

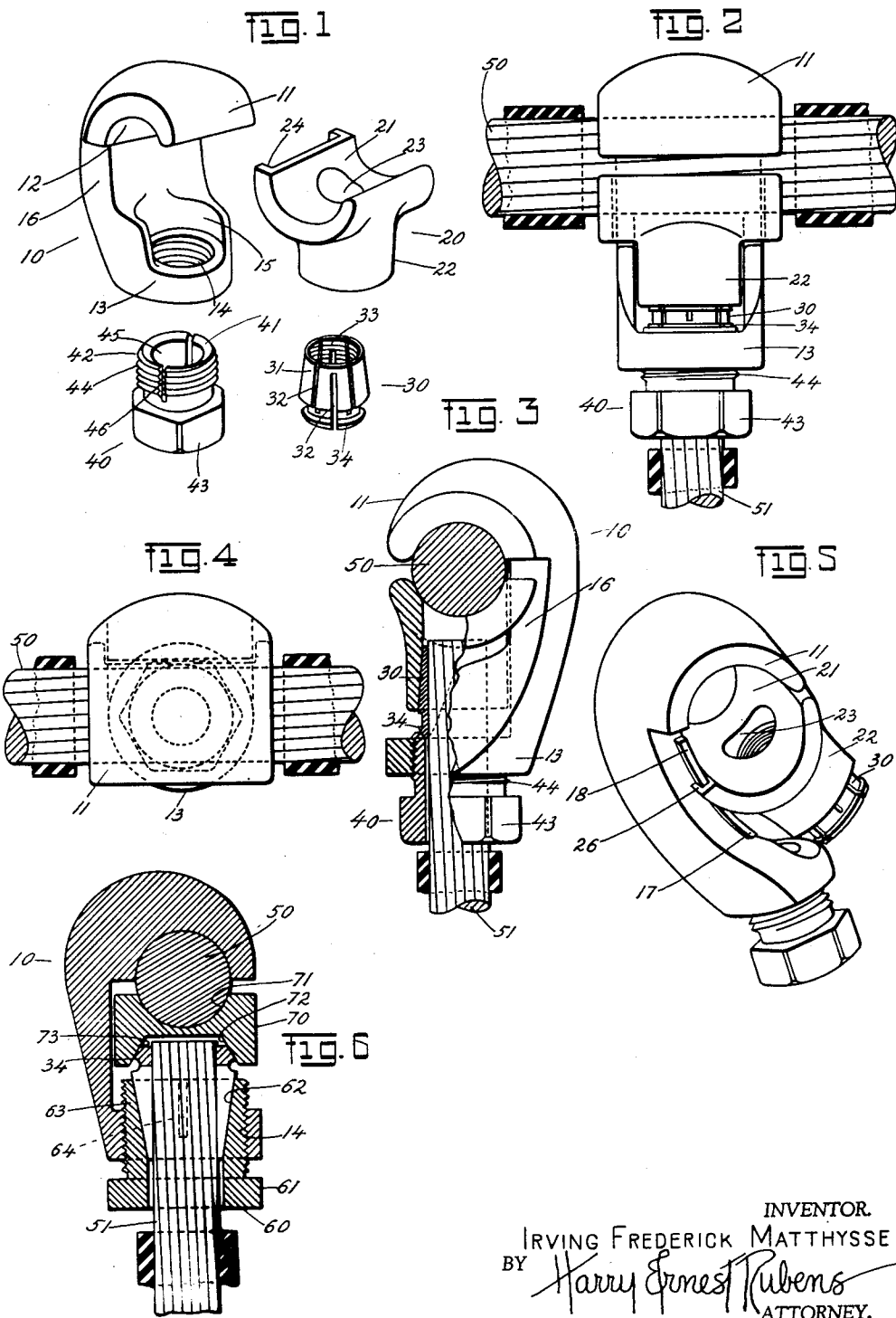
Feb. 20, 1940.

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2,191,258

T CONNECTOR

Filed April 18, 1938



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UNITED STATES PATENT OFFICE

2,191,258

T CONNECTOR

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Application April 18, 1938, Serial No. 202,639

2 Claims. (Cl. 287—54)

The present invention relates to connectors for electrical wires and cables and is intended to create a connection between two conductors at right angles to each other, by tightening a single nut.

Connectors for this purpose have previously been devised. Where a single nut has been used, however, for creating a connection between two conductors, the entire device is required to be separated into its component parts.

An object of my invention, therefore, is to provide a connector which may be readily hooked over a continuous length of cable without being disassembled into a plurality of parts.

Another object of my invention is to provide a connector of smooth contours which can be readily taped.

Still another object of my invention is to provide a connector which will be automatically locked in place on the conductors when it is tightened.

A further object of my invention is to provide a connector composed of simple, inexpensive parts which may be readily produced on automatic machinery or be made of simple castings.

These and other objects are accomplished and new results obtained, as will be evident from my novel device described in the following specification and claims and illustrated in the accompanying drawing, in which:

Fig. 1 is an exploded view of the component parts forming my device.

Fig. 2 is a front view of the assembled device.

Fig. 3 is a partially sectional side view of the same.

Fig. 4 is a top view of the device.

Fig. 5 is a perspective view of a modified form.

Fig. 6 is a sectional view of a further modification.

In Fig. 1, the component parts of the device comprise a vise-like pressure block 10, a pressure jaw 20, a gripping cone-shaped sleeve 30, and a driving nut 40.

In Fig. 2, a run conductor 50, and a tap conductor 51, illustrate, respectively, their approximate transverse positions.

The pressure-block 10, is made of an alloy capable of withstanding substantially high stresses. It is U shaped, the upper portion 11 having a semi-cylindrical channel 12, adapted to receive the exposed run conductor. The lower section 13 is perforated and threaded at 14 to receive the driving nut 40.

The pressure jaw 20, comprises a semi-cylindrical channel 21, adapted to receive the run con-

ductor 50. Beneath the channel section 21, the pressure jaw extends to form a substantially cylindrical shoulder 22, which is smaller in size than a corresponding section 15, in the pressure block 10, by which it is partially enclosed. A tapered central recess or socket 23, extends transversely from the channel 21, through the shoulder 22, and is outwardly flared to receive the cone-shaped sleeve 30.

The channel section 21, is preferably formed with a guide section 24, which slides over the central section 16, of the pressure block 10, and moves longitudinally of the aperture 14 within the pressure block 10, as determined by the central section 16.

The sleeve 30 has its external surface 31 cone-shaped for entrance into the tapered recess 23. Alternately extending from the two ends of the sleeve are slits 32 giving the sleeve walls compressive resiliency. The central hollow section 33 of the sleeve has a diameter sufficient to allow it to pass freely over the proper sized tap conductor. It is preferably threaded to facilitate a firm grip on the conductor when compressed.

The lower section of the sleeve, possesses an auxiliary blunt taper 34 for engagement with a corresponding chamfer 41, on the advancing end 42 of the nut 40. This nut has an engaging head 43 for the application of a wrench, and the advancing end 42 is threaded as at 44, for engagement with the threaded aperture 14 of the pressure bar 10. The nut 40 has, in addition, a hollow core 45, extending entirely through it, to permit entrance of the tap conductor 51, and the threaded advancing end 42 is preferably slotted as at 46, to permit expansion, as will hereinafter be explained.

The installation of my invention is simple and expeditious. All that need be done is to unscrew the advancing nut 40 until about one-eighth of an inch of thread 44 is in engagement. The sleeve 30 is inserted into the pressure jaw 20 which is tilted outward permitting the pressure block 10 to be hooked by its channel 12, over the run conductor 50. The pressure jaw 20 is then tilted back into position and the tap conductor 51 is inserted through the nut 40 into the sleeve 30. The nut is then tightened. Upon tightening the nut will advance, which in turn will apply pressure on the pressure jaw 20, which in turn engages the run conductor 50. As the pressure on the run conductor increases, the sleeve 30 will simultaneously be forced to advance in the tapered socket 23 of the pressure jaw 20. In so advancing the sleeve will be forced to contract

by the taper and grip the tap conductor 51. Thus both run and tap conductors are securely connected, both electrically and mechanically by tightening a single nut. As the connector is tightened it will automatically lock itself in the tightened position. This is accomplished by means of the blunt taper 34 on the face of the sleeve 30 bearing on the chamfer 41 on the advancing end 44 of the nut 40. The pressure will cause the split nut to expand and wedge itself tightly in the threaded hole 14 in the pressure block 10.

A modified form of guide for the pressure jaw is shown in perspective in Fig. 5. The extension 26, has been added to the guide 24 of the pressure jaw 20, and slips over the end 17 of the rail 18, extending from the central section 16 of the pressure block. Thus it is possible to have the pressure jaw guided without possibility of dislocation. In Fig. 6, a further modification of the clamping means for the tap conductor is shown. The pressure block 10 is substantially identical with that shown in Figures 1 to 4, inclusive. The same is true of the gripping cone-shaped sleeve 30, except that it is in reversed position. The nut 60 has an engaging head 61 for use with a wrench. A central core 62 is tapered to receive the cone-shaped sleeve 30.

The pressure jaw 70 has a semi-cylindrical channel 71 to receive the run conductor 50, and on its opposite face, it is recessed as at 72 with chamfer 73 to receive the auxiliary blunt taper 34 of the sleeve 30.

When the nut 60 is tightened with the tap conductor 51 inserted therein, the sleeve 30 is carried upwardly until the taper 34 engages the chamfer 73 of the pressure jaw 70. The jaw is forced against the run conductor, until the pressure causes the sleeve 30 to tighten about the tap conductor. Both conductors are thereafter simultaneously engaged. The threaded end 63 of the nut 60 may be slotted as at 64, which will cause the threaded end to expand above the threaded hole 14 of the pressure block 10.

This modification has the advantage of being self tightening. In other words, as tension is exerted on the tap conductor, the sleeve is pulled further down into the taper of the nut with the result that it compresses the conductor with greater force.

The clamping means of my invention is in line with, and surrounds the tap conductor. It is also made with a minimum cross-sectional diameter. The contour of the connector will, therefore, be smoother, smaller, more symmetrical and, therefore, easier to tape. If the clamping means were perpendicular to the axis of the cable as is often the case, an unsightly protuberance, difficult to tape would be the result.

Another feature of my invention is that the various elements of the clamping means are longitudinally spaced and there is no unnecessary increase in diameter as might result were the nut an internally threaded nut. Under such circumstances, the cross-corners dimension of the nut would be enormously increased, causing a large bulk of metal, difficult to tape, to be present just adjacent the point where the tap cable enters the connector.

Still another feature of my invention is the fact that those portions of the connector which are under high tensile or bending stresses may be made of strong alloys or metals of low electrical conductivity, whereas those portions of the connector which carry the current are under simple compressive forces and may be made of pure copper or other material of high conductivity without regard to strength. Thus, for example, the pressure block 10, the main body casting, may be made of an alloy having 96% copper, 3% silicon, and 1% manganese, which has a tensile strength, in excess of 50,000 lbs. per square inch and an electrical conductivity of less than 7% IACS. On the other hand, the current carrying members (sleeve 30 and pressure jaw 20) may be made of pure copper, which in cast form has a tensile strength of less than 22,000 lbs. per square inch, and an electrical conductivity greater than 85% IACS. By thus separating the mechanical and electrical functions of the constituent parts of the connector, each part can be made of a material which will be perfectly suited to its functions and it is not necessary to compromise on a material which will combine the properties of strength and electrical conductivity, but which would not have the maximum obtainable value of either.

I have thus described my invention, but I desire it understood that it is not confined to the particular forms or uses shown and described, the same being merely illustrative, and that the invention may be carried out in other ways without departing from the spirit of my invention, and therefore, I claim broadly the right to employ all equivalent instrumentalities coming within the scope of the appended claims, and by means of which, objects of my invention are attained and new results accomplished, as it is obvious that the particular embodiments herein shown and described are only some of the many that may be employed to attain these objects and accomplish these results.

What I claim and desire to secure by Letters Patent, is as follows:

1. A T connector comprising a U-shaped body section with a semi-cylindrical channel forming one leg of the U for receiving a run conductor, and a threaded aperture in the remaining leg opposite the channel, a hollow bolt for threaded engagement with the aperture in the leg of the body section; and means positioned between said bolt and the run conductor for simultaneously compressing a tap conductor inserted into the bolt and the run conductor firmly into position when the bolt is tightened.

2. A T connector comprising a U-shaped body section with a semi-cylindrical channel forming one leg of the U for receiving a run conductor, and a threaded aperture in the remaining leg opposite the channel, a hollow bolt for threaded engagement with the aperture in the leg of the body, and having substantially the same diameter as the remaining leg opposite the channel; and means positioned between said bolt and the run conductor for simultaneously compressing a tap conductor inserted into the bolt and the run conductor firmly into position when the bolt is tightened.

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