

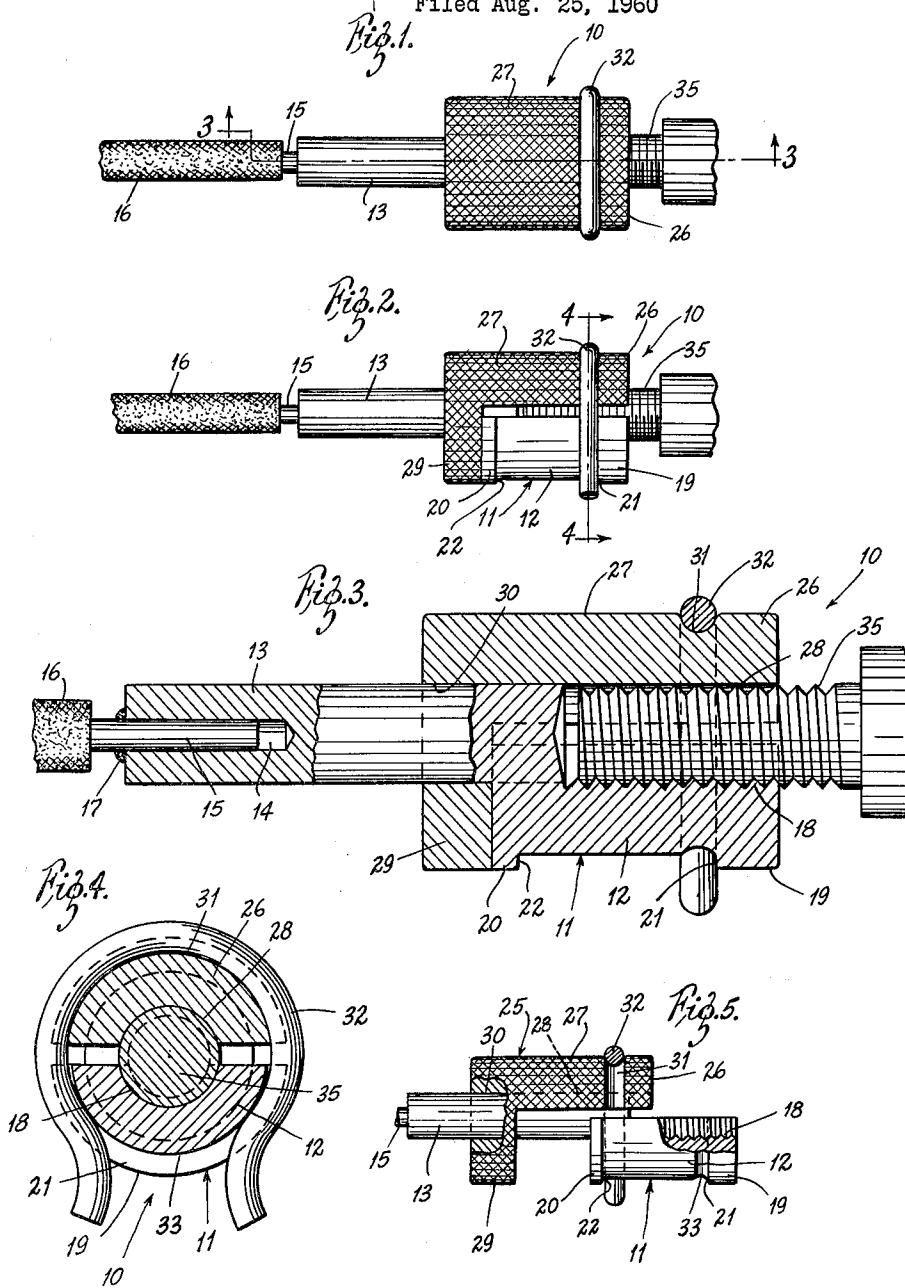
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QUICK CONNECTOR

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3,099,509
QUICK CONNECTOR

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The present invention relates to a quick connector for making electrical connections to a fixed terminal post.

The essence of the invention is the provision of a conductive connector to which an electrical cable is attached, in the form of a lengthwise-divided sleeve with quickly operable means by which the connector may be fastened to a terminal post. It comprises essentially two complementary half-sleeves, each having a half-bore that, when combined, receives a fixed terminal. One (referred to as the "fixed half sleeve") has an axially projecting shaft-like cable connector; the other has a ring slidably engaging this shaft-like connector. Engagement and disengagement of the halves is effected by such axial sliding. A spring ring holds the half-sleeves clamped together and serves as a detent against axial disengagement.

The fixed half-sleeve only, has threads, while the other half-sleeve has a smooth half-bore. By this means, the connector eliminates the conventional threading of a nut and bolt type terminal post, and requires only the sliding of a single part to make the connection. Inasmuch as the connector is constructed of an electrical conductive material and, inasmuch as the fastening attachment of the connector to the terminal post is positive and covers a large area of the terminal, there results a reliable electrical connection.

A principal object of the invention is to provide a quick connector for an electrical cable that can connect the cable to a terminal post without requiring threading of any parts of the terminal post.

Another object of the invention is to provide a quick connector for an electrical connection that includes a single sliding element with means for positively maintaining the relationship of the single sliding element with a single fixed element.

Still another object of the invention is to provide a quick connector for a slidable element that can attach an electrical connector to a terminal post without damaging the threads of the terminal post.

Yet another object of the invention is to provide a quick connector having means for audibly indicating the fact that the connector is locked onto a terminal post.

Another object of the invention is the provision of a quick connector that is extremely simple to operate and to construct and yet is highly reliable. Other objects and advantages will appear to those skilled in the art.

In the drawings:

FIGURE 1 is a top view of the quick connector;

FIGURE 2 is a side view of the connector taken from the bottom of FIGURE 1;

FIGURE 3 is a view in section along the line 3—3 of FIGURE 1;

FIGURE 4 is a view in section along the line 4—4 of FIGURE 2; and

FIGURE 5 is a side view similar to FIGURE 2, but with the connector in position for attaching to a fixed terminal and with parts broken away and in section.

Referring to the drawings, the connector is indicated generally by the numeral 10. It comprises a fixed half-sleeve element 11 that includes a forward portion 12 illustrated as having the shape of a half cylinder. The fixed half-sleeve 11 also has integral therewith a rearward projecting portion 13 of cylindrical shape but of reduced diameter. The rearward portion 13 has a hole 14 bored into it, and into which the bared wire 15 of

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a cable 16 can be inserted. The wire 15 may be held within the bore 14 by a pressfit or may be soldered as indicated at 17.

The forward half-sleeve 12 of the fixed member 11 has internal threads 18 in its half-bore. At the forward-most end of the forward portion, there is a rib or flange 19, also in the form of a half cylinder; and there is a similar rib or flange 20 at the rearward end of the forward portion 12. The inner walls 21 and 22, respectively, of the bosses 19 and 20 provide stops for a spring, as will be described.

The other half-sleeve comprises a single sliding member 25 with a main body portion 26 illustrated in the form of a hollow half-cylinder, having a knurled outer surface 27 and a smooth inner surface 28 on its half-bore.

It is to be noted that the smooth inner surface 28 is in contrast to the internal threads 18 of the fixed member 11.

The rear portion of the slidable half-sleeve member 25 is characterized by a portion 29 that forms a complete cylinder with a hole 30 through it coaxial with the half-bore surface 28 of the body portion 26. The hole 30 is only slightly larger in diameter than the diameter of the cylinder 13 so that it can slide along the cylinder 13 until stopped against the rear wall of the annular boss 20.

The slidable half-sleeve member 25 has a groove 31 about its periphery transverse to the axis of the above-described half-cylinders. A single loop spring 32 is seated within the groove 31 and also passes partly around the forward portion 12 of the fixed member 11 where it is reduced in size between the inner surfaces 21 and 22 of the bosses 19 and 20. It will be noted from FIGURES 3 and 5 that the forward portion 12 of the fixed member 11 has a slight groove 33 into which the spring 32 snaps when the slidable member 25 is slid to the forward end of the fixed member 11. When that snapping action occurs, there is a definite and audible impact of the spring against the groove 33.

The quick connector is intended primarily for use in connecting the cable 16 to a threaded terminal post, such as the one indicated by the numeral 35. Such posts may, for example, appear on transformers or the like.

In operation, the slidable member 25 is slid to the rear of the fixed member 11 until the spring 32 abuts the inner face 22 of the boss 20. This open or released condition of the connector is illustrated in FIGURE 5. To apply the connector to a terminal 35, the fixed half-sleeve is placed over the threads of the terminal and held against the threads. Thereafter, the movable half-sleeve 25 is slid axially along the opposite sides of the terminal 35 by pressure exerted upon the knurled outer surface 27, toward complete overlapping of the fixed half-sleeve. In this action, the smooth half-bore 28 is unhindered by the threads on the terminal. Finally, the clamping spring 32 snaps into the groove 33, with an audible snap, indicating that the connector is in place for an effective electrical connection. The two half-sleeves are securely retained together and against the terminal 35 by the spring; and are held against axial withdrawal by having the threads 18 of the half sleeve 12 clamped onto the threads of the terminal. To assure the clamping action, the two half-sleeves should be slightly separated when closed onto the terminal.

Various changes and modifications may be made within the process of this invention as will be readily apparent to those skilled in the art. Such changes and modifications are within the scope and teaching of this invention as defined by the claims appended hereto.

What is claimed is:

1. A device for connecting an electrical cable to a terminal post, comprising

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- a hollow sleeve divided lengthwise into first and second opposed parts between which such terminal post is received from one end of the opposed parts, and clamping means embracing said sleeve parts whereby to secure them in axial registration, thereby to clamp the terminal post, 5
- the first said sleeve parts being electrically conductive and having a terminal-post-grasping inner surface, said first part having, at the end opposite to that receiving the terminal post, an axially projecting cable connector portion, 10
- the other sleeve part having at the end opposite that receiving the terminal post a concentric ring portion surrounding and axially slidable relative to said axially projecting cable connector portion, 15
- whereby when the clamp means is released, said other sleeve part may be slid along the terminal post axially out of registration with the first sleeve part to release the terminal post.
2. The device of claim 1 wherein the inner surface of the first sleeve part is indented for interfitting with complementary indentations on a terminal. 20
3. The device of claim 2 wherein the inner surface of the other part is smooth.
4. The device of claim 2 wherein the said inner surface is threaded. 25
5. The device of claim 4 wherein the other sleeve part

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has a smooth inner surface and is slidable between a position even with one end of the first sleeve part and a position that exposes the threads of the first sleeve part.

6. The device of claim 4, the first sleeve part being of greater radial extent than its projecting cable connector portion, whereby sliding movement of the other sleeve part to engage the terminal post is stopped by abutment of its ring portion against the first sleeve part.
7. The device of claim 4, the clamp being a spring loop, the outer surface of either of said sleeve parts having a portion slidable within the loop and an indentation adjacent to the slidable portion into which the loop seats releasably.

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