April 29, 1941. R. L. STRUBE 2,240,125

WINDING DEVICE

Filed Aug. 1, 1940

Fig. 1

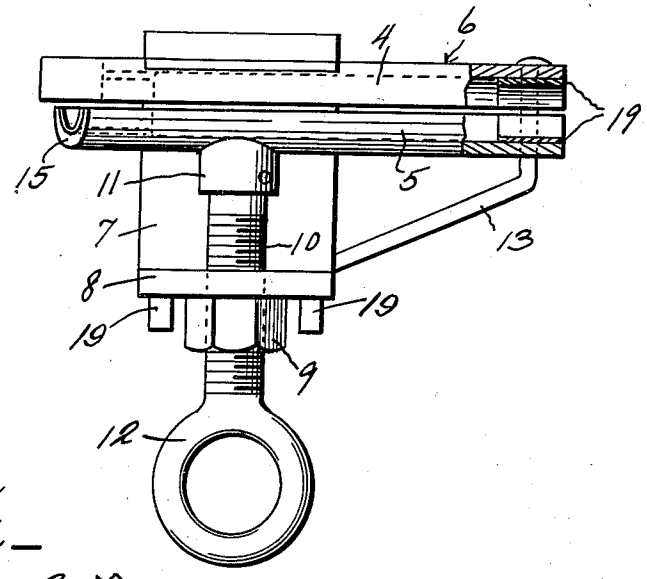


Fig. 2

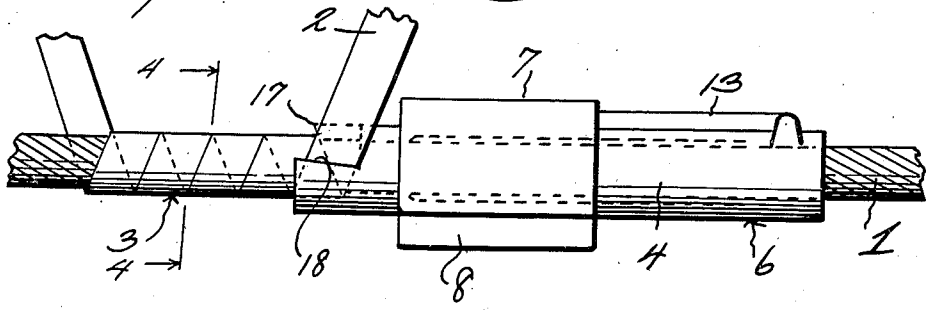


Fig. 4

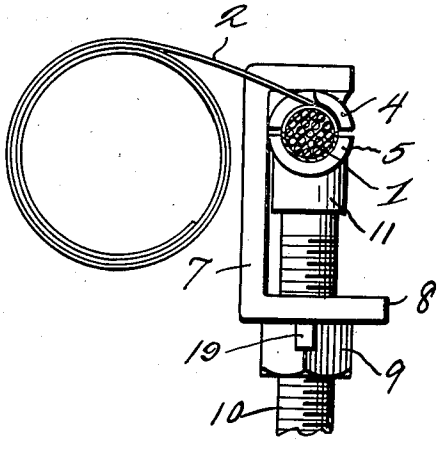
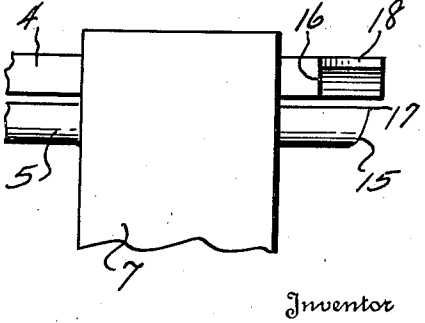


Fig. 3



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WINDING DEVICE

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Application August 1, 1940, Serial No. 349,176

7 Claims. (Cl. 57—10)

This invention relates to devices for use by electricians in working upon current carrying wires or cables and pertains particularly to a device to facilitate the application of aluminum wire to high voltage electric transmission lines.

The primary object of the present invention is to provide a tool which will facilitate the wrapping of aluminum armor ribbon around electric current transmission lines whereby the application of such armor to the line may be effected in a great deal less time than is required at the present time by the employment of present methods.

Another object of the invention is to provide an aluminum ribbon wrapping or winding tool which is adapted to be employed in association with a "hot stick" such as is commonly employed by electric linemen working on high tension wires, whereby the lineman is able to apply the ribbon to the wire quickly and properly without danger.

The invention will be best understood from a consideration of the following detailed description taken in connection with the accompanying drawing forming part of this specification, with the understanding, however, that the invention is not to be confined to any strict conformity with the showing of the drawing but may be changed or modified so long as such changes or modification mark no material departure from the salient features of the invention as expressed in the appended claims.

In the drawing:

Fig. 1 is a view in elevation of the tool embodying the present invention.

Fig. 2 is a view in top plan of the tool showing the same in operation.

Fig. 3 is a rear view of the working end of the tubular portion of the tool.

Fig. 4 is a sectional view taken substantially on the line 4—4 of Fig. 2.

Referring now more particularly to the drawing, the numeral 1 designates a portion of a current conducting line or cable which is to be wrapped with the usual aluminum ribbon here indicated by the numeral 2, whereby to provide a protecting or covering armor over the cable adjacent to a supporting insulator, to facilitate the tying of the wire to the insulator in the customary manner. This armor ribbon is applied spirally to the wire so as to form thereabout a smooth protecting sheath, as indicated at 3 in Fig. 2.

The tool or implement embodying the present invention and by means of which the armor ribbon is applied spirally in the manner illustrated in Fig. 2, comprises the two relatively long semi-cylindrical, grooved bodies 4 and 5, which when disposed in coacting relation upon opposite sides of the current conductor 1, form a guide or sleeve indicated generally by the numeral 6, which may be rotated axially on the wire and moved longitudinally thereof.

One of the bodies of the sleeve, here shown as the body 4, is secured to an end of an elongated plate or bracket 7 which extends transversely of the sleeve and which at its opposite end is angularly or laterally turned to form the flange 8 which extends across the other portion of the sleeve which is movable relative to that portion which is attached to the bracket plate. This flange 8 carries a nut 9 which is alined with an aperture not shown, of the flange, and through this nut extends the threaded bolt or screw 10 which has its inner end swivelly coupled, as at 11, to the portion of the tubular sleeve or guide which is free of the bracket, such portion being here designated by the numeral 5.

The outer end of the screw 10 is formed to provide the eye 12 which facilitates the attachment to the device of the hook of a "hot stick" such as is commonly used in working upon high tension transmission lines.

The bracket 7 is relatively narrow and in view of this and in order to stabilize the structure, there is provided a brace arm 13 which is attached at one end to the end of the bracket adjacent the flange 8 while at its other end it extends across the movable portion 5 of the sleeve adjacent an end of the latter, and is attached to the adjacent end of the fixed portion 4 of the sleeve.

The end of the movable portion 5 of the sleeve remote from the arm 13, is cut obliquely to the length of the sleeve, as indicated at 15. The end of the fixed portion 4 adjacent to the obliquely cut end 15 of the movable portion is cut transversely through approximately half of its width as indicated at 16, from that side which is nearest the point 17 of the obliquely cut end of the portion 5 and is then provided with the longitudinally extending edge 18 which is slightly oblique to the center of the sleeve, as shown in Fig. 2. There is thus formed in the end of the fixed portion 4 of the sleeve, a notch or recess through which extends the tape or ribbon 2 which is being wound on the cable.

The edge 18 functions as a guide for the ribbon as the tool is rotated around the wire or cable 1, the slightly oblique longitudinal edge of the notch in the portion 4 functioning to keep the ribbon in the inner end of the notch and the oblique end edge 15 of the movable portion 5 which extends transversely with respect to the line of the portion of the ribbon entering the notch, serves as an abutment for the last turn or spiral of the ribbon coil.

From the foregoing, it will be readily apparent that the device embodying the present invention is so constructed that it may be applied to a "hot

wire" by means of the usual "hot stick" and it may also be rotated on the wire by the attached "hot stick" so that the lineman will not be required to touch the tool or the wire in winding the ribbon about the wire.

The inner surfaces of the two portions 4 and 5 of the sleeve are preferably provided at the ends thereof with short linings of a soft bearing metal, as indicated at 19. These lining inserts for the sleeve portions coact to form bearing guides so that the major portion of the wire 1 is free of contact with the sleeve and, therefore, the sleeve may be easily or smoothly turned on the wire.

The flange 8 is provided upon opposite sides of the nut 9 with the downwardly extending lugs 19. These lugs parallel the screw 10 and are spaced from the nut as shown in Fig. 1.

As previously stated, the device is constructed to be applied to a wire and handled by the usual or conventional type of "hot stick" which is employed by linemen when working on high tension wires for the handling of devices which are electrically connected with the wire.

In starting a ribbon such as is indicated at 2 upon the wire, the lineman takes the roll of ribbon and forms an open eye in one end thereof. This eye is then placed over the high tension line by the aid of a pair of "hot wire tongs" which are suitably insulated to facilitate handling the ribbon without requiring the lineman to touch the same or the wire. The eye of the ribbon is secured over the wire by the tongs and the winding device which may have been previously applied to the wire by means of the "hot stick" is slipped down the wire and the ribbon is fitted in the end of the winder against the bearing edge 18 thereof. The portions 4 and 5 of the device are then tightened up so as to firmly enclose the wire and turn thereon but hold the ribbon firmly so as to effect the spiral winding of the ribbon in the manner illustrated. The winding device is then rotated around the wire and after the ribbon has been wound onto the desired extent, the eyed end portion of the ribbon is cut or broken off, so that the end of the ribbon will lie tight against the wire.

The conventional type of "hot stick" which is employed for taking a hold on the screw eye 12 is of standard and well-known construction, therefore, it is not believed that any detailed explanation of the character of the "hot stick" securing or clamping head is necessary. This head is provided with a recess into which the eye 12 is received and the lugs 19 also engage in the opposite sides of the recess so that the "hot stick" will be held in connection with the screw 10 against turning.

What is claimed is:

1. A ribbon winding device for high tension wires, comprising a guide adapted to engage the wire and divided longitudinally to form two portions, a bracket secured to one portion, a screw threadably connected with and supported by the bracket, means forming a swivel connection betwen an end of the screw and the other portion of the guide, and means at one end of the guide and forming a part of the guide facilitating the spiral winding of a ribbon about the wire upon axial rotation of the guide around the wire.

2. A device for spirally winding an armor ribbon around a wire, comprising a guide formed to engage a portion of the wire and longitudinally divided to form two portions, a screw swivelly connected at one end to one of the portions, means attached to the other portion and having said screw threadably connected therewith whereby turning of the screw will effect the relative movement of the two portions, one of said portions at one end being cut obliquely and the adjacent end of the other portion being provided with a notch opening through the adjacent end and through one side to receive the armor ribbon.

3. A device for spirally winding an armor ribbon about a high tension wire, comprising a pair of grooved bodies arranged for cooperative relation to form a guide engaging the wire, a screw swivelly coupled at one end with one of the bodies, a supporting means with which said screw is threadably connected having fixed connection with the other one of the bodies, said screw at its outer end being formed in an eye for the attachment of a "hot stick" thereto, and said bodies at adjacent ends being constructed and arranged for cooperative action to facilitate the spiral winding of a ribbon around the wire when the guide is axially rotated on the wire.

4. A device for spirally winding an armor ribbon about a high tension wire, comprising a wire engaging guide body longitudinally divided to form two portions, means coupling said portions together which is constructed and arranged to facilitate moving said portions relative to one another, one of said guide portions being cut obliquely to provide a flat face adapted to engage the edge of a convolution of the ribbon, the oblique face terminating at one end in a point, and the other member at the end adjacent said oblique face being provided with a notch in one side which extends longitudinally inwardly beyond said point and which at its inner end has a face extending transversely of the guide and which has a longitudinally extending face which is slightly oblique to the length of the guide and against which the ribbon bears when the guide is axially rotated on the wire.

5. A ribbon winding device for high tension wires, comprising a guide adapted to engage the wire and divided longitudinally to form two portions, a bracket secured to one portion, a screw threadably connected with and supported by the bracket, means forming a swivel connection between an end of the screw and the other portion of the guide, and means at one end of the guide and forming a part of the two portions facilitating the spiral winding of a ribbon about the wire upon axial rotation of the guide around the wire, the said guide portions at both ends being provided upon their inner faces with bearing linings which cooperate to form annular bearings for the wire to maintain the wire free of contact with the interior surface of the guide throughout the major portion of the length of the latter.

6. A ribbon winding device as defined in claim 1, in which the screw is provided with a standard head adapted to be engaged by a hot-line clamp-stick or similar tool.

7. A device as defined in claim 1, in which the last-mentioned means comprise guiding surfaces, engaging the surface of said ribbon to feed the ribbon to the conductor at such an angle that the ribbon will be wrapped spirally, and for engaging the edge of the ribbon to cause the device to slide axially of the wire as the ribbon is wrapped on the wire.

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