

[54] **RETENTION SYSTEM FOR ELECTRICAL CONTACTS**

[75] Inventor: **Joseph Sugar**, Los Angeles, Calif.

[73] Assignee: **International Telephone and Telegraph Corporation**, New York, N.Y.

[22] Filed: **July 13, 1973**

[21] Appl. No.: **378,885**

[52] U.S. Cl. **339/59 R**

[51] Int. Cl. **H01r 13/40**

[58] Field of Search 339/59-63,
339/217, 220, 221, 258

[56] **References Cited**

UNITED STATES PATENTS

3,012,159	12/1961	Druesedow.....	339/59 M
3,165,369	1/1965	Maston.....	339/59 M
3,444,504	5/1969	Lynch et al.....	339/221 R
3,748,633	7/1973	Lundergan.....	339/258 R

FOREIGN PATENTS OR APPLICATIONS

1,399,216	4/1965	France	339/220 R
-----------	--------	--------------	-----------

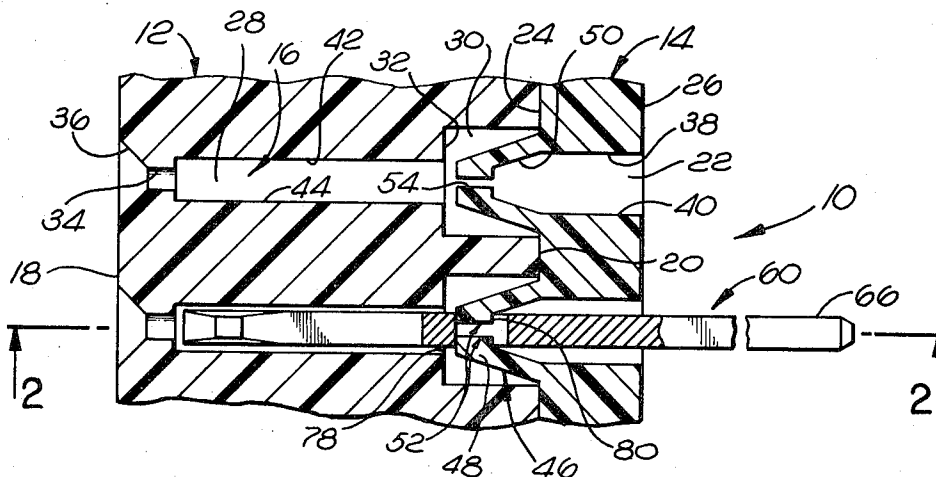
379,568	3/1940	Italy	339/220 R
1,127,424	4/1962	Germany.....	339/258 R
1,058,278	2/1967	Great Britain	339/59 M

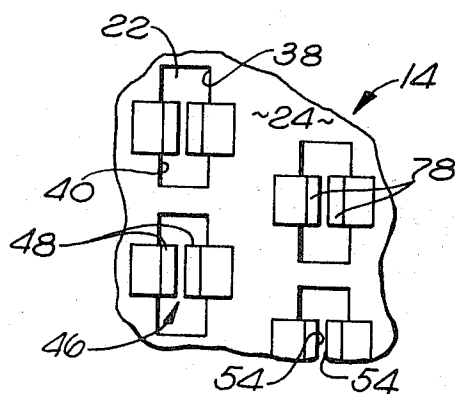
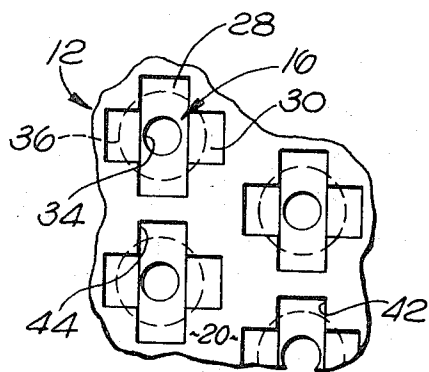
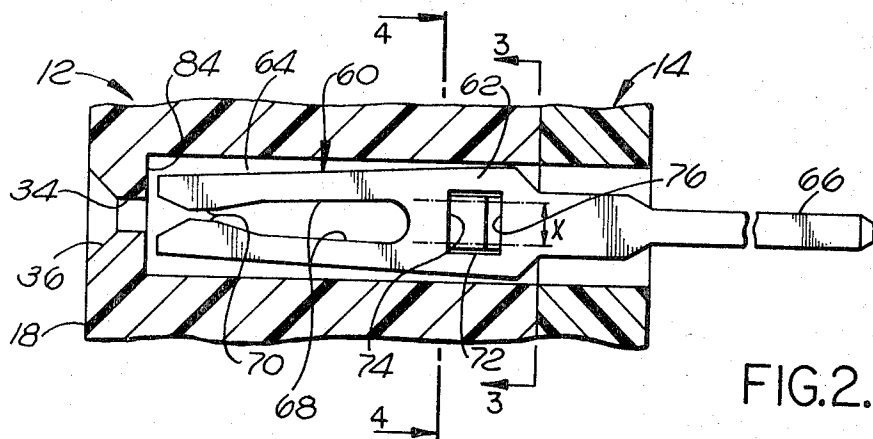
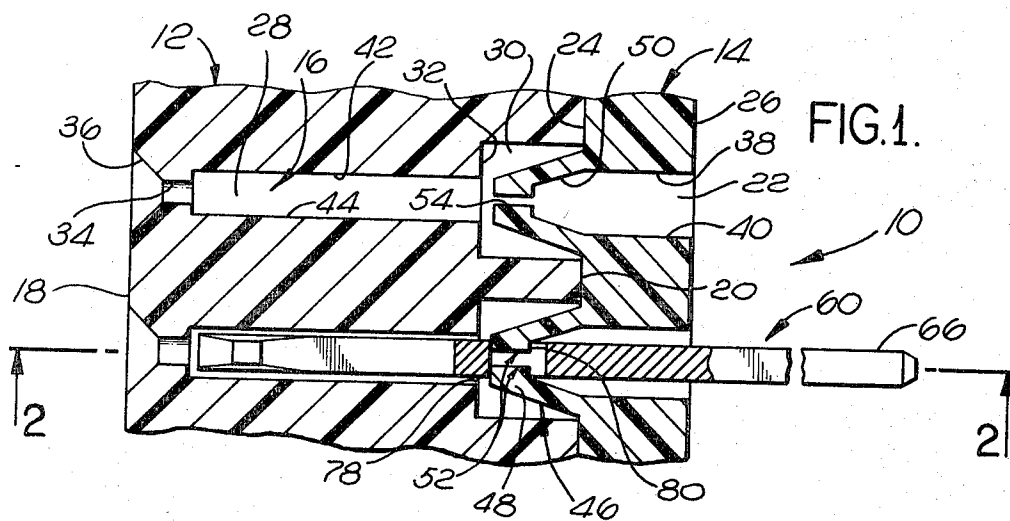
Primary Examiner—Joseph H. McGlynn
Attorney, Agent, or Firm—Thomas L. Peterson

[57] **ABSTRACT**

A retention system for a rear insert-rear release tuning fork-type socket contact or pin contact having a flat stamped body section with a rectangular opening formed therein. The insulator for the contact is formed with a passage having a pair of integral laterally resilient retention elements on opposite sides thereof. These elements are spread apart when the contact is inserted into the passage and contract into the opening in the contact when the latter is aligned therewith to secure the contact in the passage. An extraction tool inserted through the rear of the insulator passage serves to spread the retention elements apart, thus allowing the contact to be removed rearwardly from the passage.

17 Claims, 10 Drawing Figures





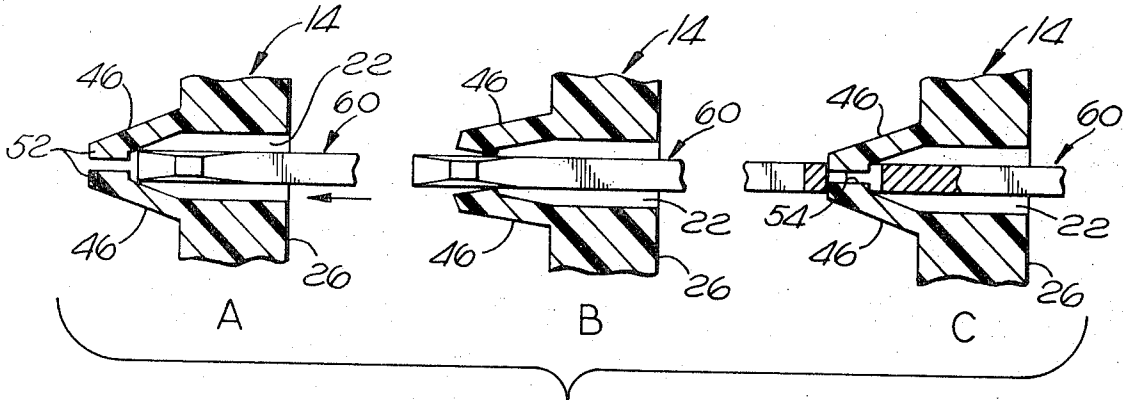


FIG. 5.

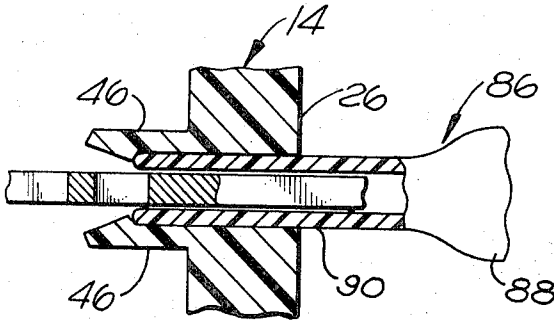


FIG. 6.

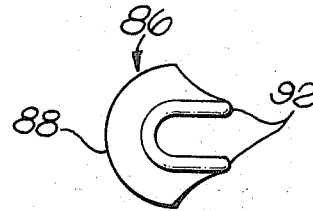


FIG. 7.

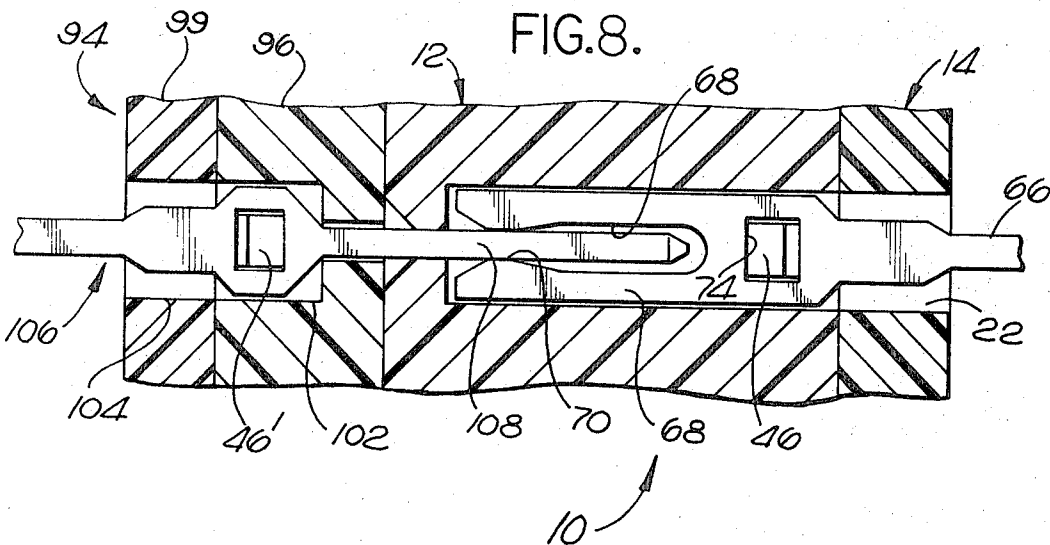


FIG. 8.

RETENTION SYSTEM FOR ELECTRICAL CONTACTS

BACKGROUND OF THE INVENTION

The present invention relates generally to a retention system for electrical contacts and, more particularly, to a retention system particularly suited for flat tuning fork-type socket and pin contacts.

Flat tuning fork-type socket contacts are frequently employed in one connector member of an electrical connector which are matable with a plurality of pin contacts in another connector member. Typically, these contacts are retained in position in the insulators of the respective connector members by an interference or press fit. As a consequence, the reusability of these types of contacts and their respective insulators is very limited. In many applications, reusability of the insulator and the contacts is desired, thus necessitating the use of a contact retention system not requiring an interference fit. It is also desirable to provide a closed entry form of passage for the tuning fork contact so that the legs of the contact will not be damaged when the pin contact is engaged therewith. To meet this requirement, the contact retention system must allow the contacts to be both inserted and withdrawn from the rear face of the insulator in which the contacts are mounted.

Rear insert-rear release type retention systems for electrical contacts are well known in the art, but they have been generally limited to contacts having a cylindrical configuration. Some systems of this general type utilize individual spring retention clips or rings which circumscribe the respective contact members and are either mounted on the contacts for engagement against respective shoulders in the insulator passages or are mounted in the passages for engagement against respective shoulders on the contacts. Another form of retention system employs cones which are integrally formed with the insulators and are resiliently radially expandable to permit collars on the contacts to pass therethrough upon insertion of the contacts in the insulator passages and the cones will contract behind the collars on the contacts to limit rearward movement of the contacts in the insulator passages. Also, various forms of integral fingers have been utilized on insulators for retaining contacts within the passages in the insulators. In all these systems, the spring clips, cones or fingers limit the contacts in the insulator against movement in only one direction. Additional shoulders must be formed on the insulator to cooperate with either the front ends or shoulders on the contacts to limit the contacts against movement in the opposite direction. The following United States patents describe in detail the type of prior art retention systems previously discussed herein:

U.S. Pat. No. 3,158,424 to Bowen; U.S. Pat. No. 3,165,639 to Maston; U.S. Pat. No. 3,440,596 to Frompovicz; and U.S. Pat. No. 3,648,213 to Kobler. It is noted that the Frompovicz and Kobler systems provide for rear insert but front release of the contacts in the connector insulators.

Thus, what is desired and constitutes the principal object of the present invention is a retention system for tuning fork-type socket contacts and pin contacts which does not require an interference fit between the contacts and the insulators and allows the contacts to be both inserted and withdrawn from the rear of the in-

ulators so that a closed entry can be provided at the forward end of the insulator for the tuning fork contacts.

SUMMARY OF THE INVENTION

According to the principal aspect of the present invention, there is provided a retention system for an electrical contact having a generally flat configuration, such as a tuning fork-type socket or pin contact, which allows the contact to be both inserted and withdrawn from the rear of the connector insulator. The contact embodies a flattened body section having an opening therein which defines forwardly and rearwardly facing edges. The insulator is provided with at least one laterally movable contact retention element which extends forwardly and inwardly from the wall of the insulator passage to a forward free end. The forward free end embodies stop means which is receivable in the opening in the contact member and cooperates with the forwardly and rearwardly facing edges of the opening to limit axial movement of the member in the passage in both the forward and rearward direction. The stop means is preferably in the form of a rectangular projection formed on the contact retention element which has a configuration complementary to that of the opening in the contact so as to be receivable therein. Unlike the retention elements employed in the prior art connectors discussed previously herein, the retention element of the present invention limits movement of the contact in the insulator passage in opposite directions so that additional shoulders need not be formed on the contact and in the insulator to limit movement of the contact in the direction opposite to that to which the retention element limits movement. Thus, the retention system of the present invention is relatively simple in construction and inexpensive to manufacture. The retention system also allows for replacement of the contacts in the insulator and the reuse of both these elements. Also, in the case of the socket contact, since it is insertable and removable from the rear of the connector insulator, a closed entry may be provided at the forward end of the insulator passage to protect the forward contacting portion of the contact.

Other aspects and advantages of the invention will become more apparent from the following description taken in connection with the accompanying drawings.

BRIEF DESCRIPTION OF THE DRAWINGS

FIG. 1 is a fragmentary vertical section, with portions in elevation, illustrating an electrical connector member embodying the contact retention system of the present invention, with one contact member illustrated as being fully inserted in position in the connector insulator passage;

FIG. 2 is a fragmentary horizontal sectional view taken along line 2—2 of FIG. 1;

FIG. 3 is an elevational view showing the rear face of the front insulator utilized in the connector of the present invention;

FIG. 4 is an elevational view showing the front face of the rear insulator;

FIGS. 5a, 5b, and 5c are fragmentary vertical sections of the rear insulator of the connector member of the present invention illustrating the progressive steps of insertion of a contact member in the passage in the insulator;

FIG. 6 is a fragmentary vertical section of the rear insulator with an extraction tool positioned therein to permit withdrawal of the contact rearwardly from the insulator;

FIG. 7 is a front end view of the extraction tool illustrated in FIG. 6; and

FIG. 8 is a fragmentary vertical section, partly in elevation, illustrating the connector member of FIGS. 1-6, operatively engaged with another connector member employing a similar contact retention system, the opposing contact members being in their fully inserted positions in the two connector members and being mated with each other.

DESCRIPTION OF THE PREFERRED EMBODIMENT

Referring now to the drawings in detail, FIG. 1 illustrates an electrical connector member 10 which includes a front insulator member 12 and a rear insulator member 14. A plurality of parallel contact receiving passages 16 extend through the front insulator 12 from a front face 18 to a rear face 20. A plurality of passages 22 are provided in the rear insulator member 14 in alignment with the passages 16 in the front insulator member. Passages 22 extend from a front face 24 to a rear face 26 of the rear insulator member. The front and rear insulator members are fixedly secured with respect to each other by any suitable means, not shown. The outer peripheral structure of the connector member 10 has not been illustrated as it may be of any conventional form. For example, the front and rear insulator members may be mounted in a rigid tubular outer shell if desired.

Each of the passages 16 includes a contact receiving cavity 28 and also an enlarged rearward passage 30 which extends from a rearwardly facing shoulder 32 in the passage 16 to the rear face 20 of the front insulator member 12.

As best seen in FIG. 3, the contact receiving cavity 28 and enlarged rearward passage 30 in the front insulator each have a generally rectangular configuration in cross section with the longer walls of the passages being exposed at right angles with respect to each other. The front insulator member 12 is adapted to support a socket contact member therein, and accordingly, each passage 16 is provided with a constricted forward cylindrical bore 34 having a chamfered entrance ramp 36 leading to the front face 18 of the insulator for guiding a pin contact member of another connector member into mating engagement with the socket contact member mounted in the passage 16. The front face 24 of the rear insulator member 14 is flush with the rear face 20 of the front insulator member. The passages 22 in the rear insulator member have a rectangular configuration in cross section. The top and bottom walls 38 and 40, respectively, of each passage 22 lie in planes which are parallel to the top and bottom walls 42 and 44, respectively, of the corresponding rectangular contact receiving cavity 28. Since the passages 22 are in alignment with the passages 16, contact members may be inserted into the cavities 28 by being pushed through the passages 22 from the rear of the rear insulator 14.

A pair of generally rectangular oppositely disposed contact retention elements 46 are integrally formed on the rear insulator 14 and extend forwardly and inwardly to forward free ends 48. The inner walls 50 of the retention elements 46 form continuations of the

upper and lower walls 38 and 40, respectively, of the passage 22. The free ends 48 of the elements 46 are formed with rectangular projections 52 which extend toward each other. Preferably, the inner faces 54 of the projections 52 are spaced apart a relatively short distance. The retention elements 46 are resiliently laterally movable so that they may be expanded when a contact member is inserted into the passage 22.

The rear insulator 14, including the integral contact retention elements 46, is preferably molded as an integral unit of a tough plastic material which when made in relatively thin strips is resiliently deformable. With such material, the relatively thick body portion of the rear insulator 14 will comprise a substantially rigid structure, while the relatively thin retention elements 46 will have the desired resiliently flexible or deformable characteristics. The materials which are particularly suitable for the rear insulator 14, which are set forth herein by way of example only and not by way of limitation, are a polyamide such as "nylon," a fluoroethylene such as "Kel-F," an acetate such as "Delrin," or a polycarbonate such as "Lexan." Such materials have excellent electrical insulation characteristics, and serve to increase the dielectric separation between adjacent contacts, which is an important factor in permitting a dense, closely-spaced array of contact members in small connectors.

The socket contact members 60 which are adapted to be supported in the front and rear insulator members 12 and 14, respectively, are retained therein by the respective pairs of retention elements 46. Each socket contact member is preferably a flat stamped tuning fork-type contact, but it may take other forms as will be discussed later herein. The socket contact member 60 includes a flattened intermediate body section 62, a forwardly extending contacting section 64 and a rearwardly extending tail section 66. The contacting section 64 has cross sectional outer dimensions slightly less than the cross sectional dimensions of the cavity 28 so that the former is axially slidable in the latter but restrained from relative rotatable movement with respect thereto. The contacting section 64 includes a pair of forwardly extending laterally spaced legs 68 formed adjacent their forward ends with projections 70 which extend toward each other. The projections are chamfered as best seen in FIG. 1 to facilitate passage of the forward end of the contact member past the contact retention elements 46. The tail section 66 is preferably in the form of a rectangular or square tail to which a wire may be secured by wire wrapping techniques, as well known in the art. Alternatively, the tail section may be a solder tail if desired. A rectangular opening 72 is formed in the flat body section 62 of the contact member. The configuration of the opening 72 is complementary to the rectangular projections 52 on the contact retention elements 46 and is dimensioned slightly greater than such projections so that the latter may be received in the opening. The opening 72 provides a rearwardly facing edge 74 and a forwardly facing edge 76. With the contact elements 60 fully positioned in the passages in the front and rear insulator members of the connector member 10, both rectangular projections 52 on the retention elements 46 will extend into the opening 72 in the contact member from opposite sides thereof. Each projection 52 provides a forwardly facing shoulder 78 which cooperates with the rearwardly facing edge 74 on the contact member to limit rearward movement of

the contact member in the insulator members 12 and 14. The projection 52 also provides a rearwardly facing shoulder 80 which cooperates with the forwardly facing edge 76 on the contact member 60 to limit forward movement of the contact member in the insulator members.

The width of the contact retention elements 46 is slightly greater than the maximum distance between the legs 68 on the contact member 60, indicated by the arrow X in FIG. 2 so that, when the contact member is inserted into the passages in the front and rear insulators 12 and 14, the upper and lower surfaces of the legs will engage the projections 52 on the elements 46, retaining the elements in an outwardly expanded condition until the contact member reaches the position illustrated in FIG. 2 wherein such projections contract or snap into the opening 72 to secure the contact member in the connector.

As seen in FIG. 2, because the diameter of the bore 34 at the front portion of the passage 16 in the front insulator 12 is less than the cross sectional area of the rectangular cavity 28, there is provided an inwardly extending flange 84 which extends over the front edge of the legs 68 on the socket contact member 60 so as to provide a closed entry which protects the legs from damage which might occur as the contact member on the mating connector member is inserted into the cavity 28 to engage the socket contact member. As will be appreciated, however, the spacing between the projections 70 on the legs of the contact members 60 is less than the diameter of the bore 34 so that the contact element on the mating connector member will engage such projections when the former is inserted into the cavity 28, spreading the legs laterally apart to provide a firm frictional engagement therebetween as best seen in FIG. 8.

Referring again to FIG. 1, it is seen that the top and bottom walls 38 and 40, respectively, of the rectangular passage 22 in the rear insulator member 14 are spaced from the top and bottom surfaces of the contact member 60 to provide a clearance space for insertion of an extraction tool which allows the contact member to be withdrawn rearwardly from the connector insulators.

Referring now to FIGS. 5a, 5b, and 5c, there is shown the progressive steps of the insertion of the contact member 60 into the passage 22 in the rear insulator of the connector. In FIG. 5a, the forward end of the contact member 60 is positioned immediately behind the projections 52 on the contact retention elements 46. Upon forward movement of the contact member, the retention elements 46 will expand outwardly allowing the contact to pass between the retention elements as seen in FIG. 5b. As stated previously, the opposing faces 54 of the retention elements 46 will engage the top and bottom surfaces of the legs 68 of the contact member 60 when the latter is moved forwardly into the insulator passages. When the rectangular opening 72 in the contact member comes into registry with the projections 52 on the retention elements 46, the projections will snap into the opening as best seen in FIG. 5c to limit forward and rearward axial movement of the contact member in the insulator. In order to remove the contact member from the insulator, there is provided a plastic extraction tool 86 having a rigid handle 88 and a forwardly extending flexible section 90 having a generally U-shaped cross section as seen in FIGS. 6 and 7. The outer dimension of the forward section 90

of the tool is sufficiently small to allow the tool to be inserted into the passage 22 in the rear insulator member 14. The distance between the sides 92 of the forward section of the tool is slightly greater than the thickness of the contact member 60 so that the tool may be inserted around the tail section of the contact member and moved forwardly. Upon forward movement of the tool, the front edge thereof will engage the inner walls 50 of the contact retention elements 46, as seen in FIG. 6, spreading the elements apart to retract them from the opening 72 in the contact member, thus allowing the contact member to be withdrawn rearwardly from the rear face 26 of the rear insulator member 14.

In FIG. 8, a connector member 94 is illustrated engaged with the connector member 10. The connector member 94 includes a front insulator member 96 and a rear insulator member 98. The rear insulator may be identical to the rear insulator member 14 in the connector member 10 and includes a pair of contact retention elements 46' only one being seen in FIG. 8. The forward insulator member 96 is similar to the forward insulator member 12 except that it is shorter in the axial direction. The insulator members 96 and 98 are provided with aligned passages 102 and 104 which receive a pin contact member 106. This contact member is identical to the socket contact member 60 except that the forward contacting portion thereof is formed with a flat blade 108 rather than with a pair of spaced tuning-fork contact legs. The width of the blade 108 is slightly greater than the distance between the projections 70 on the legs 68 of the socket contact member 60 so that when the blade is inserted into the passage 16 in the connector member 10, the legs 68 will spread apart, and the projections 70 thereon will be frictionally engaged with the blade. The pin contact member 106 is inserted into its respective passages in the insulator members 96 and 98 from the rear and is rearwardly movable therefrom in the same manner as is the socket contact member 60. In the operative position of the pin contact member 106, the retention elements 46' will limit forward and rearward movement of the contact member in the passages 102 and 104.

While the forward portion 108 of the pin contact member 106 has been described as being a flat blade, such portion may also have a square or round cross section. In addition, while the contact members 60 and 106 have been illustrated as embodying wire wrap tails, the tail sections of such members may be provided with other forms of termination structures for connection to electrical conductors. Furthermore, the retention system of the present invention is not limited to use for electrical connector members embodying only tuning fork-type socket and pin-type contacts as other forms of contacts may be utilized if they embody a flat body section in which an opening is provided for receiving the retention elements 46 to limit forward and rearward movement of the contact members in the connector passages. However, as will be appreciated, the maximum advantage of the invention is derived by utilizing contacts which are stamped from flat metal sheets wherein the openings 72 in the contacts may be easily formed during the stamping operation.

It will be appreciated from the foregoing that by the present invention there is provided a unique contact retention system in which stop means are provided on the retention elements 46 in the form of shoulders 78

and 80 which engage with the edges of an opening cut in the contact members to limit axial movement of such members in both forward and rearward directions in a connector passage. This arrangement also allows for rear insert and rear release of the contact members in the connector so that the contact members may be replaced without damaging the connector insulator as occurs with tuning fork contacts which are press fit into insulators, as has been the general practice prior to this invention. Also, because the contact retention elements 46 are formed integrally with the rear insulator member 14, manufacturing costs are maintained at a minimum.

What is claimed is:

1. An electrical connector member comprising:
 - a body of insulation material having a passage extending from a front face to a rear face thereof;
 - an electrical contact member in said passage insertable from the rear of said body, said contact member embodying a flattened body section having an opening therein defining forwardly and rearwardly facing edges;
 - a laterally movable contact retention element fixed with respect to said body against axial shifting, said element extending forwardly and inwardly from the wall of said passage to a forward free end, said free end embodying stop means receivable in said opening and cooperating with said forwardly and rearwardly facing edges to limit axial movement of said contact member in said passage, said element having an inner rearwardly facing inclined surface between said wall and said free end; and
 - the wall of said passage being spaced from said contact member between said retention element and said rear face of said body to provide a clearance space opening at said rear face for the insertion of a tool from the rear in a forward direction to deflect said retention element laterally outwardly to retract said stop means from said opening and thereby permit withdrawal of said contact member rearwardly from said passage, said contact member being devoid of any obstruction in said clearance space.
2. An electrical connector member as set forth in claim 1 wherein there are provided a pair of said contact retention elements positioned on opposite sides of said flattened body section, said stop means on the forward free ends of said elements being both receivable in said opening.
3. An electrical connector member as set forth in claim 1 wherein:
 - said contact member embodies a contacting section forward of said flattened body section and a tail section rearward of said flattened body section; and
 - said tail section extends beyond the rear of said body and is formed as a wire wrap tail.
4. An electrical connector member as set forth in claim 1 wherein:
 - said contact member is either a flat tuning fork-type contact or a flat pin-type contact.
5. An electrical connector member as set forth in claim 1 wherein:
 - said opening in said contact member has a rectangular configuration; and
 - said stop means on said forward free end of said retention element comprises a rectangular projection

- having a configuration complementary to that of said opening.
6. An electrical connector member as set forth in claim 1 wherein:
 - said contact retention element is integral with said body.
7. An electrical connector member as set forth in claim 6 wherein there are provided a pair of said contact retention elements on opposite sides of said passages, said stop means on the forward free ends of said elements being both receivable in said opening.
8. An electrical connector member as set forth in claim 7 wherein:
 - said inner surface of each said retention element forms a continuation of the wall of said passage.
9. An electrical connector member as set forth in claim 1 including:
 - an insulator member forward of and fixed with respect to said body;
 - said insulator member having a cavity therein aligned with said passage and opening adjacent thereto;
 - said contact member being a flat tuning fork-type contact; and
 - said cavity having a rectangular cross section complementary to the configuration of said contact member for slidably and nonrotatably receiving said contact member.
10. An electrical connector member as set forth in claim 9 wherein:
 - a relatively small passage is formed in said insulator member extending from said cavity to the front face of said insulator member defining an inwardly extending flange extending over a portion of the forward end of said contact member.
11. An electrical connector member comprising:
 - a body of insulation material having a passage extending from a front face to a rear face thereof;
 - an electrical contact member in said passage insertable from the rear of said body, said contact member embodying a flattened body section having an opening therein defining forwardly and rearwardly facing edges;
 - a laterally movable contact retention element fixed with respect to said body against axial shifting, said element extending forwardly and inwardly from the wall of said passage to a forward free end, said free end embodying stop means receivable in said opening and cooperating with said forwardly and rearwardly facing edges to limit axial movement of said contact member in said passage;
 - said contact member is a flat tuning fork-type contact having a pair of spaced forwardly extending contact legs terminating in inwardly extending projections; and
 - said retention element has a width greater than the maximum distance between said legs whereby upon forward insertion of said contact member into said passage said legs will slide freely past said retention element until said opening comes into registry with said stop means on said forward free end of said retention element.
12. An electrical connector member as set forth in claim 11 wherein:
 - said inwardly extending projections on said legs are chamfered to facilitate movement of said contact member past said retention element.

13. An electrical connector member as set forth in claim 11 wherein:

said contact member embodies a rearwardly extending wire wrap tail extending beyond the rear face of said body.

14. An electrical connector member comprising: front and rear insulator members having aligned passages therethrough extending from a front face of the front insulator member to a rear face of the rear insulator member;

a flat tuning-fork type contact member positioned in said passages insertable from the rear of said rear insulator member, said contact member having a generally rectangular shaped opening therein, a forwarding extending contacting section and a rearwardly extending tail section extending beyond the rear face of said rear insulator member, said opening providing forwardly and rearwardly facing edges;

a pair of contact retention elements integral with said rear insulator and extending forwardly and inwardly from opposite sides of the wall of the passage in said rear insulator to forward free ends, said forward free ends being formed with rectangular projections extending toward each other, each said projection having a configuration complementary to that of said opening in said contact member so as to be receivable in said opening, each said projection providing forwardly and rearwardly facing shoulders thereon, each said element having an inner rearwardly facing inclined surface between said wall and said projection;

said retention elements being resiliently laterally expandable to permit said contacting section to move past said projections upon forward insertion of said contact member into said passages, said projections contracting into said opening in said contact member whereby said forwardly facing shoulders on said projections and rearwardly facing edge cooperate to limit rearward movement of said contact member in said passages and said rearwardly facing shoulders on said projections and forwardly facing edge cooperate to limit forward movement of said contact member in said passages; and

the wall of said passage being spaced from said contact member between said retention elements and said rear face of said body to provide a clearance space opening at said rear face for the insertion of a tool from the rear in a forward direction to deflect said retention elements laterally outwardly to retract said projections from said opening and thereby permit withdrawal of said contact member rearwardly from said passage, said contact member being devoid of any obstruction in said clearance space.

15. An electrical connector member as set forth in claim 14 wherein:

said passage in said front insulator member includes a section having a rectangular cross section complementary to the configuration of the contacting section of said contact member for slidably and nonrotatably receiving said contacting section.

16. An electrical connector member as set forth in claim 14 wherein:

said tail section of said contact member is a flat sided wire wrap tail.

17. An electrical connector member comprising: front and rear insulator members having aligned passages therethrough extending from a front face of the front insulator member to a rear face of the rear insulator member;

a flat tuning-fork type contact member positioned in said passages insertable from the rear of said rear insulator member, said contact member having a generally rectangular shaped opening therein, a forwarding extending contacting section and a rearwardly extending tail section extending beyond the rear face of said rear insulator member, said opening providing forwardly and rearwardly facing edges;

a pair of contact retention elements integral with said rear insulator and extending forwardly and inwardly from opposite sides of the wall of the passage in said rear insulator to forward free ends, said forward free ends being formed with rectangular projections extending toward each other, each said projection having a configuration complementary to that of said opening in said contact member so as to be receivable in said opening, each said projection providing forwardly and rearwardly facing shoulders thereon;

said retention elements being resiliently laterally expandable to permit said contacting section to move past said projections upon forward insertion of said contact member into said passages, said projections contracting into said opening in said contact member whereby said forwardly facing shoulders on said projections and rearwardly facing edge cooperate to limit rearward movement of said contact member in said passages and said rearwardly facing shoulders on said projections and forwardly facing edge cooperate to limit forward movement of said contact member in said passages;

said contacting section of said contact member includes a pair of spaced forwardly extending contact legs; and

the projections on said retention elements each have a width greater than the distance between said legs whereby upon forward insertion of said contact member into said passages said legs will slide freely past said projections until said opening comes into registry with said projections.

* * * * *