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(54) **Electrical connector with integral wire release member**

Elektrischer Verbinder mit eingebauter Lösevorrichtung

Connecteur électrique avec dispositif de dégagement intégré

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## Description

**[0001]** The present invention generally relates to an electrical connector and, more particularly, to an electrical connector that may be used to carry high-voltage power signals.

**[0002]** Electrical connectors are used to connect various forms of components and equipment. For example, some electrical connectors connect printed circuit boards to wires, which are used to convey power to appliances and utilities, such as lighting fixtures, ballasts and the like. Many appliances and utilities have high power demands. For example, many devices, such as lighting assemblies operate at very high voltage levels.

**[0003]** Conventional power connectors include a housing that retains a plurality of electrical contacts. Each electrical contact has a pin that is configured to be retained within a receptacle of a printed circuit board. Within the connector, the contacts are also connected to wires from one or more appliances or utilities. Power signals are transferred between the wire and the printed circuit board through the electrical connector.

**[0004]** In many applications, it is desirable to have a wire release capable of repeatedly inserting and removing the wire from the connector. To afford the wire release, many connectors are configured to pinch or sandwich each individual wire between a corresponding contact and an interface wall of the connector housing. Certain connectors include contacts having a base portion secured in the housing and a contact tip that engages the wire. The base and contact tip of the contact are joined by a flexible portion that spring biases the contact tip toward the wire. The contact tip is deflected away from the electrical wire to remove the wire from the connector. However, if the contact tip is bent too far, the elasticity of the contact may be lost. When the contact elasticity is lost, the contact tip no longer returns to its original position and thus does not adequately pinch the wire against the wall of the connector once the wire is inserted. Thus, great care typically must be exercised when removing electrical wires from connectors to ensure that the contacts within the connector are not overly deflected in order to maintain the contact elasticity.

**[0005]** Recently, connectors have been proposed that include a contact deflection member that limits the range over which the contact is deflected when inserting and releasing a wire. The contact deflection member may simply constitute a push button that is slidably held in the connector housing. A lower end of the push button engages the contact tip, while an opposite end of the push button is configured to be pressed by the user. When the user presses the button, the lower end of the button bends the contact tip away from the wire. The connector housing may include stop features that permit the button to slide over a limited range of motion within the connector housing, thereby similarly limiting the amount of contact deflection.

**[0006]** However, the push button is a separate com-

ponent that is individually inserted into a receptacle within the connector housing. Hence, separate and distinct molds and/or dies must be used to form the push button and the connector housing. Further, during assembly, each push button must be individually positioned within a corresponding receptacle in the connector housing. The separate molding and assembly steps unduly add cost and expense to the manufacturing process of the electrical connector.

**[006A]** A prior art electrical connector assembly (on which the preamble of claim 1 is based) is disclosed in patent US 5494456. The connector assembly includes a housing with chambers each containing a contact which is deflectable over a range of motion to make and break electrical contact with a wire inserted into the housing. The housing is provided with apertures each of which is arranged to allow the insertion of a tool for deflecting a respective contact away from its associated wire to permit release of the wire from the housing.

**[0007]** Thus, a need exists for an electrical connector that maintains proper elasticity of electrical contacts housed within the electrical connector. A need also exists for a more cost-effective and efficient electrical connector that utilizes a contact deflection member.

**[0008]** Embodiments of the present invention provide an electrical connector comprising a housing, contacts and contact deflecting members. The housing includes a plurality of chambers that retain an equal plurality of contacts. The chambers are configured to receive individual wires. The electrical contacts are deflectable to make and break electrical connections with the wires. The contact deflecting members are positioned proximate corresponding contacts and are configured to deflect the electrical contacts to break connections with corresponding wires. The contact deflecting members are disposed within channels formed in the housing and are integrally formed with the housing. Each contact deflecting member includes an end formed integrally with the housing through a hinge that pivotally joins the contact deflecting member to the housing. The electrical connector may also include an anti-overstress member provided in the chamber and positioned at an end of the range of motion of the contact to limit deflection of the contact. The range of motion may also be limited by an abutment of a contact end of the contact deflecting member and an interior wall of the housing. The electrical connector assembly may be a push button having an engagement surface extending from an exterior of the housing. The engagement surface is configured to receive a tool used to actuate the push button. The channel and the contact deflecting member are formed integrally with one another through a hinge that permits pivotal motion of the contact deflecting member laterally within the channel. The hinge is integrally formed with the contact deflecting member and the housing to enable pivotal motion of the contact deflecting member.

**[0009]** In order that the present invention may be more readily understood, reference will now be made to the

accompanying drawings, in which:-

**[0010]** Figure 1 illustrates an isometric view of a fully-assembled electrical connector according to one embodiment of the invention.

**[0011]** Figure 2 illustrates a transverse cross-sectional view of the electrical connector taken along arrow 2-2 in Figure 1.

**[0012]** Figure 3 illustrates an isometric view of a fully-assembled electrical connector according to an alternative embodiment of the invention.

**[0013]** Figure 4 illustrates an isometric partial interior view of the electrical connector of Figure 3 showing a contact in an undeflected position.

**[0014]** Figure 5 illustrates an isometric partial interior view of the electrical connector of Figure 3 showing a contact in a deflected position.

**[0015]** Figure 6 illustrates an isometric partial interior view of the electrical connector of Figure 3 showing an integrally formed push button.

**[0016]** Figure 7 illustrates an isometric partial interior view of an electrical connector according to a second alternative embodiment of the present invention and showing a contact in an undeflected position.

**[0017]** Figure 8 illustrates an isometric partial interior view of the electrical connector of Figure 7 showing a contact in a deflected position.

**[0018]** Figure 1 of the accompanying drawings illustrates an isometric view of a fully-assembled electrical connector 10 according to an embodiment of the present invention. The electrical connector 10 includes a contact housing 12. The contact housing 12 includes an open end (not shown) exposing contact chambers (not shown) that receive and retain electrical contacts. A bottom cover may pivotally open and close over the open end through an integrally formed hinge. The electrical contacts may be loaded into the contact chambers through the open end.

**[0019]** The contact housing 12 has a plurality of wire troughs 14, which are configured to support wires in a desired orientation with respect to the contact housing 12, and contacts 16 (shown in greater detail, for example, with respect to Figure 2) having circuit board engaging portions 18 extending downwardly from a bottom surface of the connector 10. Each wire trough 14 includes lateral support walls 20 and a rear support wall 22 that may conform to the contours of a wire.

**[0020]** The contacts 16 are further described with respect to United States Application Serial No. 10/197,161, entitled, "Anti-Overstress Electrical Connector," filed July 17, 2002, and listing Navin Patel and William Lenker as inventors ("the '161 application").

**[0021]** The electrical connector 10 also includes contact deflecting members, or push buttons 24, retained within channels 26. The push buttons 24 are integrally formed with the contact housing 12.

**[0022]** Figure 2 illustrates a transverse cross-sectional view of the electrical connector 10 taken along arrow 2-2 in Figure 1. A majority of each contact 16 is retained

within an inner chamber 25 formed within the contact housing 12. The electrical contact 16 includes a contact tip 27 formed integrally with a curved flex portion 29, which is in turn joined with a base 31. The base 31 is, in turn, joined to the circuit board engaging portion 18, which extends downwardly from the contact housing 12. As shown in Figure 2, the contact tip 27 is proximate the push button 24. The push button 24 may pivot into the inner chamber 25, thereby engaging and deflecting the contact tip 27 of the contact 16 (as discussed below).

**[0023]** Each push button 24 integrally connects with the contact housing 12 through a top surface 28 of the contact housing 12, or within the channel 26. The push button 24 is integrally formed with the contact housing 12, for example the top surface 28, as contiguous molded material. The push button 24 may integrally connect with the top surface 28 through an integral hinge 30, which integrally connects the top surface 28 and the push button 24.

**[0024]** The push button 24 may be used with or without anti-overstress features. The push button 24 includes an engagement surface 32 integrally formed with a main body 34. The main body 34 is, in turn, formed with a contact end 36 that is distally located from the engagement surface 32. The contact end 36 is located proximate the contact tip 27 of the contact 16. The contact end 36 includes a lower surface 40 sloped to abut against the contact 16 when the push button 24 is pressed in the direction of arrow A. The lower surface 40 includes an upper contact corner 42 and a lower contact corner 44.

**[0025]** The push button 24 is formed within the channel 26 that is defined by first and second interior walls 46 and 48 of the contact housing 12. The push button 24 connects to the first interior wall 46 through the hinge 30 proximate the top surface 28. The hinge 30 extends downwardly from the top surface 28 along the first interior wall 46 toward a termination point 50. The termination point 50 may be anywhere along the first interior wall 46 provided that the hinge 30 allows the push button 24 to pivot sufficiently with respect to the first interior wall 46, while ensuring that the hinge 30 does not break away from the first interior wall 46 when the push button 24 is depressed.

**[0026]** In order to deflect the contact tip 27 of the electrical contact 16, the engagement surface 32 of the push button 24 is pressed in the direction of arrow A. Because the push button 24 is integrally formed with the contact housing 12 at hinge 30, the main body 34 of the push button 24 pivots toward the interior wall 46 along arc B. Consequently, the upper and lower contact corners 42 and 44 of the lower surface 40 move downward in the direction of arrow A, and toward the interior wall 46 in the direction of arrow C. The lower surface 40, or at least one of the contact corners 42 and 44, engages and deflects the contact tip 27 in the direction of arrow D. The range of deflection of the contact 16 may be limited by the range of motion of the push button 24. The movement of the push button 24 in the direction of arc B stops when

the contact end 36 of the push button 24 abuts the first interior wall 46.

**[0027]** An electrical wire 52 is positioned within the wire trough 14. The wire trough 14 is in communication with the inner chamber 25 through a wire passage 54. The electrical wire 52 includes a stripped conducting portion 56 that is inserted into the electrical connector 10 until it contacts and extends past the contact tip 27. Once the electrical wire 52 is fully inserted into the electrical connector 10, the stripped conducting portion 56 is pinched between the contact tip 27 and an interior wall 58 of the electrical connector 10. Thus, an electrical path may be established between the electrical contact 16 and the electrical wire 52.

**[0028]** In order to release the electrical wire 52 from the electrical connector 10, the contact tip 27 of the electrical contact 16 is deflected. As mentioned above, when the electrical wire 52 is in a fully engaged position within the electrical connector 10, the electrical wire 52 is pinched between the electrical contact 16 and the interior wall 58 within the contact housing 12. To disengage the wire 52, the user presses downward on the engagement surface 32 in the direction of arrow A, thereby causing the push button 24 to pivot about hinge 30 along arc B. As the push button 24 pivots, it deflects the contact tip 27 of the contact 16 in the direction of arrow D. As the contact tip 27 deflects, it separates from the wire 52, thereby permitting the wire 52 to be easily removed from the wire passage 54.

**[0029]** Figure 3 illustrates an isometric view of a fully assembled electrical connector 60 according to an alternative embodiment of the present invention. The electrical connector 60 includes similar components to the embodiment described above. It includes a contact housing 62 having wire channels 64, which are configured to support wires in a substantially vertical (or horizontal) orientation. Each wire channel 64 extends downwardly into the contact housing 62 from a top surface 66 of the contact housing 62.

**[0030]** The electrical connector 60 includes push buttons 68 retained within channels 70. The push buttons 68 include an engagement surface 72 that includes a divot 74 formed between two peaks 76 and 78. The engagement surface 72 is configured in this fashion so as to receive a tool, such as a screwdriver, which is used to actuate the push button 68. A screw driven head may be securely received within the divot 74.

**[0031]** Figure 4 illustrates an isometric partial interior view of the electrical connector 60 showing a contact 16 in an undeflected position. The push buttons 68 are integrally formed with the top surface 66 of the contact housing 62, at a position within the channel 70, through a hinge 80. Each push button 68 is integrally formed with the contact housing 62. The push button 68 may be integrally formed within an electrical connector that may or may not include anti-overstress members 82.

**[0032]** Figure 6 illustrates an isometric partial interior view of the integrally formed push button 68. The en-

gagement surface 72 is integrally formed with a main body 84 of the push button 68. The main body 84 is joined with a contact end 86 that is distally located from the engagement surface 72. The contact end 86 is located proximate the contact 16. The contact end 86 includes a lower surface 88 that abuts the contact 16 when the push button 68 is pressed in the direction of arrow A. The lower surface 88 includes an upper edge 90 and a lower rounded projection 92.

**[0033]** The push button 68 is formed within a channel 70 that is defined by first and second interior walls 94 and 96 of the contact housing 62. The push button 68 connects to the first interior wall 94 through the hinge 80 that is proximate the top surface 66. The hinge 80 extends downwardly from the top surface 66 along the first interior wall 94 toward a termination point 98. The termination point 98 may be anywhere along the first interior wall 94 provided that the hinge 80 allows the push button 68 to pivot with respect to the first interior wall 94, while ensuring that the hinge 80 does not break away from the first interior wall 94 when the push button 68 is depressed.

**[0034]** Figure 5 illustrates an isometric partial interior view of the electrical connector 60 showing a contact 16 in a deflected position. In order to deflect the electrical contact 16, the push button 68 is pressed in the direction of arrow A. Because the push button 68 is integrally formed with the contact housing 62 at the hinge 80, the main body 84 of the push button 68 pivots toward the interior wall 94 along arc B. Consequently, the upper edge 90 and the lower rounded projection 92 moved downwardly in the direction of arrow A, and toward the interior wall 94 in the direction of arrow C. Consequently, the lower rounded projection 92 and/or the upper edge 90 engages and deflects the contact 16 in the direction of arrow D. The upper edge 90 and the lower rounded projection 92 may both be rounded to minimize the possibility of damage to the contact 16 caused by scratching and/or snagging the contact 16. The range of deflection of the contact 16 is limited by the range of motion of the push button 68. The movement of the push button 68 in the direction of arc B stops when the contact end 86 of the push button 86 abuts the first interior wall 94.

**[0035]** The anti-overstress members 82 form a shelf or ledge, which also limits the movement of the electrical contact 16 in the direction of D. The anti-overstress members 82 are positioned so that the electrical contact 16 is not pushed past the point in which the electrical contact 16 loses, or substantially loses, its original elasticity.

**[0036]** Figures 7 and 8 illustrates a isometric partial interior view of an electrical connector 100 showing a contact in non-deflected and deflected positions, respectively, according to a second alternative embodiment of the present invention. The connector 100 includes a main housing 102 that houses a plurality of contacts 104 and integrally formed push buttons 106. The push buttons 106 include a hinge 108 integrally formed with an outer lateral surface 110 of the housing 102. The housing 102 is formed so that a contact end 112 of the push button

106 is disposed within, and passes through, a slot 114 formed through the top surface 116 of the housing 102. The contact end 112 may slidably move through the slot 114.

[0037] The push button 106 also includes a ramped upper engagement surface 118 that is integrally formed with a lower motion limiting surface 119. The motion limiting surface 119 is, in turn, integrally formed with the contact end 112. The contact end 112 includes a protrusion 120, which may operatively abut the contact 104.

[0038] As the upper engagement surface 118 is pushed downwardly in the direction E, or in the direction F, the movement of the engagement surface 118 is translated through the push button 106 into the contact end 112. Similar to the embodiments described above, the push button 106 pivots relative to the housing 102 by way of the integrally formed hinge 108. Thus, the hinge 108 remains attached to the housing 102 and the contact end 112 moves through the slot 114. As the push button 106 moves toward the contact 104, the protrusion 120 engages and deflects the contact 104, thereby deflecting the contact 104. The movement of the push button 106 is limited by the lower motion-limiting surface 119 contacting the top surface 116 of the housing 102. That is, because the slot 114 is not wide enough to allow the lower motion-limiting surface 119 to pass through, the motion of the push button 106 toward the contact 104 is halted by the lower motion-limiting surface 119 contacting the top surface 116. Thus, the range of motion that the contact 104 may move during deflection is limited by the interaction of the lower motion-limiting surface 119 and the top surface 116 of the housing 102.

[0039] Embodiments of the present invention may be used with a wide variety of electrical equipment. For example, embodiments of the present invention may be used in high-voltage applications such as connecting components of fluorescent lighting ballasts. Embodiments of the present invention provide a more cost-effective and efficient electrical connector that utilize an integrally formed push buttons to deflect electrical contacts within the electrical connector. Because the push buttons are integrally formed, there is no need to separately mold and manufacture the push buttons. Also, because the push buttons are integrally formed, there are less component parts to assemble into the electrical connector during the manufacturing process, thereby saving time and labor.

## Claims

1. An electrical connector assembly (10,60,100), comprising

a housing (12,62,102) having one or more chambers (25), one or more contacts (16,104) retained in the chamber(s) and deflectable over a range of motion to make and break electrical

contact with one or more wires (52) when inserted into the housing, **characterised by** one or more contact deflecting members (24,68,106) formed integrally with the housing and extending into the chamber(s), and a hinge (30,80,108) integrally formed with the or each contact deflecting member (24,68,106) and the housing to enable pivotal motion of the contact deflecting member, the or each contact deflecting member being positioned to engage and deflect an associated contact (16,104) whereby to make and break electrical contact with one said wire.

2. The electrical connector assembly of claim 1, wherein the housing includes one or more channels (26,86,114) receiving the contact deflecting member (s) (24,68,106), the or each channel and the associated contact deflecting member being formed integrally with one another through the hinge (30,80,108).

3. The electrical connector assembly of claim 1, including a plurality of the chambers (25), each of which retains one of the contacts (16,104) and communicates with a corresponding passage (54) configured to receive a wire (52), and a plurality of the contact deflecting members (24,68,106) disposed within individual channels (26,86,114) in the housing communicating with the chambers, said contact deflecting members being formed integrally with said channels through hinges (30,80,108) pivotally attaching said contact deflecting members (24,68,106) to the housing.

4. The electrical connector assembly of any preceding claim, wherein the range of motion is limited by the abutment of the or each contact deflecting member and an interior wall (46,94) of the housing.

5. The electrical connector assembly of claims 2 and 4, or claims 3 and 4, wherein the or each contact deflecting member (24,68,106) pivots laterally within the associated channel (26,86,114) formed in the housing, and the contact deflecting member has a side wall (46,94) that abuts against a side wall (46) of the channel to limit pivotal motion of the contact deflecting member.

6. The electrical connector assembly of any preceding claim, including an anti-overstress member (82) provided in the or each chamber (25) and positioned at an end of the range of motion of the associated contact (16) to limit deflection of said contact.

7. The electrical connector assembly of any preceding claim, wherein the or each contact deflecting member is a push button (24,68,106) having an engage-

ment surface (72,118) extending from an exterior of the housing,

8. The electrical connector assembly of claim 7, wherein the engagement surface (72) is configured to receive a tool used to actuate the push button.
9. The electrical connector assembly of any preceding claim, wherein the or each contact (16) includes a deflection portion (27) having a tip configured to sandwich the wire (52) against a side wall of the chamber (25), the contact deflecting member engaging the deflecting portion of the contact.

#### Patentansprüche

1. Elektrische Steckverbinder-Baugruppe (10, 60, 100), die Folgendes umfasst:

ein Gehäuse (12, 62, 102), das eine oder mehrere Kammern (25) hat, wobei ein oder mehrere Kontakte (16, 104) in der/den Kammer(n) festgehalten werden und über einen Bewegungsbereich abgelenkt werden können, um einen elektrischen Kontakt mit einem oder mehreren Drähten (52) herzustellen und zu unterbrechen, wenn sie in das Gehäuse eingeführt werden, **gekennzeichnet durch**

ein oder mehrere Kontaktablenkungselemente (24, 68, 106), die integral mit dem Gehäuse geformt sind und sich in die Kammer(n) erstrecken, und ein Scharnier (30, 80, 108), das integral mit dem oder jedem Kontaktablenkungselement (24, 68, 106) und dem Gehäuse geformt ist, um eine Schwenkbewegung des oder jedes Kontaktablenkungselements zu ermöglichen, wobei das oder jedes Kontaktablenkungselement dafür angeordnet ist, in einen zugeordneten Kontakt (16, 104) einzugreifen und ihn abzulenken, um **dadurch** einen elektrischen Kontakt mit dem einen Draht herzustellen und zu unterbrechen.

2. Elektrische Steckverbinder-Baugruppe nach Anspruch 1, wobei das Gehäuse einen oder mehrere Kanäle (26, 86, 114) einschließt, die das/die Kontaktablenkungselement(e) (24, 68, 106) aufnehmen, wobei der oder jeder Kanal und das zugeordnete Kontaktablenkungselement durch das Scharnier (30, 80, 108) integral miteinander geformt sind.
3. Elektrische Steckverbinder-Baugruppe nach Anspruch 1, die mehrere der Kammern (25), deren jede einen der Kontakte (16, 104) festhält und mit einem entsprechenden Durchgang (54) in Verbindung steht, der dafür konfiguriert ist, einen Draht (52) aufzunehmen, und mehrere der Kontaktablenkungselemente (24, 68, 106), die innerhalb einzelner Kanäle

(26, 86, 114) in dem Gehäuse angeordnet sind, die mit den Kammern in Verbindung stehen, einschließt, wobei die Kontaktablenkungselemente durch Scharniere (30, 80, 108), welche die Kontaktablenkungselemente (24, 68, 106) schwenkbar an dem Gehäuse befestigen, integral mit den Kanälen geformt sind.

4. Elektrische Steckverbinder-Baugruppe nach einem der vorhergehenden Ansprüche, wobei der Bewegungsbereich durch das Anstoßen des oder jedes Kontaktablenkungselements und einer Innenwand (46, 94) des Gehäuses begrenzt wird.

5. Elektrische Steckverbinder-Baugruppe nach Anspruch 2 und 4 oder Anspruch 3 und 4, wobei das oder jedes Kontaktablenkungselement (24, 68, 106) seitlich innerhalb des zugeordneten Kanals (26, 86, 114), der in dem Gehäuse geformt ist, schwenkt und das Kontaktablenkungselement eine Seitenwand (46, 94) hat, die an eine Seitenwand (46) des Kanals anstößt, um die Schwenkbewegung des Kontaktablenkungselements zu begrenzen.

6. Elektrische Steckverbinder-Baugruppe nach einem der vorhergehenden Ansprüche, die ein Überlastungsschutzelement (82) einschließt, das in der oder jeder Kammer (25) bereitgestellt wird und an einem Ende des Bewegungsbereichs des zugeordneten Kontakts (16) angeordnet ist, um die Ablenkung des Kontakts zu begrenzen.

7. Elektrische Steckverbinder-Baugruppe nach einem der vorhergehenden Ansprüche, wobei das oder jedes Kontaktablenkungselement ein Druckknopf (24, 68, 106) ist, der eine Eingriffsfläche (72, 118) hat, die sich von einem Äußeren des Gehäuses aus erstreckt.

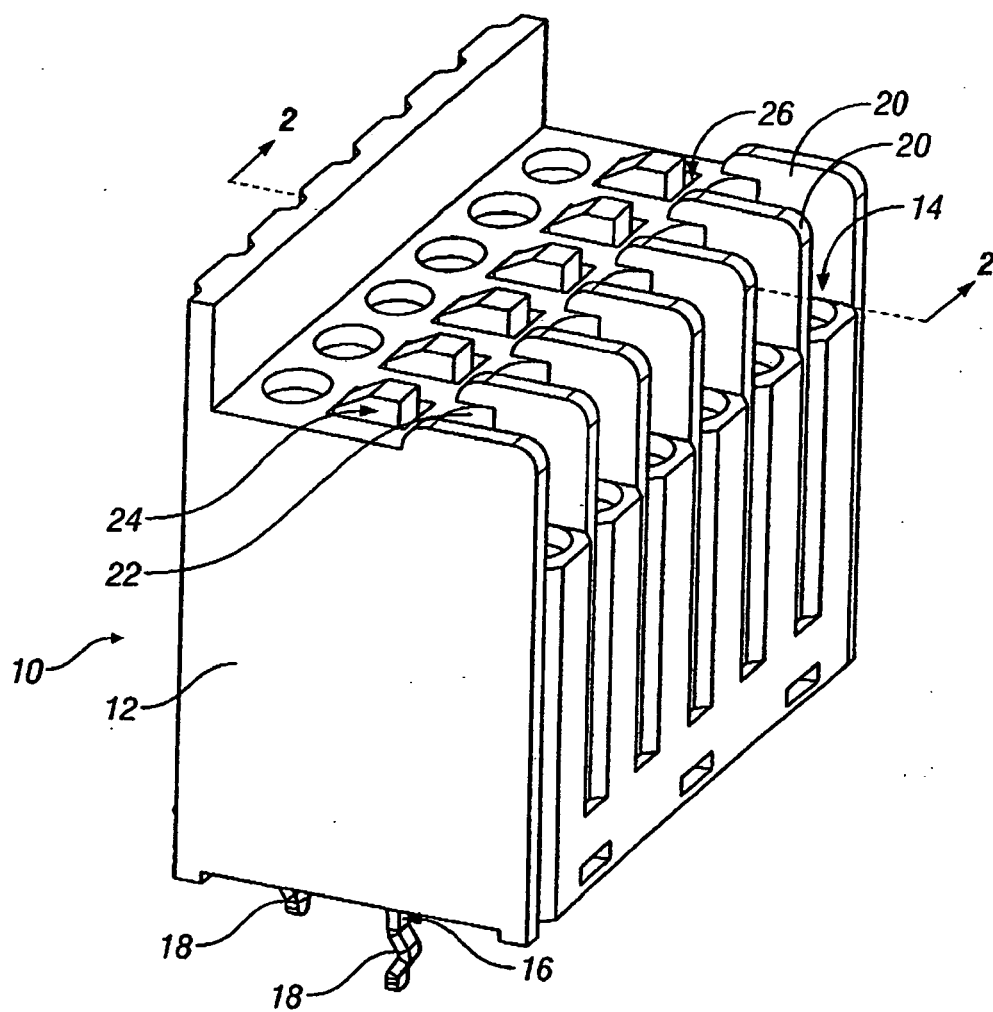
8. Elektrische Steckverbinder-Baugruppe nach Anspruch 7, wobei die Eingriffsfläche (72) dafür konfiguriert ist, ein Werkzeug aufzunehmen, das zum Betätigen des Druckknopfs verwendet wird.

9. Elektrische Steckverbinder-Baugruppe nach einem der vorhergehenden Ansprüche, wobei der oder jeder Kontakt (16) einen Ablenkungsabschnitt (27) einschließt, der eine Spitze hat, die dafür konfiguriert ist, den Draht (52) an einer Seitenwand der Kammer (25) einzuklemmen, wobei das Kontaktablenkungselement den Ablenkungsabschnitt des Kontakts in Eingriff nimmt.

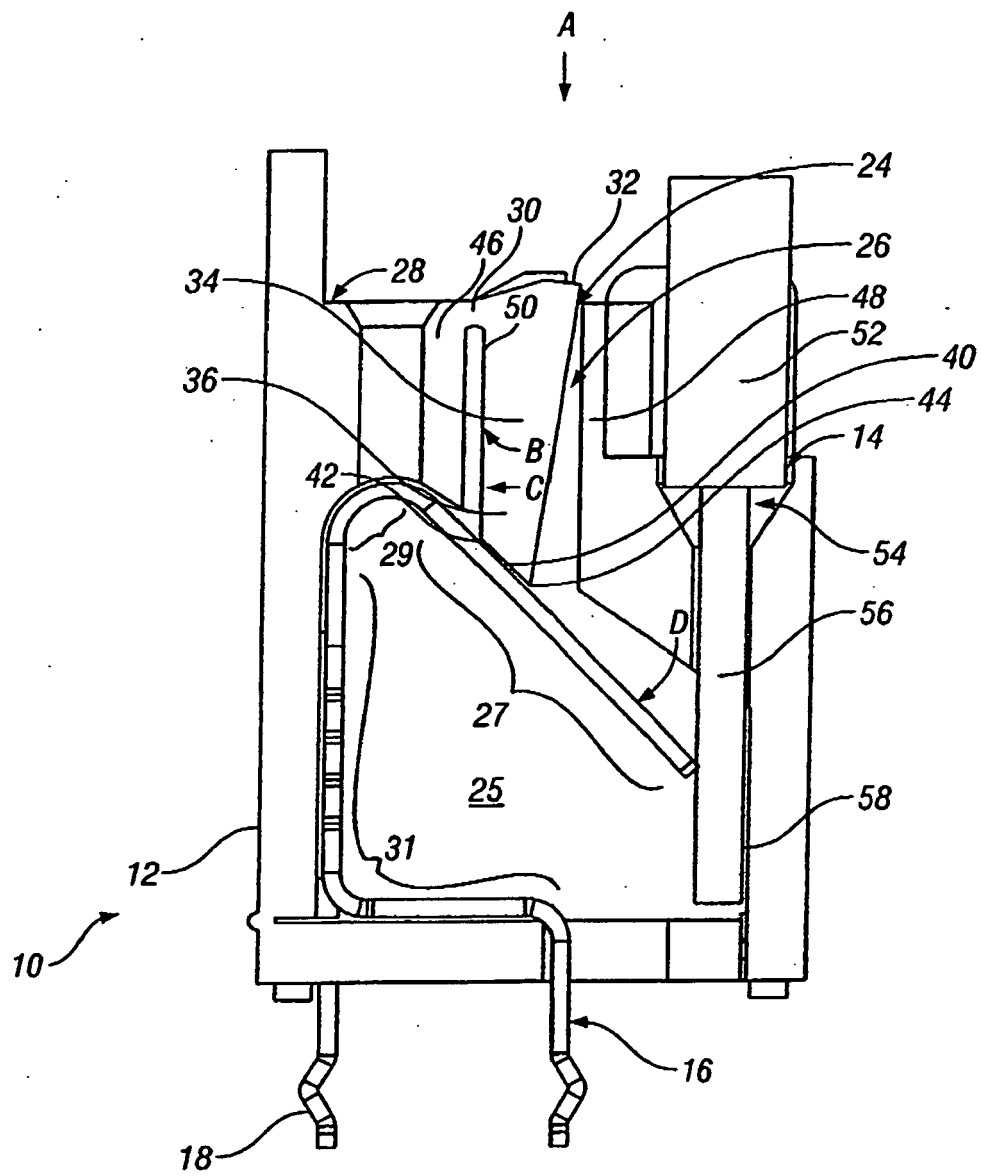
#### Revendications

1. Assemblage de connecteur électrique (10, 60, 100), comprenant:

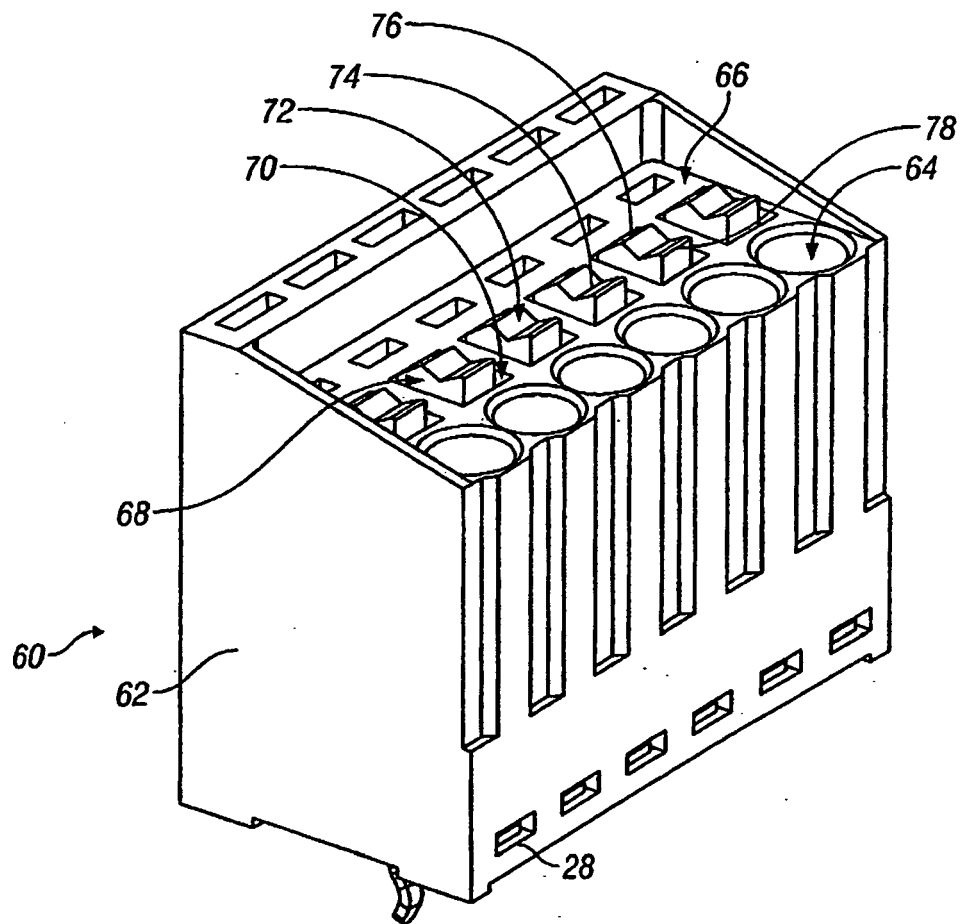
- un boîtier (12, 62, 102), comportant une ou plusieurs chambres (25), un ou plusieurs contacts (16, 104) retenus dans la (les) chambre(s), et pouvant être fléchis au-delà d'un intervalle de déplacement pour établir et supprimer le contact électrique avec un ou plusieurs fils (52) lors d'une insertion dans le boîtier, **caractérisé par** un ou plusieurs éléments de fléchissement des contacts (24, 68, 106), formés d'une seule pièce avec le boîtier et s'étendant dans la(les) chambre(s), et une charnière (30, 80, 108) formée d'une seule pièce avec le ou chaque élément de fléchissement des contacts (24, 68, 106) et le boîtier, pour permettre un déplacement pivotant de l'élément de fléchissement du contact, le ou chaque élément de fléchissement des contacts étant positionné de sorte à s'engager dans un contact associé (16, 104) et à fléchir celui-ci pour établir ou supprimer le contact électrique avec un dit fil.
2. Assemblage de connecteur électrique selon la revendication 1, dans lequel le boîtier englobe un ou plusieurs canaux (26, 86, 114) recevant l'élément (les éléments) de fléchissement des contacts (24, 68, 106), le ou chaque canal et l'élément de fléchissement des contacts associé étant formés d'une seule pièce par l'intermédiaire de la charnière (30, 80, 108).
  3. Assemblage de connecteur électrique selon la revendication 1, englobant plusieurs chambres (25) chacune retenant un des contacts (16, 104) et communiquant avec un passage correspondant (54) configuré de sorte à recevoir un fil (52), et plusieurs éléments de fléchissement des contacts (24, 68, 106) agencés dans des canaux individuels (26, 86, 114) dans le boîtier, communiquant avec les chambres, lesdits éléments de fléchissement des contacts étant formés d'une seule pièce avec lesdits canaux par l'intermédiaire de charnières (30, 80, 108) fixant de manière pivotante lesdits éléments de fléchissement des contacts (24, 68, 106) sur le boîtier.
  4. Assemblage de connecteur électrique selon l'une quelconque des revendications précédentes, dans lequel l'intervalle de déplacement est limité par la butée du ou de chaque élément de fléchissement des contacts contre une paroi interne (46, 94) du boîtier.
  5. Assemblage de connecteur électrique selon les revendications 2 ou 4, ou selon les revendications 3 et 4, dans lequel le ou chaque élément de fléchissement des contacts (24, 68, 106) pivote latéralement dans le canal associé (26, 86, 114) formé dans le boîtier, l'élément de fléchissement du contact comportant une paroi latérale (46, 94) butant contre une paroi latérale (46) du canal pour limiter le déplacement pivotant de l'élément de fléchissement du contact.
  6. Assemblage de connecteur électrique selon l'une quelconque des revendications précédentes, englobant un élément s'opposant à une contrainte excessive (82) agencé dans la ou dans chaque chambre (25) et positionné au niveau d'une extrémité de l'intervalle de déplacement du contact associé (16), pour limiter le fléchissement dudit contact.
  7. Assemblage de connecteur électrique selon l'une quelconque des revendications précédentes, dans lequel le ou chaque élément de fléchissement des contacts est constitué par un bouton-poussoir (24, 68, 106), comportant une surface d'engagement (72, 118) s'étendant à partir d'une partie externe du boîtier.
  8. Assemblage de connecteur électrique selon la revendication 7, dans lequel la surface d'engagement (72) est configurée de sorte à recevoir un outil servant à actionner le bouton-poussoir.
  9. Assemblage de connecteur électrique selon l'une quelconque des revendications précédentes, dans lequel le ou chaque contact (16) englobe une partie à fléchissement (27) comportant une pointe configurée de sorte à prendre en sandwich le fil (52) contre une paroi latérale de la chambre (25), l'élément de fléchissement du contact s'engageant dans la partie à fléchissement du contact.



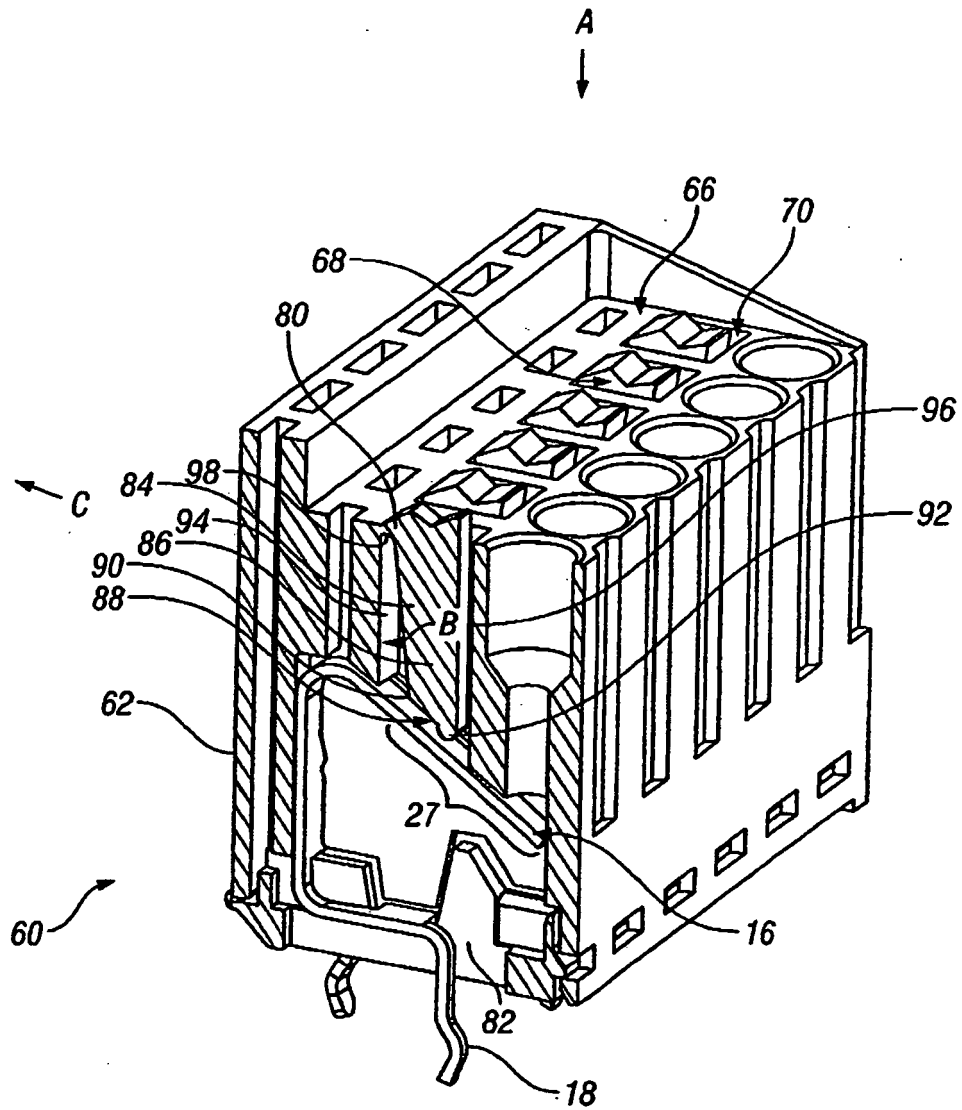
**FIG. 1**



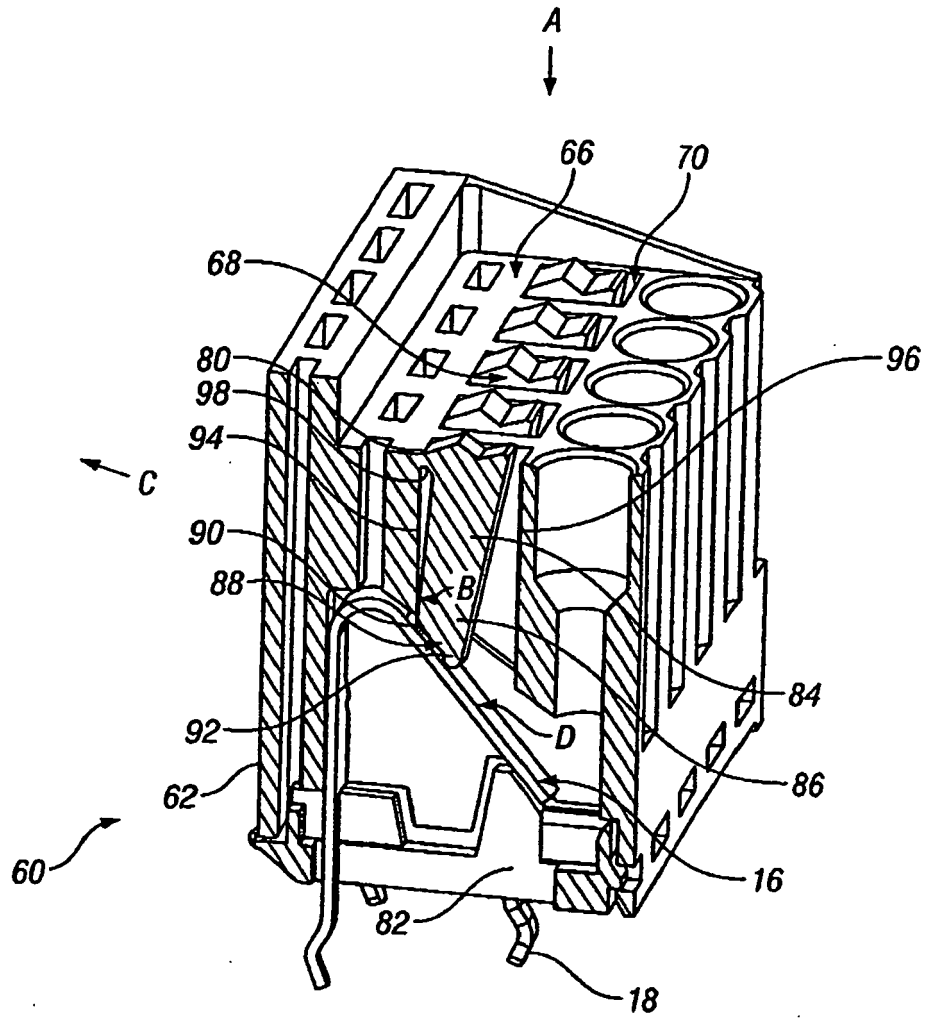
**FIG. 2**



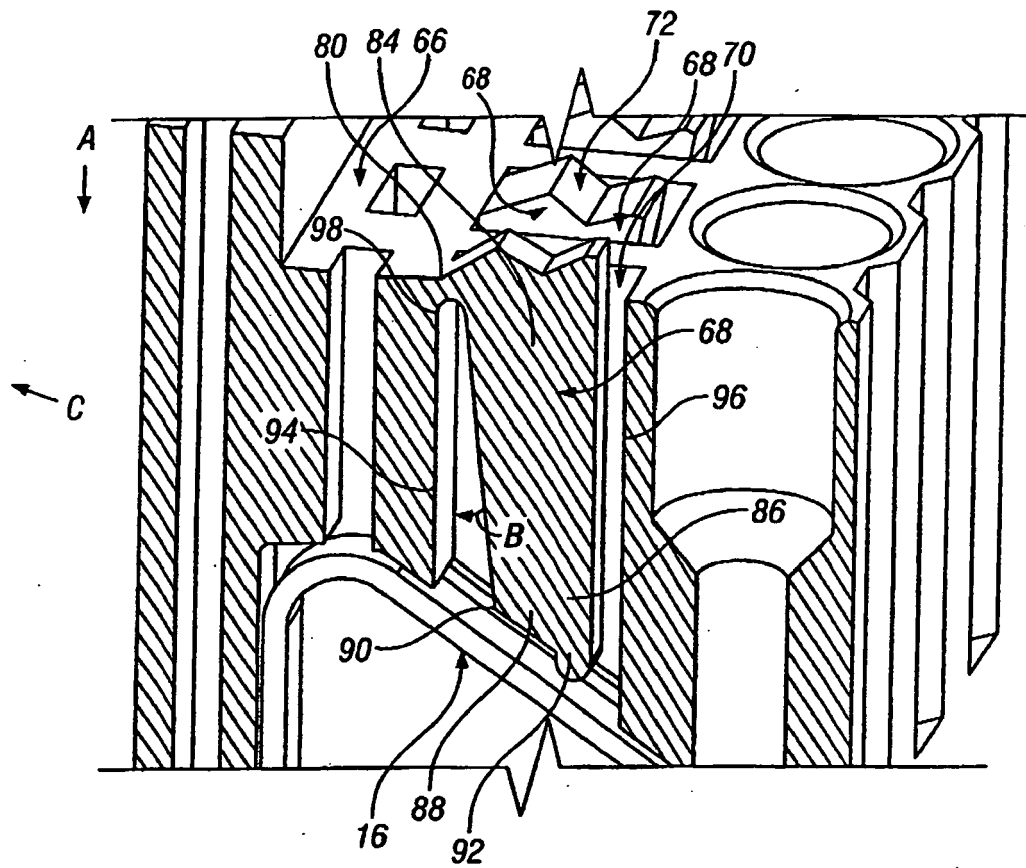
**FIG. 3**



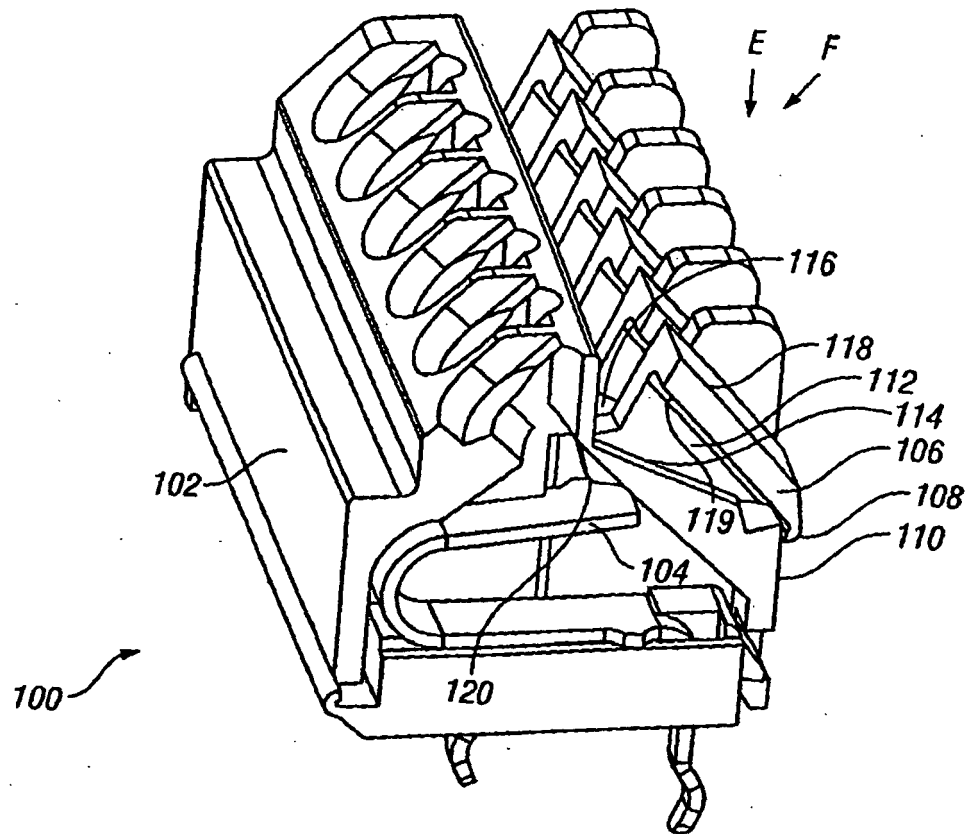
**FIG. 4**



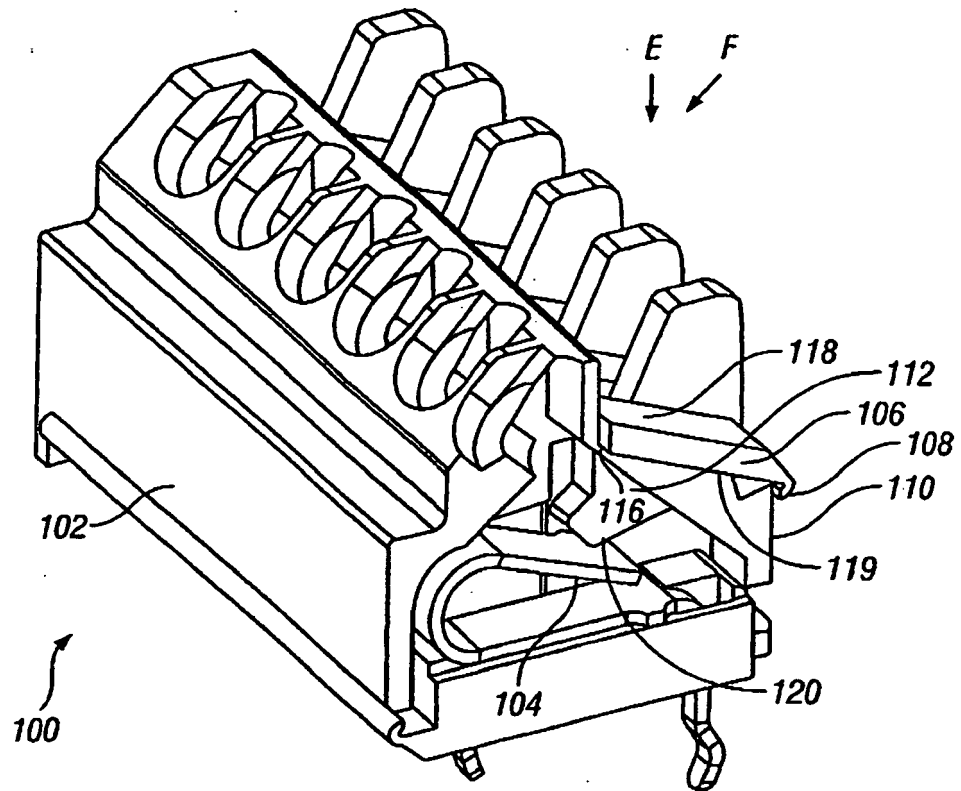
**FIG. 5**



**FIG. 6**



**FIG. 7**



**FIG. 8**

**REFERENCES CITED IN THE DESCRIPTION**

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**Patent documents cited in the description**

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