

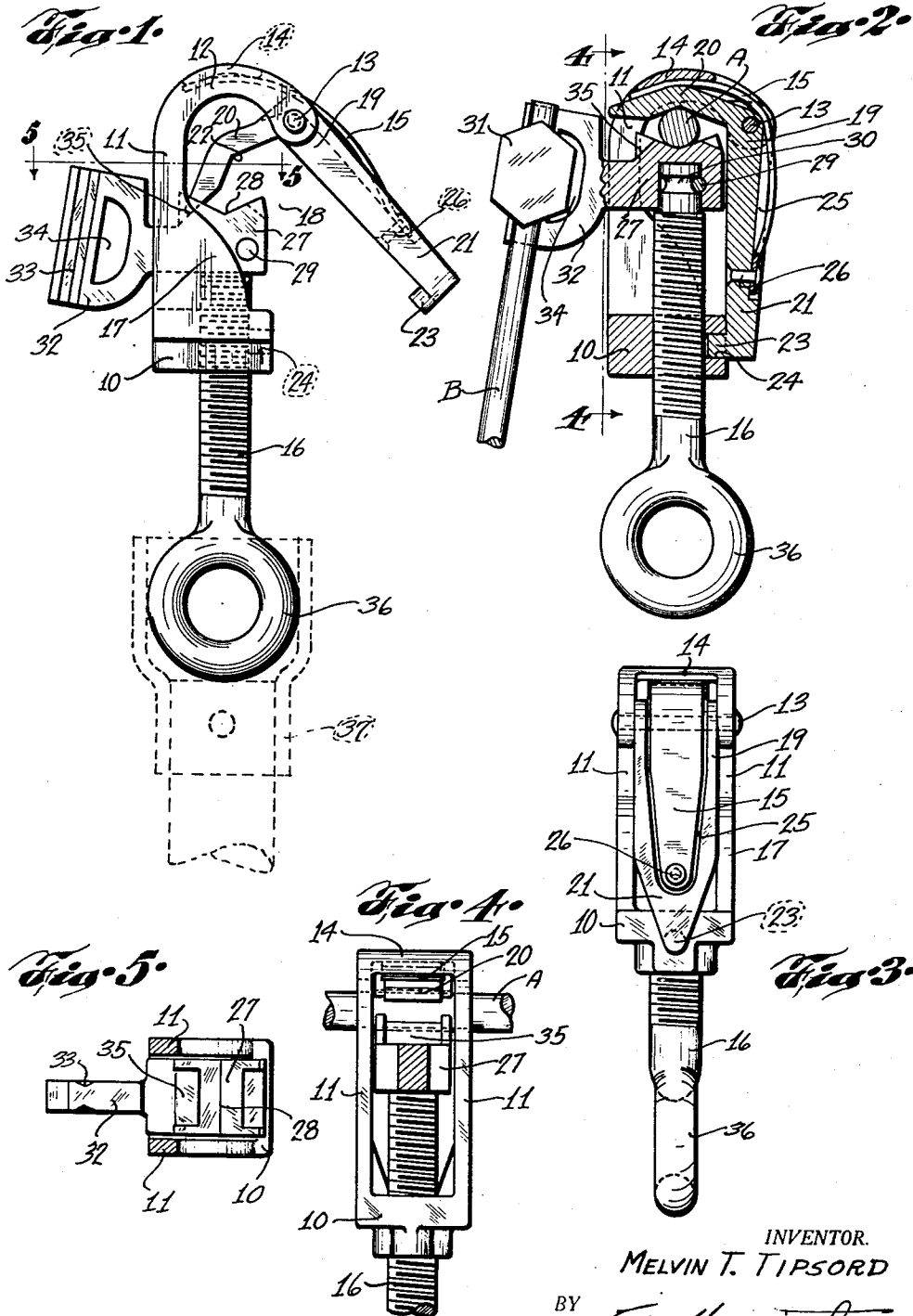
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WIRE CLAMPING DEVICE

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WIRE CLAMPING DEVICE

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This invention relates to wire-clamping devices, and more particularly to an improved clamp which may be employed as the head portion of a lineman's tool for handling electrical lines or cables, or which may serve as an electrical connector for connecting a tap, or lead-off wire, to a main or feeder line. The device is especially adapted for use in connection with overhead high tension lines.

An object of the present invention is to provide an improved device of the character described which, when clamped on a wire, completely surrounds the same, thereby preventing the wire from slipping, or otherwise being unintentionally freed from the environs of the clamp.

Another object is to provide a connector device having improved means which facilitate its application to an overhead line.

Other objects and advantages will hereinafter appear.

The present invention resides principally in a clamp assembly having a pivotally mounted jaw element which is adapted for movement responsive to movement of a companion jaw element.

The pivoted jaw carries a projecting portion which serves, when the device is in open, wire-receiving condition, to direct a wire to a position between the jaws. When in closed condition the projecting portion serves to bridge, or obstruct, the opening through which the wire has been received into the device.

In the drawing, Fig. 1 is a side elevation of a preferred embodiment of the invention shown in open, wire-receiving condition, a fragmentary portion of a tool (forming no part of the present invention) for applying the device to an energized line appearing in broken lines.

Fig. 2 is a partially sectioned side elevation of the device of Fig. 1, shown connecting two conductors.

Fig. 3 is a front elevation of the device.

Fig. 4 is a fragmentary sectional elevation of the device as viewed from the line 4-4 of Fig. 2.

Fig. 5 is a transverse section taken at line 5-5 of Fig. 1.

Referring now by numerals of reference to the drawing, the clamp structure includes a substantially U-shaped body member, preferably formed as by casting from metal having high electrical conducting properties. The clamp body includes a base portion 10, and laterally spaced, substantially parallel arms 11 which extend from opposite sides of the base at right angles to the plane thereof. The arms 11 are preferably curved near their outer ends, such curved portions being in-

dicated at 12, and are connected at their outer extremities by a pivot pin 13 which extends transversely between the arms. A bridge 14, connecting the arms at the apices of their curved portions, provides a backing for a pivotally mounted jaw element, to be hereinafter described, and further serves to position one end of a leaf spring 15. The base 10 is provided with an internally threaded bore located centrally with respect to the arms 11, such bore accommodating a jaw-actuating bolt 16. As best appears from Fig. 1, the inner ends of arms 11 are laterally offset from the axis of bolt 16. Gusset portions 17 reinforce the arms 11 at the base, and in addition aid in guiding a conductor into a clamping position between the jaw members.

From the foregoing description it will appear that the clamp body presents a lateral opening, indicated at 18, between the base 10 and the outer ends of arms 11, through which opening a wire is adapted to be introduced laterally into the body of the clamp.

Disposed between the arms 11 and mounted on the pin 13 for pivotal movement relative to the clamp body is a substantially L-shaped member 19 having leg portions 20 and 21. The pivot pin 13 extends through a bore formed in the member 19 at the junction of the leg portions 20 and 21. The leg portion 20 projects from the pin 13 into the clamp body, and forms a wire-clamping jaw, and a groove 22 traverses the under surface of portion 20 and aids in positioning a wire thereon.

When the clamp is in open condition (Fig. 1) the portion 21 projects from the pivot pin 13 at an angle to the longitudinal axis of the clamp body. When so disposed, portion 21 appears as a prolongation of the arms 11, materially increasing the scope of the device when positioning the same on an overhead line and thereby facilitating such operation. When disposed in closed position (Fig. 2), portion 21 extends from the ends of arms 11 to the base 10, providing a closure for the lateral, wire-receiving opening 18. It will thus appear that a clamped wire, indicated at A, is entirely encompassed by the device, and accordingly is definitely prevented from slipping or becoming inadvertently displaced from the environs of the clamp structure.

The portion 21 is provided with suitable means for definitely engaging the base 10, in the present example such means comprising a lateral stud 23, formed on portion 21, which is adapted to fit snugly in a recess 24 in the side of the base 10. By such or a similar expedient, the arms 11 are relieved of stresses which tend to bend or distort

the same when the device is clamped on a wire, enabling enhanced clamping pressures to be employed.

The leaf spring 15, previously mentioned, extends along the outer surface of portion 21, in a shallow recess 25 formed therein, and is anchored at its end to portion 21 by means of a rivet 26. The spring 15 tends to hold member 19 in open clamp position, as shown in Fig. 1.

Mounted on the inner end of the bolt 16 for rectilinear movement toward and from the base 10 is a jaw element 27, which comprises a metal block having wire-receiving groove or seat 28. The bolt 16 projects into a central bore formed in the jaw element, and is maintained therein by means of a pin 29 which extends transversely through the bore and laterally into an annular groove 30 formed in the end portion of the bolt. Thus, the bolt is permitted to rotate freely relative to the jaw element 27, yet is permanently attached thereto. The spaced arms 11 form a guideway for the jaw element 27 and prevent that element from turning with the bolt. Means are provided for securing a secondary or tap wire 3 to the clamp structure. Such means preferably include a so-called slotted-bolt connector, indicated generally at 31, carried by a projection or terminal lug 32 on the jaw element 27. The lug 32 is provided with a groove or wire seat 33 and an aperture 34 located laterally of the groove 33 which aperture receives one leg of the slotted-bolt. A nut (not appearing) threaded on the slotted-bolt serves to clamp the wire B between the lug 32 and bolt head 31.

When the clamp device is in open position, in readiness for application to a wire (Fig. 1), the member 19 assumes an angular position relative to the axis of the device, the free end of jaw 20 bearing upon a camming surface 35 of jaw 27. When the bolt 16 is turned to move jaw 27 toward jaw 20, the latter jaw, actuated by the former, is rotated to a position subjacent the bridge 14, the bridge providing a solid backing for jaw 20. During the recited operation, leg portion 21 of member 19 swings from clamp-open position (Fig. 1) to closed position (Fig. 2).

The clamp herein shown and described is primarily intended for use as a wire connector, and to adapt the device for such purpose the bolt 16 is provided with a head portion 36 of ring form which permits of its ready engagement and disengagement by a presently prevailing type of lineman's manipulating tool, a fractional portion of which is indicated at 37. However, by permanently fastening the bolt 16 to a suitable pole, the assembly becomes a so-called "wire-tong" used extensively by linemen for handling energized, high tension wires.

From the foregoing description it will appear that I have provided an improved wire clamp, the improved features residing principally in the pivotally mounted jaw structure which, during sequential operating stages, provides a guiding arm for directing a wire into proper position for clamping between the clamping elements, which arm thereafter provides a closure for the wire-receiving opening.

I have described my invention by reference to the preferred construction shown, but numerous variations and modifications may be made in the device described herein, without departing from the spirit and scope of the invention.

I claim:

1. A wire-clamping device comprising a body member provided with a wire passage open at a

side of the body portion, an element movably connected to the body member, said element having portions, one of which forms a clamping jaw and the other being elongated and movable to such position as to bridge and close said wire passage, and a second jaw supported by said body member and movable with respect to the jaw portion of said element in a manner to clamp a wire between said second jaw and the jaw portion of said element, a portion of said element being in contact with said second jaw whereby movement of said second jaw toward the wire-clamping position moves the jaw portion of said element toward the wire-clamping position and the passage-bridging portion of said element toward the passage-bridging position.

2. A wire-clamping device comprising a body member provided with an open wire passage at a side thereof, an element pivotally connected to the body member adjacent to said wire passage, said element having angularly related portions, one thereof forming a clamping jaw and the other being elongated and movable to such position as to bridge and close said wire passage, and a second jaw supported by said body member and movable with respect to the jaw portion of said element in a manner to clamp a wire between said second jaw and said jaw portion of said element, a portion of said element being in contact with said second jaw whereby movement of said second jaw toward the wire-clamping position moves the jaw portion of said element toward the wire-clamping position and the passage-bridging portion of said element toward the passage-bridging position.

3. A wire-clamping device comprising a body member provided with an open wire passage at a side thereof, an element pivotally connected to the body member adjacent to said wire passage, said element having angularly related portions, one thereof forming a clamping jaw and the other being elongated and movable to such position as to bridge and close said wire passage, a second jaw supported by said body member and movable with respect to the jaw portion of said element in a manner to clamp a wire between said second jaw and said jaw portion of said element, a portion of said element being in contact with said second jaw whereby movement of said second jaw toward the wire-clamping position moves the jaw portion of said element toward the wire-clamping and the passage-bridging portion of said element toward the passage-bridging position, and means for moving said second jaw toward and from the wire-clamping position.

4. A wire-clamping device comprising a body member provided with an open wire passage at a side thereof, an element pivotally connected to the body member adjacent to said wire passage, said element having angularly related portions, one thereof forming a clamping jaw and the other being elongated and movable to such position as to bridge and close said wire passage, a second jaw supported by said body member and movable with respect to the jaw portion of said element in a manner to clamp a wire between said second jaw and said jaw portion of said element, a portion of said element being in contact with said second jaw whereby movement of said second jaw toward the wire-clamping position moves the jaw portion of said element toward the wire-clamping position and the passage-bridging portion of said element toward the passage-bridging position.

the passage-bridging position, and screwthreaded means for moving said second jaw toward and from the wire-clamping position.

5 5. A wire-clamping device comprising a body member provided with an open wire passage at a side thereof, an element pivotally connected to the body member adjacent to said wire passage, said element having angularly related portions, one thereof forming a clamping jaw and the
10 other being elongated and movable to such position as to bridge and close said wire passage, a second jaw supported by said body member and movable with respect to the jaw portion of said element in a manner to clamp a wire be-
15 tween said second jaw and said jaw portion of said element, a portion of said element being in contact with said second jaw whereby movement of said second jaw toward the wire-clamping position moves the jaw portion of said element toward the wire-clamping position and the
20 passage-bridging portion of said element toward the passage-bridging position, means for moving said second jaw toward and from the wire-clamping position, and a spring associated with
25 said element in such manner that it tends to move the passage-bridging portion thereof out of the passage-bridging position.

6. In a wire clamp a body member having an open side which provides a wire passage, a substantially L-shaped element pivotally connected to the body member, one leg of said element being adapted to bridge the open side of the
5 body member and the other leg of said element forming a wire-clamping jaw projecting into the body member, a second wire-clamping jaw in the body member which is movable toward and from the first-named jaw, a portion of said
10 L-shaped element being in cooperating contact with a portion of the second wire-clamping jaw whereby movement of said second wire-clamping jaw toward the wire-clamping position moves the
15 jaw of said L-shaped element toward the wire-clamping position and the bridging leg of said L-shaped element toward a position where it bridges the open side of the body member, a
20 bolt threaded in the body member for actuating said second jaw, wire connecting means carried by said second jaw, and a spring disposed to bias said element to a position where the bridging
leg thereof is in non-bridging position relative to the open side of the body member.

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