrow P, the fork terminal 6

may avoid the FPC. Or, as shown by arrow Q, the FPC may avoid the fork terminal 6. Therefore, in such cases, defect of conduction occurs.

In addition, strict alignment between the plated lead 3 and the fork terminal 6 could be designed, but such a countermeasure has a problem that manufacturing dimension tolerance or assembly dimension tolerance of components becomes strict. Also, a multipole connector structure in which the cumulative dimension tolerance of components becomes large has a problem of becoming difficult to handle its dimension tolerance.

It is therefore one advantageous aspect of the present invention to provide a circuit body and a connector structure capable of preventing occurrence of defect of conduction.

Solution to Problem

According to one advantage of the invention, there is provided a circuit body comprising:

a conductor including a two-pronged part having two extended portions; and

plated leads arranged at the extended portions respectively.

A width of the conductor may be equal to a width of the two-pronged part.

According to another one advantage of the invention, there is provided a connector structure, comprising:

the circuit body;

a fork terminal including a first terminal part and a second terminal part which project from a terminal base so that an insertion space is formed

between the first and second terminal parts;

a housing including a fitting part accommodating the fork terminal;

and

an insertion member inserted into the insertion space through the fitting part in a state where the circuit body is fixed,

wherein the circuit body is electrically connected with one of the first and second terminal parts with the insertion of the insertion member.

Advantageous Effects of Invention

According to the invention, in the case of normal connection without misalignment, a mating terminal is first inserted into the two-pronged part and then, when the mating terminal rides over in a back position of the two-pronged part, connection is completed. On the other hand, in the case of misaligned connection which causes defect of conduction conventionally, the plated leads are present in both sides of the two-pronged part in the invention, so that the mating terminal rides over the plated leads and thereby, connection is completed. It is more preferable to match a width of the two-pronged part with a width of the mating terminal targeted for connection in the invention. The two-pronged part could have substantially a concave shape, and is preferably formed in substantially a U shape or substantially a V shape.

Accordingly, the invention has an effect capable of preventing occurrence of defect of conduction since the two-pronged part is formed and also the plated leads are arranged in both sides of this two-pronged part.

According to the invention, even when the line width of the arrangement portion of the plated leads is made substantially equal to the line

width of the conductor, the two-pronged part is provided between the plated leads, so that the plated leads are widely formed practically. Therefore, a wear procedure of cutting equipment can be slowed in manufacture of the circuit body. Also, according to the invention, the line width of the arrangement portion of the plated leads is made substantially equal to the line width of the conductor, so that misalignment can be reduced in a wide range.

Accordingly, the invention has an effect capable of providing one better form of the plated leads.

According to the invention, when connector fitting of the housing and the insertion member is performed, the circuit body is inserted into the insertion space of the fork terminal through the insertion member. At this time, the fork terminal surely rides over the plated leads or the back position of the two-pronged part and thereby, connection is completed. According to the invention, the fork terminal does not avoid the circuit body or the circuit body does not avoid the fork terminal, with the result that sure connection can be made.

Accordingly, the invention has an effect capable of forming the connector structure without defect of conduction since the circuit body having the two-pronged part and the plated leads in both sides of this two-pronged part is included.

Brief Description of Drawings

Figs. 1A and 1B are diagrams showing an FPC assembly including a part of a connector structure and a circuit body of the invention. Fig. 1A is a side view, and Fig. 1B is a bottom view including a partially enlarged view.

Figs. 2A and 2B are diagrams showing a female connector used as the mating side of fitting of the FPC assembly of Figs. 1A and 1B. Fig. 2A is a plan view, and Fig. 2B is a side view.

5 Figs. 3A and 3B are diagrams related to connector fitting. Fig. 3A is a side view during the fitting, and Fig. 3B is a side view at the time of completing the fitting.

10 Figs. 4A to 4C are diagrams related to connection of a fork terminal. Fig. 4A is a diagram during the connection, Fig. 4B is a diagram at the time of completing connection, and Fig. 4C is a diagram during connection having misalignment.

Figs. 5A to 5C are diagrams related to another example of a terminal connection part including a two-pronged part and plated leads.

15 Figs. 6A to 6C are diagrams related to a conventional example. Figs. 6A and 6B are diagrams showing a part of an FPC, and Fig. 6C is a diagram showing occurrence of defect of conduction.

Description of Embodiments

20 A circuit body has a conductor, a plated lead and a two-pronged part. The two-pronged part has two extended portions. The plated leads are arranged in the two extended portions respectively. Namely, the plated leads are arranged in both sides of the two-pronged part. A connector structure includes the circuit body in a configuration, and a fork terminal is electrically connected to the circuit body when connector fitting is performed.

25 A first embodiment will hereinafter be described with reference to the drawings. Figs. 1A and 1B are diagrams showing an FPC assembly including

a part of a connector structure and a circuit body of the invention. Also, Figs. 2A and 2B are diagrams showing a female connector, and Figs. 3A and 3B are diagrams related to connector fitting, and Figs. 4A to 4C are diagrams related to connection of a fork terminal.

5 In Figs. 1A and 1B, reference numeral 21 shows the FPC assembly. The FPC assembly 21 includes an FPC 22 as one example of a circuit body, a slider 23 (an insertion member) made of synthetic resin having insulation properties, and a holder 24 locked in the slider 23 so as to press the FPC 22. The FPC assembly 21 is constructed so as to be fitted into a female connector
10 25 by a connector. First, each of the components described above will be described.

The FPC 22 is a publicly known flexible printed circuit, and is a kind of circuit body capable of being applied to the invention. The FPC 22 has a base material 26 having insulation properties, plural conductors 27 juxtaposed
15 in one row sideways at a predetermined spacing, and a coat part 28 having insulation properties.

The plural juxtaposed conductors 27 are made of metal foil which is copper foil for example, and are fastened on the base material 26. The conductors 27 are insulated from the outside by being covered with the coat
20 part 28. Reference numeral 29 in the FPC 22 shows a conductor exposed part. This conductor exposed part 29 is formed as the portion in which the conductor 27 is exposed from the coat part 28 in a predetermined length from an end 30 of the FPC 22. An end of the conductor 27 in an exposed state in the conductor exposed part 29 is provided with a terminal connection part 31
25 continuously.

The terminal connection part 31 is formed as an electrical connection portion and as a portion which a fork terminal 46 described below of the female connector 25 rides over. Further, the terminal connection part 31 is formed as an arrangement portion of a plated lead 36 described below. The terminal connection part 31 is formed so that a line width W1 becomes equal to a line width W2 of the conductor 27 in the present embodiment. A two-pronged part 32 is formed in the terminal connection part 31 of such a line width W1. The two-pronged part 32 is notched and formed using substantially the center of an end 33 in the terminal connection part 31 as a notch start position. In the embodiment, the two-pronged part 32 is notched and formed in substantially a U shape having two extended portions. Other notch examples will be described in a second embodiment.

A distance L1 from the end 30 of the FPC 22 to a back position 34 of the two-pronged part 32 is constructed so as to become shorter than a distance L2 from the end 30 to a connection completion position of the fork terminal 46 described below. Also, a width W3 of the two-pronged part 32 becomes larger than a terminal width of the fork terminal 46 described below. In addition, a thickness of the portion which the fork terminal 46 described below rides over shall be a thickness T similar to the conventional thickness. The fork terminal 46 is constructed so as to be inserted into the two-pronged part 32 in a state in which the fork terminal 46 described below is not misaligned (see Fig. 4B) or is slightly misaligned.

The terminal connection part 31 continuous with the conductor 27 has the following portion in addition to the two-pronged part 32. That is, a connection part 35 is provided as a portion which is set in the connection

completion position and continuous with the back position 34 of the two-pronged part 32. Also, the plated leads 36 are arranged in the two extended portions respectively. Namely, the plated leads 36 are provided as the portions continuous with both outsides of the two-pronged part 32. The
5 connection part 35 is formed as the portion of connection to the fork terminal 46 described below. The fork terminal 46 is constructed so as to ride over the plated leads 36 and reach the connection part 35 and be electrically connected to the connection part 35 if misalignment occurs.

The terminal connection part 31 is formed so that this line width W1 is
10 substantially equal to the line width W2 of the conductor 27, but has the two-pronged part 32, so that the terminal connection part 31 has an effect capable of narrowly forming the plated leads 36 practically as is conventionally done. Then, this effect also exerts an effect capable of slowing a wear procedure of cutting equipment in manufacture of the FPC 22.

15 In addition, a publicly known FFC (flexible flat circuit) etc. are given as the applicable circuit body other than the FPC 22. The invention is not limited to the above as long as the circuit body is a circuit body capable of being electrically connected to the fork terminal 46 described below.

The slider 23 has a slider body 37 and a lock arm part 38 integrated
20 with this slider body 37. The slider body 37 is formed as a portion inserted into a fitting part 48 described below of the female connector 25. Also, the top portion (insertion top portion 39) of the slider body 37 is formed as a portion inserted into the fork terminal 46 described below.

The lock arm part 38 is formed in a cantilevered arm shape having
25 flexibility. The lock arm part 38 is constructed so that a lock hole part (not

shown) formed in this lock arm part 38 is hooked and locked in a lock claw part 50 described below of the female connector 25. The lock arm part 38 is formed as a portion contributing to maintenance of an electrical connection state or prevention of detachment of slider 23.

5 The insertion top portion 39 has an abutting part 40 for positioning and a pressed holding surface part 41. The abutting part 40 for positioning is arranged and formed on the upper surface side in a top position of the slider body 37. The abutting part 40 for positioning is formed as a portion abutting on a projection 57 for positioning of the fork terminal 46 described below. The
10 slider body 37 is constructed so as to regulate insertion when this abutting part 40 for positioning abuts on the projection 57 for positioning.

 The pressed holding surface part 41 is formed on an upper surface of the slider body 37 as a portion pressed and held by a pressing holding surface part 59 of a first terminal part 53 of the fork terminal 46 described below. The
15 pressed holding surface part 41 is arranged and formed so as to be continuous with the abutting part 40 for positioning. Reference numeral 42 shows an FPC fixing part. This FPC fixing part 42 is arranged and formed on a lower surface of the slider body 37 as a portion for fixing the FPC 22.

 The slider body 37 has locking protrusions 44 on both side surfaces
20 43 of this slider body 37. The locking protrusion 44 is formed in substantially a claw shape so that the holder 24 can be locked.

 In Figs. 2A and 2B, the female connector 25 is a connector mounted in a substrate (not shown), and is configured to include a female housing 45 (housing) made of synthetic resin having insulation properties and plural fork
25 terminals 46 having conductivity accommodated and fixed in this female

housing 45.

The female housing 45 is formed in a rectangular box shape in the embodiment. The female housing 45 has the fitting part 48 formed by opening a front surface 47 of this female housing 45. The fitting part 48 is formed as a portion for receiving the fork terminal 46. Also, the fitting part 48 is formed as a portion for inserting the FPC assembly 21 and fitting a connector.

The female housing 45 has the lock claw part 50 in substantially a center position of an upper surface 49 of this female housing 45. The lock claw part 50 is formed so as to project from the upper surface 49 in substantially a claw shape. The lock claw part 50 is formed so that the FPC assembly 21 can be locked.

The female housing 45 is formed so as to expose a part of the fork terminal 46 from a back surface 51 of this female housing 45.

The fork terminal 46 is formed by pressing a metal plate having conductivity and also a predetermined thickness. The fork terminal 46 is formed in a shape of a female terminal. The fork terminal 46 has a terminal base 52, a first terminal part 53 and a second terminal part 54 respectively projecting from an upper end and a lower end of this terminal base 52, insertion space 55 formed between the first terminal part 53 and the second terminal part 54, and a substrate connection part 56 exposed from the back surface 51 of the female housing 45, and is formed in the illustrated shape.

The first terminal part 53 arranged in the upper side and the second terminal part 54 arranged in the lower side have resilience in which distal positions of these terminal parts can separate slightly. The distal end

positions are free ends. The projection 57 for positioning is projected and formed in an intermediate position of the first terminal part 53 of such a first terminal part 53 and a second terminal part 54. On the other hand, a projection 58 for connection is projected and formed in a distal position of the second terminal part 54. The projection 57 for positioning and the projection 58 for connection are respectively arranged and formed so as to project to the side of the insertion space 55.

The projection 57 for positioning is formed as a portion for determining an insertion position of the FPC assembly 21. The projection 57 for positioning is formed so as to function as the so-called stopper. The projection 57 for positioning is present in the intermediate position of the first terminal part 53 as described above, and is arranged and formed in a back position from the projection 58 for connection. The portion between the projection 57 for positioning and the distal end of the first terminal part 53 is formed as the pressing holding surface part 59 for pressing and holding an insertion portion of the FPC assembly 21.

The projection 58 for connection is formed as a portion for making contact with the connection part 35 of the terminal connection part 31 in the FPC 22. The projection 58 for connection is formed so as to have a angle shape in side view. In addition, the shape is not particularly limited as long as electrical connection can be made.

Next, assembly of the FPC assembly 21 and the female connector 25 and also electrical connection will be described based on the structure described above.

In the female connector 25, assembly is completed by receiving the

plural fork terminals 46 in the fitting part 48 of the female housing 45. Also, in the FPC assembly 21, assembly is completed by fixing the FPC 22 to the FPC fixing part 42 in a lower surface of the slider body 37 and also locking the holder 24.

5 When connector fitting is performed by sliding the FPC assembly 21 into the female connector 25 as shown in Fig. 3A after the assembly described above, electrical connection is completed together with this fitting. Concretely, the slider body 37 in a state of fixing the FPC 22 is inserted into the fitting part 48 of the female housing 45 and also the insertion top portion 39 of the slider
10 body 37 is inserted between the first terminal part 53 and the second terminal part 54 of the fork terminal 46 and when this insertion is performed to the following state, electrical connection is completed. That is, when the abutting part 40 for positioning of the insertion top portion 39 is inserted until the abutting part 40 abuts on the projection 57 for positioning of the first terminal
15 part 53, at this time, the connection part 35 in the terminal connection part 31 of the FPC 22 in a state of being fixed to the FPC fixing part 42 makes contact so as to ride over the projection 58 for connection of the second terminal part 54 and thereby, electrical connection is completed.

 The insertion top portion 39 of the slider body 37 is pressed from the
20 first terminal part 53 with the insertion described above. Therefore, a state of contact between the connection part 35 and the projection 58 for connection is maintained. Also, the lock hole part (not shown) of the lock arm part 38 in the slider 23 is hooked and locked in the lock claw part 50 of the female housing 45. Therefore, detachment of the FPC assembly 21 is regulated and the state
25 of contact between the connection part 35 and the projection 58 for connection

is maintained.

The electrical connection mentioned above will be described more concretely with reference to Figs. 4A to 4C.

In Fig. 4A, in the case of normal connection without misalignment, the
5 second terminal part 54 of the fork terminal 46 is first inserted into the two-pronged part 32. Then, when the second terminal part 54 rides over the back position 34 of the two-pronged part 32, connection is completed at the connection part 35 of the terminal connection part 31 as shown in Fig. 4B. On the other hand, in the case of misaligned connection, as shown in Fig. 4C, both
10 sides of the two-pronged part 32 have the plated leads 36, so that the second terminal part 54 of the fork terminal 46 makes contact with the connection part 35 after the second terminal part 54 rides over the plated leads 36. Consequently, connection is completed.

As described above with reference to Figs. 1A to 4C, according to the
15 invention, the terminal connection part 31 has the two-pronged part 32 and also has the plated leads 36 in both sides of this two-pronged part 32 and further has the connection part 35 continuous with the two-pronged part 32 and the plated leads 36, so that electrical connection can be made surely, with the result that there is an effect capable of preventing occurrence of defect of
20 conduction. Also, the invention has an effect capable of forming a connector structure without defect of conduction by surely making electrical connection.

A second embodiment will hereinafter be described with reference to the drawing. Figs. 5A to 5C are diagrams related to another example of a terminal connection part including a two-pronged part and plated leads. In
25 addition, detailed description is omitted by assigning the same numerals to the

same components as those of the first embodiment.

In Fig. 5A, a terminal connection part 60 is formed so that a line width W4 of this terminal connection part 60 becomes slightly thinner than a line width W2 of a conductor 27. Such a terminal connection part 60 has a two-pronged part 61, plated leads 62 and a connection part 63. The two-pronged part has two extended portions having the line width W4. The plated leads are arranged in the two extended portions respectively. Namely, the plated leads 62 are arranged and formed in both sides of the two-pronged part 61. It goes without saying that the terminal connection part 60 as described above also has an effect similar to that of the first embodiment.

In Fig. 5B, a terminal connection part 64 has a two-pronged part 65, plated leads 66 and a connection part 67. The two-pronged part has two extended portions having substantially a V shape. The plated leads are arranged in the two extended portions respectively. Namely, the plated leads 66 are arranged and formed in both sides of the two-pronged part 65. The two-pronged part 65 is notched and formed in the V shape using substantially the center of an end 68 as a notch start position. It goes without saying that the terminal connection part 64 as described above also has an effect similar to that of the first embodiment.

In Fig. 5C, a terminal connection part 69 has a two-pronged part 70, plated leads 71 and a connection part 72. The two-pronged part has two extended portions formed by a square concave shape. The plated leads are arranged in the two extended portions respectively. Namely, the plated leads 71 are arranged and formed in both sides of the two-pronged part 70. The two-pronged part 70 is notched and formed in substantially the square concave

shape using substantially the center of an end 73 as a notch start position. It goes without saying that the terminal connection part 69 as described above also has an effect similar to that of the first embodiment.

5 It is to be noted that the invention is not limited to the above described embodiments, but various modifications, improvements, and so on can be appropriately made. Besides, materials, shapes, sizes, numbers, positions to be arranged, and so on of constituent elements in the above described embodiment are not limited, provided that the invention can be achieved.

10 The present application is based on Japanese Patent Application No. 2011-039244 filed on February 25, 2011, the contents of which are incorporated herein by way of reference.

Industrial Applicability

15 A circuit body and connector structure according to the present invention can achieve an effect capable of forming the connector structure without defect of conduction since the circuit body having the two-pronged part and the plated leads in both sides of this two-pronged part is included.

Reference Signs List

- 20 21 FPC ASSEMBLY
22 FPC (CIRCUIT BODY)
23 SLIDER (INSERTION MEMBER)
24 HOLDER
25 FEMALE CONNECTOR
25 26 BASE MATERIAL

- 27 CONDUCTOR
- 28 COAT PART
- 29 CONDUCTOR EXPOSED PART
- 30 END
- 5 31 TERMINAL CONNECTION PART
- 32 TWO-PRONGED PART
- 33 END
- 34 BACK POSITION
- 35 CONNECTION PART
- 10 36 PLATED LEAD
- 37 SLIDER BODY
- 38 LOCK ARM PART
- 39 INSERTION TOP PORTION
- 40 SLIDER BODY
- 15 41 PRESSED HOLDING SURFACE PART
- 42 FPC FIXING PART
- 43 SIDE SURFACE
- 44 LOCKING PROTRUSION
- 45 FEMALE HOUSING (HOUSING)
- 20 46 FORK TERMINAL
- 47 FRONT SURFACE
- 48 FITTING PART
- 49 UPPER SURFACE
- 50 LOCK CLAW PART
- 25 51 BACK SURFACE

- 52 TERMINAL BASE
- 53 FIRST TERMINAL PART
- 54 SECOND TERMINAL PART
- 55 INSERTION SPACE
- 5 56 SUBSTRATE CONNECTION PART
- 57 PROJECTION FOR POSITIONING
- 58 PROJECTION FOR CONDUCTION
- 59 PRESSING HOLDING SURFACE PART
- 60,64,69 TERMINAL CONNECTION PART
- 10 61,65,70 TWO-PRONGED PART
- 62,66,71 PLATED LEAD
- 63,67,72 CONNECTION PART
- 68,73 END

CLAIMS

1. A circuit body comprising:

5 a conductor including a two-pronged part having two extended portions; and
plated leads arranged at the extended portions respectively.

2. The circuit body as set forth in claim 1, wherein

10 a width of the conductor is equal to a width of the two-pronged part.

3. A connector structure, comprising:

the circuit body as set forth in claims 1 or 2;

15 a fork terminal including a first terminal part and a second terminal part which project from a terminal base so that an insertion space is formed between the first and second terminal parts;

a housing including a fitting part accommodating the fork terminal;

and

an insertion member inserted into the insertion space through the fitting part in a state where the circuit body is fixed,

20 wherein the circuit body is electrically connected with one of the first and second terminal parts with the insertion of the insertion member.

Fig. 1A

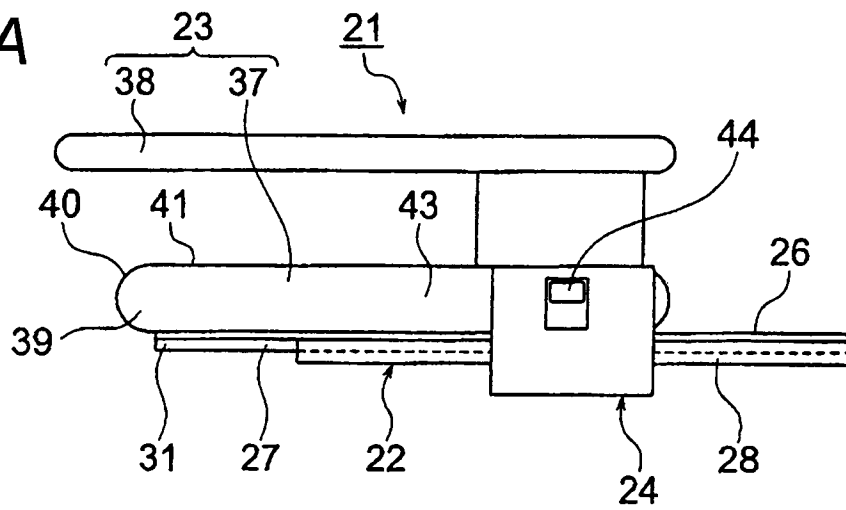


Fig. 1B

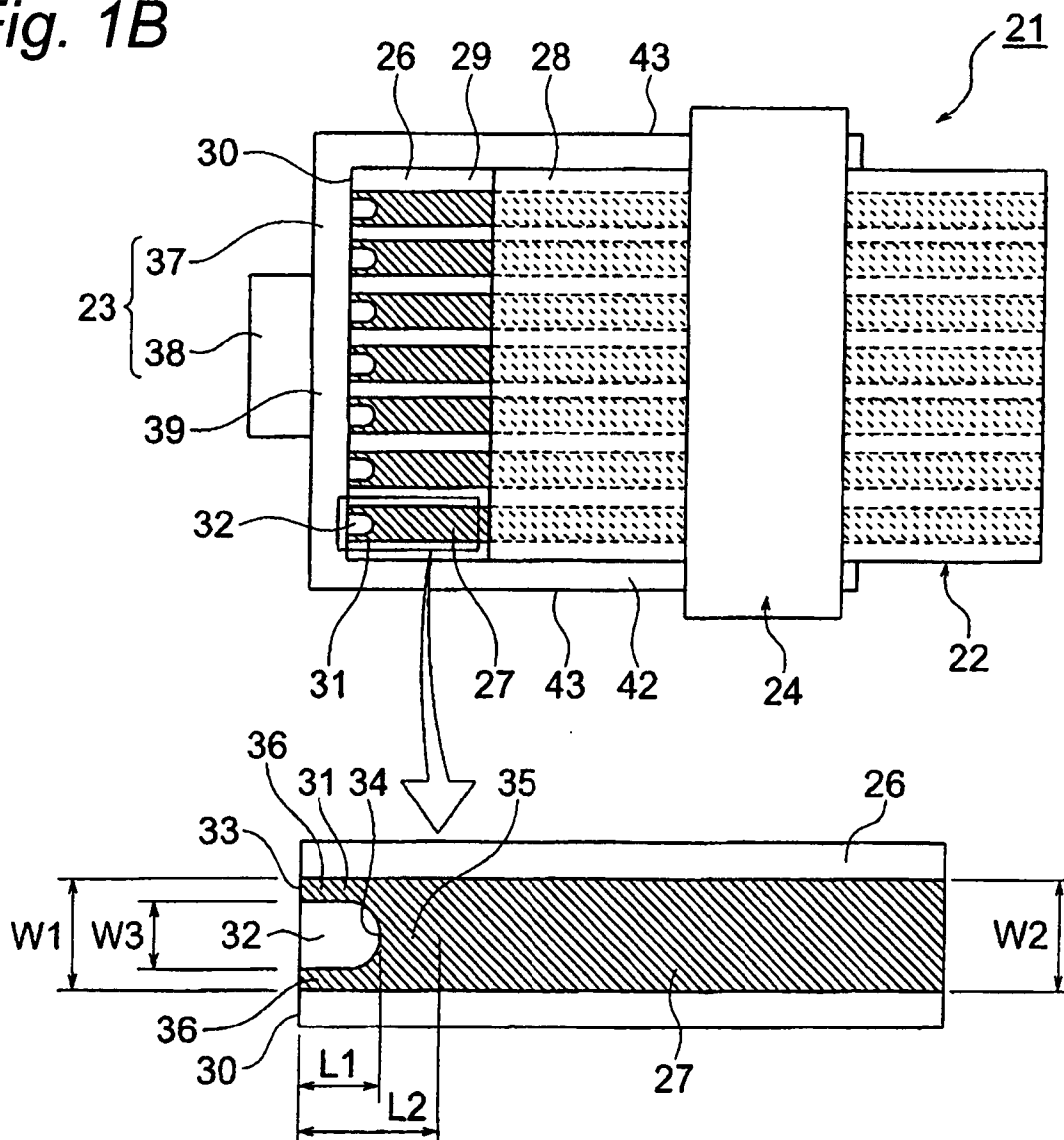


Fig. 2A

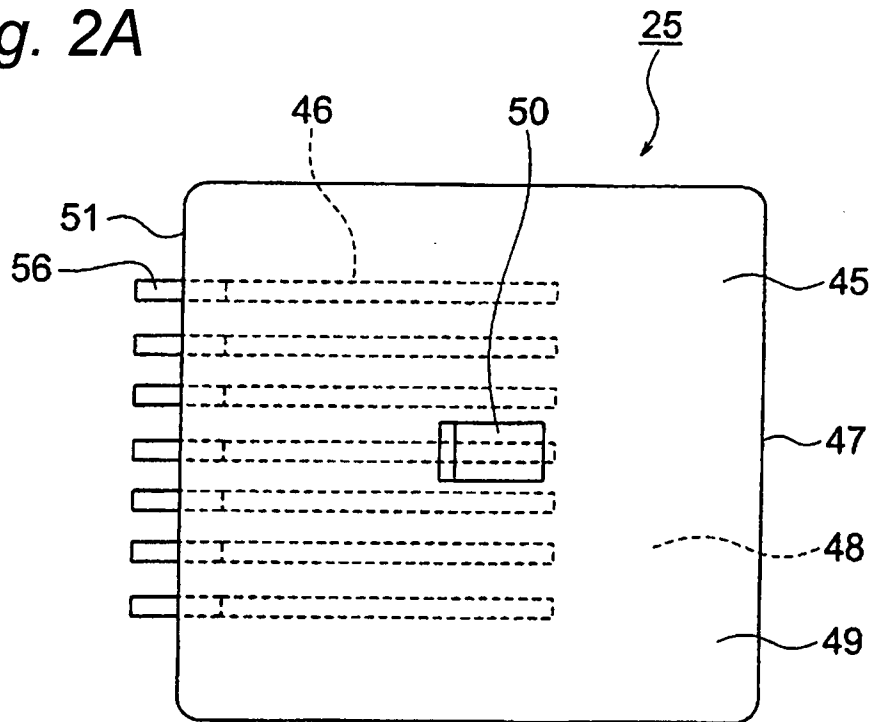


Fig. 2B

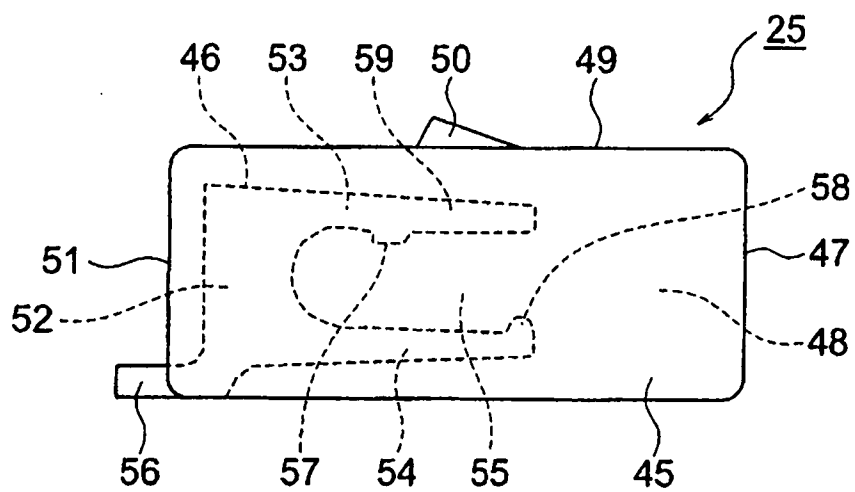


Fig. 3A

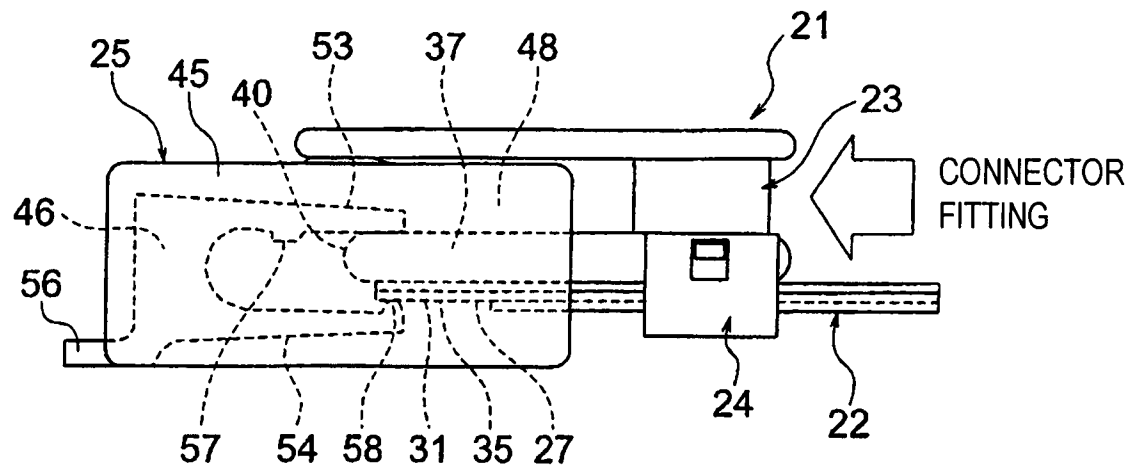


Fig. 3B

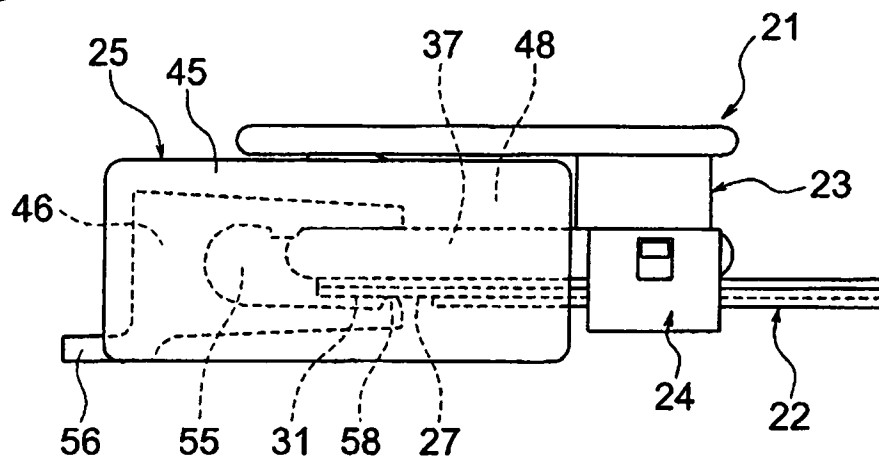


Fig. 4A

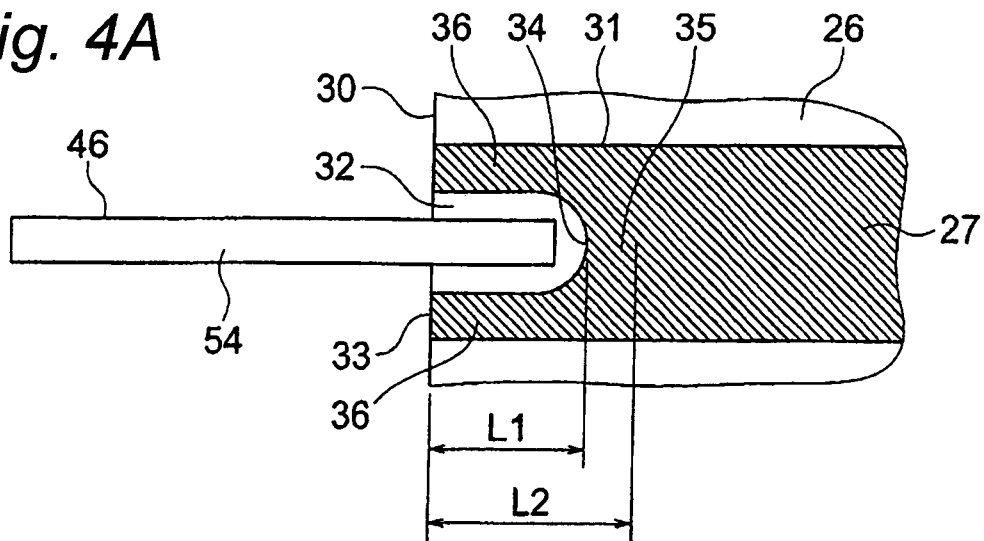


Fig. 4B

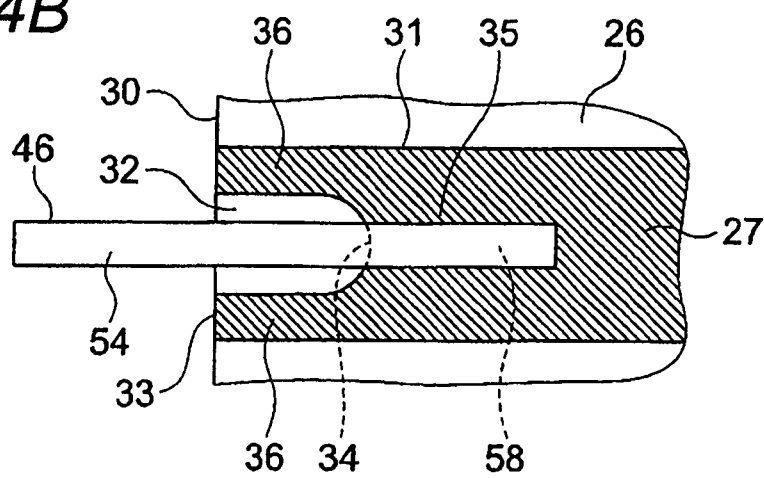


Fig. 4C

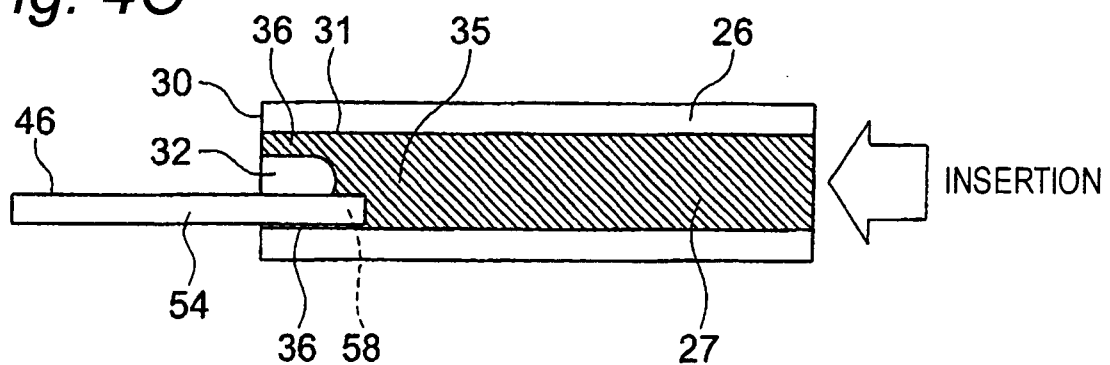


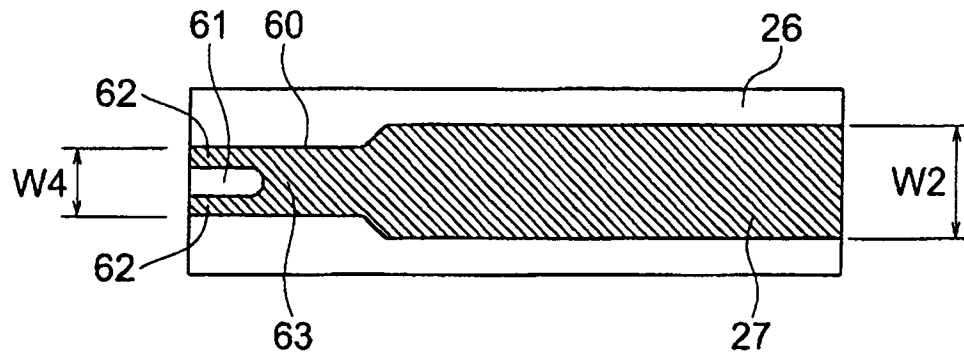
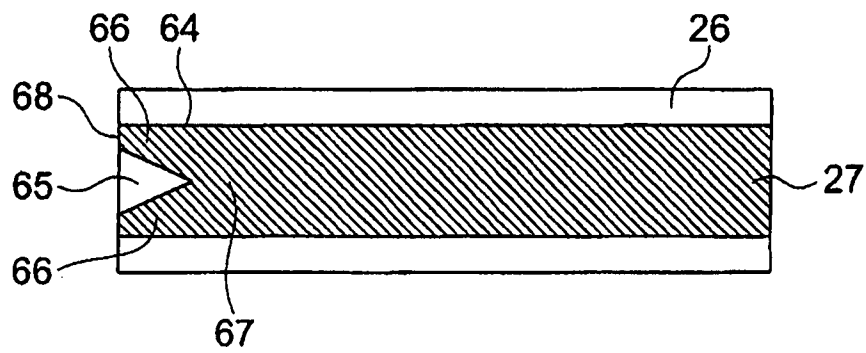
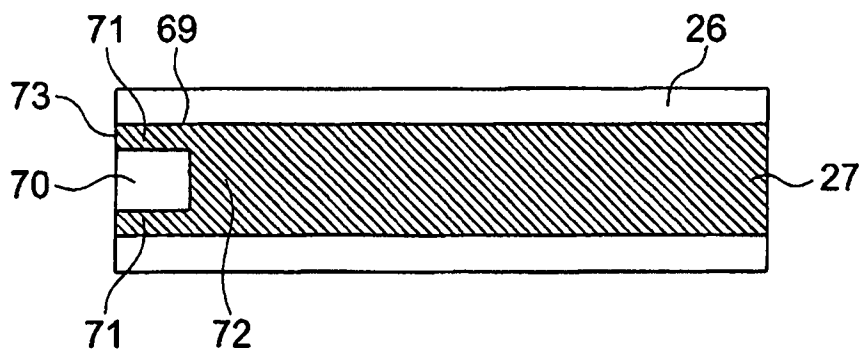
Fig. 5A*Fig. 5B**Fig. 5C*

Fig. 6A

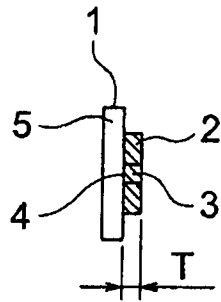


Fig. 6B

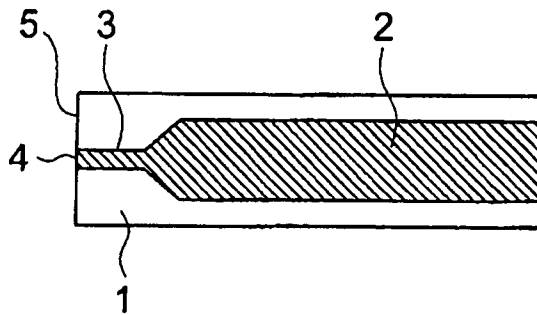
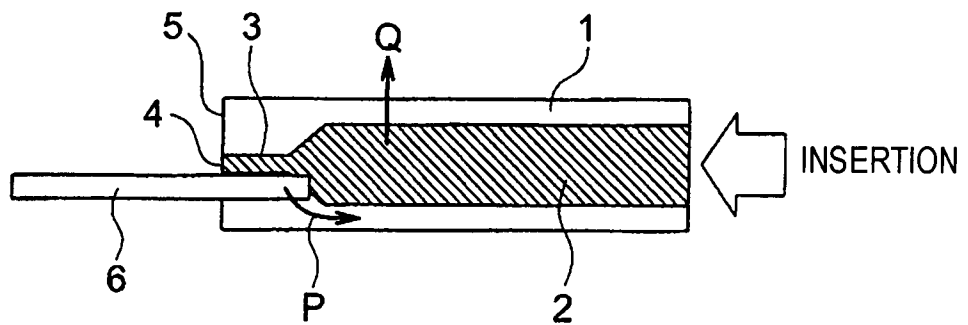


Fig. 6C



INTERNATIONAL SEARCH REPORT

International application No
PCT/JP2012/055305

A. CLASSIFICATION OF SUBJECT MATTER
INV. H01R12/79 H01R12/59
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)
H01R H05K

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.
X	US 6 699 395 B1 (SVENKESON JOHN W [US] ET AL) 2 March 2004 (2004-03-02)	1
Y	column 1, lines 39-46; figures 5,16,18 -----	3
X	US 5 211 565 A (KRAJEWSKI NICHOLAS J [US] ET AL) 18 May 1993 (1993-05-18) figures 22,23 -----	1,2
X	TW 200 638 823 A (3M INNOVATIVE PROPERTIES COMPANY) 7 March 2005 (2005-03-07) figures 1,2d -----	1,2
Y	US 4 900 268 A (KUNISHI SHINSUKE [JP]) 13 February 1990 (1990-02-13) figures 6-8 -----	3



Further documents are listed in the continuation of Box C.



See patent family annex.

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"&" document member of the same patent family

Date of the actual completion of the international search

21 May 2012

Date of mailing of the international search report

31/05/2012

Name and mailing address of the ISA/

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Corrales, Daniel

INTERNATIONAL SEARCH REPORT

Information on patent family members

International application No

PCT/JP2012/055305

Patent document cited in search report	Publication date	Patent family member(s)	Publication date
US 6699395	B1	02-03-2004	NONE

US 5211565	A	18-05-1993	NONE

TW 200638823	A	07-03-2005	-----
US 4900268	A	13-02-1990	BR 8806438 A 22-08-1989
		CA 1293305 C 17-12-1991	
		EP 0320250 A1 14-06-1989	
		JP 4038470 Y2 09-09-1992	
		JP H0192085 U 16-06-1989	
		US 4900268 A 13-02-1990	
