

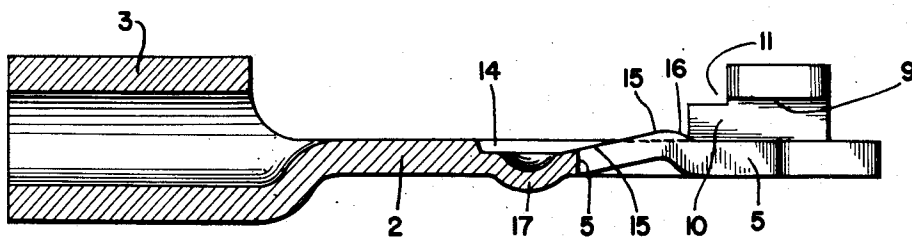
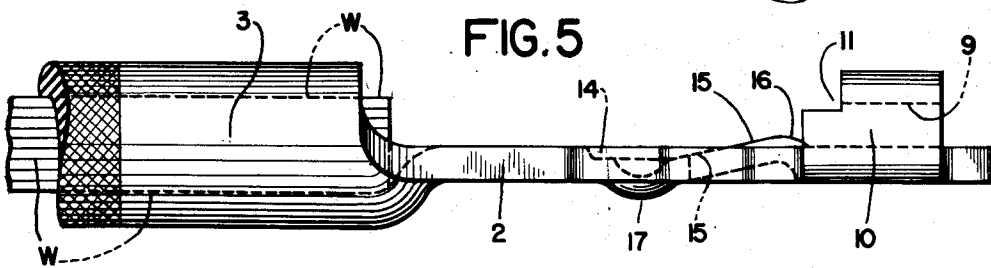
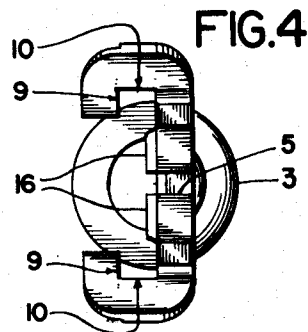
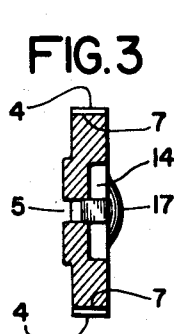
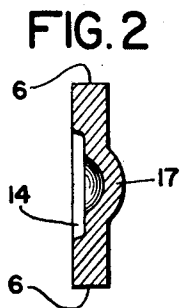
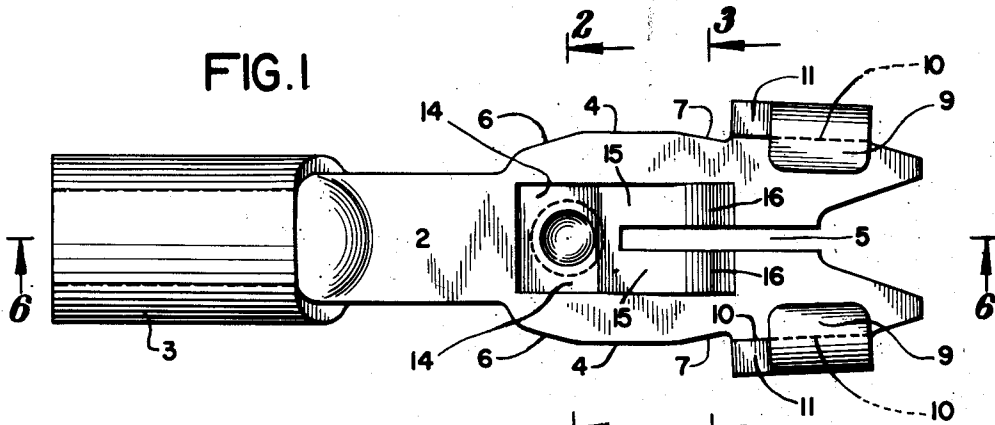
Oct. 28, 1952

M. D. BERGAN ET AL
ELECTRICAL CLASP CONNECTOR

2,615,736

Filed Nov. 1, 1948

2 SHEETS—SHEET 1



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2 SHEETS—SHEET 2

FIG. 7

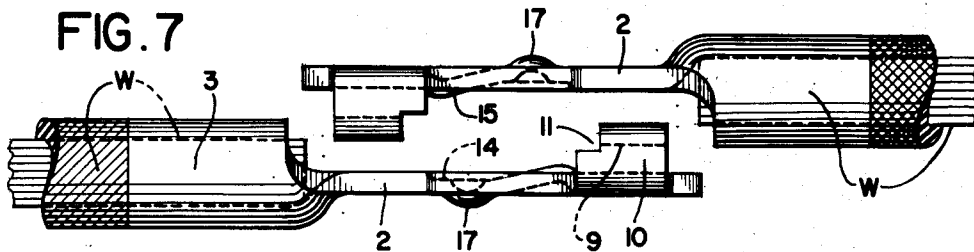


FIG. 8

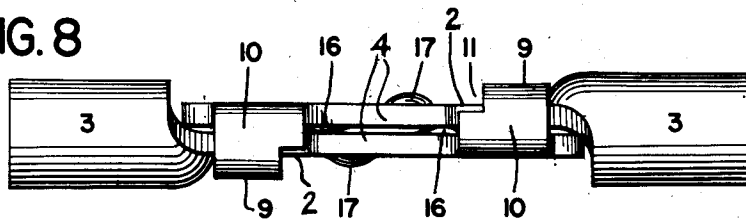


FIG. 9

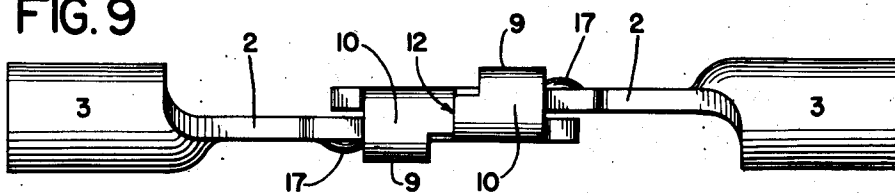


FIG. 10

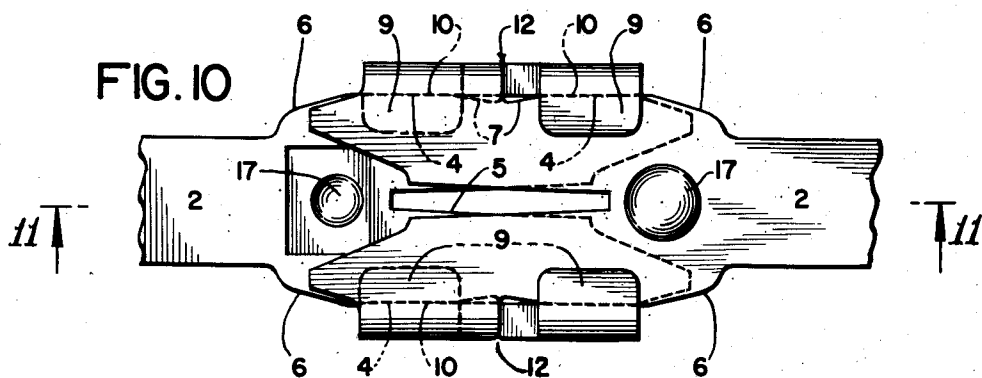
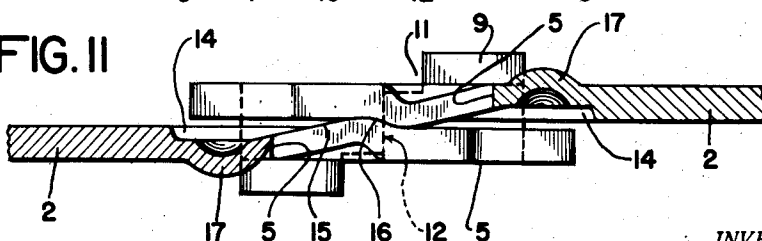


FIG. 11



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2,615,736

ELECTRICAL CLASP CONNECTOR

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Application November 1, 1948, Serial No. 57,706

14 Claims. (Cl. 287-76)

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This invention relates to electrical connectors and more particularly to a new form of duplicate-end fitting or terminal comprising a pair of identical-form parts disengageably connected to produce a complete connector. For convenience, the new electrical quick-disconnect fitting herein may be referred to as an electrical clasp connector.

Known connectors of this general class sometimes are referred to as twin connectors since two identical-half parts (or the engaging portions thereof) constitute a complete connector. It appears from the present state of the art that such connectors may well be improved in respect to their electric-contacting portions, by which to achieve more efficient current transmission, in combination with an independently mechanical connecting means.

Thus it is a purpose of this invention to produce a simple two-part duplicate-form quick-disconnect electrical fitting of novel form having joining or clasp portions which possess a dual-connecting function, the two primary features of which include a first means for producing a sustained spring-loaded pressure engagement to establish an effective electrical contact for transmitting current, together with a second means for making a secure joint to establish an effective mechanical connection for holding the two parts together against a pulling or separating strain, the said two means acting independently but in unison for effecting separate connections, one electrical and the other mechanical, in a simple one-piece fitting.

The foregoing dual-connecting feature affords a latitude in selecting a preferred manufacturing tolerance in respect to the first means for producing stress or tension in the spring-loading portion of the terminal, that is, in the portion thereof which acts to make a permanent and enduring sustained-pressure contact for electrical connection. Thus a manufacturer may build into this new terminal a chosen degree of spring tension which is best adapted for the particular use to be served by a manufactured lot of the connectors—having regard for size of the fitting and purposes to be served in the field—without altering the constant factor of its positive mechanical joint which functions independently of the sustained-pressure contact.

Another purpose of the invention is to produce an electrical connector of the two-part duplicate-form type, embodying the foregoing two independent connecting features and having a camming-resistance function, which provides a dis-

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engageable detent latching action, and which also may provide for an audible "click" or a pronounced "feel" as two of the terminals are manually engaged, thereby indicating that they are in finally connected position. This is important where wiring connections to be made are not visible to a mechanic, and he must sometimes "reach for" as well as "feel out" and "hear" the connection and disconnection being made.

The description and claims with accompanying drawings explain the invention by reference to the structural form thereof preferred at this time in aid of understanding the problems sought to be solved. The teachings herein may suggest other examples of construction to those who wish to avail themselves of the benefits of the invention, bearing in mind that subsequent modifications ordinarily are the same in spirit and principle as the original disclosure.

Sheet 1 of the drawings illustrates the structural form of a single terminal. Two such terminals are required to make a complete electrical clasp connector, as shown on Sheet 2 illustrating the invention in the form of a splice connector.

Figs. 1 through 6, as well as Figs. 10 and 11, are illustrated on the same scale and somewhat enlarged for the purpose of structural clarity.

Figs. 7, 8 and 9 are "action" views drawn on a reduced-scale to demonstrate the sequence in mode of operation when bringing two of the twin terminal parts into finally connected relation.

Fig. 1 is an inside face view of the terminal formed with a connecting shank and head which is forked, and having clasp ears carried on the tines of the fork, as well as a recessed cam formed in part in the fork tines and in part in the headed shank.

Fig. 2 is a section on the line 2-2, while Fig. 3 is developed on the line 3-3. Both views are transverse sections through the terminal head of Fig. 1.

Fig. 4 is an end view of the inner end of the terminal, that is, the right-hand end of Fig. 1.

Fig. 5 is a side elevation showing the outer end of the terminal secured to an electrical conductor.

Fig. 6 is a longitudinal section taken along the line 6-6 of Fig. 1 bisecting the terminal centrally between its two prong tines constituting a forked contact head.

Fig. 7 shows the duplicate terminals about to be placed together face-to-face in first position, by which to attach them preliminarily

as in Fig. 8, from which they are pulled and slid into final mechanical latching and electrical contacting position as shown in Fig. 9. These are "action" views demonstrating the mode of connecting and disconnecting the two clasping terminals.

Fig. 10 is a fragmentary top view (enlarged scale) of the two clasping terminals in finally connected relation like Fig. 9 (reduced scale) to make a complete fitting characterized by its dual connection.

Fig. 11 is a lengthwise section on the line 11-11 of Fig. 10 showing a novel camming and detent latching means which secures the two terminals in finally connected relation, as in Figs. 9 and 10.

The single terminal illustrated (Sheet 1), as an example of the invention and hence the pair thereof assembled to form a complete connector (Sheet 2), is drawn from production specimens. Accordingly, the drawings herein are set out to approximate scale, although greatly enlarged over the general stock run of connectors manufactured for the trade. Thus the connector may be reproduced in various sizes from the drawings, in view of which fact the dimension-form and proportions thereof need not be described in detail.

The example of the invention shown for illustrating its principle takes the form, in species, of a splice connector. This is observed in Fig. 7 where two electrical-conducting wires W of stranded form are being "splice connected." However, the genus or principle of the invention enlarges and extends its application to electrical connectors in general, thus finding utility in instrument and panel wiring, as in quick connect and disconnect binding post types and other species of connectors.

The terminal as a whole is of one-piece construction. It is made of nominally-hard metallic-bar stock (copper sheet) which is tempered to resist any tendency to bend permanently out of shape when subjected to service and also to impart resiliency for obtaining a degree of flexure by which to spring-load and tension its inner contacting end portion when two of the counterpart terminals are clasped together, as in Figs. 9, 10 and 11.

In the drawings, the reference number 2 points out a metallic shank portion which may be integrally formed on its outer end (the left-hand side of Sheet 1) with a wire-receiving barrel or sleeve 3. An electrical wire W (usually a stranded conductor) is secured within the metal sleeve 3 by any known method and thus transmits current to the terminal 2 formed of bar or sheet-metal stock and defined by parallel side edges.

The shank portion 2 of the terminal widens out on its inner end (the right-hand side of Sheet 1) to form a two-tine or double-prong electrical-contact fork portion having two equal-length substantially parallel outer side edges 4 adapted to make sustained-pressure contacts with another like terminal (Sheet 2). The contact edges 4 are shorter than the overall length of the two symmetrical contact prongs. The increased width measured between the spaced edges 4, over that of the parallel edges of the shank 2, provides a forked electrical-contact head on the inner end of the shank, while the sleeve 3 (or other known wire-fastening means) is provided at the outer end of the shank.

Next, it is observed that the electrical-contact

head is bisected by an elongated straight cut-out 5 made through its inner end and extended outward along the lengthwise axis of the headed shank 2, thus forming the contact prongs above mentioned. The outer end, that is, the bottom or crotch of the cut-out 5, terminates within the widened contact head (without reaching the shank portion 2) between the pressure contact edges 4. Thus two chamfered edges 6, which are symmetrically aslope toward the cut-out 5, as well as the outer ends of the contact edges 4, are located outward on the terminal beyond the crotch-end of the cut-out.

It is observed that the cut-out 5 opens at the inner end of the terminal into a wide gap shown in this example as being V-shaped, thereby separating the pair of prongs constituting the contact head of the terminal. Such gap provides a large open space between the inner tips of the prongs. This spacing gap may be made wider than the diameter of the wire W where its stub-end projects through the sleeve 3 toward the shank 2. Accordingly, when two terminals are placed together (as heretofore described in reference to Sheet 2), the stub-end of the wire W projects into the wide V-shaped space forming a wide lead to the cut-out 5. This arrangement provides for shanks 2 of minimum length since the stub-ends of the wires W do not interfere with placing the two terminal fork ends adjacent the sleeves 3 when manipulating a pair of the terminals into their initial position (Fig. 8).

The inner ends of the two sustained-pressure contact edges 4 are relieved by chamfering edges 7 also symmetrically sloped toward the longitudinal cut-out 5. Accordingly, the contact edges 4 are chamfered at both ends by non-contact edges 6 and 7. Thus the two substantially parallel side edges 4 stand outward from the relieving edges 6 and 7 to define the maximum width of the pronged contact head. Note also that the overall length of the pronged contact head is somewhat longer than the shank portion 2 of the terminal, a pair of which constitute a complete connector (Sheet 2) of the quick make-and-brake type.

An important feature inheres in a novel arrangement of a pair of retaining or clasping ears 9 integrally formed in the inner end of the pronged contact head and rigid therewith. The ears 9 have a retaining and clasping function when two of the terminals are in finally connected position (Figs. 9, 10 and 11). The two rigid clasping ears 9 are identical in form, are symmetrically disposed in opposite relation on each side of the bisecting cut-out 5 defining the two contact prongs, and are located at the open inner end of the cut-out. Thus located, the ears are remote from the shank 2, also from the crotch of the cut-out 5, and are spaced apart a distance fractionally greater than the width of said shank. This latter structural relation permits the shank 2 of one terminal to pass by and into the ears 9 of another like terminal when placing two of them together.

The reference number 9 for the ears points to their inside surfaces which are parallel with the inside flat face of the forked contact head. The spacing between the planes of the flat ear surfaces 9 and the inside flat face of the forked contact head is a little greater than the thickness of the bar stock of which these terminals are manufactured. It is seen that each clasping ear 9 is formed rigidly on a right angle with a flange

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10, and the latter also is formed rigidly on a right angle with each outside edge of the two contact prongs at the inner end of the latter.

The reference 10 points to the two inside flat electrical-contact surfaces of the two flanges which are adapted to make sustained-pressure engagement with the electrical-contact edges 4 of another like terminal. The two surfaces 10 are fractionally closer together than the spacing of the two parallel edges 4. Furthermore, the two contact surfaces 10 are disposed at a slight inward angle to the two contact edges 4, the apex of the planes of said two contact surfaces 10 being located toward and beyond the inner end of the terminal. In other words, the planes of the two spaced contact surfaces 10 intersect far beyond the right-hand edge of Sheet 1 of the drawings. Therefore, the contact surfaces 10 are at a slight angle to the parallel contact edges 4—not perceptible in commercial specimens of the connector.

Accordingly, the two flange contact surfaces 10 crowd and press with a wedging action against the two contact edges 4 when two terminals are interlocked in clasped assembly (Figs. 9, 10 and 11), whereupon the contact prongs yield or spread outward away from each other and the angle of the two surfaces 10 approaches or attains parallelism. That this novel feature provides for sustained-pressure engaging action of the resiliently cooperating contact edges 4 and surfaces 10 is revealed by study of the mode of operation (Sheet 2) of the terminal.

The bisecting cut-out 5, with its crotch terminating short of the outer end of the contact edges 4, provides fork tines possessing a limited degree of flexure affording a resilient spring-like give when the two edges 4 of one terminal slide and wipe under pressure along the two counterpart angle flange surfaces 10 formed rigidly on the other terminal. It is seen that the clasping ears 9 and the pressure-contact flanges 10 are rigid in relation to each other, and also are rigidly formed upon and in relation to the fork tines, but that the latter are resilient in relation to each other.

Attention is drawn to the fact that each ear surface 9 is shorter than each flange surface 10. This differential length is achieved by extending the flanges to the chamfered non-contacting edges 7, while terminating the ears short of said edges 7. In other words, the ear 9 is shorter than its flange 10 by reason of a unique notched-out portion 11 which removes some of the bar stock forming the ear. In fact, each notch 11 extends into each flange 10 just beyond the clasping surface 9 of each ear.

The above feature means that the right-angle bend of the ear 9 (to form it integrally on the flange 10) is made inward of and away from the left-hand end-edge of said flange, where the latter terminates adjacent the chamfered edge 7. Such feature incidentally aids manufacture by leaving the end-edges of the flanges 10 in perfect squared-off form perpendicular to the parallel contact edges 4. More importantly, the feature contributes to effective operation when connecting two of the terminals together.

Thus is solved the problem of bulging or swelling of metal outward above the surface and at the end of a corner of any piece of sheet metal or bar stock bent into right-angular shape, as when forming the flanges 10 over toward the cut-out 5 to make the ears 9. The notches 11 provide for right-angular bends between the ears

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and flanges in such a way that the usual end-corner surface does not squeeze out and detrimentally protrude at and on the end-edges of the flanges 10 adjacent the edges 7 but occurs remotely therefrom.

The foregoing feature achieved by the notched-out portions 11, which shorten the clasping ears 9, aids uniformity and accuracy in the operation and fit of mass-production parts, as here involved. Such feature makes possible the clasping of two terminals into finally connected relation, where the two end-edges of the flanges 10 come together for a perfect surface fit in a common abutting plane, as pointed out at 12 (Figs. 9, 10 and 11). All three views are to be read and compared for an appreciation of the clasped position of two terminals in finally assembled relation to complete an electrical connection between two conductor wires W. The structural form per se of the clasping ears 9 with the pressure contact flanges 10, as taken all together, contributes to a new and improved mode of operation in a twin type clasp connector.

Coming now to further features of the invention, there is shown a flat recessed surface 14 of generally rectangular form depressed into the crotch area of the two contact forks. This depression 14 has its plane surface swaged below and parallel with the flat face of the forked contact head. It begins adjacent the inner end of the shank 2 and merges with a camming surface 15, and the latter rises from surface 14 and extends forward above the face of the contact head and terminates in a rounded latching detent shoulder 16 extending back down to the face of the contact head. The cut-out 5 bisects the ovaled detent shoulder 16 and the camming surface 15, the crotch of the cut-out terminating proximate the forward end of the flat recessed surface 14.

A boss 17 is depressed centrally within the flat recess 14 and protrudes beyond the outside flat face of the terminal, that is, on the face thereof opposite the clasping ears 9. This boss may be circular in form with a size diameter somewhat greater than the width of the bisecting cut-out 5. Consequently, the boss 17 of one terminal 2, if by chance placed upon the cut-out 5 of another identical terminal 2, would ride or remain on the face of the latter and not register or extend down into said cut-out.

Considering the terminal, as to its electrical contacting surfaces which undergo and remain under sustained-pressure engagement, when two terminals are clasped together, it is seen that there are two contact surface edges 4 and two flange surfaces 10. Accordingly, there are four surfaces on each terminal. Thus two clasped terminals make a connection through eight contacting surfaces standing under spring-loaded stress.

The foregoing description has been made largely by reference to Sheet 1 of the drawings, and Sheet 2 is next observed for an explanation of two of the terminals, each the counterpart of the other, assembled in their clasped and dual-connected relation.

In the use and quick-connect operation of the terminal, two thereof are held with their inner flat faces toward each other as in Fig. 7, then brought together by perpendicularly passing each shank 2 through each pair of ears 9 as in Fig. 8, and thereupon axially pulling or sliding each terminal along the other (pulling the two sleeves 3 in opposite directions) until the two resilient

forked contact heads have their four edges 4 clasped under spring-loaded clamping compression by the four flanges 10 (Figs. 9, 10 and 11). Each terminal embraces the other, thereby establishing a duplicate connection in the two-part combination. This mode of operation establishes an effective and low-resistance current-flow connection through the eight sustained-pressure contacts, as heretofore explained.

The end-edges of the flange pair 10 of each terminal come together at 12 (Fig. 9, etc.) in stopped abutment for a perfect fit. This constitutes the mechanical joint or connection; it is independent of the electrical connection and positive against "pull out." In other words, the stop at 12 cannot accidentally operate to release one terminal from another. Disconnection can only be accomplished by pushing axially on the two terminals, that is, by forcing the two sleeves 3 toward each other.

The function of the boss 17 is next noted. Its purpose is to make the connector fool-proof by preventing the assembly of two terminals upside down. In other words, if a wiring mechanic should inadvertently fail to place the ears 9 toward each other as required (Fig. 7), the boss 17 on one of the terminals then rests upon the shank 2 of the other. This misfit prevents the shank 2 from passing between the ears 9, with the result that the two terminals are positively prevented from attaining their first position (Fig. 8).

Correct initial assembly of the two identical half parts (Fig. 8) causes the latching-detent cam-shoulder 16 of each to rest within the flat recess 14 of the other. This position permits both pairs of ears 9 to receive both shanks 2 (Fig. 8). Then upon pulling the two terminals axially apart (the two sleeves 3 away from each other), it follows that each camming surface 15 climbs upon the other.

The latter camming movement induces spring-loading, by tensioning each terminal, a reaction which is generated by friction between the sliding cams 15 climbing each other, and increasing the friction as they go, ultimately resulting in spring flexure of the terminal. When the two cams 15 pass each other at their highest points, each detent shoulder 16 slides by and latches against and behind the other. Thereupon, a slight degree of the flexure, imparted by the climbing cams, is relieved and the latter reaction serves to maintain the detent shoulders 16 in releasably latched engagement, as observed more particularly in Fig. 11.

The mode of operation as a whole is unique, and separate consideration of the two spring-flexing actions is required for full understanding. Thus while the twin cams 15 are climbing each other (from Fig. 8 to 9), and tensioning flexure is being induced by each terminal into the other (for subsequent spring-loaded reaction) by the pressure of each applied perpendicular to the face of the other, there simultaneously occurs a further spring-loading action induced by the crowding of the resilient fork contact edges 4 within the rigid clamping ears 9 sliding along the contact surfaces 10 which tends to flex the two prongs apart (outward from the cut-out 5) and thus stress both contact prongs parallel to their flat faces. This latter stressing action is sustained and undiminished after the latching shoulders 16 pass each other (see Fig. 11) and the end-edges of the rigid flanges 10 come to a "stopped" rest against each other, as at 12 (see Figs. 9, 10 and 11).

Care and attention in reaching an understanding of the mode of operating complex should now reveal a most unique condition. While there is a "drop off" in contact pressure between the two engaged flat cams 15 when they pass each other—thus utilizing a portion of the tension expended perpendicularly to the flat faces of the terminals for latching them, as at 16 in Fig. 11—there is in marked contrast, to that loss of pressure, an undiminished and continuing static compression between the four contact edges 4 and the four contact surfaces 10 exerted parallel to said flat faces, thus providing the eight sustained-pressure contacts aforementioned.

Since the two contact forks give or flex outward away from each other, the two angular contact surfaces 10 become parallel and make full contact along their entire lengths with the edges 4. The primary function of the clamping ears 9 is to maintain the twin-terminal assembly intact. Accordingly, the ear surfaces 9 of one terminal (having greater spacing from the inside flat face of the contact prong than its thickness) only incidentally make electrical contact with the outside of the other terminal. The sliding action of the two cams 15 up their inclined planes may cause the four ears 9 to make pressure contact with the backside flat faces of the two terminals, but that action is only momentary.

When the oveled detent latching shoulders 16 pass over each other (for either connecting or disconnecting the two terminals), it follows that any momentary pressure contact between the ears 9 and the outside flat faces of the contact forks is relaxed. Now it is seen that the permanent and enduring sustained-pressure contact actually exists only between the several cooperating surfaces 4 and 10 of the connector, the design and construction of which has this novel characteristic in view.

With the foregoing in mind, it is clear that there is provided the dual connection, as mentioned at the outset. The independent mechanical connection is achieved by the action of the twin detent latching shoulders 16 (Fig. 11) in conjunction with the positive "stop" against "pull-out" or release provided by the abutment stop 12—while the independent electrical connection is achieved by the sliding action of the cooperating sustained-pressure surfaces 4 and 10. Accordingly, the mechanical joint and the electrical contact act in unison but independently.

The pressure developed by the engaging and wiping contact surfaces, especially the eight surfaces 4 and 10, which spring-load and maintain an undiminished tension, performs the further function of de-oxidizing said surfaces to the extent that the connector provides itself with sub-surface virgin metallic contacts. Scraping away the atmospheric-formed oxide film on the contact surfaces 4 and 10 eliminates the insulating effect which such film interposes against current flow and thus means that this minimum size connector transmits maximum current without heating.

Furthermore, the permanently stressed and undiminished contact pressure applied to the eight engaged surfaces 4 and 10 (scraped clean, as aforesaid) very largely inhibits atmospheric contact, with the resulting advantage that a minimum of oxidation takes place. Consequently, there occurs a minimum of oxide con-

tamination of the virgin-metallic contact surfaces after initially being engaged, as herein disclosed, by the unique action of this dual-function connector.

This disclosure explains the principles of the invention and the best mode contemplated in applying such principles, so as to distinguish the invention from others; and there is particularly pointed out and distinctly claimed the part, improvement or combination, which constitutes the invention or discovery, as understood by a comparison thereof with the prior art.

This invention is presented to fill the need for a new and useful electrical clasp connector. Since various modifications in construction, mode of operation, use and method, may and often do occur to others, especially so after acquaintance with an invention, it is to be understood that this disclosure is exemplary of the principles and of equivalent constructions, without being limited to the present showing of the invention.

What is claimed is:

1. An electrical disconnect terminal having an outer end which receives a conductor adapted to be connected therewith; and the inner end of the terminal comprising a flat contact head, in the form of a fork, having spaced resilient prongs, which flex in relation to each other, in the plane of said flat contact head; and a clasp-
ing ear formed on the free end of each of the two resilient prongs, both clasp-
ing ears being disposed on the same side of the plane of the flat contact head, and adapted to disengageably connect with the flat contact head of another like terminal.

2. An electrical disconnect terminal, as covered in claim 1; further characterized by spacing the two clasp-
ing ears apart a distance fractionally closer together than the spacing of the two resilient prongs; whereby the clasp-
ing ears of two like terminals, when disengageably connected, act to crowd and frictionally engage the resilient prongs, thus tensioning said prongs and maintaining them in spring-loaded condition while so connected.

3. An electrical disconnect terminal, as covered in claim 1; further characterized by a boss formed on the flat contact head, and on the surface thereof opposite to the clasp-
ing ears; said boss having a diameter greater than the space between the resilient prongs, and rising above the surface of the flat contact head; whereby two of said like terminals are prevented from connecting with each other unless the clasp-
ing ears of each terminal are placed toward each other.

4. An electrical disconnect terminal, as covered in claim 1; further characterized by a cam-
ming surface including a latching-detent shoulder, formed on the flat contact head, and on the same side thereof as the clasp-
ing ears; whereby two like terminals, when connected with each other, have their said latching-detent shoulders seated one against the other, to releasably hold said two terminals in connected relation.

5. An electrical disconnect terminal comprising, in combination, a pair of like or duplicate-form terminals, each having an outer end which receives a conductor adapted to be connected therewith, and each having an inner end including a flat contact head adapted to engage the other; each flat contact head being made in the form of a fork provided with two resilient prongs, a clasp-
ing ear formed proximate and on the free

end of each of the two resilient prongs, thus providing two clasp-
ing ears on each terminal; whereby said two like terminals disengageably connect with each other, by sliding their flat contact heads upon each other, into the clasp-
ing ears of each other, and all four clasp-
ing ears spreading outwardly under sustained pressure engagement of said ears against said prongs.

6. An electrical terminal formed of flat-bar stock, and having a shank, the outer end of which is adapted to connect with a conductor and the inner end with another like terminal; said inner end comprising a contact head provided with two substantially parallel contact edges, two rigid flanges turned up on the contact head at its inner end, one thereof on each side of said contact head, a contact surface provided on the inner side of each rigid flange, these two contact surfaces being spaced apart fractionally less than the distance between the two contact edges; and a rigid clasp-
ing ear formed on each flange, each ear having a surface parallel with the flat face of the contact head, the spacing of said ear surfaces from the flat face being greater than the thickness of the contact head, and the spacing between said two ears being fractionally more than the width of the shank; the contact head being provided with a bisecting cut-out extending through its inner end, between the two rigid clasp-
ing ears, and outward along the axis of the terminal, the bisecting cut-out having a crotch terminating in the contact head a distance outward from said rigid clasp-
ing ears, said bisecting cut-out thus dividing the contact head into two parallel prongs having limited flexure parallel to the plane of the flat face; and a flat recessed surface formed below and parallel with the flat face of the contact head, said flat recessed surface merging at its inner end with a camming surface extending toward the clasp-
ing ears and rising at an angle above said flat face, and a detent latching shoulder formed at the high point of the camming surface.

7. An electrical terminal as described in claim 6, but having additional features, to-wit, the overall shape of the flat recessed surface and the camming surface being formed substantially rectangular, and the bisecting cut-out being extended through the camming surface, thereby forming the latter on the two parallel prongs.

8. An electrical terminal as described in claim 6, but having additional features, to-wit, the overall shape of the flat recessed surface and the camming surface being formed substantially rectangular, the bisecting cut-out being extended through the camming surface, thereby forming the latter on the two parallel prongs, and the bisecting cut-out having its crotch formed in a low portion of the cam, and also near the forward end of the flat recessed surface.

9. An electrical terminal as described in claim 6, and in which a boss is formed on the outside face of the flat-bar stock, opposite to the flat recessed surface, and having a size diameter greater than the width of the bisecting cut-out.

10. An electrical terminal as described in claim 6, and in which a notch is provided at the outer end of each rigid clasp-
ing ear, thereby making the flanges longer than said ears, and the end-
edges of the two flanges forming planes adjacent and perpendicular to the two parallel contact edges.

11. An electrical terminal having features in addition to those described in claim 6, and re-

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lating to the "two parallel prongs" therein recited, wherein said prongs have their inner tip ends spaced apart by a gap forming a wide lead to the "bisecting cut-out," the gap constituting a space of greater width than the diameter of an electrical "conductor" adapted to be connected to the outer end of the terminal.

12. An electrical terminal as described in claim 6, but having an additional feature, to-wit, disposing the contact surface of each rigid flange at an inwardly directed angle in relation to and symmetrically with each parallel contact edge, so that the apex or intersection of the planes of said two contact surfaces is located toward and beyond the inner end of the terminal.

13. An electrical connector comprising, in combination, a pair of duplicate-form terminals, both of which have contact heads with substantially parallel contact edges, and with flat faces held in quick disconnect relation with each other, by rigid clasping ears formed on and spaced apart at the inner end of each terminal, also the ears being spaced from the flat faces a distance greater than the thickness of the contact heads which said ears embrace and clasp, said ears being formed on flanges having contact surfaces spaced from each other a distance less than the distance between the contact edges, each contact head being provided with a bisecting cut-

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out extending through and from its inner end forward between and beyond the ears, thereby providing each contact head with a pair of prongs which are flexed outward from the bisecting cut-out and spring tensioned in the planes of the flat faces by clamping pressure applied by the flanges, cam means provided on each terminal and engaging each other, and detent latching shoulders formed at the high points of the cams and latching against each other.

14. An electrical connector as described in claim 13, but having an additional feature, to-wit, each of the four contact surfaces of the four ears being disposed at an inward angle in relation to and symmetrically with each parallel contact edge, so that the apex or intersection of the planes of said two contact surfaces of a respective terminal is located toward and beyond the inner end of said terminal.

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The following references are of record in the file of this patent:

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