

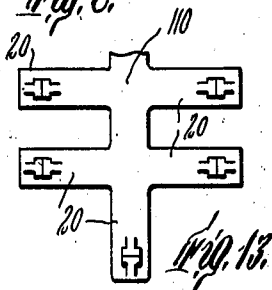
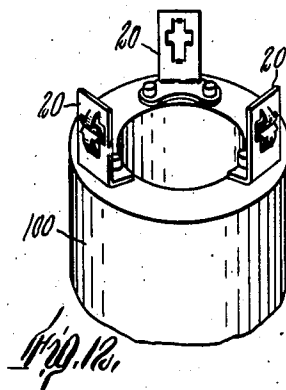
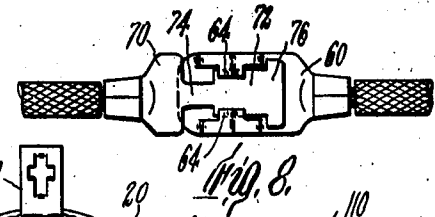
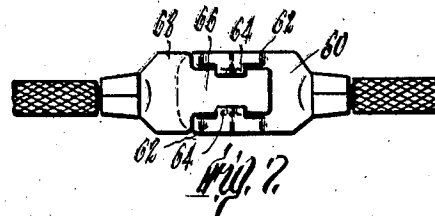
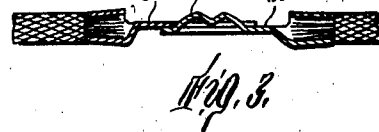
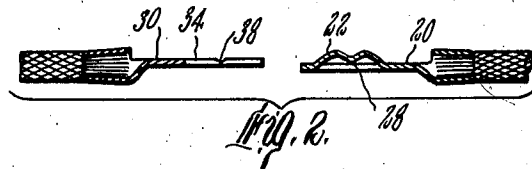
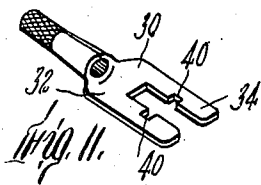
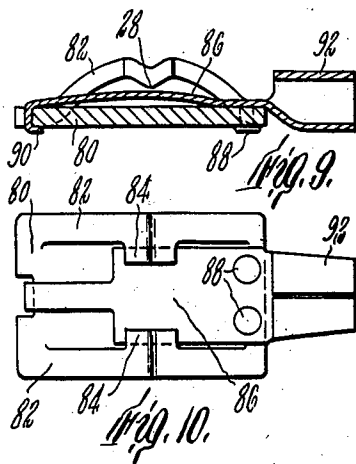
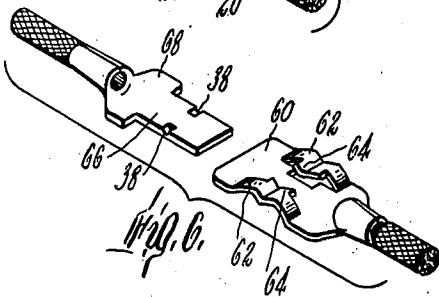
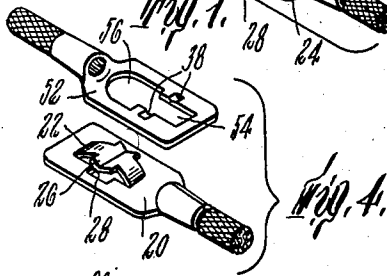
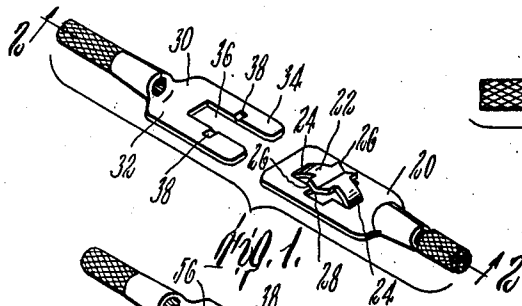
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ELECTRIC CONNECTOR

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UNITED STATES PATENT OFFICE

2,336,385

ELECTRIC CONNECTOR

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3 Claims. (Cl. 24-230)

This invention relates to an electric connector for quickly and easily connecting wires to terminals or connecting the ends of wires together or for any other analogous purpose.

In installing electrical equipment in automobiles including dashboard switches and the like, the use of conventional binding posts is objectionable in that setscrews are apt to become loose and to be lost. It is also inconvenient to solder all of the connections, and soldered connections make replacement of equipment troublesome.

It is an object of this invention to provide a connector consisting of two separable parts which are normally in good electrical contact, one of these parts being attached to the end of a wire, the other part being either formed with or attachable to a terminal on some piece of electrical equipment such as a switch. It is an object of the invention to provide a connector the parts of which can easily be assembled and separated. It is also an object of the invention to provide a connector which is simple in structure and inexpensive to make. These and other beneficial features of the invention will be evident from the following description of certain embodiments thereof, and from the drawing of which

Figure 1 is a perspective view of a two-part connector embodying the invention.

Figure 2 is a section on the line 2-2 of Figure 1.

Figure 3 is a section similar to Figure 2 but showing the connector assembled.

Figure 4 is a perspective view of the two parts of a modified form of connector.

Figure 5 is a longitudinal section of the connector shown in Figure 4, the parts being assembled.

Figure 6 is a perspective view of another modified form of the invention.

Figure 7 is a plan view of the same, the members being assembled.

Figure 8 is a plan view of another modified form of the invention.

Figure 9 is a sectional view of one member of another modification of the invention.

Figure 10 is a plan view of the member shown in Figure 9.

Figure 11 is a slightly modified form of one of the members illustrated in Figure 1.

Figure 12 is a perspective view of a piece of electrical equipment provided with connector members similar to one of those shown in Figure 1.

Figure 13 shows a multiple connector by which several wires can be attached to a single conductor.

The invention resides in a connector consisting of two members which are normally held together in face-to-face engagement so as to provide a relatively large area of interfacial engagement for efficient passage of electric current. The two members constituting the connector are made of flat metal stock such as sheet or strip material, copper or brass being preferably used. In the embodiment of the invention illustrated in Figures 1, 2 and 3, one member 20 is formed with a struck-up element 22, the element being elongated and having its ends 24 integral with the member 20 so that the element forms a loop extending out of the plane of the member 20. The intermediate portion of the loop 22 is wider than the end portions of the loop so that it has offset parts 26 projecting laterally beyond the side edges of the end portions of the loop 22. These lateral offset parts 26 are preferably provided with downwardly extending bosses 28 which project toward the plane of the member 20. As shown in Figures 1 and 2, these bosses may be in the form of a reverse bend in the loop 22. Cooperating with the member 20 is a flat member 30 which may be formed with a pair of parallel branches 32 and 34 separated by a central slot 36 which has a width substantially the same as that of the end portions of the loop 22. To assemble these members together, the branches or prongs 32 and 34 of the member 30 are placed on the upper face of the member 20 so as to straddle the loop 22. The member 30 is then slid along the face of the member 20 so that the prongs 32 and 34 ride under the bosses 28. These bosses are spaced from the plane of the upper face of the member 20 by a distance slightly less than the thickness of the member 30. Hence, when the prongs of the member 30 are pushed past the bosses 28, the central portion of the loop 22 is sprung upwardly. The metal employed in the member 20 is preferably such as to have sufficient spring to permit such slight upward displacement of the central portion of the loop 22. Since the slot 36 in the member 30 has substantially the same width as the end portions of the loop 22, the side edges of these portions of the loop 22 will be in substantial contact with the side edges of the slot 36 when the member 30 is superposed on the member 20. Hence both of the offset parts 26 of the central portion of the loop 22 will overlap the prongs 32 and 34 and will press these prongs against the face of the member 20, thereby ensuring a good electrical connection between the interengaging faces of the members. The prongs 32 and 34 are pro-

vided with suitable recesses 38 which are adapted to receive the bosses 28. When the member 30 has been pushed along the face of the member 20 to its proper position, the bosses 28 snap into the recesses 38, thus assuring the operator that the connector is properly assembled, and also releasably holding the members in their proper assembled relation. The engagement of the side edges of the slot 36 against the side edges of the loop 22 serves to maintain the two members in proper alinement. If preferred, the recesses 38 may be in the form of notches 40 in the inner edges of the prongs 32 and 34, as indicated in Figure 11. In such case it makes no difference which side of the connector member 30 is uppermost when this member is advanced to be assembled with a corresponding member 20.

The form of connector illustrated in Figures 4 and 5 include a member 20 which may be identical in all respects with the member 20 illustrated in Figure 1. To cooperate with the member 20 a member 52 may be provided having a central aperture in lieu of the slot 36 shown in Figure 1. This aperture comprises a portion 54 which has a width substantially equal to that of the loop 22 and a wider portion 56 which is of sufficient size to receive the wider central portion of the loop 22. In assembling the members 20 and 52, the latter is hooked over the loop 22 by causing the central portion of the loop to pass upward through the opening 56. The member 52 is then pulled so as to slide it along the face of the member 20 until the bosses 28 snap into the recesses 38. This form of the invention is desirable in cases where the connection is liable to be subjected to tensional pulls.

Figures 6 and 7 illustrate a further modified form of the invention in which one member 60 has two struck-up loops 62 each of which is provided with a laterally offset part 64 between the end portions of the loop. These offset portions 64 project toward each other so as to receive thereunder the tongue 66 of the cooperating member 68. The width of the tongue 66 is substantially equal to the distance between the two loops 62, so that when the member 68 is placed on the member 60 and is pushed to slide the tongue 66 along the surface of the member 60 between the loops 62, the tongue fits closely between the loops and rides under the offset portions 64. Recesses 38 are provided in the tongue 66 to receive bosses on the central portions of the loops 62 whereby the member 68 is releasably held in proper assembled relation with the member 60.

Figure 8 illustrates a further modified form somewhat analogous to the hook-over form illustrated in Figures 4 and 5. As shown in Figure 8, a member 60 is provided which may be identical in all respects to the member 60 illustrated in Figure 6. Cooperating with this member is a member 70 of flat metal having a tongue 72 of the same width as the tongue 66 shown in Figure 6. This tongue, however, has a narrow portion 74 which is slightly less in width than the distance between the offset portions 64 of the loops 62. The end portion 76 of the tongue 72 is wider than the distance between the end portions of the loops 62. Thus in assembling the members 60 and 70, the latter is superposed on the former by causing the narrow portion 74 to pass down between the offset parts 64 of the loops 62. The member 70 is then drawn back so as to cause the body portion 72 of the tongue to ride under the offset portions 64 until the wide end portion 76 engages the loops to prevent further movement

of the member 70. This form of connector is suitable for connections which are liable to be subjected to tensional pulls. The tongue 72 is preferably formed with suitable recesses 38 to receive the bosses of the loops 62.

Figures 9 and 10 show a modified form of member equivalent to the member 20 illustrated in Figure 1. Instead of making this member out of relatively thin stock which is capable of a resilient yielding when the cooperating member is assembled therewith, the member having the struck-up loop can be made of stiff unyielding material such as sheet steel of fairly heavy gage. As shown in Figure 9, a member 80 is made of such material and is provided with a pair of struck-up loops 82 having laterally offset central portions 84 somewhat similar to the structure of the member 60 shown in Figure 6. To this member 80 is secured a resilient element 86 as by rivets 88. This element 86 may be arched upwardly toward the bosses 28, and may be provided with an end portion 90 hooking over the end of the member 80 to hold the spring member 86 in place. The member 86 is also preferably shaped at its other end as at 92 to receive the end of a wire or other conductor. The member 80 operates in exactly the same way as the member 60, a corresponding member 68 being pushed in between the struck-up loops 82. The resilience of the spring member 86 causes good interfacial engagement between the inserted member and the face of the spring member 86.

Figure 12 is a conventional representation of a piece of equipment such as a lamp socket or switch 100 having three terminals. To each of these terminals is secured by riveting or otherwise a member 20 adapted to receive a corresponding member 30 to complete a connection. Instead of members 20, any of the other members herein illustrated and described may be secured to the terminals to cooperate with corresponding members to complete connections.

Figure 13 illustrates a bus-bar 110 or the like to which it may be desired to connect several wires. The bar may be formed or provided with a plurality of connector members 20, each adapted to receive a corresponding member 30. A similar arrangement of other forms of connections can be made if preferred.

It is evident that various modifications and changes may be made in the embodiments of the invention herein shown and described without departing from the spirit or scope of the invention as defined in the following claims.

I claim:

1. An electric connector comprising two interengageable flat members of sheet metal stock, one of said members having an element struck up therefrom but joined at both ends to the plane portion, the struck-up element having a mid-portion laterally offset from said ends and normally spaced from the plane portion slightly less than the stock thickness of the other member, the other member being adapted to be inserted under said offset portion of the struck-up element so as to tension said element and to be pressed thereby against the plane portion of said one member.

2. An electric connector comprising two flat separable members in face-to-face engagement, one of said members having an elongated element struck up therefrom with both ends integral with the member to form a loop outside of the plane of the member and adjacent to an edge

of the other said member, said element having an intermediate portion laterally offset to project over the adjacent edge of said other member, and a boss on the offset portion of said element, said other member having a recess to receive said boss. 5

3. An electric connector comprising two flat members of sheet metal stock in face-to-face engagement one upon the other, and means for maintaining pressure between said members at 10

the interface, said means comprising an element struck up from the lower of said members and integral at both ends therewith, said element having an intermediate portion laterally offset from said ends and pressing on said upper member, the offset portion of said element when unstressed being spaced from the plane of said lower member slightly less than the stock thickness of said upper member.

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