

Jan. 6, 1953

2,624,771

E. D. HANSON  
COLLAPSIBLE COILING HEAD FOR ELECTRICALLY  
CONTACTING INSULATED CABLE  
Filed April 30, 1948

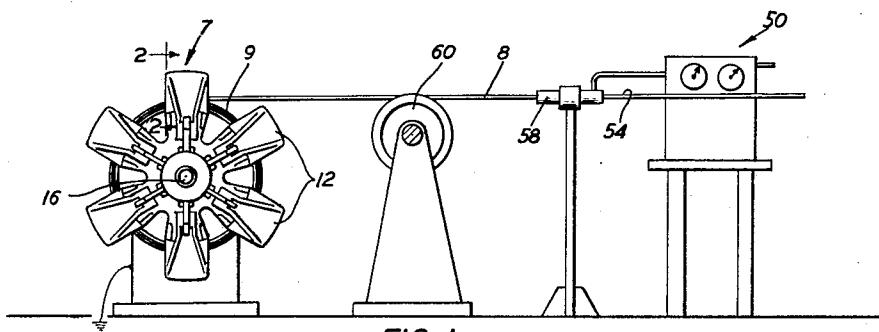


FIG. 1

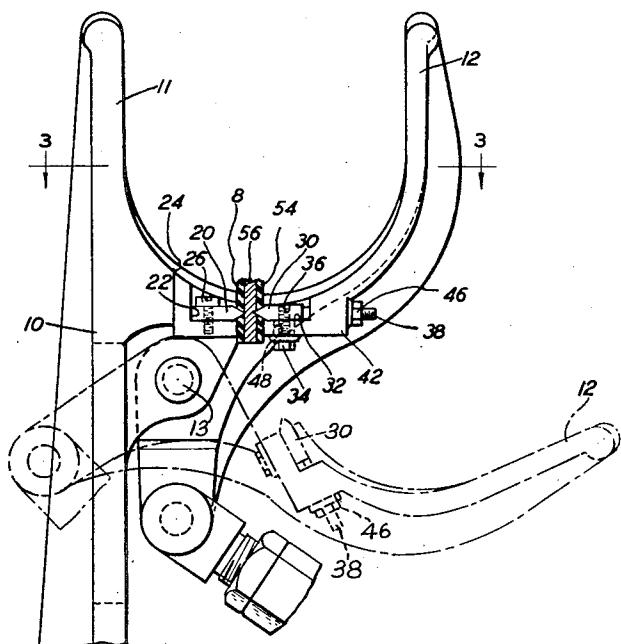


FIG. 2

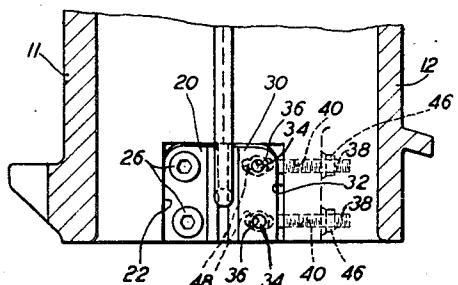


FIG. 3

INVENTOR  
E. D. HANSON  
By *Lefty Manz*  
ATTORNEY

## UNITED STATES PATENT OFFICE

2,624,771

## COLLAPSIBLE COILING HEAD FOR ELECTRICALLY CONTACTING INSULATED CABLE

Estyle D. Hanson, Baltimore, Md., assignor to  
Western Electric Company, Incorporated, New  
York, N. Y., a corporation of New York

Application April 30, 1948, Serial No. 24,313

1 Claim. (Cl. 173—324)

1

This invention relates to collapsible coiling heads, and more particularly to collapsible coiling heads including means for securing articles to be wound thereto.

In coiling filamentary articles, such as tapes, conductors, or the like, upon collapsible coiling heads, it is essential to secure the end of the article to the head each time a coiling operation is started. Where such a head is used with continuously operating apparatus for advancing a filamentary article to the head and for processing the article as the article is advanced to the head, it is advantageous that the article be quickly attached to the head each time a coiling operation is started so that the continuous processing operation be interrupted as slightly as possible. Furthermore, where an insulated conductor is being wound upon a collapsible coiling head and is tested electrically as it is wound thereon, it is sometimes essential to connect the conductor electrically to the head to form a part of the electrical testing circuit. In the past there has been no satisfactory apparatus for quickly connecting an insulated conductor both mechanically and electrically to a coiling head.

An object of the invention is to provide new and improved collapsible coiling heads.

A further object of the invention is to provide new and improved collapsible coiling heads including means for securing a filamentary article thereto.

An apparatus illustrating certain features of the invention may include a collapsible coiling head having a pair of sections movable relative to one another, and a pair of clamps mounted on the sections and movable into clamping relationship for clamping a filamentary article to the head sections when the sections are moved relatively in one direction.

A complete understanding of the invention may be obtained from the following detailed description of a collapsible coiling head forming a specific embodiment thereof, when read in conjunction with the appended drawings, in which:

Fig. 1 is a fragmentary, front elevation of a collapsible coiling head forming one embodiment of the invention;

Fig. 2 is an enlarged, vertical section taken along line 2—2 of Fig. 1, and

Fig. 3 is an enlarged view taken along line 3—3 of Fig. 2.

Referring now in detail to the drawing, there is shown a collapsible coiling head 7 for coiling a covered conductor 8 thereon to form a coil 9, the convolutions of which may be tied together for further handling of the coil. The collapsible

coiling head is grounded electrically, and includes a solid head section 10 having arms 11—11 projecting therefrom. Collapsible segments 12—12 are secured to the arms 11—11 by pins, of which a pin 13 is shown. The collapsible segments may be pivoted toward the arms 11—11 to closed positions, as shown in solid lines in Fig. 2, to form with the solid section 10 a coiling head for coiling the covered conductor 8, and may be latched in this condition by a latch 16. The latch 16 may be actuated to permit the segments to be moved to open positions, as shown in broken lines, to permit removal of a finished coil. The features of the collapsible coiling head described hereinabove are disclosed and claimed in Patent 2,459,336 granted January 18, 1949, on copending application Serial No. 704,819, filed October 22, 1946, by P. R. Powell, for "Collapsible Reels."

A blade 20 (Figs. 2 and 3) is secured in a socket 22 in a drum portion 24 of one of the arms 11—11 of the solid head section 10 by cap screws 26—26. A blade 30 is secured adjustably in a socket 32 formed in one of the segments 12—12 by cap screws 34—34 secured in tapped bores 36—36 formed in the blade 30 and adjustment screws 38—38 screwed into tapped bores 40—40 formed in a lug 42 of the drum portion of the segment 12. Nuts 46—46 lock the adjustment screws in their adjusted positions. The cap screws 34—34 extend through elliptical holes 48—48 formed in the reel segment 12 and may be loosened to permit the blade 30 to be adjusted toward or away from the blade 20. The adjustment screws 38—38 may be adjusted to engage the blade 30 and the cap screws 34—34 are retightened to securely lock the blade 30 in its adjusted position.

An electrical test set 50 (Fig. 1) for testing the insulating qualities of an insulating covering 54 (Fig. 2) enclosing a conductor 56 of the insulated conductor 8 includes an electrode 58 (Fig. 1) for contacting the periphery of the covering 54 at an electrical potential different from the potential of the ground. A capstan 60 advances the conductor 8 continuously past the test set 50 toward the collapsible coiling head.

*Operation*

To start a coiling operation with the collapsible coiling head described hereinabove, an end of the insulated conductor 8 is placed between the blade 20 and the blade 30, which have been moved apart by moving the segments 12—12 to their open positions. The blades 20 and 30 are positioned near the edges of the arm 11 and the segment 12 to which they are attached so that the conductor

may be inserted by lateral movement thereof, which is much easier than endwise threading of the conductor. The segments 12-12 then are moved to their closed positions. This moves the blade 30 toward the blade 20, and wedges the conductor 8 tightly between these blades. As the blades are moved together, the blades cut through the insulating covering 54 of the insulated conductor 8 and dig into the conductor 56 to make electrical contact with the conductor and to secure the covered conductor mechanically to the grounded head. Electrical contact of the blades with the end of the conductor 56 grounds the conductor. If the insulating qualities of the portion of the insulating covering 54 contacted by the electrode 58 of the test set 50 are poor, current flows through this portion of the insulation to the conductor 56 and then through the conductor, the blades 20 and 30, and the head to ground. This flow of current is indicated by the test set.

After the reel segments 12-12 have been moved to their closed positions, thereby connecting the insulated conductor 8 mechanically to the collapsible coiling head and connecting the conductor 56 electrically to the head, the head is rotated to coil the insulated conductor 8 thereon. After a predetermined length of the covered conductor has been coiled on the head to form the coil 9, rotation of the head is stopped, the coil is tied, the conductor is cut, and the segments 12-12 are unlatched and moved to their open positions. Collapsing the head moves the blade 30 away from the blade 20 to release the end of the conductor, and the coil 9 then is removed from the head. The operation described hereinabove then may be repeated to form another coil.

The above-described apparatus serves to connect the insulated conductor mechanically to the coiling head and to connect the conductor electrically to the head merely by moving the segments 12-12 to their closed positions. It also

serves to disconnect the conductor 8 both mechanically and electrically from the head merely by moving the collapsible segments to their open positions.

What is claimed is:

A collapsible head for coiling and electrically contacting an insulated conductor, which comprises a rotatable shaft, a plurality of arms radially mounted on and secured to the shaft, each of said arms having a drum portion serving as a winding surface for receiving convolutions of a coiled conductor, a plurality of convolution retaining segments pivotally mounted one for each upon the arms, said segments being pivotally movable in planes radially intersecting the axis of the shaft between a collapsed position towards the shaft and a noncollapsed position in which they extend radially outward therefrom, a knife blade secured to the drum portion of one of the arms, and a second knife blade secured to one of the pivoted segments and positioned to face the first-mentioned blade, whereby the pivotal movement of the segments towards their noncollapsed position will cause the blades to engage a portion of the conductor and penetrate the insulation thereon to contact the conductor.

ESTYLE D. HANSON.

#### REFERENCES CITED

30 The following references are of record in the file of this patent:

#### UNITED STATES PATENTS

Number	Name	Date
1,346,812	Duston	July 20, 1920
1,500,641	Sabourin	July 8, 1924
1,845,526	Spence	Feb. 16, 1932
1,977,677	Hill	Oct. 23, 1934
2,459,336	Powell	Jan. 18, 1949
2,476,636	Spisak	July 19, 1949