Oct. 11, 1938. G. G. GREENE ET AL 2,132,566

CABLE WRAPPING

Filed March 15, 1937 2 Sheets-Sheet 1

FIG. 1.

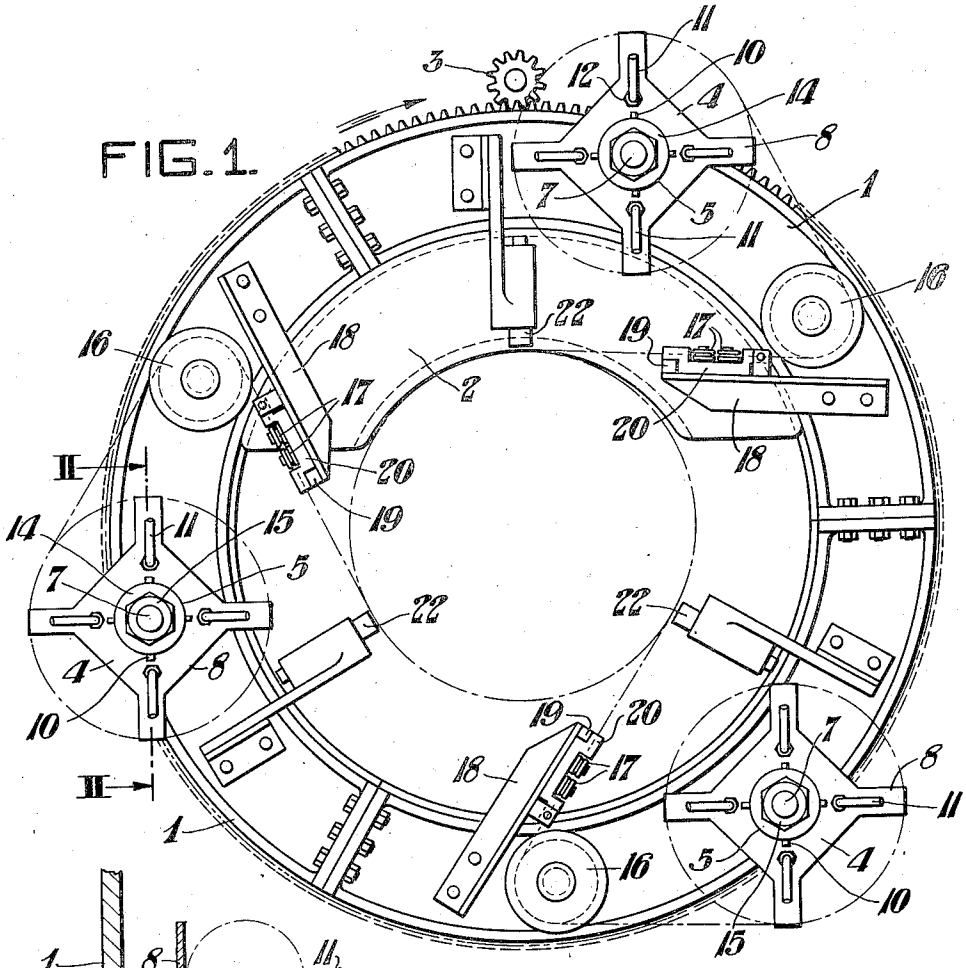


FIG. 2.

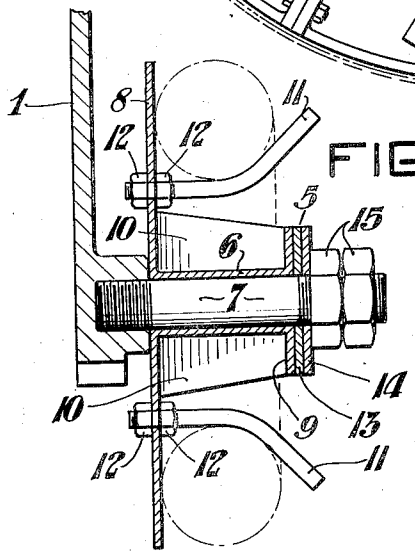


FIG. 3.

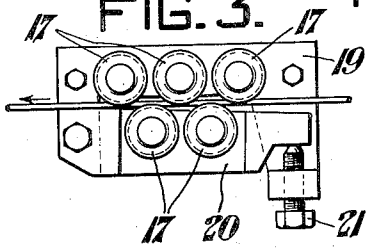
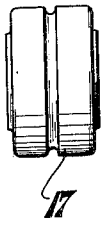


FIG. 4.



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FIG. 5.

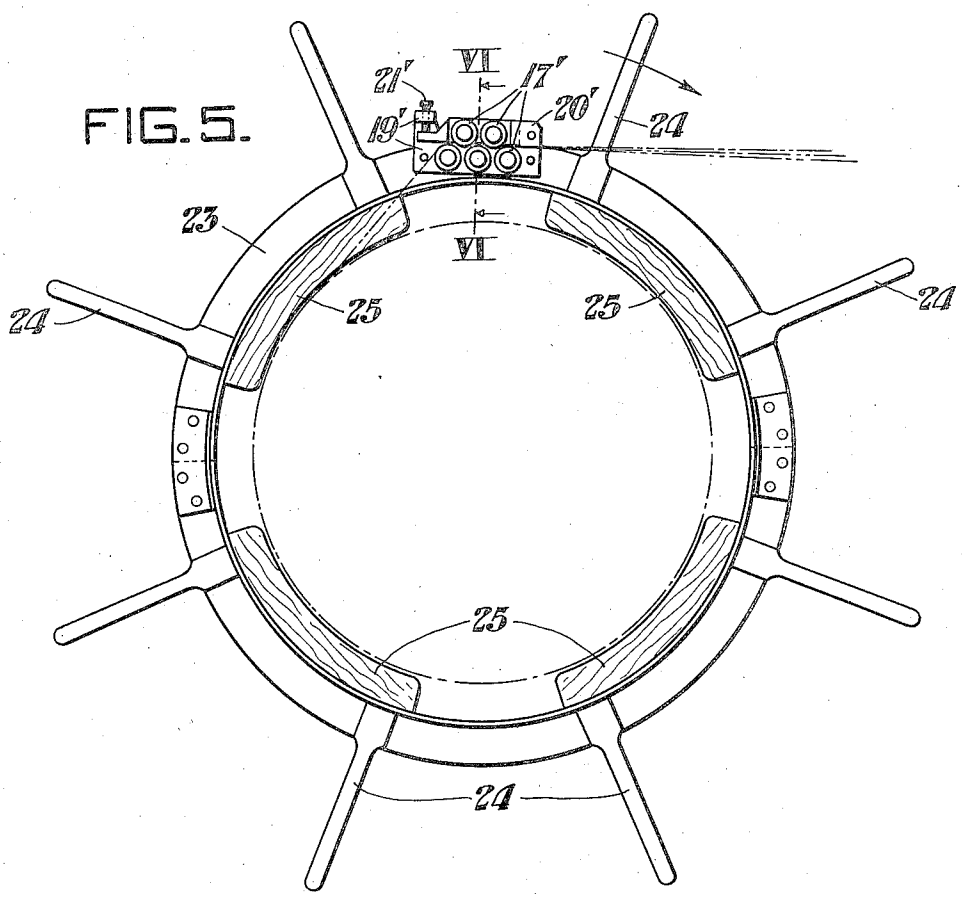


FIG. 6.

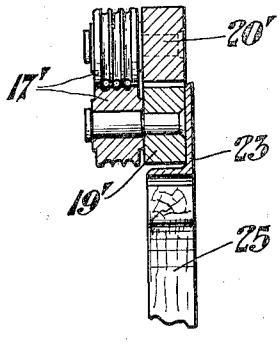
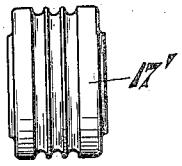


FIG. 7.



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UNITED STATES PATENT OFFICE

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CABLE WRAPPING

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Application March 15, 1937, Serial No. 131,082

5 Claims. (Cl. 117—37)

This invention relates particularly to suspension bridge cables, one of the objects being to apply the customary wire wrapping to these cables so that there are no voids between the adjacent convolutions of the wrapping wire and so that there are no unsightly bumps or waves. Another object is to feed the wire wrapping onto the cable directly from commercial coils of wire, as furnished by wire manufacturers, to thereby eliminate the expense of rewinding the wire from these coils onto special bobbins. Other objects may be inferred.

Two specific examples of suspension cable wrapping devices embodying the features of the present invention are illustrated by the accompanying drawings, in which:

Figure 1 is a front view of the first example.

Figure 2 is a section taken from the line II—II in Figure 1.

Figures 3 and 4 are details.

Figure 5 is a front view of the second example.

Figure 6 is a cross-section taken from the line VI—VI in Figure 5.

Figure 7 is an enlarged detail from Figure 6.

The first example is of the powered type and includes a flyer 1 carried by a cable saddle 2 and having a toothed periphery whereby it may be driven by a powered pinion 3. This flyer is an annular mount that is made of segments bolted together so that it may be applied about the cable, the saddle 2 being adapted to ride the cable and revolubly mount the flyer. All this should be familiar to anyone skilled in the bridge cable making art.

The device under discussion is distinguished from others in that the flyer does not mount the usual heavily braked bobbins which normally carry the winding wire. Instead of this, the flyer mounts large reels 4 which are of sufficient size to carry a commercial coil of wire as it is furnished by the wire manufacturer. Furthermore, the reels 4 are provided with relatively light brakes 5 which are intended to brake the reels only sufficiently to prevent them spinning freely when the flyer 1 stops revolving.

Specifically speaking, the reels 4 each consist of a pipe bushing 6 that rotates on a pin 7 projecting from the flyer 1, annular plates 8 and 9 making up the ends of the reel and being spaced apart by web plates 10. The coil of wire is carried by curved arms 11 mounted to the end-plate 8 by nuts 12 which, when loosened, permit the normally outwardly curved ends of the arms 11 to be turned inwardly so as to receive a fresh coil of wire. Each of the brakes 5 comprises a friction washer 13 clamped against the end-plate 9 of the reel by a washer 14 and locking nuts 15 screwed onto the end of the pin 7, the washer 13 functioning as a brake lining.

A further difference between the device and conventional wrapping machines is that the wire leaving the reels is guided by rollers 16 tangentially onto the cable through straightening rolls 17 mounted by the flyer 1 through brackets 18. These straightening rolls comprise two series of rolls forming a tortuous pass for the wire whereby the latter is reversely bent several times so that it utimately leaves in a straight condition, entirely free from waves or bends which would cause voids between the adjacent convolutions of the wire wrapping on the cable or unsightly bumps or waviness. In each instance the rolls 17 in each series are in alignment, one series being carried by a mounting 19 which is fixed respecting its mounting brackets 18 and the other series being carried by a mounting 20 that is pivoted respecting the mounting 19 and forced toward the other by a setscrew 21. Adjustment of this setscrew determines the amount the wire is bent during its straightening. The wire in each instance leaves the straightening rolls in a straight line at a tangent to the periphery of the cable on which it is being wound.

In addition to their straightening function, the rolls 17 serve a further function, namely, that of tensioning the wire so that it winds tightly onto the cable. This tensioning is ordinarily done by braking the bobbins that normally take the place of the reels 4. The tensioning by the rolls enables the use of commercial coils or bundles of wire, since the tension is applied at locations between the coils and the cables, whereby these coils are relieved of the tensioning stress. Commercial coils cannot be used with ordinary wrapping machines for the reason that the convolutions feeding in advance of others are tensioned to such an extent that they dig down into the latter and become entangled, whereby it is normally necessary to rewind the wire from the coils furnished by the wire manufacturers onto the specially designed bobbins of relatively small capacity.

A further advantage involved by the use of the straightening and tensioning rolls 17 is that the wire is tensioned at a constant value regardless of the amount of wire on the coil from which it is fed. When the coil itself is braked, the tension varies according to the diameter of the feeding wire convolution, it being necessary to either put

up with a bad job or stop the machine and readjust the brakes as the wire supply exhausts.

The flyer 1 also mounts positioning fingers 22 which extend inwardly and bear against the cable at the various tangent points between the wire and the cable. These fingers serve to closely compact the convolutions of the winding wire and also to cause the device as a whole to travel along the cable, due to the ends of the fingers being beveled so that the increasing wire convolutions force them along.

The second example of the invention is a wrapping device of the manually operated type. This device includes a flyer 23 provided with handles 24 and a plurality of saddles 25, which serve to guide the flyer in its proper orbit. The flyer 23 of this device mounts a single set of straightening rolls having the same features as those described in connection with the first example and to which the same numerals are applied except that they are primed for identification purposes. The flyer 23 of this manually operated device does not mount the coils of wire, the wire being fed to the straightening and tensioning rolls from a source which is not shown.

It might be mentioned that the manual device is ordinarily used where clearance is not provided for a powered wrapping device. Since the powered device simultaneously fed three wires onto the cable, it is desirable that this manual device be capable of continuing the job. Therefore, each of the straightening and tensioning rolls 17' is provided with three wire grooves instead of but one, as were the rolls 17 of the powered device. This expedient permits the straightening rolls of the manual machine to handle three wires simultaneously. It is to be noted that all three of the wires feed straight from the straightening rolls tangentially onto the periphery of the cable, even though the pass lines of the straightening rolls do not point toward the latter. The straightening rolls of both machines perform the same functions and it is, therefore, not considered necessary to repeat what has been said in connection with the first example.

The operation of the manual device necessitates revolving the wire supply when the device is rotated. This is practical because this manual device is used at only those parts of a bridge cable which do not provide clearance for the powered type of device, as has been previously explained.

Although the present invention has been disclosed by means of specific examples in accordance with the patent statutes, it is not intended that the invention be limited exactly thereto, except as defined by the appended claims.

We claim:

1. A cable wrapping device including a flyer and wire straightening rolls mounted by said flyer so that wire leaving said rolls feeds tangentially onto the cable to be wrapped.

2. A cable wrapping device including a flyer and wire straightening rolls mounted by said flyer so that wire leaving said rolls feeds tangentially onto the cable to be wrapped, said rolls being adjustable so as to restrain said wire variable amounts.

3. A cable wrapping device including a flyer, means mounted by said flyer for carrying at least one coil of wrapping wire, and wire straightening rolls mounted by said flyer so that wire feeding from said coil passes through said rolls and tangentially onto the cable to be wrapped.

4. A cable wrapping device including a flyer, means mounted by said flyer for carrying at least one coil of wrapping wire, and wire straightening rolls mounted by said flyer so that wire feeding from said coil passes through said rolls and tangentially onto the cable to be wrapped, said rolls being adjustable so as to restrain said wire variable amounts.

5. A cable wrapping device including a flyer, means mounted by said flyer for carrying at least one coil of wrapping wire, and wire straightening rolls mounted by said flyer so that wire feeding from said coil passes through said rolls and tangentially onto the cable to be wrapped, said rolls being adjustable so as to restrain said wire variable amounts, and the first named means being provided with means for retarding rotation of said coil independently of the restraint of said straightening rolls.

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