ABSTRACT OF THE DISCLOSURE

A fastener for wires and the like having a tubular shell whose cavity is open in one direction and tapers toward the open end, and a locking member wedgedly engaging the tapering wall of the cavity under the restraint of a spring which biases the locking member in an outward direction. A recess in the exposed surface of the locking member permits a pointed tool securely to engage the member for depressing the same against the spring to permit insertion of a wire or release of a clamped wire. The preferred locking member is drop shaped having a hemispherical outer portion and a tapering inner portion.

Devices for instantaneously fastening electrical conductors without the use of screws are already known in the art. In particular there are known unipolar electric plugs having an outwardly tapering conical cavity adapted to receive the end of the wire or conductor to be fixed, a ball, which is actuated upon by a spring, being accommodated in said cavity.

By slightly compressing the spring it is possible to insert the wire between the ball and the inner wall of the cavity, said wire being clamped by the ball against the cavity wall when the wire is subjected to traction. It is an inherent shortcoming of all these conventional devices that the conductor or wire cannot be removed unless the ball is compressed by means of another pointed tool which, in its turn, is caught within the cavity.

A further inconvenience of the conventional devices consists in that contact between the ball and the conductor is limited to practically one point only.

The present invention provides a device which avoids the above mentioned difficulties and is also usable as a mechanical joint. It has a tubular shell whose cavity tapers toward an open end normally closed by a movable locking member under the urging of a resilient element. A recess in an outward face of the locking member is adapted to receive a pointed tool for releasing a wire, cable or the like that is clamped between the surface of the locking member and the inner wall of the shell.

The locking member preferably is drop-shaped, an essentially semi-spherical portion being directed outward, and an essentially conical portion being directed inward and partly surrounded by a spring which pushes the locking member into its closing position. The semi-spherical portion of the member is formed with a central recess for receiving a pointed tool.

The invention will be better understood as preferred embodiments of the same will now be described with reference to the accompanying drawing in which:

FIG. 1 shows another unipolar electric plug in an axially sectional view.

FIG. 2 illustrates an element of the plug shown in FIG. 1 in elevation.

FIG. 3 is a plan view of said element.

The plug has a brass shell 1 of cylindrical form whose cavity 5 has a cylindrical lower portion (E-F), an intermediate conically tapering portion (F-H), a cylindrical throat (H-I) and finally an outwardly open, conically flaring portion (I-J).

The lower cylindrical portion (E-F) is seated by a press fit on the cup shaped end 13' of the plug pin 13 which accommodates the lower end of a tapering helical spring 4 the upper end of which coaxially engages a conical inner portion C-D-A (FIG. 2) of a drop-shaped locking member 2 having an outer semi-spherical portion A-B-C.

The semi-spherical portion A-B-C is provided with a central recess 2'. The plug is operated as follows: When a fairly rigid copper wire is to be inserted into the plug, it will suffice to push said wire into the flaring end portion I-L of the cavity 5 in the direction of the arrow 15. The locking member 2 is moved downward against the restraint of the spring 4. The wire is then strongly held between the semi-spherical surface of the member 2 and the inner wall H-F of the body 1.

The wire is released by inserting a pointed tool (a needle, a nail or the like) into the recess 2' of the member 2 and pushing the same against the action of the spring 4. The wire is free for removal.

A wire or cable which is not sufficiently rigid for overcoming the spring 4 is inserted after displacement of the member 2 by means of a pointed tool. When the pressure on the member 2 is released, the wire is strongly held between the member 2 and the body 1.

Only the recess 2 permits a pointed tool to be used for overcoming the action of the spring 4, whereby any type of wire or conductor may be introduced.

When, in the conventional devices, one tries to overcome the action of the spring by applying a pointed tool to a spherical locking member, the spherical member merely turns. Should one succeed in pressing it inward, the pointed tool is caught in the plug.

The conical portion of the drop-shaped locking member 2 is restricted by the spring 4 in its swinging movement and keeps its axial orientation even under stress. In other words, the locking member 2 cannot rotate about a transverse axis as the ball of a conventional device would.

The device of the invention consists of very simple components capable of being manufactured by mass production methods without difficulty.

The shell I is fastened to the plug 13 by pressure applied as indicated by arrows 16-17.

While the invention has been described with reference to an embodiment, it is not limited to the specific form shown, since changes and modifications may be made in the structure as well as in the material without departing from the spirit and the scope of the invention as defined in the appended claims.

What is claimed is:

1. In a fastener having a tubular shell formed with an elongated cavity longitudinally tapering toward an open end, a locking member in the cavity, and yieldably resilient means biasing the locking member toward said open end for wedging engagement with the inner wall of said shell, the improvement of the locking member comprising an arcuate face of said locking member being formed with a recess therein, said face being exposed in said open end of the cavity during said engagement of the locking member with said inner wall and having a portion facing the inner wall for clamping an element thereto against, and said locking member further having a forwardly tapering end portion opposite said exposed face and positioned inside said resilient means.

2. In a fastener as set forth in claim 1, said locking member being drop shaped, said face thereof being substantially hemispherical, and said locking member conically tapering inward of said cavity from said hemispherical face.

3. In a fastener as set forth in claim 2, said yieldably
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resilient means including a helical spring interposed between the other end of said cavity and said locking member, said conically tapering portion of said locking member being received in said spring.

4. In a fastener as set forth in claim 2, said cavity having a throat portion and flaring longitudinally from said throat portion in opposite directions, said throat portion and a terminal portion of said cavity adjacent the other end of said shell being substantially cylindrical, and a plug pin partly received in said terminal portion in sealing engagement, said pin being formed with a recess open toward said cavity, said yieldably resilient means including a spring partly received in the recess of said plug pin and engaging said locking member.