

March 30, 1948.

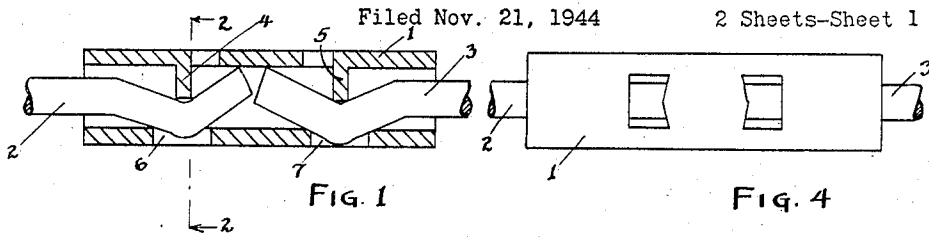
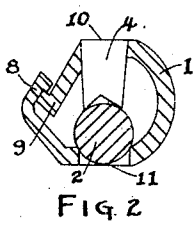
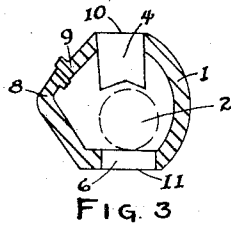
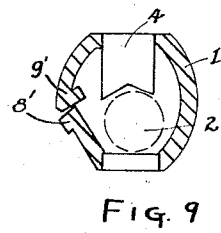
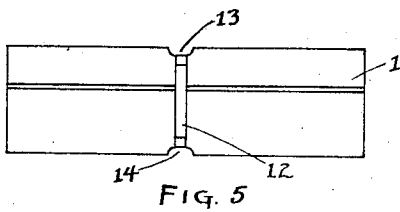
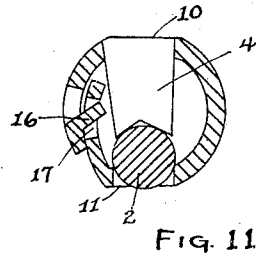
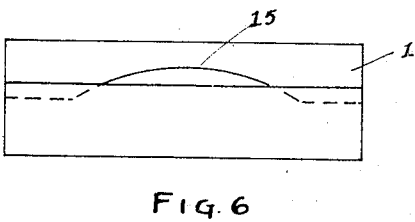
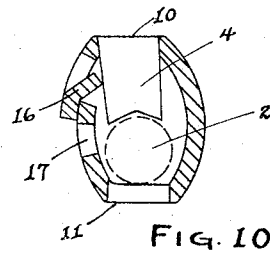
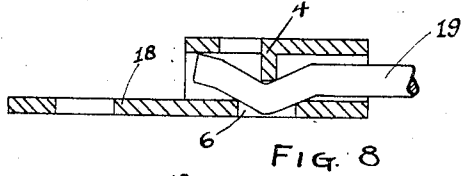
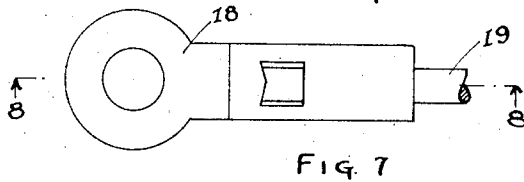
H. L. GORDON

2,438,779

WIRE CONNECTOR

Filed Nov. 21, 1944

2 Sheets-Sheet 1



Herman L. Gordon
Inventor

March 30, 1948.

H. L. GORDON

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WIRE CONNECTOR

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2 Sheets-Sheet 2

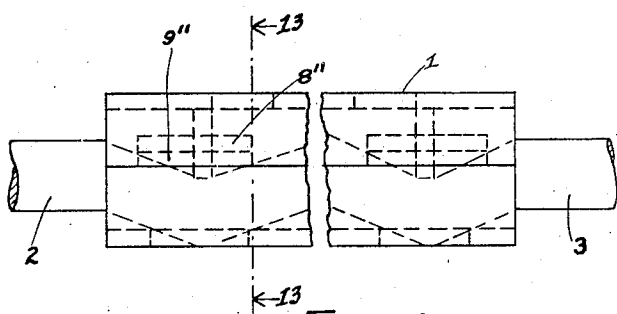


FIG. 12

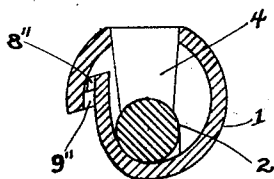


FIG. 13

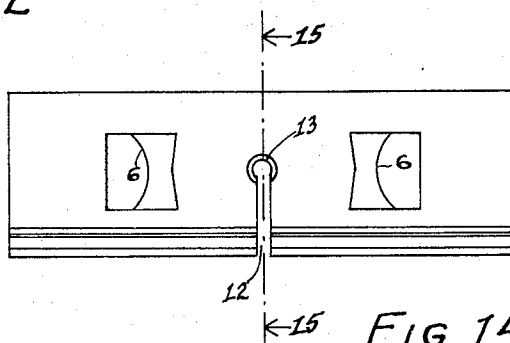


FIG. 14

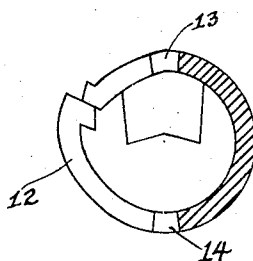


FIG. 15

INVENTOR

Herman L. Gordon

UNITED STATES PATENT OFFICE

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WIRE CONNECTOR

Herman L. Gordon, Silver Spring, Md.

Application November 21, 1944, Serial No. 564,513

13 Claims. (Cl. 287-75)

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This invention relates to connectors for wire ends.

An object of this invention is to provide an improved means of connecting a wire end to a terminal.

A further object of this invention is to provide an improved means of connecting two wire ends together to form a mechanically secure connection.

A further object of this invention is to provide an improved structure for mechanically splicing wire ends together or to terminals without the use of solder.

A further object of this invention is to provide a solderless connector for wire ends wherein special crimping tools are not required to be employed in securing the connection.

Other objects of this invention will appear from the following specification and claims and from the accompanying drawings illustrating the invention, wherein:

Figure 1 is a longitudinal cross-sectional view taken through a connector according to this invention showing the securement of the wire ends.

Figure 2 is a cross-sectional view taken on line 2-2 of Fig. 1.

Figure 3 is a view similar to Fig. 2 showing the relationship of the parts before securement is effected.

Figure 4 is a plan view of the connector of Fig. 1 showing the appearance of the top portion thereof.

Figure 5 is an elevational view of another embodiment of a connector according to this invention.

Figure 6 is an elevational view of a further embodiment of a connector according to this invention.

Figure 7 is a plan view of a terminal employing the connector structure of this invention.

Figure 8 is a cross-sectional view taken on line 3-3 of Fig. 7.

Figure 9 is a cross-sectional view similar to Fig. 3 but somewhat modified.

Figure 10 is a cross-sectional view similar to Fig. 3 but disclosing a still further modification.

Figure 11 is a view similar to Fig. 10 but disclosing the relationship of the parts after securement is effected.

Figure 12 is an elevational view of a still further modification.

Figure 13 is a cross-sectional view taken on line 13-13 of Figure 12.

Figure 14 is a top plan view of the connector shown in Figure 5.

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Figure 15 is a cross-sectional view taken on line 15-15 of Figure 14.

In solderless wire connectors of the prior art the wire end is usually inserted into a sleeve element of deformable metal and securement is obtained by crimping the sleeve element containing the wire end by the use of a special pressure tool whose jaws are formed with special crimping structure. The tool may be similar to ordinary pliers except for the special configuration of the jaws. This required configuration makes the tool useless except for this specific crimping function.

To avoid the need for a special crimping tool I provide structure in the sleeve whereby the wire end is crimped and locked in secured position by the mere application of pressure to the sleeve, such as may be obtained by the use of ordinary pliers or by striking the sleeve slightly with an ordinary hammer.

In Figure 1 a cross-sectional view of a metal splicing sleeve 1 is shown wherein wire ends 2 and 3 are held in secured relation. Downwardly struck depending tongues 4 and 5 are provided which cooperate with the oppositely positioned openings 6 and 7 respectively in the sleeve to hold the wire ends in secured relation thereto.

In the embodiment of this invention disclosed in Figures 2 and 3, the edges of the sleeve are formed with cooperating flanges 8 and 9 adapted to hook together when the sleeve is squeezed. The normal relation of the flanges 8 and 9 is shown in Figure 3, wherein the initial position of the inserted wire end 2 is also shown in dotted view. The top and bottom surfaces of the sleeve are provided with flattened portions 10 and 11 to form bearing surfaces to cooperate with the squeezing tool whereby rotation of the sleeve during the squeezing process is prevented. As the top and bottom portions 10 and 11 of the sleeve 1 are squeezed together, the downstruck tongue 4, or 5, presses the contiguous portion of the wire end 2 or 3 into opposite opening 6 or 7, thereby crimping the wire end into secured position. The cooperating edge flanges 8 and 9 slip past each other and snap into hooked relation, as shown in Figure 2. The downstruck tongues 4 and 5 thereafter maintain the wire ends in crimped secured relation to openings 6 and 7 in the sleeve.

In order to allow one wire end at a time to be side the sleeve to permit the insertion of a somewhat larger gauge wire end for a given normal diameter of resilient sleeve 1, the direction of the

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locking flanges may be reversed, as shown in Figure 9 at 8' and 9'.

In order to allow one wire end at a time to be crimped and locked in secured position in the sleeve 1, the locking flange elements 8 and 9 or 8' and 9' may be provided as separate short flange elements adjacent each end of the sleeve 1 instead of extending continuously throughout the length thereof. This is shown in Figures 12 and 13 wherein the short interlocking flange elements are indicated at 8'' and 9''. To facilitate the ready distortion of one end of the sleeve with respect to the other end during the securingment of one wire end, a slot 12 having rounded stress-distributing end portions 13 and 14 may be provided intermediate the ends of the sleeve as shown in Figures 5, 14 and 15. As shown in these figures, slot 12 extends transversely through a substantial portion of both the upper and lower flanged portions of the sleeve whereby said flanged portions may be considerably flexed independently of the remainder of the sleeve. Another means of providing for ready distortion of one end of the sleeve with respect to the other end is disclosed in Fig. 6 wherein the intermediate portion of one edge of the sleeve is cut away to form the shallow curved recess 15, which distributes the tensile stress at the edge of the sleeve due to the unbalanced pressure at one end.

A further modification of the sleeve locking means is disclosed in Figures 10 and 11, wherein an inwardly struck tongue 16 cooperates with an opening 17 in the sleeve wall in a locking relationship similar to that existing between flanges 8' and 9' in Fig. 9. The relationship of the tongue and opening may be reversed to cooperate in a manner similar to flanges 8 and 9 in Fig. 2 if desired. Furthermore, the tongue and opening structure may be employed in the embodiments of Figs. 5 and 6 instead of the locking flanges there disclosed.

In Figures 7 and 8 the locking structure of one half of the sleeves of any one of the embodiments of Figs. 1 to 6 and 9 to 11 may be employed to secure a wire end 19 to a terminal 18. As in the former embodiments, the wire end is inserted in the sleeve and the sleeve is squeezed with ordinary pliers or lightly tapped with an ordinary hammer so that the cooperating locking flanges or tongue and opening locking elements snap into locking position. In this position the depending tongue 4 holds the wire end securely crimped in opening 6.

While certain specific embodiments of this invention have been shown it will be understood that various modifications may be made within the spirit of the invention. Therefore no limitations upon the invention are intended other than are imposed by the scope of the appended claims.

What is claimed is:

1. In a wire connector of the character described, a sleeve member for receiving a wire end, means within said sleeve member for at times gripping said wire end, and locking means responsive to compression of said sleeve member for maintaining said gripping means in gripping relationship to said wire end.

2. In a wire connector of the character described, a sleeve member for receiving a wire end, a depending tongue formed within said sleeve member adapted at times to contact said wire end in gripping relationship therewith, and locking means carried by said sleeve member, said locking means being rendered effective responsive to compression of said sleeve member to maintain said

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tongue in gripping relationship to said wire end.

3. The structure of claim 1 and wherein the gripping means comprises a depending tongue member and an opening formed in the wall of the sleeve member opposite the tongue member.

4. The structure of claim 1 and wherein the sleeve member is formed with superimposed relatively movable edges, said locking means comprising cooperating flange elements formed on said edges.

5. The structure of claim 1 and wherein the sleeve member is formed with superimposed relatively movable edge portions, said locking means comprising cooperating hook and socket elements formed on said edge portions.

6. The structure of claim 1 and wherein the sleeve member is provided with flattened bearing portions for engagement with a compression tool having substantially flat pressure-applying elements whereby rotation of the sleeve during application of pressure is prevented.

7. In a wire terminal, a sleeve member adapted to receive a wire end, means within said sleeve member for at times gripping said wire end, and locking means on said sleeve member rendered effective responsive to compression of said sleeve member for maintaining said gripping member in gripping relationship to said wire end.

8. A wire splicing device comprising a sleeve, a recess formed in the sleeve wall intermediate the ends thereof, means within the sleeve adjacent at least one end thereof for at times gripping a wire end, and locking means on the sleeve rendered effective responsive to compression of the sleeve adjacent said one end for maintaining said gripping means in gripping relationship to said wire end.

9. Means for securing a wire end comprising a deformable receptacle adapted to receive said wire end, means within said receptacle for at times gripping said wire end, and locking means on said receptacle rendered effective responsive to compression of said receptacle for maintaining said gripping means in gripping relationship to said wire end.

10. Means for securing a wire end comprising a sleeve member adapted to receive said wire end, a depending tongue formed within said sleeve member adapted at times to contact said wire end, socket means in said sleeve member formed opposite said depending tongue adapted at times to receive a portion of said wire end responsive to pressure thereon by said tongue, and locking means on said sleeve member rendered effective responsive to compression of said sleeve member for maintaining said tongue in its pressure-exerting position.

11. The structure of claim 10, and wherein said socket means is an opening in said sleeve member.

12. Means for securing a wire end comprising a receptacle adapted to receive said wire end, means within said receptacle for at times gripping said wire end, and locking means on said receptacle rendered effective responsive to compression of said receptacle for maintaining said gripping means in gripping relationship to said wire end, said receptacle being formed with relatively movable edge portions, said locking means comprising cooperating projections formed on said edge portions.

13. Means for securing a wire end comprising a receptacle having relatively movable opposing walls, said receptacle being adapted to receive a wire end between said opposing walls, a depend-

ing tongue carried by one of said walls adapted at times to contact said wire end, socket means formed in the other opposing wall opposite said depending tongue adapted at times to receive a portion of said wire end responsive to pressure thereon by said tongue, and cooperating locking means carried by said opposing walls rendered effective responsive to compression of the receptacle for maintaining said tongue in its pressure-exerting position.

HERMAN L. GORDON.

REFERENCES CITED

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

	Number
5	719,817
	1,568,585
	1,631,719
	2,370,725

10

	Number
	755,558

15

UNITED STATES PATENTS

Name	Date
Kunze -----	Feb. 3, 1903
Brune, Sr. -----	Jan. 5, 1926
Chandler -----	June 7, 1927
Gordon -----	Mar. 6, 1945

FOREIGN PATENTS

Country	Date
France -----	Sept. 11, 1933

Certificate of Correction

Patent No. 2,438,779.

March 30, 1948.

HERMAN L. GORDON

It is hereby certified that error appears in the printed specification of the above numbered patent requiring correction as follows: Column 2, lines 52 and 53, strike out the words "allow one wire end at a time to be side" and insert instead *provide additional clearance inside*; and that the said Letters Patent should be read with this correction therein that the same may conform to the record of the case in the Patent Office.

Signed and sealed this 25th day of May, A. D. 1948.

[SEAL]

THOMAS F. MURPHY,
Assistant Commissioner of Patents.