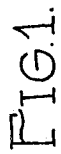


1,336,649.

2 SHEETS—SHEET 1.



INVENTOR
EDWARD T. MUSSON.

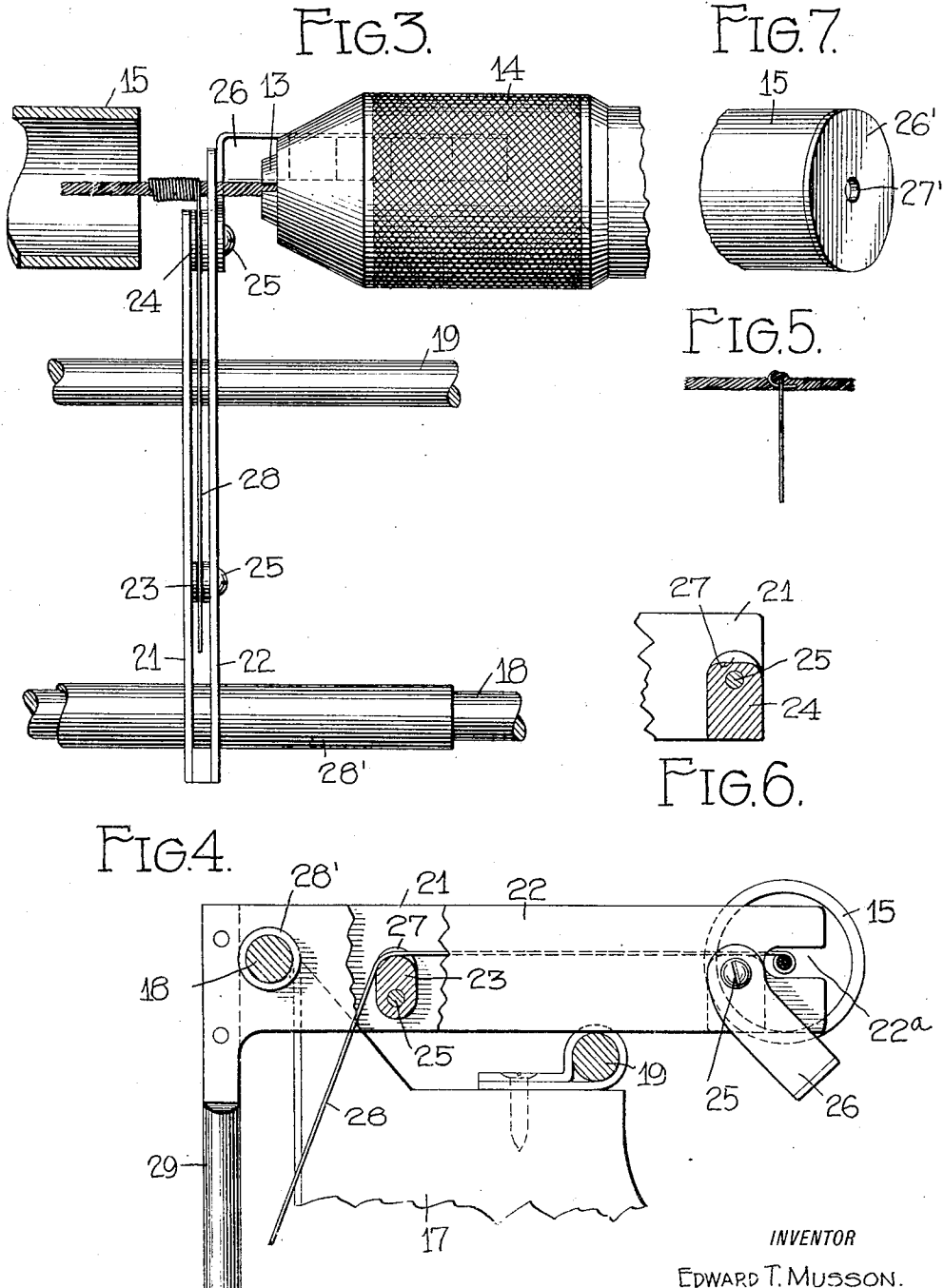
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E. T. MUSSON.
WIRE WRAPPING AND WINDING MACHINE.
APPLICATION FILED MAY 18, 1916.

1,336,649.

Patented Apr. 13, 1920.

2 SHEETS—SHEET 2.



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UNITED STATES PATENT OFFICE.

EDWARD T. MUSSON, OF BUFFALO, NEW YORK, ASSIGNOR TO CURTISS AEROPLANE AND MOTOR CORPORATION, A CORPORATION OF NEW YORK.

WIRE WRAPPING AND WINDING MACHINE.

1,336,649.

Specification of Letters Patent.

Patented Apr. 13, 1920.

Application filed May 18, 1916. Serial No. 98,348.

To all whom it may concern:

Be it known that I, EDWARD T. MUSSON, a citizen of the United States, residing at Buffalo, in the county of Erie and State of New York, have invented certain new and useful Improvements in Wire Wrapping and Winding Machines, of which the following is a specification.

My invention relates generally to mechanism for wrapping or winding cable or wire with a reinforcing member and more particularly to that type of wire-winding machine wherein the cable is revolved while the reinforcing member is fed to its desired position.

It has been found in the past that during the process of winding cable and wire, certain objectionable features were encountered. One of these objectionable features was a tendency of the reinforcing wire to kink; another, the difficulty of obtaining proper tension in the reinforcing wire during the process of feeding the same; and still another, the tendency of the wire strands in the reinforcing wire to untwist or come apart. It was with full cognizance of the prior deficiencies that I constructed this present invention which is designed to overcome the numerous disadvantages heretofore existing while adding many advantages and beneficial means for increasing efficiency, simplicity and practicability of operation.

More specifically, some of the objects of my invention are as follows: to provide against twisting or kinking of the rotated wire during the process of wrapping it by constructing a protecting device to limit the lateral movement of the wire caused by rapid revolution: to accomplish the complete reinforcement of a cable without unnecessary or complicated machinery or labor: to eliminate the possibility of untwisting of the wire to be reinforced during the process of rotating and wrapping the same to the wire or other flexible element: to provide a means for adjusting or measuring the extent of reinforcement: to attain a maximum perfection in feed tension and allow for adaptation of such tension to the nature of the cable or wire to be reinforced: to construct a means for maintaining substantially rigid disposition of the wire between an enveloping member and the rotating member in order that the wire may be

adequately wrapped and reinforced with a minimum degree of labor and care: and moreover to attain a degree of simplicity heretofore unknown in the art without corresponding loss of function, stability and efficiency.

To these and other ends, my invention consists in the construction, arrangement and combination of parts described hereinafter and pointed out in the claims.

One embodiment of my invention is represented by way of example in the accompanying drawings, wherein:

Figure 1 is a front elevation of my device;

Fig. 2 is a plan view;

Fig. 3 is an enlarged view of a portion of my invention as illustrated in Fig. 2, and it shows the supporting tube in section to illustrate the position of the wire;

Fig. 4 is an enlarged sectional end view of my device looking away from the wire clamp;

Fig. 5 illustrates an improved way of attaching the reinforcing wire in the first instance.

Fig. 6 is a partially sectional view of the guide block used for the reinforcing wire.

Fig. 7 is a modification of the container tube used in my invention.

In the following description of the preferred embodiment of my invention, like numbers designate like or similar parts throughout the several views.

In order to attain the many functions concurrent with the adoption of my device, I provide a foundation 1 to which is secured in any suitable manner, the support 2 which may be rectilinear, solid or of any desired configuration, form or construction adapted to retain upon its upper portion a rotary power device generally designated by 3 and held upon said support by the elongated bolt 4 and auxiliary means such as the screw 5^a.

I have illustrated by way of example in the accompanying drawings, a power device somewhat similar to the ordinary type of breast drill mechanism having a body portion 5 provided with a vertical bearing 6 through which the hand or if desired power operated beveled gear wheel 7 is carried. The body portion is further provided with a modified bifurcated end 8 across the ends of which is integrally formed the longitudinal bearing or sleeve supporting arms 9

adapted to retain the bearing 10 through which the shaft or shank 11 is carried. The beveled gears 12 are rotatably carried within the bifurcation and engage the beveled gear wheel 7 in such a manner as to provide two speeds for the shaft 11 for which they are power transmission parts. Upon the free end of the shaft or shank, the chuck is carried, and is composed generally of wire engaging jaws 13 and an adjusting member 14. I desire it to be understood that the above described rotary power device is one commonly used and the particular details of its construction have no bearing upon the novelty of my invention.

At a position longitudinally spaced from the gripping terminus of the power device, I provide what I term an enveloping means or container tube 15 shown in the drawings as being cylindrical and of a length governed by the conditions surrounding its reduction to practice. In order to maintain the tube 15 longitudinally alined with the power member, I provide a series of spaced-apart, alined supports 16 which rigidly engage the same and are secured in any suitable manner to the foundation 1.

A plurality of supports, here illustrated as two in number, and designated by 17, carry upon their upper extremities a longitudinal guide 18 and at a distance slightly lower than said guide and in parallel relation thereto, a parallel support member 19. Both the guide 18 and the support 19 are parallel to the alined power device and container tube and are held by the supporting members 17 in spaced relation thereto. A collar 28', freely movable upon the guide 18, carries intermediate its extremities a feed wire frame comprising two spaced apart sections or arms designated by 21 and 22.

The said arms or sections are of unequal lengths and extend inwardly to a point adjacent the longitudinal axis of the container 15 and power device and are at right angles to the said guide member, and rest loosely upon the parallel supports as is shown in Fig. 4 of the drawings. The longer of the two sections or arms, designated by 22 has a cut-away portion 22^a within which the wire to be wound or reinforced is rotated.

Blocks 23 and 24 are maintained in their respective positions by means of screws or other means 25. One of the screws—that nearest the free ends of the arms 21 and 22, serves the dual purpose of securing means for both the block 24 and the measuring device 26 which will be hereinafter referred to more specifically.

In order to facilitate the feeding of wire over the blocks 23 and 24, I provide each of them with a groove 27 through which the feed wire 28 moves and is held against lateral displacement. In order to adjust the tension of the wire 28, one increases the

angle of incidence between the wire and the block 23.

The operation of my invention is as follows: A flexible member such as a wire or cable is led through the tubing 15 and the end thereof is gripped between the jaws 13 of the power mechanism. A wire 23 is then secured to the said cable or flexible member in the manner illustrated in Fig. 5 and the power mechanism rotated by means of the handle or if desired by machine power. Upon rotation of the cable by the power mechanism, the feed wire 28 is caused to spiral around the same securely wrapping it for the purpose desired. Movement may be imparted to the feed device by means of the handle 29 although ordinarily movement will be given to the feed mechanism through the tendency of the feed wire to progress through its helical convolutions.

A novel and most important function of the member 15 is to maintain the flexible member free from kinks due to the rapid rotating of the same. It is well known that when rotating a section of wire or cable, the slack tends to form waves and other distortions which would preclude the proper winding or wrapping of the same. The walls of the tubing prevent this contingency from arising by limiting lateral movement of the same.

The tube 15 is axially movable in its bearings and may be adjusted toward and from the chuck 14 to accommodate wrapper wires of different length. In Fig. 3 the wrapper wire is short and consequently the tube 15 is but slightly spaced from the chuck.

A modification of my invention is illustrated in Fig. 7 where a cap 26' or other closing means is secured over the opening of the tube 15 and has formed therein an opening 27' through which to project the cable or wire to be wrapped. Upon rotation of the wire, the constricted opening will cause the same to become substantially rigid between the tubing and the retaining jaws thereby facilitating wrapping of the same although in no wise interfering with the rotation of the wire in the tube as a whole.

Secured to the feed mechanism is a measuring device or laterally extending rule 26 before referred to which might be further described as extending parallel to the longitudinal axis of the cable to be wrapped. Said rule is of a construction which is clearly shown in Fig. 3 and is designed to progress with the helix of the wire in order to inform the operator when a sufficient distance or extent of the wire wrapped has been traversed.

While in the foregoing, there has been illustrated in the drawings and described in the specification, such combination and arrangement of elements as constitute the preferred construction or embodiment of this

invention, it is nevertheless desired to emphasize the fact that interpretation of the invention should only be conclusive when made in the light of the subjoined claims.

5 What is claimed is:

1. A machine for wrapping a flexible wire or the like flexible element with a wire or the like comprising a means to grip and rotate the flexible wire together with means
10 mounted in advance of the gripping means to envelop and prevent the formation of kinks in the flexible wire during its rotation.

2. A machine for wrapping a flexible wire or the like flexible element with a wire or the like comprising a means to grip and rotate the flexible wire together with axially adjustable means mounted in advance of the gripping means to envelop and prevent the formation of kinks in the flexible wire during
20 its rotation.

3. A machine for wrapping a flexible wire or the like flexible element with a wire or the like comprising a means to rotate the flexible wire together with a cylinder mounted
25 in advance of the gripping means to envelop and prevent the formation of kinks in the flexible wire during its rotation.

4. A machine for wrapping a flexible wire or the like flexible element with a wire or the like comprising a means for rotating and gripping with substantially equal force each strand of wire to be wrapped, the unraveling of the wire being thus prevented during its rotation, enveloping means
30 mounted in advance of the gripping means to prevent the formation of kinks in said

wire, and means intermediately positioned between the enveloping means and the gripping means for supporting the wire to be wrapped at that point directly adjacent the
40 wrapper wire.

5. A machine for wrapping a flexible wire or the like flexible element with a wire or the like, comprising rotating means, enveloping means for the wire to be wrapped
45 to prevent kinks during rotation thereof, and means coincident with said enveloping means to maintain a substantially rigid disposition of the wire between said means and said rotating means.
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6. A machine for wrapping a flexible wire or the like flexible element with a wire or the like, comprising rotating means, enveloping means having an opening for the wire to be wrapped to prevent kinks during
55 rotation thereof, and means for constricting the opening in said enveloping means to maintain a substantially rigid disposition of the wire between said enveloping means and said rotating means.
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7. In a machine for wrapping a flexible wire or the like flexible element with a wire or the like, the combination with a wire rotating means, of a movable guide for the wrapper wire, and a measuring device carried by the guide for movement with respect to the rotating means to indicate at all times the length of that portion of the wire wrapped.
65

In testimony whereof I affix my signature. 70

EDWARD T. MUSSON.