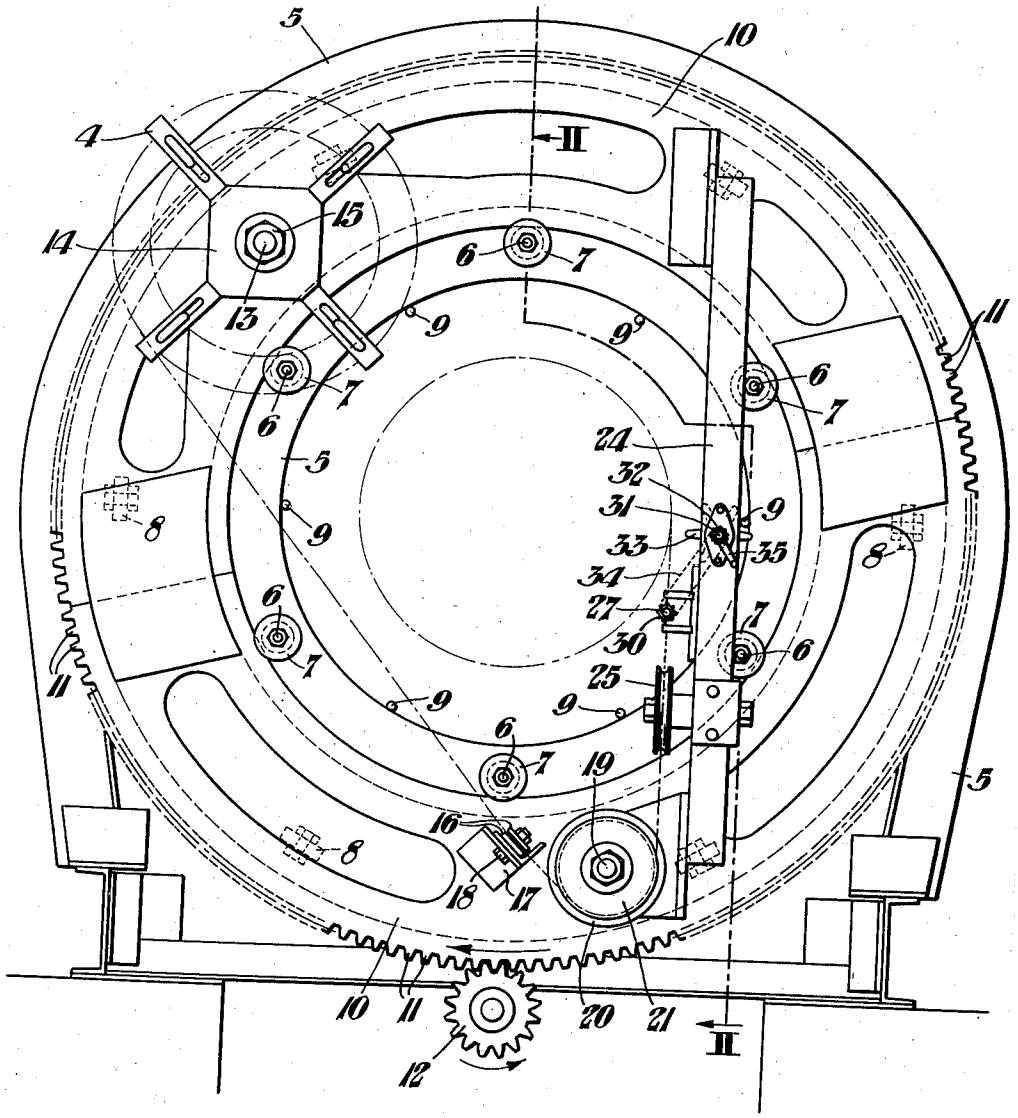
May 17, 1938. H. C. HUNTER 2,117,959

CABLE WRAPPING MACHINE

Filed Sept. 20, 1937 2 Sheets-Sheet 1

FIG. 1.



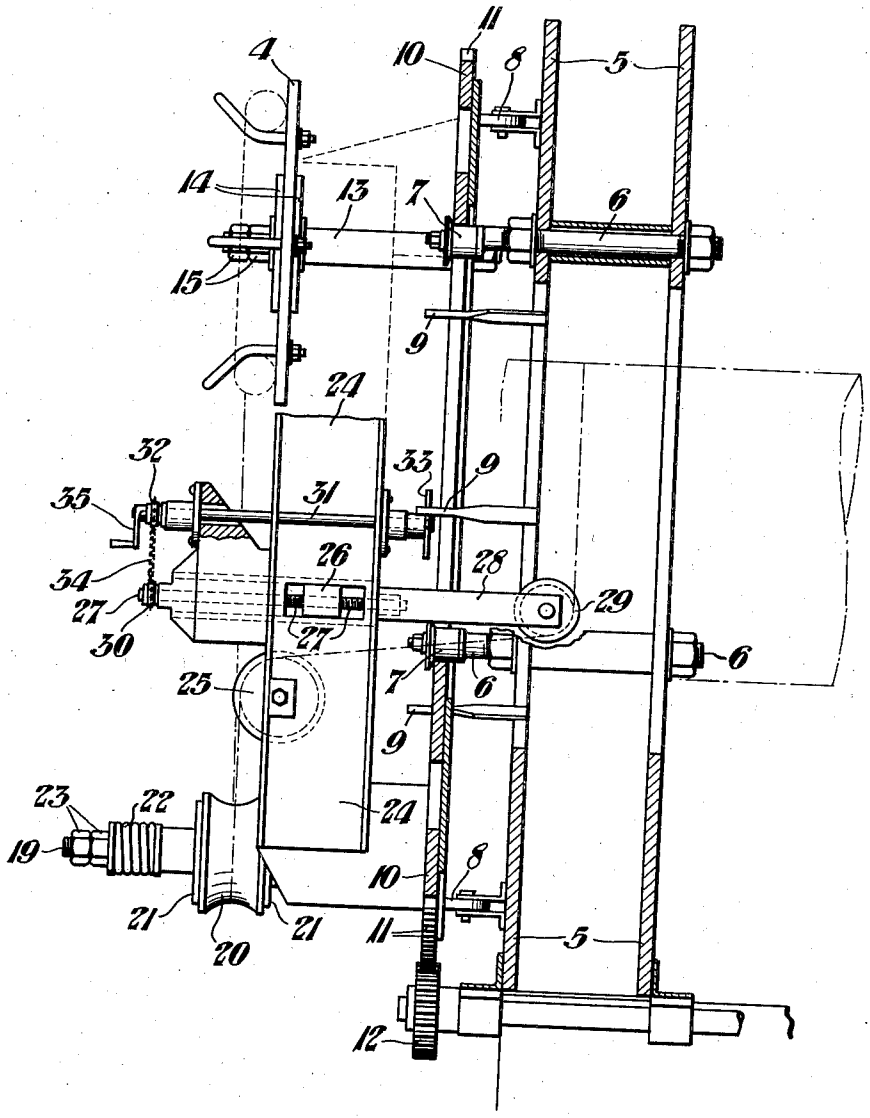
Inventor:
HARRY CLYDE HUNTER
by: Usina & Lauber
his Attorneys.

May 17, 1938. H. C. HUNTER 2,117,959

CABLE WRAPPING MACHINE

Filed Sept. 20, 1937 2 Sheets-Sheet 2

FIG. 2.



Inventor:
HARRY CLYDE HUNTER,
by: Usina & Lauber
his Attorneys.

Patented May 17, 1938

2,117,959

UNITED STATES PATENT OFFICE

2,117,959

CABLE WRAPPING MACHINE

Harry Clyde Hunter, Chicago, Ill., assignor to American Bridge Company, a corporation of New Jersey

Application September 20, 1937, Serial No. 164,826

9 Claims. (Cl. 117—37)

This invention relates to a machine for wrapping cables for suspension bridges and, more particularly, to an improved type wrapping machine or seizing device for use in connection with cable compacting machines.

Heretofore, when suspension bridge cables were compacted they were restrained, after compacting, either by wrapping the cable with wire by hand close to the area compacted or by placing an especially constructed wire or steel band thereon. The wrapping by hand was very slow and the proper, uniform tension desired was difficult to attain while wrapping. Furthermore, the steel or wire bands that were often used usually had to be of a particular size for each size of cable to be wrapped and usually required a special clamp for holding their ends together. Also, these bands usually required special machines, or devices, for drawing them tightly around the cable. Both of these cable restraining methods were, of course, slow as well as expensive.

It is one of the objects of my invention to provide a machine which is fast and automatic in its operation, and can be used on any size cable.

My seizing or wrapping machine is used in connection with compacting machines which hold the cable until the restraining wire is applied and securely fastened in position by the machine. In my invention the wire is wrapped around the cable with a predetermined initial tension while the cable is held to a compacted size by the compacting machine and each turn of the wire around the cable holds its share of the total restraining forces. It is necessary to operate the machine only long enough to put on a sufficient number of turns to carry the entire restraining stresses. Thus, it is then not necessary to have specially built bands or ropes of any particular strength but ordinary drawn wire is used which is, of course, relatively inexpensive, and can be rapidly and cheaply applied.

It is another object of this invention to provide a machine for wrapping or seizing cables which is simple in its operation and which can be moved quite readily along the cable. Usually such devices are bulky and hard to handle, and get out of order quite frequently.

It is a further object of my invention to provide an improved type cable wrapping machine equipped with an automatic level winding device for placing the wire evenly and uniformly around the cable.

Various other objects and advantages of this invention will be more apparent during the course of the following specification and will be particularly pointed out in the appended claims.

In the accompanying drawings I have shown, for the purpose of illustration, one embodiment which my invention may assume in practice. In these drawings:

Figure 1 is an end elevation of my improved type cable wrapping machine; and

Figure 2 is a sectional view taken on the line II—II of Figure 1.

It is usually customary in all devices or machines for compacting suspension bridge cables to provide a circular yoke or ring-girder which is made in segments and which is adapted to be easily assembled around the cable. This yoke or girder carries the jacks or other devices which exert pressure on the cable to resist outward radial movement of the strands of the cables when this pressure is applied.

In the attached drawings I have shown the essential yoke or ring-girder 5 carrying a plurality of eccentric studs 6 arranged circularly on the girder and having flanged rollers 7 rotatably mounted on one end thereof. These studs are made slightly eccentric so that they can be turned in the girder to position and adjust the rollers carried thereby radially to the center of the girder and cable. There is also mounted on the face of the girder a number of flat faced rollers 8 which are adapted to rotate freely in a plane parallel the radii of the girder. Extending from the same face of the girder and carried thereby are a number of fingers 9, arranged circularly, the function of which will be described later in the specification.

An annular ring 10, sometimes called a flyer, through which the cable is adapted to extend, is rotatively mounted on the rollers 7. The inner face of the ring is adapted to lie over and against the flat faced rollers 8 thus allowing the same to rotate freely about the cable. This ring is preferably made up of two or more segments fastened together by suitable splice plates and bolts, or by any other suitable means in such a manner that they may be readily assembled and disassembled for periodically moving the ring and machine along the cable. Gear-teeth 11 are arranged along the periphery of the ring and are adapted to engage with the teeth of a driven spur-gear 12. This spur-gear can be driven by any suitable source of power, such as an air or electric motor to, in turn, drive the ring. The ring is held in place on the rollers 7 by means of flanges thereon. It will be seen that these eccentric studs permit

easy adjustment of the ring member to centrally locate the cable therein.

There is mounted on the ring a wire carrying and supplying device comprising a swift 4, similar to those generally used for holding a coil of wire, mounted on a stud-spindle 13 which is attached to the annular ring 10. The ease of rotation of the swift can be regulated so that it supplys the wire evenly, and without undercutting or overrunning, by means of friction-plates 14 and adjusting nuts 15.

On the same side of the ring, but diametrically opposed to the swift 4, is arranged a friction device consisting of two blocks or plates 16, preferably made of steel but which can be made from any other suitable friction material, which are attached to a bracket 17 by means of a bolt 18, the bracket being, in turn, suitably attached to the ring. The pressure between the plates can be adjusted by means of the bolt 18.

A second tensioning device is arranged adjacent the friction plates and comprises a stud-shaft 19 attached to the ring on which there is rotatively mounted a friction sheave 20 made of wood, or some other suitable material. On this stud-shaft there are arranged, on each side of the tension sheave, friction-plates 21. There is also arranged on this shaft a spring 22 and adjusting nuts 23. The freedom of rotation of this tension sheave is regulated by the adjusting nuts 23 and through the action of the spring 22.

Also on the same side of the ring and arranged in a chord-like manner, there is affixed thereto a bar 24 carrying a deflecting sheave 25 and the level winding device of my invention. This device consists of a screw-block 26 mounted on the bar which is adapted to carry a threaded shaft 27. A sliding-bar 28 is arranged on the bar 24 and is connected to one end of the threaded shaft 27. The other end of the sliding-bar 28 carries a deflecting sheave 29 rotatably mounted thereon. On the other end of the threaded shaft 27 there is mounted a sprocket 30. Also mounted on the chord-like bar 24, and journaled therein, is a second shaft 31 having a sprocket 32 on one end thereof and a star-wheel 33 on its opposite end. A sprocket-chain 34 is arranged on the sprockets between two shafts for driving the threaded shaft 27. The toothed-wheel is adapted to cooperate with the fingers 9 on the ring-girder when the ring is rotated. Thus, it will be seen that as the annular ring rotates, the star-wheel 33 on the shaft 31 will be brought into contact with the spaced fingers 9 carried by the stationary girder which will intermittently rotate the shaft 31 to which it is secured which, in turn, will rotate the threaded shaft 27 which, in turn, moves the sliding-bar 28, together with the sheave 29, forwardly in small increments or a distance substantially equal to the diameter of the wire.

To more readily understand the operation of my improved type cable wrapping machine it operates as follows:

A reel of wire is placed on the swift 4 and the free end of the wire is threaded between the friction-plates 14 and around the tension sheave 20 one or more times, as desired. The wire then passes around the deflecting sheave 25 in order to change its direction to permit it to pass inside the girder 5 where it is again changed in the direction by passing around the movable deflecting sheave 29 of the level winding device to the cable.

After the wire has been threaded through the machine, the free end of the wire is securely affixed to the cable close to the compacted cable area. The tension devices are then adjusted to give the proper tension to the wire. The power is then applied to the spur gear 12 which, in turn, rotates the annular ring 10. After the ring is revolved the required number of revolutions to place the desired number of turns on the cable, the ring is stopped, the wire cut between the deflecting sheave 29 and the cable, and the wire securely affixed thereto to prevent it from unwrapping. This completes the operation and the wrapping of the cable at a compacted point. The entire machine is now ready to be moved forwardly to compact and fasten another point on the cable. There is provided a hand-crank 35 on the end shaft 31 for returning the sliding-bar and deflecting sheave of the winding device to its initial and essential starting position before the start of the next seizing or wrapping operation.

It will be understood that it is necessary for the compacting machine to hold the cable until the holding or restraining wire is applied and secured, and as it is necessary to perform this operation at approximately three-foot intervals throughout the length of the cable it can be readily seen that by the use of my invention the speed of applying these holding wires is greatly increased, which likewise expedites the compacting of the cable and reduces the cost of the entire operation.

While I have, in this application, specifically described one embodiment which my invention may assume in practice, it will be understood that this embodiment is merely for the purpose of illustration and description, and that various other forms may be devised within the scope of my invention, as defined by the appended claims.

I claim:

1. A machine for wrapping cables comprising means for holding said machine on a cable, a revolving member adapted to revolve about the cable, means on said member for holding a supply of wrapping material, means carried by said member for guiding and tensioning the material while wrapping the same, means carried by said member for automatically guiding and laying each successive wrapping of the material into close uniform proximity with the previous wrapping around said cable, and means for moving said guiding and laying means intermittently a distance equal substantially to the diameter of the wire on each complete revolution of said revolving member.

2. A machine for wrapping cable with wire comprising means for holding the machine on a cable, an annular rotatable ring member adapted to revolve about the cable, means on said member for holding a reel of wire, means on said member for guiding and tensioning said wire as it is being wrapped on the cable, means carried by said member for automatically guiding and laying each successive wrapping of the wire into close uniform proximity with the previous wrapping, and means for moving said guiding means parallel to the cable intermittently substantially a distance equal to the diameter of the wire on each complete revolution of said ring.

3. A machine for wrapping cables comprising means for holding said machine on a cable, an annular ring which is adapted to revolve about said cable, said ring carrying means for holding a reel of wire, a tension device carried by said ring including a pair of plates between which the wire is first adapted to pass from the reel, a second tension device carried by said ring around which

the wire is next adapted to pass, a deflecting sheave carried by said ring over which the wire next passes, a guiding sheave carried by said ring over which the wire finally passes to position each successive wrapping into close proximity with each previous wrapping as it is wrapped around the cable, and means for moving intermittently said guiding sheave.

4. The combination defined in claim 3 wherein the means for intermittently moving the guiding sheave includes a movable bar to which said guiding sheave is rotatably fixed, and means for intermittently moving said bar and sheave.

5. The combination defined in claim 3 wherein the means for intermittently moving the guiding sheave includes a movable bar to which said guiding sheave is rotatably fixed, a threaded shaft to which the movable bar is fixed, and means for intermittently rotating said shaft to move said bar and sheave.

6. A machine for wrapping cables comprising a stationary member for holding said machine on a cable, an annular ring member rotatably mounted thereon in which the cable is adapted to lie, means on said ring for holding a reel of wire, means carried by said ring for guiding and tensioning the wire as it is being wrapped, and means carried by said stationary member adapted to automatically cooperate with means carried by said ring to intermittently guide and position each successive wrapping of the wire into close uniform proximity with each previous wrapping around the cable.

7. The combination defined in claim 6 wherein the means carried by the stationary member adapted to cooperate with means carried by the ring consists of a plurality of uniformly spaced fingers extending from the stationary member.

8. The combination defined in claim 6 wherein the means carried by the stationary member adapted to automatically cooperative with means carried by the ring to intermittently guide and position each successive wrapping of the wire into close uniform proximity with each previous wrapping of the wire on the cable to guide and position each successive wrapping of the wire into close uniform proximity with each previous wrapping consists of a sheave rotatably mounted on a movable bar, a threaded shaft having one end connected to said bar and a sprocket mounted on the opposite end thereof, a second shaft rotatably mounted on the ring and journaled thereon, said shaft having a sprocket on one end and a toothed wheel mounted on the opposite end thereof which is adapted to cooperate with fingers positioned on said stationary member to rotate intermittently the shaft to which it is attached intermittently and a chain extending between said sprockets for rotating intermittently said threaded shaft to move in turn the bar and sheave.

9. A machine for wrapping cables comprising means for holding said machine on a cable, a revolving member adapted to revolve about said cable, means on said member for holding a supply of wire, means for guiding and tensioning the wire as it is being wrapped, and means carried by said revolving member adapted to cooperate with means carried by said holding means to guide and position each successive wrapping of the wire into close uniform proximity with each previous wrapping of the wire around the cables.

HARRY CLYDE HUNTER.