Nov. 13, 1956 A. ESCHNER, JR 2,770,788

MULTICONTACT ELECTRICAL CONNECTOR

Filed May 31, 1955 3 Sheets-Sheet 1

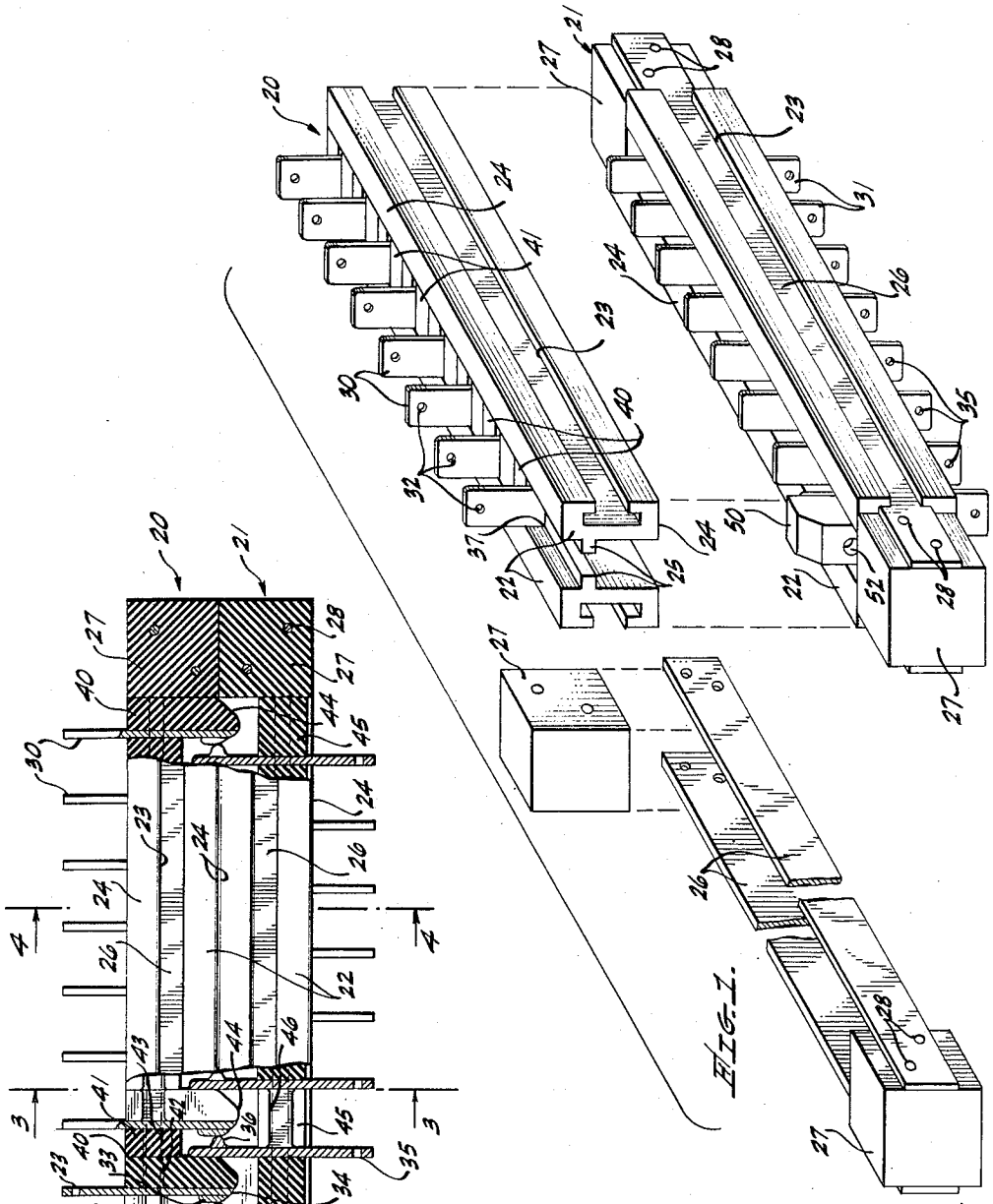

FIG. 1.

FIG. 2.

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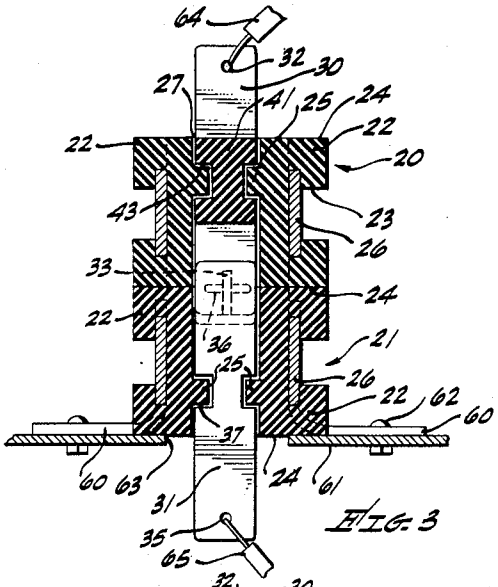

FIG. 3

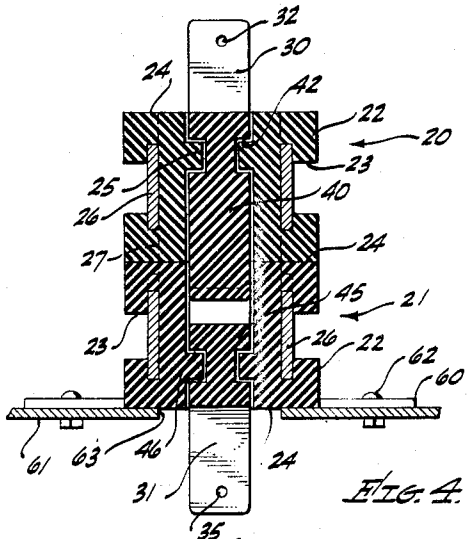

FIG. 4

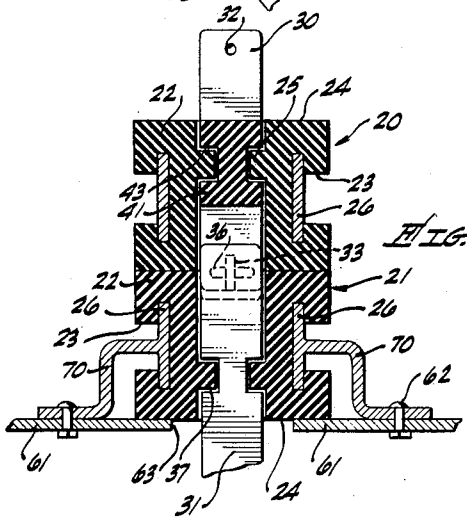

FIG. 5.

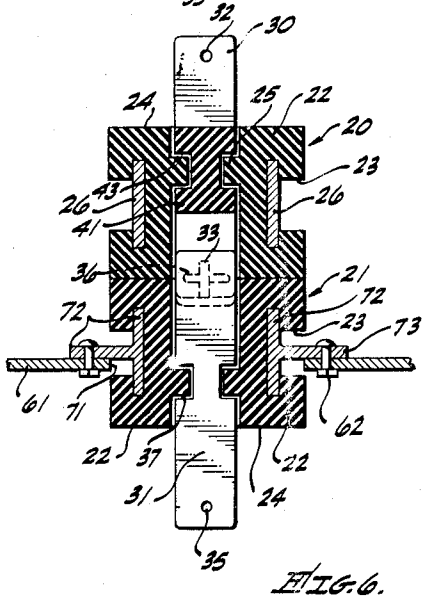

FIG. 6.

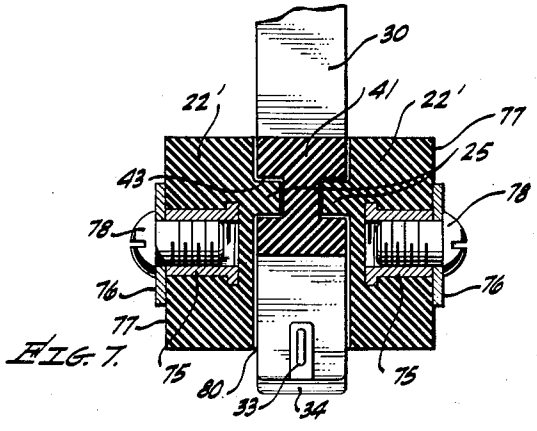

FIG. 7.

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MULTICONTACT ELECTRICAL CONNECTOR

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FIG. 8.

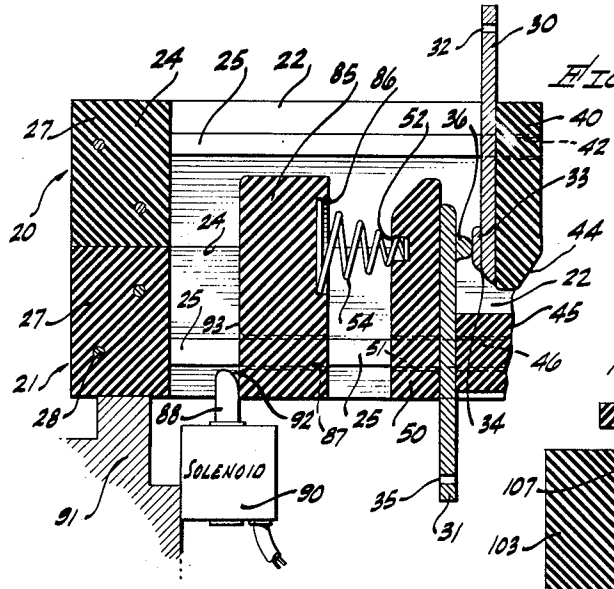


FIG. 9.

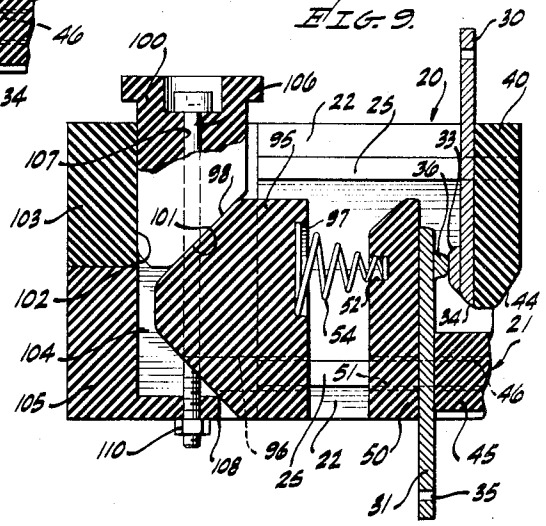
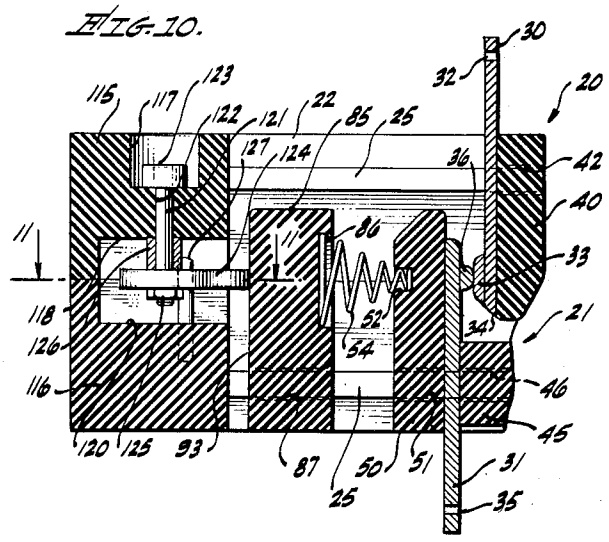


FIG. 10.



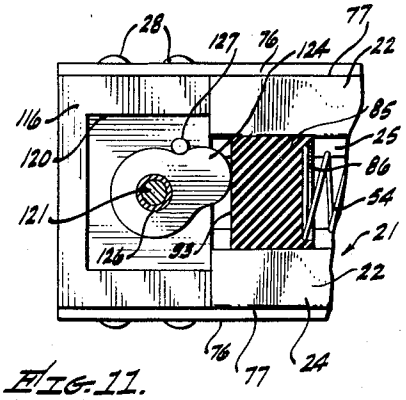


FIG. 11.

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2,770,788

MULTICONTACT ELECTRICAL CONNECTOR

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Application May 31, 1955, Serial No. 511,850

10 Claims. (Cl. 339—198)

The present invention has general utility in the field of electrical connectors and relates to a multiple contact type electrical connector having variable contact pressures.

In various types of electrical and electronic devices, especially those devices requiring the use of connectors between a plurality of electrical leads or other current carrying elements, considerable difficulty is often experienced in obtaining proper contact pressure between contact members, while still permitting manual separation of components of the connector. In other words, in all types of connectors wherein a considerable number of connections must simultaneously be made and/or broken, it has been common practice heretofore to employ pins, leaves or other bodies, inserted between or into resilient gripping members, in order that the required pressure may be maintained between these elements to enable the transmission of electrical energy therethrough. Upon the making or breaking of the connection, composite frictional forces are built up to a level requiring levers, cams or other mechanical arrangements for effecting relative movement of the various elements of the connectors. Unless proper pressure is maintained between contacts, under certain detrimental conditions such as shock, vibration and the like, considerable noise or interruption in electrical flow through the connector will be experienced. Additionally, connectors incorporating elements that are fitted loosely enough to permit manual connection and disconnection are frequently subject to corrosive action and/or other types of detrimental deterioration that will naturally result in poor or even non-existent connections.

In other instances, prior electrical connectors have been provided with a plurality of connector elements that are not only maintained in a permanent condition relative to a supporting body, but in addition, are associated with complex body forms. In this connection, it is important that connector elements be arranged in association with body forms in such a manner as to permit replacement and/or repair thereof in the event of damage to one or more of several adjacently disposed elements. The matter of particular body forms also becomes important relative to the necessity for interchangeability thereof, the maintenance of low production costs and ultimate service or repair of this type of unit.

It is accordingly, one important object of the present invention to provide an electrical connector having means enabling application of variable contact pressures to connector elements incorporated therein.

It is another important object of the present invention to provide an electrical connector having individually positioned and disposed connector elements plurally arranged in association with a connector body, whereby to permit free engagement between adjacent connector units and thereafter the establishment of proper contact pressures between these contacts.

A further object of the present invention is to provide a novel electrical connector including universal connector

bodies utilized as supporting structure for contact members.

Still another important object of the present invention is to provide a novel means for connecting universal bodies utilized in an electrical connector.

A still further important object of the present invention is to provide novel means for biasing contact elements toward each other, thus to establish proper contact pressures between such elements.

Another object of this invention is to provide a novel means for releasing established contact pressure between contact elements when it is desired to separate multiple contact carrying units.

A further important object of the present invention is to provide novel means for supporting at least one element of a connector unit in operative association with adjacent panels, bulkheads or other adjacent surfaces or objects.

Other and further important objects of the present invention will become apparent from the disclosures in the following detailed specification, appended claims and accompanying drawings, wherein:

Figure 1 is an exploded perspective view showing one form of the present electrical connector;

Fig. 2 is a transverse view partially in section through the present connector showing the components in connected relationships;

Fig. 3 is an enlarged transverse sectional view through the connected electrical connector of the present invention as taken substantially as indicated by line 3—3, Fig. 2;

Fig. 4 is a sectional view similar to Fig. 3 through another portion of the present electrical connector as taken substantially as indicated by line 4—4, Fig. 2;

Fig. 5 is a sectional view similar to Fig. 3, showing a modified use situation for the present electrical connector;

Fig. 6 is another sectional view similar to Fig. 5 showing a further modified use of the present invention;

Fig. 7 is a transverse sectional view through one of the connector units showing a modified means for connecting universal connector bodies in operative association with each other;

Fig. 8 is a fragmentary sectional view similar to a portion of Fig. 2 and showing a modified means for releasably maintaining predetermined contact pressures between contact elements;

Fig. 9 is a further longitudinal sectional view similar to a portion of Fig. 2 and showing another modified means for releasably maintaining desired contact pressures between contact elements;

Fig. 10 is still another sectional view similar to Figs. 8 and 9 and showing still another method of releasably applying and maintaining desired contact pressures between contact elements; and

Fig. 11 is a fragmentary sectional view showing a portion of the modified arrangement of Fig. 10 and taken substantially on line 11—11, Fig. 10.

With reference to the drawing, wherein like reference characters denote like parts, the electrical connector of the present invention is shown in Fig. 1 as comprising generally connector units 20 and 21. The units 20 and 21 are adapted for operative connection one with the other in a manner to be hereinafter more fully described and as illustrated in Fig. 2. In one form of the invention, each of the units 20 and 21 has connector bodies 22 forming a portion thereof and universally used throughout these units. Each of the bodies 22 is made from elongated dielectric material such as, for example, plastic, glass, rubber or the like, which may be extruded in a continuous strip and cut to the desired lengths. While it will be recognized that the present bodies may assume various con-

figurations depending upon the ultimate use thereof, means must be provided for maintaining such bodies in operative association with each other. Accordingly, the bodies **22** further include a generally T-shaped elongated groove **23** along one of the sides thereof and spaced approximately equidistant from upper and lower edges **24** thereof. An elongated rib **25**, that is generally rectangular in cross section, is provided on the sides of the bodies **22** remote from the T-shape groove **23** and positioned nearer one of the edges **24**. It is to be understood that the bodies **22** may be of any desired length in accordance with the requirements of particular installation situations.

The bodies **22** are retained in operative association and spaced relationship, with regard to each other, by means of a pair of elongated relatively flat bars **26**, the ends of which are attached to blocks **27** by any suitable fastening means such as rivets or screws **28**. The bars **26** are adapted for disposition in the T-shaped grooves **23** with one of the blocks **27** being secured to the bars after insertion of the bars in the grooves. It will, therefore, be noted that the bodies **22** will be maintained with the ribs **25** in parallel spaced relationship.

As shown primarily in Figs. 2, 3 and 4, the elongated ribs **25** serve to support a plurality of electric contact elements **30**, in the unit **20**, and contact elements **31** in the unit **21**. The contacts **30** are made from flat elongated strips of current carrying material with one of the ends thereof being provided with openings **32** to provide connecting means for electrical leads or wires, the other ends being provided with raised contact surface portions **33**, the outer ends of which, together with the ends of the contacts, being bevelled as at **34**. The contacts **31** are similar to the contacts **30** and are provided with openings **35** on one end thereof and raised contact surface portions **36** adjacent to the other end thereof. It is to be noted that the contact surface portions **33** extend parallel to the contacts **30**, while the contact surface portions **36** are disposed transversely of the contacts **31**. Thus, upon disposition of the contacts **30** and **31** with the surfaces **33** and **36** in contacting relationship, a point contact connection will be made therebetween with tolerances as to the disposition and length of surface portions **33** and **36** being relatively wide. The contacts **30** and **31** are each maintained within the units **20** and **21** respectively by means of generally rectangular notches **37** that are formed on each side thereof and adapted for cooperation with the ribs **25** of the bodies **22**. It is to be noted that the notches **37** are somewhat larger than the ribs **25** so as to permit free movement of the contacts along the ribs and slight angular displacement thereof.

The contacts **30** are maintained in longitudinal spaced relationship by means of spacers **40** and **41**. These spacers are formed from any suitable dielectric material, are disposed adjacent each other between the contacts **30** and are each provided with notches **42** and **43** respectively which are adapted for disposition about the ribs **25**. The spacers **40** are transversely somewhat longer than the spacers **41** and extend beyond the bevelled ends **34** of the contacts **30**. Additionally, the extended ends of the spacers **40** are also bevelled as at **44** for a purpose to be hereinafter more fully described. It may be seen that, if desired, the spacer **40** and **41** may be integrally formed; however, individual formation of these components lends greater contact placement flexibility to the present connector arrangement.

The contacts **31**, like the contacts **30**, are also maintained in spaced longitudinal relationship by means of spacers **45**, of dielectric material, that are each provided with notches **46** which are adapted for cooperation with the ribs **25** of the bodies **22** associated with the connector unit **21**.

It may thus be seen that the units **20** and **21** may be assembled with the various contact members and spacers disposed beyond the ribs **25**, thus loosely to maintain these elements in association with the connector units. In order that proper and required pressures may be established and maintained between the surface portions **33** and **36** of the contacts **30** and **31** respectively, a pressure element **50** of dielectric material is disposed adjacent an endmost contact **31**. The element **50** is provided with side notches **51** which cooperate with the ribs **25** of the connector unit **21**. One side of the element **50** is further provided with a recess **52** which faces away from the associated contact **31**. Additionally, one or the other or both of the blocks **27**, disposed on the ends of the connector units **20** and **21**, are provided with a common recess **53**, a conical compression spring **54** being disposed between the recesses **52** and **53**. The spring **54** acts through the pressure element **50**, all of the contacts **30** and **31** and spacers **40**, **41** and **45** to urge contact surface portions **33** and **36** into tight engagement with each other. It should be understood that the longitudinal lengths of the spacers **40**, **41** and **45** are slightly less than the required spaces between the contact elements, so as to permit the aforementioned tight engagement at the surface portions **33** and **36**. Additionally, it is to be noted that the bevelled ends of the spacers **40** have side portions that are adapted for engagement with sides of the contacts **31** opposite from the transversely disposed contact surface portions **36**, thus to effect additional transverse pressure between the contact surfaces in the area of these surfaces and as transmitted thereto by means of the compression spring **54**.

Accordingly, upon removal of the compression spring **54**, pressure on the various contacts, and contact surface portions employed in the connector arrangement of the present invention, would be relieved whereby to enable free separation of the connector units **20** and **21** and re-establishment of the connection therebetween. The spring **54** is adapted for disposition in the recesses **52** and **53** following interleaved disposition of the various contact members **30** and **31**. It is to be noted that the bevelled ends **34** of the contacts **30** and the bevelled ends **44** of the spacers **40** serve to reduce any interference that may be encountered upon establishment of the interleaved association of the contacts **30** and **31**. It is to be understood that the particular relationship and placement of the spring **54** in association with the plugs **27** is merely by way of example, as will be pointed out hereinafter in relation to other forms of the present invention.

As shown in Figs. 3 and 4, end portions of the bars **26**, extending beyond transverse ends of the bodies **22**, may be fitted with integral outwardly disposed brackets **60** that are adapted for connection with a panel or the like indicated at **61** as by suitable connection means **62**. The panel **61** may be provided with an enlarged opening **63** spaced on each side of the contacts **31**. Thus, the connector unit **21** may be permanently attached to the panel **61** while the connector unit **20** may be secured to other units and/or a plurality of wire leads **64** or the like. Obviously, the contact **31** may be connected to leads **65** extending to any desired position.

With reference to Figs. 5 and 6 it is to be noted that the unit **21** may be secured to the panel **61** as by other means such as, for example, a bracket arrangement **70**, Fig. 5, that is attached to or formed integrally with the bars **26**, disposed outwardly from portions of the T-shaped grooves **23** and attached to the panel by the fastening or connecting means **62**. In this instance, the panel **61** would also be provided with the enlarged opening **63** that is spaced from the contacts **31**. The form of attachment shown in Fig. 6 may be used in situations requiring a sealed construction with reference to an enlarged opening **71** in the panel **61**. In this form of the invention, a pair of bars **72** may replace the bars **26**, with the bars **72** having transversely extending portions **73** that are, in turn, connected to the panel **61** by means of the connecting means **62**. Thus, in the form of the invention shown in Fig. 6, the opening **71** will be filled by the outer surfaces of the pair of bodies **22**.

In Fig. 7 a modified form of the invention is shown wherein bodies **22'** are provided with a plurality of spaced inserts **75** that are molded in the bodies and extend laterally therefrom. Interconnecting and supporting bars **76** may be disposed on outer surfaces **77** of the bodies **22'** and secured thereon by means of screws **78**, or the like, which threadably engage the inserts **75**. In this form of the invention, the bars **76** are adapted for attachment to end plugs **80** in a manner similar to the attachment of the previously described form of the invention to the end plugs **27**. Thus, a more rigid construction may be established in accordance with the principles of the present invention through use of the modified form of connection between the bodies **22'** which serve to make up one of the connector units.

With reference to Fig. 8, it may be seen that the desired compression exerted by the compression spring **54** may be established by different means. In this form of the invention, the spring **54** is disposed between the pressure applying member **50** and a movable spring carrying member **85**. The member **85** is provided with a side recess **86**, for reception of the larger end of the conical compression spring **54**, and is further provided with longitudinal grooves **87** on each side thereof which are adapted for disposition about the ribs **25** associated with connector unit **21**. The spring carrying member **85** may be maintained in a longitudinal position on the ribs **25**, associated with the connector unit **21**, by any suitable means and may, if desired, be retained in this position by means of a latch established by an armature **88** extending from a solenoid **90**. The solenoid **90**, together with the connector unit **21**, are connected to a common base structure indicated generally at **91**. The outer end of the armature **88** is bevelled as at **92** to permit extension thereof over an end surface **93** of the spring carrying member **85**. Upon energization of the solenoid **90**, the armature **88** will be withdrawn from its position engaging the surface **93**, thus permitting relaxation of the compression spring **54** and reduction of the pressure applied to the contacting surfaces of the various connectors **30** and **31**. This particular arrangement is useful in situations where rapid release of one connector unit from the other is desired in response to a predetermined electrical signal.

In some instances, it may be desirable to exert considerable pressure on the compression spring **54**. As shown in Fig. 9, a modified form spring carrying member **95** is slidably disposed on the ribs **25**, by means of longitudinal grooves **96** formed therein. The spring carrying member **95** is provided with a side recess **97** for reception of one end of the compression spring **54**, the other end of the spring being disposed in the recess **52** in the pressure element **50**. The spring carrying member **95** has a bevelled end portion **98** against which a force transmitting member **100**, having a bevelled surface **101**, is positioned. The force transmitting member **100** is disposed within an opening **102** in an end block **103**, there being an opening **104** in another end block **105**. The end block **103** is associated with the connector unit **20** while the block **105** forms a portion of the connector unit **21**. A screw **106** is disposed longitudinally through an opening **107** in the force transmitting member **100** and through a lip **108** formed on one side of the opening **104**. A nut or the like **110** is threadably secured to the outer end of screw **106**. Upon rotation of the nut **110** on the threads of the screw **106**, the force transmitting member **100** will be moved toward the space **104**, thus effecting relative movement between the bevelled surfaces **98** and **101** and longitudinal movement of the spring carrying member **95** along the ribs **25** for compression of the spring **54**. The force on the spring **54** may obviously be relieved by rotation of the nut **110** in an opposite direction from that previously described.

In Figs. 10 and 11, a further modified form of the

invention is shown wherein a further alternative arrangement is disclosed for urging the spring carrying member **85** in a direction to compress the spring **54**. In this form of the invention, blocks **115** and **116** are provided respectively on the ends of the connector units **20** and **21** and secured in position by the bars **76**, for example. The block **115** is provided with a recess **117** in the upper surface thereof and a recess **118** in the lower surface thereof, while the block **116** is provided with a recess **120** similar to the recess **118** in its upper surface. Thus, the recesses **118** and **120** cooperate to form a chamber between the blocks **111** and **116**. A shaft **121** is journalled in a bore **122** extending between the recesses **117** and **118**. The upper end of the shaft **121** is fitted with a head **123**, a locking member or cam **124** being secured to the lower end of shaft **121** as by means of a nut **125**. A sleeve **126** is disposed between the lock member **124** and the base of the recess **122** whereby to support the locking member in a central position between the recesses **118** and **120**. It is to be noted that, upon rotation of the shaft **121**, the locking member **124** will be rotated to the position shown in Fig. 11, with an end thereof being adapted for engagement with the surface **93** of the spring carrying member **85**, whereby longitudinally to move the spring carrying member and to compress the spring **54**. A stop pin **127** is disposed from the block **116** and extends into the chamber defined by the recesses **118** and **120**. The stop pin **127** limits rotation of the locking member **124** in a direction to move the spring carrying member **85** and compresses the spring **54**.

It may thus be seen that upon utilization of the universal components of the present invention, various arrangements may be established and various means may be utilized to effect latching, exertion of compression, releasing of compression and support of the contact elements, connector units, spacers and other components utilized in the present invention. The novel universal connector arrangement is thereby provided with universal components arranged in a manner enabling a plurality of forms of the invention, as may be required in connection with various types of electrical and electronic equipment.

Having thus described the invention and the present embodiments thereof, it is desired to emphasize the fact that many modifications may be resorted to in a manner limited only by a just interpretation of the following claims.

What is claimed is:

1. An electrical connector comprising, in combination: two pairs of elongated body members of substantially identical cross sectional configuration; means for securing each body member of said pairs in spaced relationship to another of said body members; longitudinally extending ribs on each of said body members, said ribs being disposed in facing spaced relationship in each of said pairs of body members; a plurality of contact members; notches in sides of said contact members, said notches being adapted for disposition over said ribs; spacers disposed on said ribs between said contact members, said contact members having end portions adapted for extension from the space defined between each of said pairs of said body members on at least one side thereof; contact surfaces on said extended end portions of said contact members, said contact surfaces carried by said contact members carried by each of said pairs of body members being adapted for free interleaved frictional engagement; and pressure applying means disposed longitudinally between a portion of said body member securing means and one end of said plurality of contact members and acting on a line parallel to said ribs, whereby to bias said contact surfaces into tight contact with each other following said interleaving of said contact members.

2. An electrical connector comprising, in combination: two pairs of elongated body members of substan-

tially identical cross sectional configuration; means disposed along entire sides of said body members for securing each body member of said pairs in spaced relationship to another of said body members; block means carried by ends of said securing means for connecting said ends, said block means engaging ends of said body members; longitudinally extending ribs on each of said body members, said ribs being disposed in facing spaced relationship in each of said pairs of body members; a plurality of contact members; notches in sides of said contact members, said notches being adapted for disposition over said ribs; spacers disposed on said ribs between said contact members, said contact members having end portions adapted for extension from the space defined between each of said pairs of said body members on at least one side thereof; contact surfaces on said extended end portions of said contact members, said contact surfaces carried by said contact members carried by each of said pairs of body members being adapted for free interleaved frictional engagement; and pressure applying means disposed longitudinally between said block means of said body member securing means and one end of said plurality of contact members and acting on a line parallel to said ribs, whereby to bias said contact surfaces into tight contact with each other following said interleaving of said contact members.

3. An electrical connector comprising, in combination: two pairs of elongated dielectric body members of substantially identical cross sectional configuration; means for securing each body member of said pairs in spaced relationship to another of said body members; longitudinally extending ribs on each of said body members, said ribs being disposed in facing spaced relationship in each of said pairs of body members; a plurality of relatively thin metallic contact members; notches in sides of said contact members, said notches being adapted for disposition over said ribs; spacers of dielectric material disposed on said ribs between said contact members, said contact members having end portions adapted for extension from the space defined between each of said pairs of said body members on at least one side thereof; contact surfaces on said extended end portions of said contact members, said contact surfaces carried by said contact members carried by each of said pairs of body members being adapted for free interleaved frictional engagement, said contact surfaces being elongated with contact surfaces of adjacent contact members being disposed normal to each other; and pressure applying means disposed longitudinally between a portion of said body member securing means and one end of said plurality of contact members and acting on a line parallel to said ribs, whereby to bias said contact surfaces into tight contact with each other following said interleaving of said contact members.

4. An electrical connector comprising, in combination: two pairs of elongated dielectric body members of substantially identical cross sectional configuration; means disposed along entire sides of said body members for securing each body member of said pairs in spaced relationship to another of said body members; block means carried by ends of said securing means for connecting said ends, said block means engaging ends of said body members; longitudinally extending ribs on each of said body members, said ribs being disposed in facing spaced relationship in each of said pairs of body members; a plurality of relatively thin metallic contact members; notches in sides of said contact members, said notches being adapted for disposition over said ribs; spacers of dielectric material disposed on said ribs between said contact members, said contact members having end portions adapted for extension from the space defined between each of said pairs of said body members on at least one side thereof; contact surfaces on said extended end portions of said contact members, said contact surfaces carried by said contact members carried by each of said pairs of body members being adapted for free interleaved frictional engagement, said contact surfaces being elongated with contact surfaces of adjacent contact members being disposed normal to each other; and pressure applying means disposed longitudinally between said block means of said body member securing means and one end of said plurality of contact members and acting on a line parallel to said ribs, whereby to bias said contact surfaces into tight contact with each other following said interleaving of said contact members.

5. An electrical connector comprising, in combination: two pairs of elongated dielectric body members of substantially identical cross sectional configuration; means disposed along entire sides of said body members for securing each body member of said pairs in spaced relationship to another of said body members; block means carried by ends of said securing means for connecting said ends, said block means engaging ends of said body members; longitudinally extending ribs on each of said body members, said ribs being disposed in facing spaced relationship in each of said pairs of body members; a plurality of relatively thin metallic contact members; notches in sides of said contact members, said notches being adapted for disposition over said ribs; spacers of dielectric material disposed on said ribs between said contact members, said contact members having end portions adapted for extension from the space defined between each of said pairs of said body members on at least one side thereof; contact surfaces on said extended end portions of said contact members, said contact surfaces carried by said contact members carried by each of said pairs of body members being adapted for free interleaved frictional engagement, said contact surfaces being elongated with contact surfaces of adjacent contact members being disposed normal to each other; pressure applying means disposed longitudinally between said block means of said body member securing means and one end of said plurality of contact members and acting on a line parallel to said ribs whereby to bias said contact surfaces into tight contact with each other following said interleaving of said contact members; and means for releasing said pressure applying means prior to separation of said interleaved contact members.

6. An electrical connector comprising, in combination: two pairs of elongated body members of substantially identical cross sectional configuration; means for securing each body member of said pairs in spaced relationship to another of said body members; longitudinally extending ribs on each of said body members, said ribs being disposed in facing spaced relationship in each of said pairs of body members; a plurality of contact members; notches in sides of said contact members, said notches being adapted for disposition over said ribs; spacers disposed on said ribs between said contact members, said contact members having end portions adapted for extension from the space defined between each of said pairs of said body members on at least one side thereof; contact surfaces on said extended end portions of said contact members, said contact surfaces carried by said contact members carried by each of said pairs of body members being adapted for free interleaved frictional engagement; a force transmitting block disposed on said ribs of one of said pairs of body members; a compression spring positioned between said transmitting block and one end of said plurality of contact members and acting on a line parallel to said ribs; and means for moving said transmitting block longitudinally along said ribs whereby to bias said contact surfaces into tight engagement with each other following said interleaving of said contact members.

7. An electric connector comprising, in combination: two pairs of elongated body members of substantially identical cross sectional configuration; means for securing each body member of said pairs in spaced relationship to another of said body members; longitudinally extending ribs on each of said body members, said ribs being disposed in facing spaced relationship in each of said

pairs of body members; a plurality of contact members; notches in sides of said contact members, said notches being adapted for disposition over said ribs; spacers disposed on said ribs between said contact members, said contact members having end portions adapted for extension from the space defined between each of said pairs of said body members on at least one side thereof; contact surfaces on said extended end portions of said contact members, said contact surfaces carried by said contact members carried by each of said pairs of body members being adapted for free interleaved frictional engagement; a force transmitting block disposed on said ribs of one of said pairs of body members; a compression spring positioned between said transmitting block and one end of said plurality of contact members and acting on a line parallel to said ribs; means for moving said transmitting block longitudinally along said ribs whereby to bias said contact surfaces into tight engagement with each other following said interleaving of said contact members; and means for releasing said moving means for said transmitting block.

8. An electrical connector comprising, in combination: two pairs of elongated dielectric body members of substantially identical cross sectional configuration; means disposed along entire sides of said body members for securing each body member of said pairs in spaced relationship to another of said body members; block means carried by ends of said securing means for connecting said ends, said block means engaging ends of said body members; longitudinally extending ribs on each of said body members, said ribs being disposed in facing spaced relationship in each of said pairs of body members; a plurality of relatively thin metallic contact members; notches in sides of said contact members, said notches being adapted for disposition over said ribs; spacers of dielectric material disposed on said ribs between said contact members, said contact members having end portions adapted for extension from the space defined between each of said pairs of said body members on at least one side thereof; contact surfaces on said extended end portions of said contact members, said contact surfaces carried by said contact members carried by each of said pairs of body members being adapted for free interleaved frictional engagement, said contact surfaces being elongated with contact surfaces of adjacent contact members being disposed normal to each other; a force transmitting block disposed on said ribs of one of said pairs of body members; a compression spring positioned between said transmitting block and one end of said plurality of contact members and acting on a line parallel to said ribs; and means for moving said transmitting block longitudinally along said ribs whereby to bias said contact surfaces into tight engagement with each other following said interleaving of said contact members.

9. An electrical connector comprising, in combination: two pairs of elongated dielectric body members of substantially identical cross sectional configuration; means disposed along entire sides of said body members for securing each body member of said pairs in spaced relationship to another of said body members; block means carried by ends of said securing means for connecting said ends, said block means engaging ends of said body members; longitudinally extending ribs on each of said body members, said ribs being disposed in facing spaced relationship in each of said pairs of body members; a plurality of relatively thin metallic contact members; notches in sides of said contact members, said notches being adapted for disposition over said ribs; spacers of dielectric material disposed on said ribs between said contact members, said contact members having end portions adapted for extension from the space defined between each of said pairs of said body members on at least one side thereof; contact surfaces on said extended end portions of said contact members, said contact surfaces carried by said contact members carried by each of said pairs of body members being adapted for free interleaved frictional engagement, said contact surfaces being elongated with contact surfaces of adjacent contact members being disposed normal to each other; a force transmitting block disposed on said ribs of one of said pairs of body members; a compression spring positioned between said transmitting block and one end of said plurality of contact members and acting on a line parallel to said ribs; means for moving said transmitting block longitudinally along said ribs whereby to bias said contact surfaces into tight engagement with each other following said interleaving of said contact members; and means for releasing said moving means for said transmitting block.

10. An electrical connector comprising, in combination: two pairs of elongated dielectric body members of substantially identical cross sectional configuration; means disposed along entire sides of said body members for securing each body member of said pairs in spaced relationship to another of said body members; block means carried by ends of said securing means for connecting said ends, said block means engaging ends of said body members; longitudinally extending ribs on each of said body members, said ribs being disposed in facing spaced relationship in each of said pairs of body members; a plurality of relatively thin metallic contact members; notches in sides of said contact members, said notches being adapted for disposition over said ribs; spacers of dielectric material disposed on said ribs between said contact members, said contact members having end portions adapted for extension from the space defined between each of said pairs of said body members on at least one side thereof; contact surfaces on said extended end portions of said contact members, said contact surfaces carried by said contact members carried by each of said pairs of body members being adapted for free interleaved frictional engagement, said contact surfaces being elongated with contact surfaces of adjacent contact members being disposed normal to each other; a force transmitting block disposed on said ribs of one of said pairs of body members; a conical compression spring positioned between said transmitting block and one end of said plurality of contact members and acting on a line parallel to said ribs; cam means carried by one of said block means for moving said transmitting block longitudinally along said ribs whereby to bias said contact surfaces into tight engagement with each other following said interleaving of said contact members; and latch means operatively associated with said cam means for releasing said moving means for said transmitting block.

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