

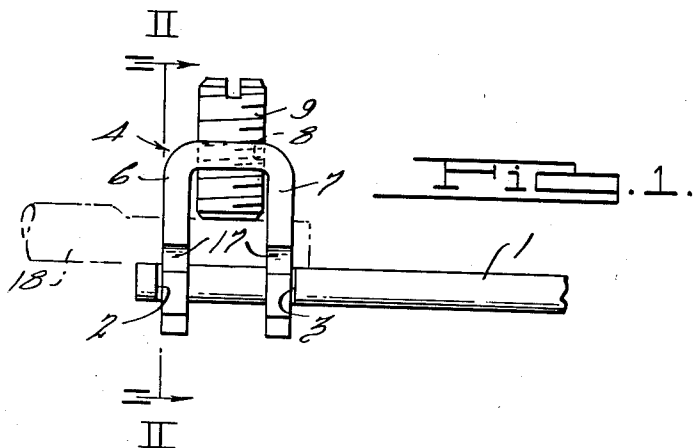
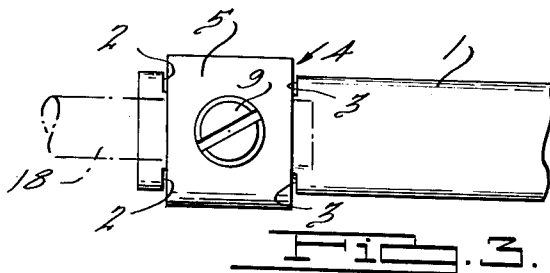
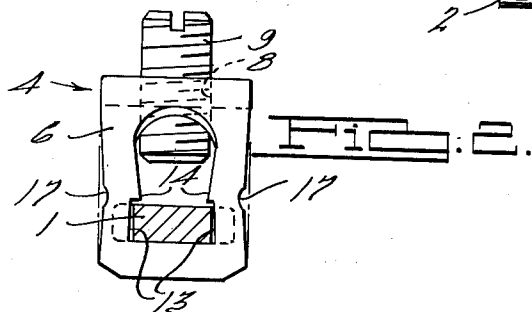
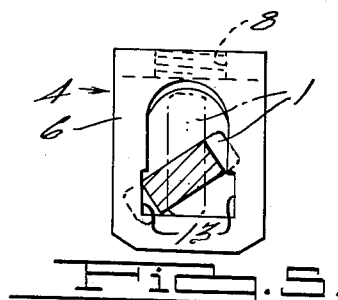
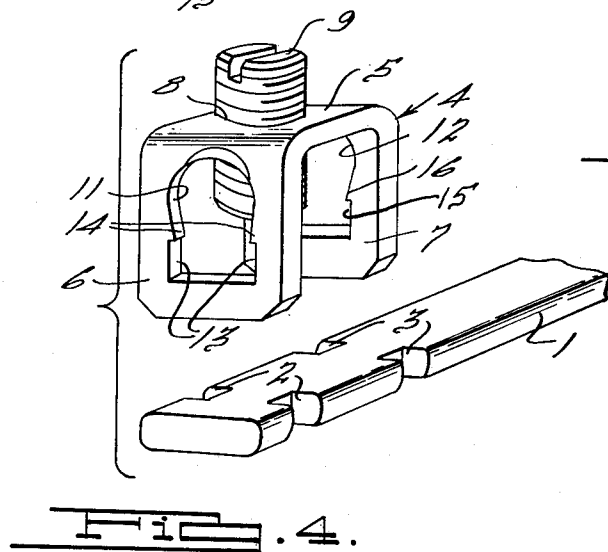
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SOLDERLESS CONNECTOR FOR BUS BAR AND WIRE

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SOLDERLESS CONNECTOR FOR BUS BAR AND WIRE

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This invention relates to solderless connectors for electrical conductors.

One object of the present invention is the provision of an improved solderless connector which is inexpensive, but rugged and reliable.

Another object of the invention is the provision of an improved solderless connector comprising a bus bar or the like and a wire housing having complementary surfaces preventing translating and rotational relative movement.

Another object of the invention is the provision of an improved solderless connector comprising a bus bar having notches therein and a U-shaped member cooperating with the bus bar, the bus bar extending through both legs of said U-shaped member.

Another object of the invention is the provision of a solderless connector in accordance with the preceding objects in which a cable portion may be inserted into the solderless connector either perpendicular to, or parallel to, the legs of the U-shaped member.

Other objects and features of the invention will be readily apparent to those skilled in the art from the specification and appended drawing illustrating certain preferred embodiments in which:

Figure 1 is an elevational view of the device of the present invention.

Figure 2 is a sectional view along the plane of the line II—II of Figure 1.

Figure 3 is a plan view of the device of the present invention.

Figure 4 is an exploded view showing the parts which comprise the present invention prior to their assembly.

Figure 5 is a view along the plane of line II—II of Figure 1, showing the method of assembly of the parts which comprise the present invention, in which the initial position of the parts is shown in dotted outline and in which an intermediate position is shown in section.

The device of the present invention comprises a bus bar or the like 1 having formed in its opposite edges a first pair of aligned notches 2 and a second pair of aligned notches 3.

Cooperating with the bus bar 1 is a wire housing 4, comprising a base portion 5 from which depend legs 6 and 7. Through the base portion 5 there is provided a threaded hole 8 in which a screw 9 operates.

Provided in the legs 6 and 7 are apertures 11 and 12 respectively. The aperture 11 is formed with a notched-out portion 13, and immediately adjacent thereto is provided inwardly projecting extensions 14. The aperture 12 has a similar notched-out portion 15 and adjacent extensions 16.

As may be seen from Figure 5, the width of bus bar 1 is less than the longitudinal dimension of the apertures 11 and 12. In assembling the wire housing 4 and the bus bar 1, the latter is rotated to the position shown in dotted lines in Figure 5 and moved through the apertures 11 and 12 until the notches 2 and 3 in the bus bar are aligned with the legs 6 and 7. The bus bar is then rotated

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through the intermediate position, shown in section in Figure 5, to the position shown in Figure 1. The opposite sides of the legs 6 and 7 are then forced inwardly as shown at 17 in Figure 2 so that the extensions 14 and 16 overlap the upper surface of the bus bar 1. After this operation is performed, relative rotational movement between the wire housing 4 and the bus bar 1 is prevented. The screw 9 is then inserted into the threaded hole 8 in the base portion 5. As indicated in Figure 1, the width of the slots 2 and 3 in the bus bar 1 is only slightly larger than the width of legs 6 and 7 whereby substantial relative translational movement between the wire housing 4 and the bus bar 1 is also prevented.

When a cable portion 18 is inserted into the solderless connector of the present invention and the screw 9 rotated so that the underside thereof engages the cable, it applies thereto a substantial force ensuring an excellent mechanical and electrical connection between the cable 18 and the bus bar 1. In the preferred form of the device of the present invention, while the bus bar 1 is formed of a material having good electrical conductivity, such as copper or the like, the wire housing 4 is formed of a material having substantial strength, such as steel. By such a choice of materials, it will readily be seen that the force which the screw applies to the cable 18 may be quite substantial so that the cable will not work loose and so that the electrical connection between the cable and the bus bar is exceptionally good.

It will readily appear that the cable may be inserted into the solderless connector either through the apertures 11 and 12 (that is, perpendicular to the plane of the legs 6 and 7) or it may be inserted into the solderless connector between the legs 6 and 7 (that is to say, parallel to these legs). In either case, it will be seen that the end of the cable may project through the solderless connector a substantial amount if such a condition is desirable. It will further be seen that the device of the present invention is of such nature that the cost thereof is minimized while its functional qualities are at the same time excellent.

While certain preferred embodiments of the invention have been specifically disclosed, it is understood that the invention is not limited thereto, as many variations will be readily apparent to those skilled in the art and the invention is to be given its broadest possible interpretation within the terms of the following claims.

What is claimed is:

1. A solderless connector comprising a bus bar, a first pair of aligned notches in said bus bar, a second pair of aligned notches in said bus bar spaced from said first pair of notches, a generally U-shaped member having a base portion and a pair of legs projecting therefrom, aligned apertures in said legs whereby said bus bar may project through both the legs of said U-shaped member, said first pair of notches disposed in engagement with the surfaces defining the aperture in one of said legs, said second pair of notches disposed in engagement with surfaces defining the aperture in the other of said legs, a threaded aperture in said base portion of said U-shaped member, and a screw operable in said threaded aperture to clamp a cable portion in electrical and mechanical connection with said bus bar.

2. A solderless connector comprising a bus bar, a first pair of aligned notches in said bus bar, a second pair of aligned notches in said bus bar spaced from said first pair of notches, a generally U-shaped member having a base portion and a pair of legs projecting therefrom, aligned apertures in said legs whereby said bus bar may project through both the legs of said U-shaped member, each of said leg apertures having a transverse dimension over at least that portion thereof spaced from said base portion substantially equal to the transverse dimension of said

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bus bar between said aligned notches, said first pair of notches disposed in engagement with that portion of one of said leg apertures which is spaced from said base portion, said second pair of notches disposed in engagement with that portion of the other of said leg apertures spaced from said base portion, a threaded aperture in said base portion of said U-shaped member, and a screw operable in said threaded aperture to clamp a cable portion in electrical and mechanical connection with said bus bar.

3. A solderless connector comprising a bus bar, a first pair of aligned notches in said bus bar, a second pair of aligned notches in said bus bar spaced from said first pair of notches, a generally U-shaped member having a base portion and a pair of legs projecting therefrom, aligned apertures in said legs whereby said bus bar may project through both the legs of said U-shaped member, each of said leg apertures having a transverse dimension over at least that portion thereof spaced from said base portion substantially equal to the transverse dimension of said bus bar between said aligned notches, said first pair of notches disposed in engagement with that portion of one of said leg apertures which is spaced from said base portion, said second pair of notches disposed in engagement with that portion of the other of said leg apertures spaced from said base portion, a threaded aperture in said base portion of said U-shaped member, and a screw operable in said threaded aperture to clamp a cable portion in electrical and mechanical connection with said bus bar, the longitudinal dimension of each of said leg apertures being substantially in excess of the thickness of said bus bar, whereby said cable portion may be laid upon said bus bar and project through both of the legs of said U-shaped member when said screw is withdrawn.

4. A solderless connector comprising a bus bar, a first pair of aligned notches in said bus bar, a second pair of aligned notches in said bus bar spaced from said first pair of notches, a generally U-shaped member having a base portion and a pair of legs projecting therefrom, aligned apertures in said legs whereby said bus bar may project through both the legs of said U-shaped member, said first pair of notches disposed in engagement with surfaces defining the aperture in one of said legs, said second pair of notches disposed in engagement with surfaces defining the aperture in the other of said legs, each of said leg apertures having a transverse dimension over that portion in engagement with the notches in said bus bar which is greater than the transverse dimension of the portion immediately adjacent thereto whereby rotation of said bus bar is prevented, a threaded aperture in said base portion of said U-shaped member, and a screw operable in said threaded aperture to clamp a cable portion in electrical and mechanical connection with said bus bar.

5. A solderless connector comprising a bus bar, a first pair of aligned notches in said bus bar, a second pair of aligned notches in said bus bar spaced from said first pair of notches, a generally U-shaped member having a base portion and a pair of legs projecting therefrom, an aperture in each of said legs, said leg apertures being aligned, each of said leg apertures having a first portion spaced from said base portion of said U-shaped member which is substantially equal to the transverse dimension of said bus bar between said aligned notches and having a second portion immediately adjacent to said first portion which is of a smaller transverse dimension than said first portion, said bus bar extending through both of said leg apertures with the first pair of notches therein in engagement with the first portion of one of said leg

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apertures and with the second pair of notches therein in engagement with the first portion of the other of said leg apertures, the surfaces forming said second portions of said leg apertures thereby preventing rotation of said bus bar, a threaded aperture in said base portion of said U-shaped member, and a screw operable in said threaded aperture to clamp a cable portion in electrical and mechanical connection with said bus bar.

6. The device of claim 5 in which the longitudinal dimension of each of said leg apertures is substantially in excess of the thickness of said bus bar, whereby said cable portion may be laid upon said bus bar and project through both of the legs of said U-shaped member when said screw is withdrawn.

7. The device of claim 5 in which the overall transverse dimension of said bus bar is greater than the transverse dimension of said leg apertures, and in which said bus bar notches are substantially as long as the thickness of said legs whereby longitudinal movement of said bus bar is prevented.

8. The device of claim 5 in which the overall transverse dimension of said bus bar is greater than the transverse dimension of said leg apertures and said bus notches are substantially as long as the thickness of said legs whereby longitudinal movement of said bus bar is prevented, and in which the longitudinal dimension of said leg apertures is greater than the overall transverse dimension of said bus bar, whereby said solderless connector may be assembled by inserting the bus bar endwise through both of said leg apertures until the notches therein register with the legs of said U-shaped member, rotating the bus bar 90° so that said notches engage said legs, and clenching said legs so that the surfaces forming said second portions of said apertures substantially overlap said bus bar.

9. In a solderless connector, a bus bar, a U-shaped member having a base portion and a pair of legs, apertures in both of said legs having notches therein spaced from said base portion, first and second pairs of aligned notches in said bus bar, said bus bar extending transversely to said legs and positioned extending through said apertures in both of said legs with said first bar of notches engaging the notches in one of said leg apertures and said second pair of apertures engaging the notches in the other of said leg apertures, said bus bar notches closely cooperating with the associated portions of said legs whereby substantial translational movement of said bus bar is prevented, a portion on said U-shaped member overlying said bus bar whereby substantial rotational movement thereof is prevented, a threaded hole in said base portion, a screw cooperating with said threaded hole, the longitudinal dimensions of said leg apertures being large in comparison with the thickness of said bus bar whereby a cable portion may be inserted into said solderless connector either perpendicularly or parallel to said legs and clamped to said bus bar by said screw.

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