Oct. 27, 1942. D. J. NEALE 2,300,035

MEANS FOR SUSPENDING AERIAL CABLES

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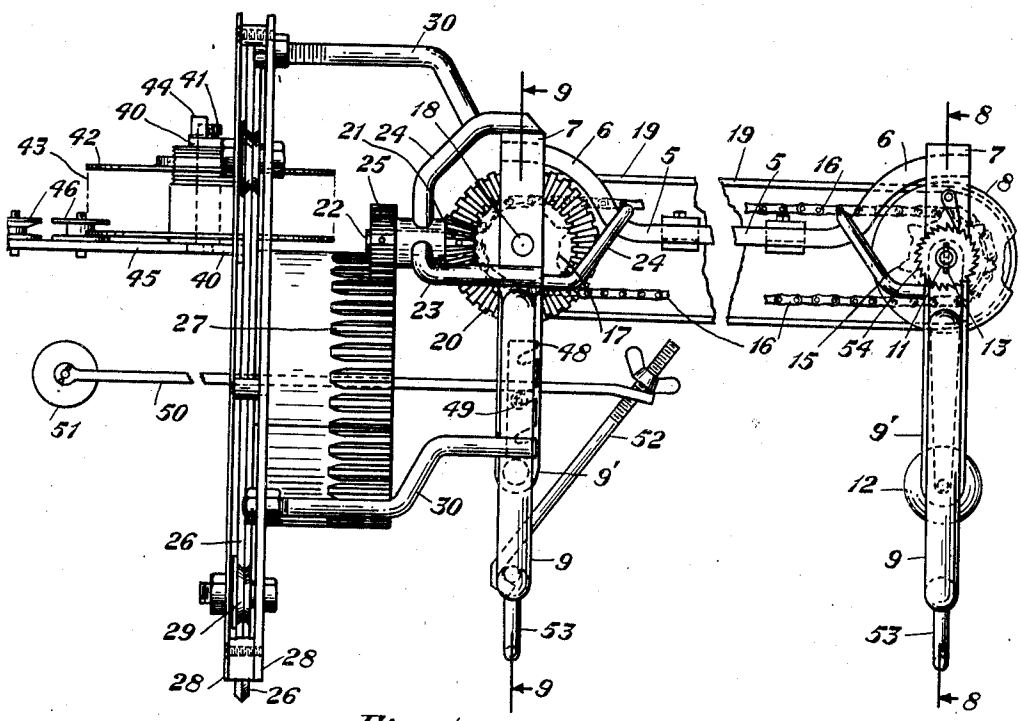


Fig. 1

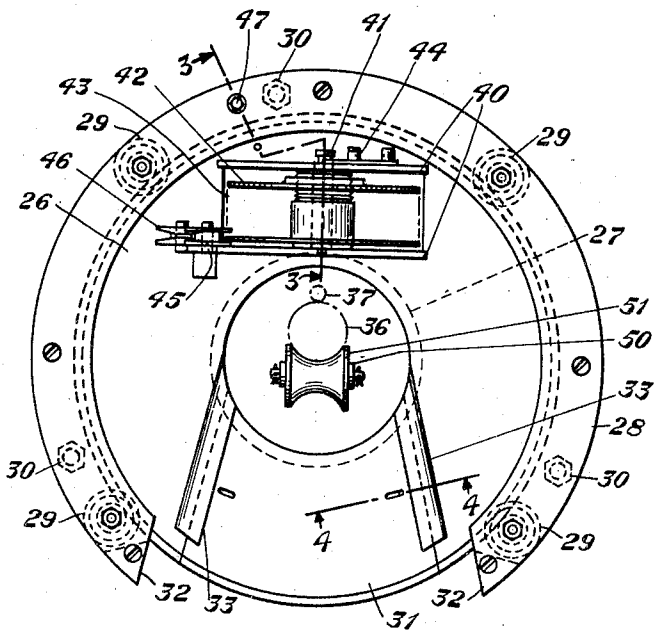


Fig. 2

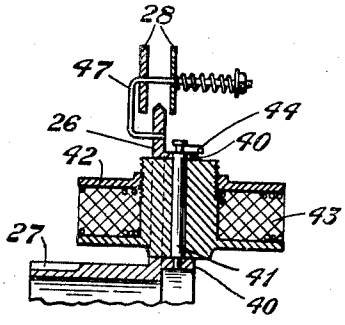


Fig. 3

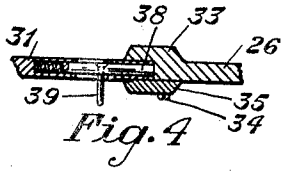


Fig. 4

INVENTOR
D. J. Neale
BY James E. Lynch
ATTORNEY

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MEANS FOR SUSPENDING AERIAL CABLES

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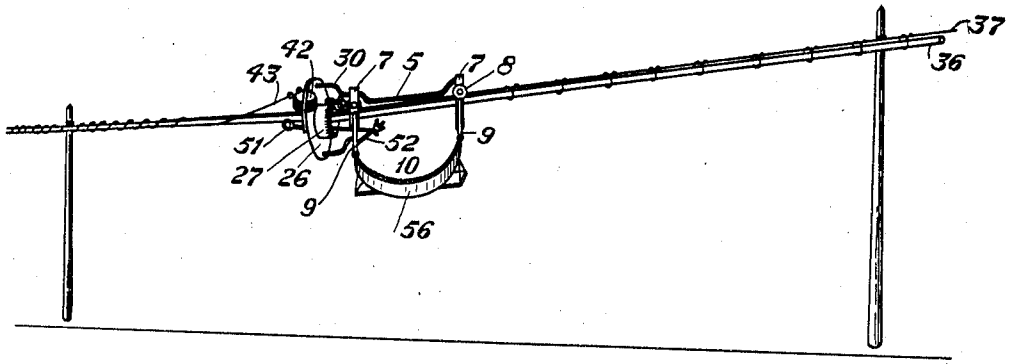


Fig. 5

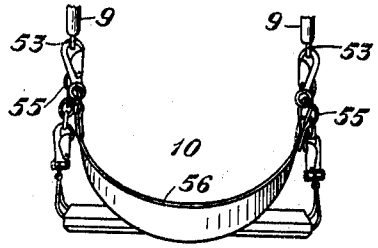


Fig. 6

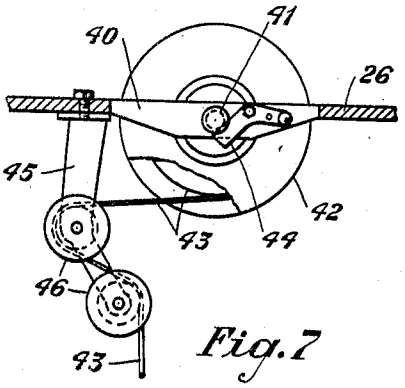


Fig. 7

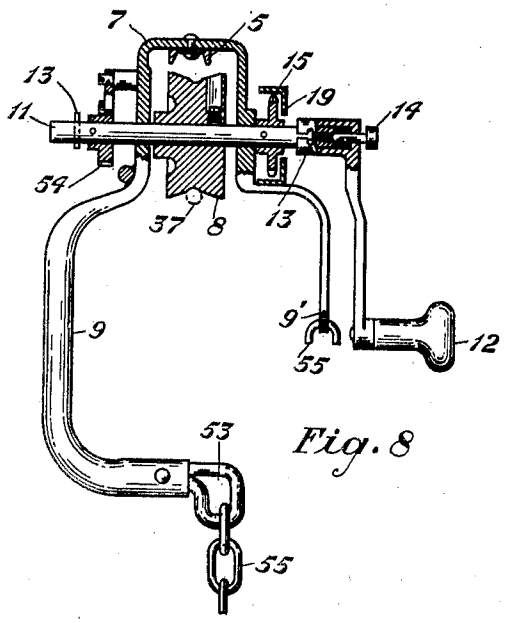


Fig. 8

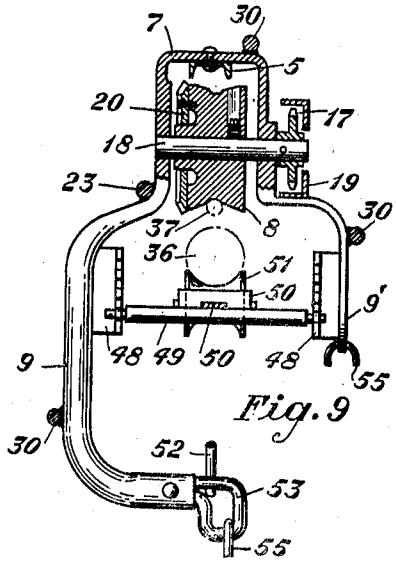


Fig. 9

INVENTOR
D. J. Neale
BY James G. Lynch
ATTORNEY

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2,300,035

MEANS FOR SUSPENDING AERIAL CABLES

Dory Jacob Neale, Topeka, Kans., assignor to American Telephone and Telegraph Company, a corporation of New York

Application August 1, 1940, Serial No. 349,335

12 Claims. (Cl. 175—376)

This invention relates to the installation of aerial cables, and more particularly to means whereby the cables may be secured to a messenger or supporting strand.

In accordance with present methods of supporting aerial cables from messenger strands, the cable is suspended from the strand by means of cable rings or the like. These rings are rigidly secured to the strand and the cable hangs loosely therein below the messenger strand. This method has been found to involve disadvantages because of subjecting the cables to considerable injury, due to creeping, swinging and buckling, which has resulted in ring cuts, sheath crystallization, and other damage. This damage is expensive to repair and results in a loss of revenue due to interruption of service.

It is therefore an object of this invention to overcome the above-mentioned disadvantages by providing a device for securing an aerial cable to a messenger strand in such manner that there will be a minimum amount of movement therebetween.

Another object of the invention is to provide an arrangement whereby a single operator, while being carried by the improved device which is mounted upon a supporting strand, may cause it to be propelled along said strand and automatically apply lashing material to wrap the strand and cable together as the device is advanced.

Another object of the invention is to provide pressure to hold the messenger strand and cable in close relation while the wrapping is being applied so that these elements may be bound snugly together.

These and further features of the invention will be more fully understood from the following detailed description when considered in connection with the accompanying drawings in which one embodiment of the invention is illustrated.

Referring to the drawings, Figure 1 is a side elevation of the improved device;

Fig. 2 is a rear view of the device which shows more particularly the annular housing in which the spinning head is rotatably mounted, the cable-engaging pressure roller and the reel for carrying the lashing material;

Fig. 3 is a section taken on the line 3, 3 of Fig. 2 showing the locking mechanism by which the spinning head is held in locked position;

Fig. 4 is a broken-away section taken on the line 4, 4 of Fig. 2 showing a fragmentary view of a removable gate of the spinning head and the spring actuated locking arrangement therefor;

Fig. 5 is a perspective view showing the improved device mounted upon a messenger strand, on one end of which strand cable rings are shown supporting the cable. These rings are removed by the lineman as the improved device is propelled along the strand and the cable is then supported thereon by lashing material;

Fig. 6 is an elevational view of a seat and associated elements of a cable car which is normally suspended from the improved arrangement;

Fig. 7 is a plan view of a reel on which a preformed coil of lashing material is carried, and the associated guide pulleys through which the material passes after it leaves the reel and in its travel to be applied about the cable and messenger strand;

Fig. 8 is a section taken on the line 8, 8 of Fig. 1 showing a crank which operates one of the strand-engaging rollers of the driving mechanism by which the machine is propelled along the messenger strand;

Fig. 9 is a section taken on the line 9, 9 of Fig. 1 showing a companion messenger strand-engaging roller to that illustrated in Fig. 8, and also a cable-engaging roller and also a portion of the adjusting means for controlling the pressure of the roller against the cable.

The device as shown in the drawings has a main frame which includes a longitudinal channel member 5 provided with arcuate end portions 6, 6. The portions 6, 6 support yokes 7, 7 which provide journals or bearings for shafts on which the messenger strand-engaging rollers 8, 8 are mounted. A pair of brackets or arms 9, 9' extend downwardly from each of yokes 7, 7 and provide a support for a lineman's chair or cable car 10 which will be later described.

The shaft 11 for one of the rollers, as indicated in Fig. 8, extends outwardly from the arms of one of the yokes 7. A crank and handle 12 are adapted to be interchangeably connected to either of the extended ends of the shaft 11. This connection is provided by pin 13 which extends through each end of the shaft 11 and forms part of a bayonet joint connection between the crank and shaft. A spring carried in the socket of the crank provides pressure to maintain the crank and shaft in a connected position, and a screw-threaded pin 14 serves to prevent accidental displacement of the crank and handle 12. The shaft 11 carries a sprocket 15 which lies intermediate the arm of the yoke 7 and the socket of the crank 12. This sprocket is connected to an endless chain 16 which extends to a com-

panion sprocket 17 carried on the end of the shaft 13. A guard 19, supported by arms extending outwardly from the channel member 5, forms a shield around the chain 16 and the sprockets 15 and 17, as shown in Figs. 1, 8 and 9. A ring gear 20 is carried by one of the rollers 8 on the side of the roller opposite that on which the sprocket 17 is mounted. This gear meshes with a pinion 21, which is carried on one end of a shaft 22 journaled in a housing supported by braces 23 and 24 which extend from one of the yokes 7 and the arm or bracket 9, respectively. A spur pinion 25 is mounted on the other end of the shaft 22. A protective shield, not shown, may be applied about the gearing.

A spinning head 26 is rotatably mounted on the rear of the frame carrying the strand-engaging rollers 8, 8. This head includes a disk-shaped portion from which a forwardly extending cylindrical flange projects. This cylindrical flange is provided with peripheral gear teeth 27 and these teeth are adapted to mesh with the spur gear 25 whereby rotation is imparted to the spinning head. The spinning head is positioned between two circular plates 28, 28 and these plates have cut-away portions at their bottoms, as more clearly appears in Fig. 2 of the drawings. A series of rollers 29 are positioned between the circular plates in spaced relation. These rollers are provided with grooves in which the chamfered or V-shaped periphery of the disk portion of the spinning head engages as it is rotated. The circular plates are held in supported position by arms 30 which extend radially therefrom and are connected to the frame 5 and brackets 9, 9'. The spinning head is provided with a removable gate 31 which is of segmental shape and forms part of the disk portion of the spinning head. This gate corresponds in shape to the opening or cut-away portions provided between the ends 32 of the circular plates. The edges of the gate 31 are slidingly positioned within these grooves. The grooves are provided with deformed portions 33 pressed out from the metal on one side of the spinning head disk to form one part of the groove. The other part of the groove is formed by strips 34 which slightly overhang the edges of the cut-away portions of the spinning head disk, and the strips 35 are secured to the deformed portions 33 by screws 34—Fig. 4. The gate 31 has an inwardly extending arcuate portion which forms part of the cylindrical flange terminating in the teeth 27. The gate 31 comprising its disk-segment portion and its arcuate portion form a removable segment so that when the gate 31 is withdrawn from the spinning head, when it is in the position indicated in Fig. 2, an opening therethrough and through the opening between the ends of the circular plates 28, 28 is provided in which the cable 36 and messenger strand 37 may be inserted so that the rollers 8, 8 may be positioned on the messenger strand 37. The gate 31 is held in locked position with its edges registering in the grooves formed by the members 33 and 34 by means of spring-actuated detents 38 which are carried by the gate and enter openings formed in the grooves provided between the members 33 and 34. The spring-actuated detents are operated by pins 39 movable in the slots provided in the disk portion of the spinning head. These pins extend outwardly to a position where they may be readily manipulated by the fingers. An opening is provided through the spinning head 26, and a pair of parallel flanges 40 extend outwardly from the longitudinal edges thereof. These flanges have corresponding apertures through which a pin 41 extends. A reel 42 is journaled on the pin 41 and this reel may be provided with separable parts. One part comprises a flange having a central cylindrical portion with a threaded extension. The cylindrical portion forms a core and the threaded extension screws into the companion flange of the reel. A preformed coil of lashing material may be readily introduced or removed from this reel in an obvious manner. The pin 41 is provided at one end with a peripheral groove in which the edge of a latch 44 (Fig. 7) carried by the flange 40 engages and locks the reel in position. A supporting arm 45 secured to the spinning head 26 carries a pair of guide rollers 46, 46. These rollers lie adjacent the reel and at such angle therefrom and from each other that they direct the lashing material as it leaves the reel so that it is applied about the messenger strand and cable to properly lash them together. Locking mechanism is provided to prevent the rotation of the spinning head 26. This mechanism is shown in Fig. 3 of the drawings, and includes a rod 47 which has a shank extending through openings in the plates 28, 28. This rod is bent into a U-shaped portion on one side of the plates, the end of which portion enters an opening in the disk portion of the spinning head, while a spiral spring lies about the extended shank on the opposite side of the plates. The spinning head is locked by manipulating the rod in an obvious manner.

The arms 9 and 9', which are adjacent the spinning head, are each provided with sections of a rack 48, which sections lie in parallel relation to each other and have corresponding angular slots therein (Figs. 1 and 9). These slots are adapted to receive the ends of a transversely extending rod 49 to which a bar 50, extending rearwardly through the central opening in the spinning head 26, is attached. This bar carries a cable-engaging roller 51 at its outer forked end, and this end is adapted to carry rollers of various sizes in accordance with the diameter of the cable operated upon. The inner end of the bar 50 has an opening therethrough in which the threaded end of a hooked rod 52 extends. The hooked portion of this rod engages in the looped end 53 of the arm 9, and the threaded end extends through the bar 50 and has a thumb-screw applied thereto. The adjustment of this thumb-screw and the adjustment of the rod 49 govern the pressure exerted by the roller 51 against the cable 36 so that it is brought into close relation with respect to the messenger strand 37 in order to facilitate the lashing of cable and messenger strand snugly together. The machine is held against the rearward movement on the strand by means of a pawl and ratchet mechanism. The ratchet mechanism 54 is shown as being mounted on an extended portion of the shaft 11, while the associated pawl is carried on yoke 7.

The lineman's chair or cable car 10 is suspended from the loop ends 53 and arms 9' by means of chains 55 in a well known manner. This chair or cable car may be equipped with the usual safety belt 56. The lineman can, of course, be seated on the cable car in alternate position with respect to the sides of the improved device. The crank 12 can be interchangeably connected to either end of the roller shaft 11 as previously stated. The lineman can thus readily operate the machine from either of its sides.

The machine is placed on the messenger strand

by opening the gate of the spinning head so that the strand and cable may be inserted therethrough and between the ends of the supporting plates for the head. The gate is replaced at this time and the grooved rollers are seated on the messenger strand. The machine is propelled along the strand by the lineman upon the rotation of the crank. This causes the rollers connected by the endless chain to cause pinion and spur gear connected to the ring gear on one of the rollers to impart rotation to the spinning head by means of the meshing of its peripheral teeth with the spur gear. The rotation of the spinning head causes the reel carried thereby to unwind the lashing material from the preformed coil. As the free end of this lashing material has been tied to a fixed object the lashing material is wrapped about the messenger strand and cable to bind them together in accordance with the advance of the machine along the strand.

The pressure roller engaging the cable holds it in close relation to the messenger strand and thus facilitates the snug wrapping of the strand and cable.

While the arrangements of this invention have been illustrated as embodied in a certain specific form which has been deemed desirable, it will be understood that they are capable of embodiment in many and widely varied forms without departing from the spirit of the invention as defined in the appended claims.

What is claimed is:

1. A device for securing a cable to a messenger strand by lashing material, which includes a cable car having sheaves for engaging the strand and also having a seat for an operator, a spinning head rotatable about the cable and messenger strand carrying lashing material and being operated by said sheaves, and means controlled by the operator for rotating said sheaves to propel the device along the strand whereby movement is imparted to the geared spinning head to cause it to rotate about the strand and cable and wrap the lashing material thereto as the device is advanced.

2. A device for securing a cable to a messenger strand by lashing material, which includes a cable car having sheaves for engaging the strand and also having a seat for an operator, a spinning head rotatable about the cable and messenger strand carrying lashing material and being operated by said sheaves, means controlled by the operator for rotating said sheaves to propel the device along the strand whereby movement is imparted to the geared spinning head to cause it to rotate about the strand and cable and wrap the lashing material thereto as the device is advanced, and means to lock the device on the strand.

3. A device for securing a cable to a messenger strand by lashing material, which includes a cable car having sheaves for engaging the strand and also having a seat suspended therefrom to permit an operator to be seated on alternate sides of the device, a spinning head rotatable about the cable and messenger strand carrying lashing material and being operated by said sheaves, shafts for said sheaves having attachment mechanism for applying power thereto on either side of said car and a crank adapted to be applied by the operator to said attachment mechanism to propel the device along the strand whereby movement is imparted to the geared spinning head to cause it to rotate about the strand and cable and wrap the lashing material thereto as the device is advanced.

4. A device for securing a cable to a messenger strand by lashing material, which includes a cable car having connected sheaves for engaging the strand and also having a seat suspended therefrom for an operator, a spinning head arranged about the messenger wire and cable, means for operatively connecting the spinning head to said sheaves, lashing material carried by the spinning head and a crank connected to said sheaves and controlled by the operator for rotating the sheaves to propel the device along the strand, said spinning head being operated upon such advance to cause the lashing material carried thereby to be wrapped about the strand and cable.

5. A device for securing a cable to a messenger strand by lashing material, which includes sheaves for engaging the strand, said sheaves being connected to operate together, and a spinning head geared to said sheaves and rotatable about the strand and cable, said spinning head carrying lashing material, whereby as the device is propelled along the strand, movement is imparted to the geared spinning head to cause it to rotate about the strand and cable and wrap the lashing material thereto as the device is advanced.

6. A device for securing a cable to a messenger strand by lashing material, which includes connected sheaves for engaging the strand, a spinning head geared to said sheaves and rotatable about the strand and cable, a reel carrying a preformed coil of lashing material mounted on the spinning head, shafts for said sheaves having attachment mechanism for applying power thereto on either side of said car and a crank adapted for connection to said attaching mechanism to rotate the sheaves to propel the device along the strand whereby movement is imparted to the geared spinning head to cause it to rotate about the strand and cable and wrap the lashing material thereto as the device is advanced.

7. A device for securing a cable to a messenger strand by lashing material, which includes a pair of connected sheaves for engaging the strand, a spinning head geared to said sheaves and being rotatable about the messenger strand and cable, a reel carrying lashing material mounted on the spinning head at an axis substantially perpendicular thereto and lying approximately within the plane of the spinning head, means to propel the device along the strand whereby said sheaves impart movement to the geared spinning head to cause it to rotate about the strand and cable and wrap the lashing material thereto as the device is advanced.

8. A device for securing a cable to a messenger strand by lashing material, which includes a frame having connected sheaves for engaging the strand, an annular housing at one end of said frame, a spinning head geared to said sheaves rotatable about the messenger strand and cable and journaled to rotate within said housing, lashing material carried by said spinning head, and means adapted to be applied to operate the sheaves to cause their rotation and propel the device along the strand whereby said sheaves impart movement to the geared spinning head to cause it to rotate about the strand and cable and wrap the lashing material thereto as the device is advanced.

9. A device for securing a cable to a messenger strand by lashing material, which includes a

frame having connected sheaves for engaging the strand, an annular housing at one end of said frame having bearings near its periphery, a spinning head rotatably mounted on the bearings within said housing, said spinning head having a removable segment so that it may be introduced about the messenger wire and cable, lashing material carried by the spinning head, and means to rotate said sheaves and propel the device along the strand, said spinning head being operated upon such advance to cause the lashing material carried thereby to be wrapped about the strand and cable in helical layers.

10. A device for securing a cable to a messenger strand, which includes sheaves for engaging said strand, said sheaves being connected to operate together, a spinning head carrying lashing material and being rotatable about the messenger strand and cable, said head having an annular gear, a gear connection between said sheaves and said annular gear to impart rotation thereto as the sheaves are moved along the strand to cause it to wrap lashing material about the strand and cable as the device is advanced.

11. A device for securing a cable to a messenger strand by lashing material, which includes a frame having connected sheaves for engaging the strand, a spinning head having an annular gear with a removable segment so that the head may be introduced about the messenger strand and cable, lashing material carried by the spinning head, gear members connecting said spinning head with said sheaves, and means to rotate said sheaves and propel the device along the strand, said spinning head being operated upon such advance to cause the lashing material carried thereby to be wrapped about the strand.

12. A device for securing a cable to a messenger strand by lashing material, which includes a frame having connected sheaves for engaging the strand, an annular housing at one end of said frame, a spinning head geared to said sheaves and journaled to rotate within said housing, lashing material carried by said spinning head, means adapted to be applied to operate the sheaves to cause their rotation and propel the device along the strand whereby said sheaves impart movement to the geared spinning head to cause it to rotate about the strand and cable and wrap the lashing material thereto as the device is advanced, and a flanged roller mounted on said frame and movable to and from the under side of the cable and means for pressing said roller against the cable to hold it in close relation with the strand.

DORY JACOB NEALE.