

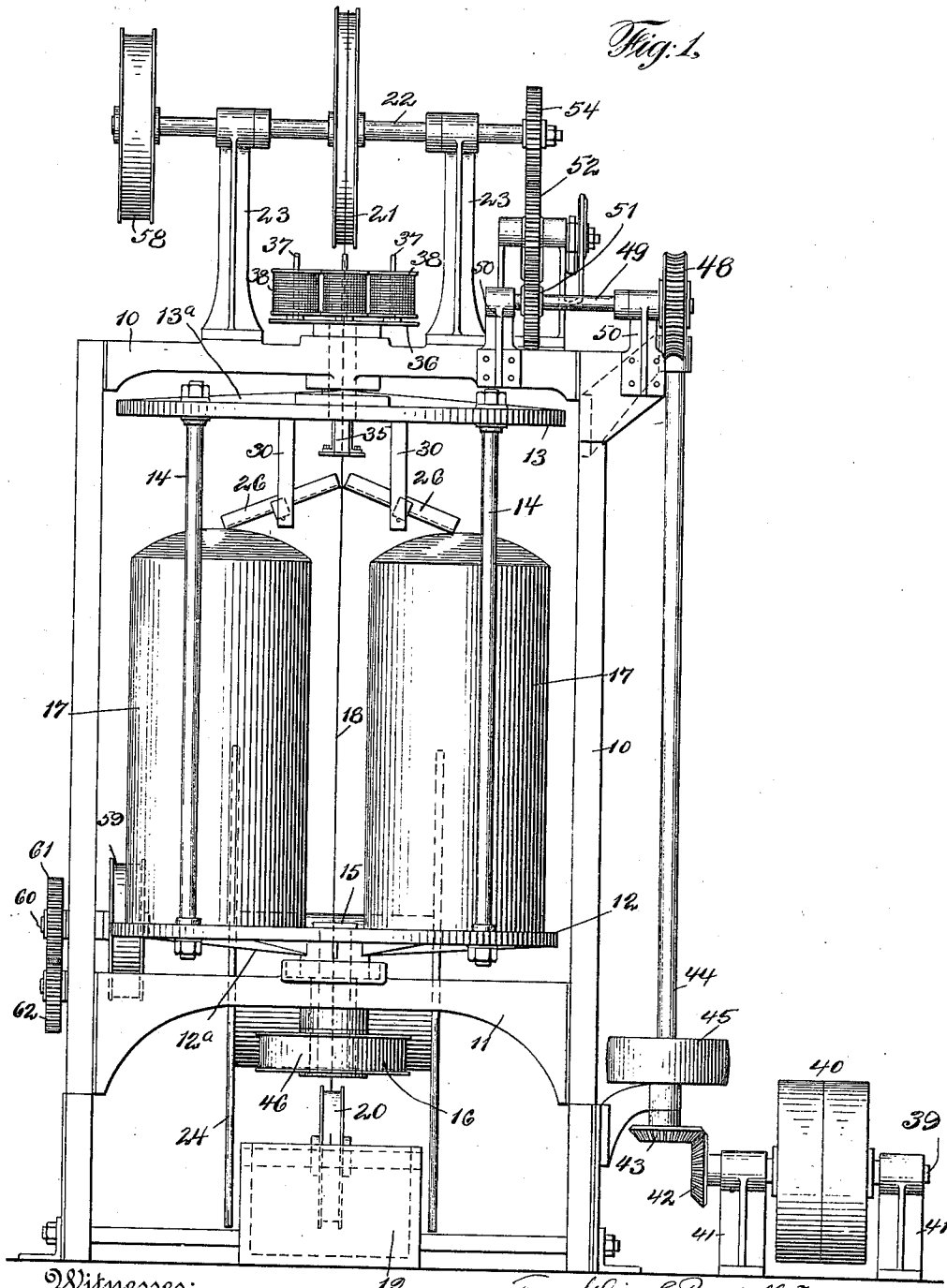
F. S. RANDALL.
WIRE COVERING MACHINE.

APPLICATION FILED APR. 28, 1911. RENEWED APR. 12, 1912.

1,045,183.

Patented Nov. 26, 1912.

4 SHEETS—SHEET 1.



Witnesses:
Max B. A. Doring,
Arthur H. Russell,

Franklin S. Randall, Inventor,

By his Attorney,
W. C. Hutchinson

F. S. RANDALL.
WIRE COVERING MACHINE.

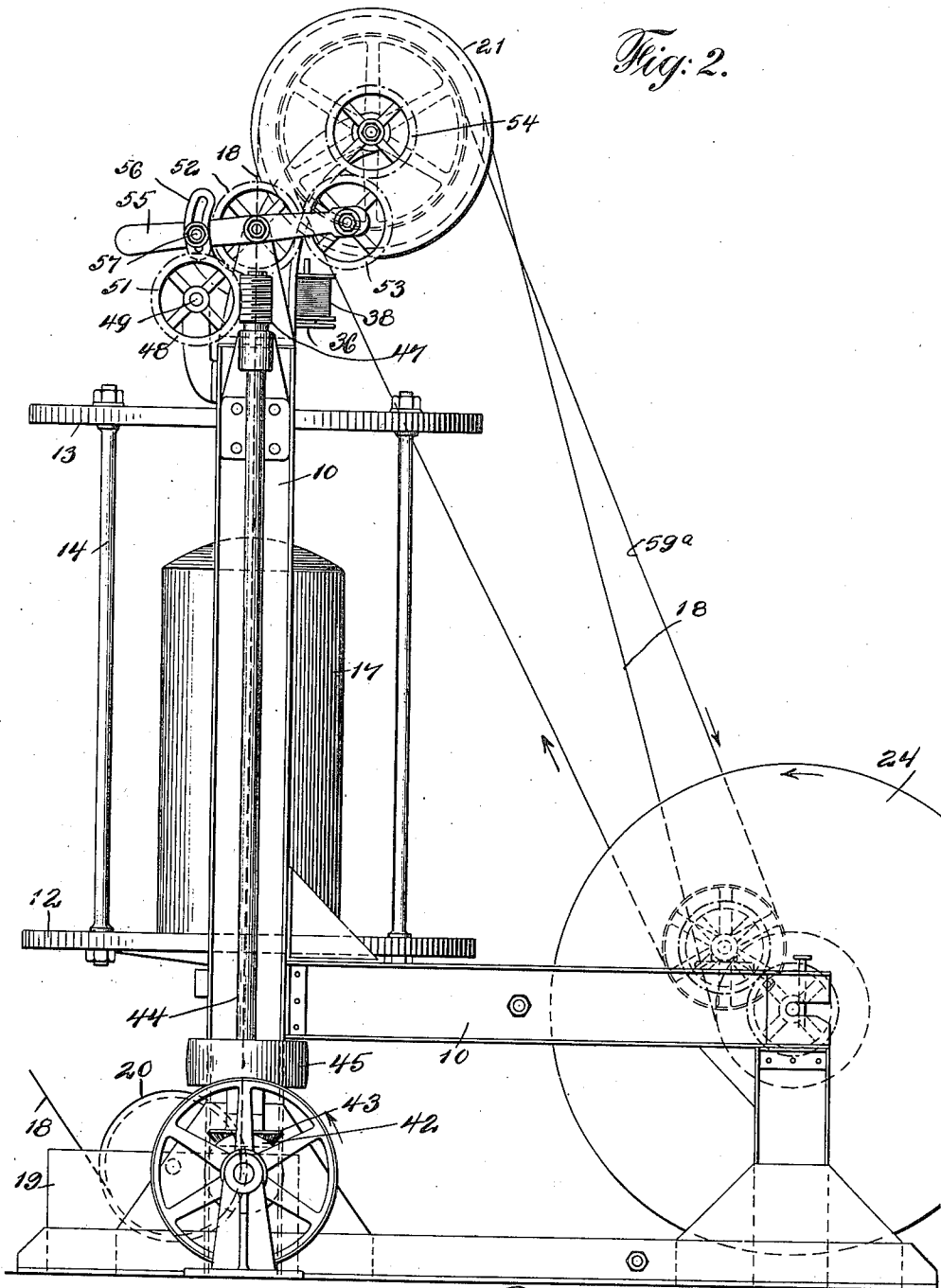
APPLICATION FILED APR. 28, 1911. RENEWED APR. 12, 1912.

1,045,183.

Patented Nov. 26, 1912.

4 SHEETS—SHEET 2.

Fig. 2.



Witnesses:
Max B. A. Doring.
Arthur G. Hannell.

Franklin S. Randall Inventor.

By his Attorney.
W. C. Hutchinson.

F. S. RANDALL.
WIRE COVERING MACHINE.

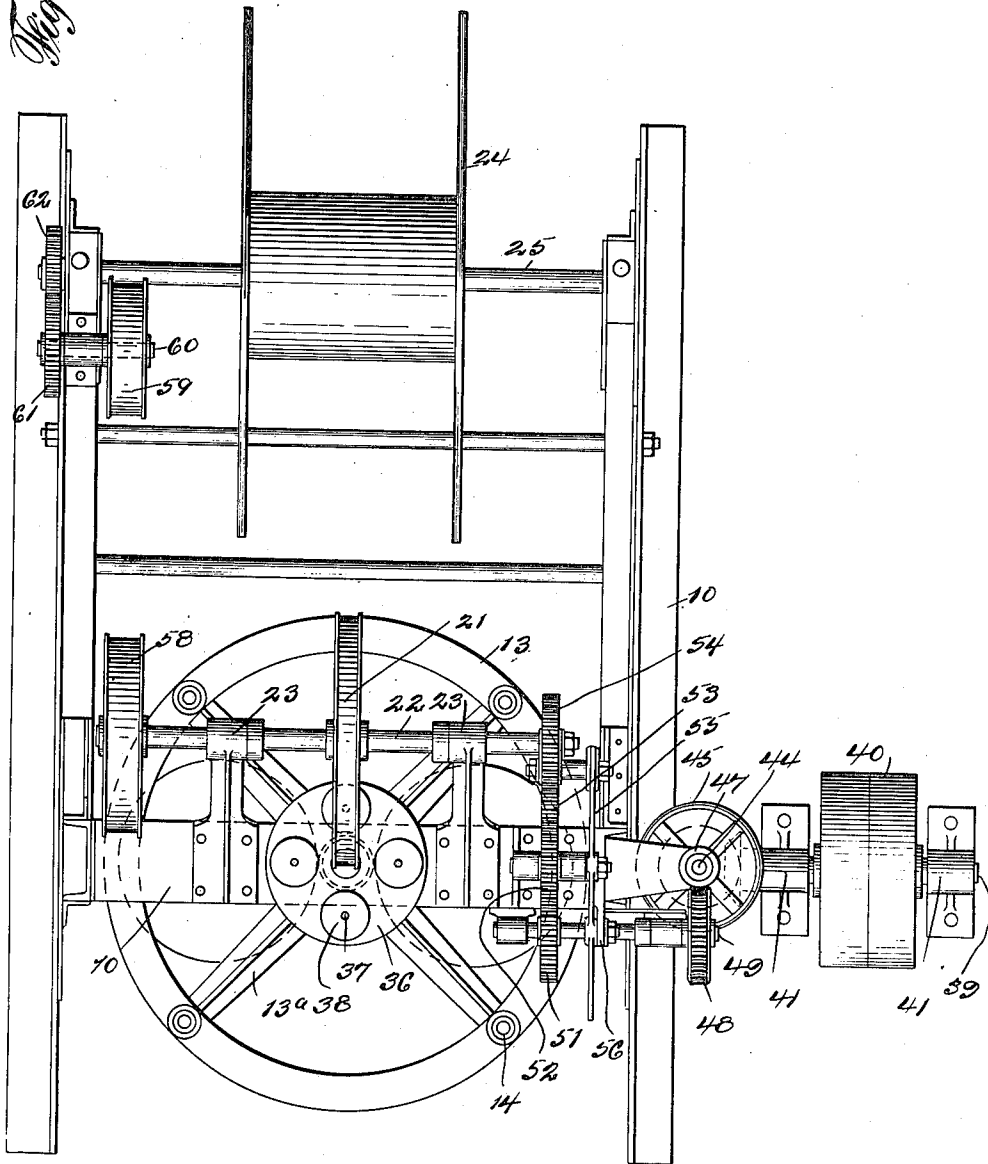
APPLICATION FILED APR. 28, 1911. RENEWED APR. 12, 1912.

1,045,183.

Patented Nov. 26, 1912.

4 SHEETS—SHEET 3.

Fig. 3.



Witnesses:
H. B. A. Loring
Arthur D. Amell

Franklin S. Randall Inventor
By his Attorney
N. B. Hutchinson

F. S. RANDALL.
WIRE COVERING MACHINE.

APPLICATION FILED APR. 28, 1911. RENEWED APR. 12, 1912.

1,045,183.

Patented Nov. 26, 1912.

4 SHEETS—SHEET 4.

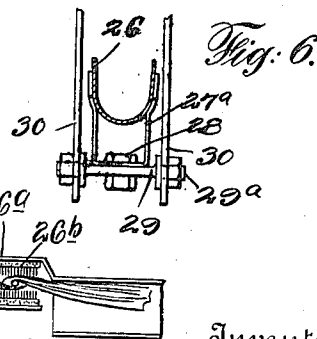
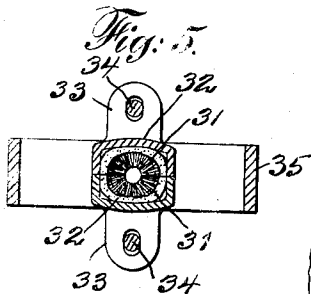
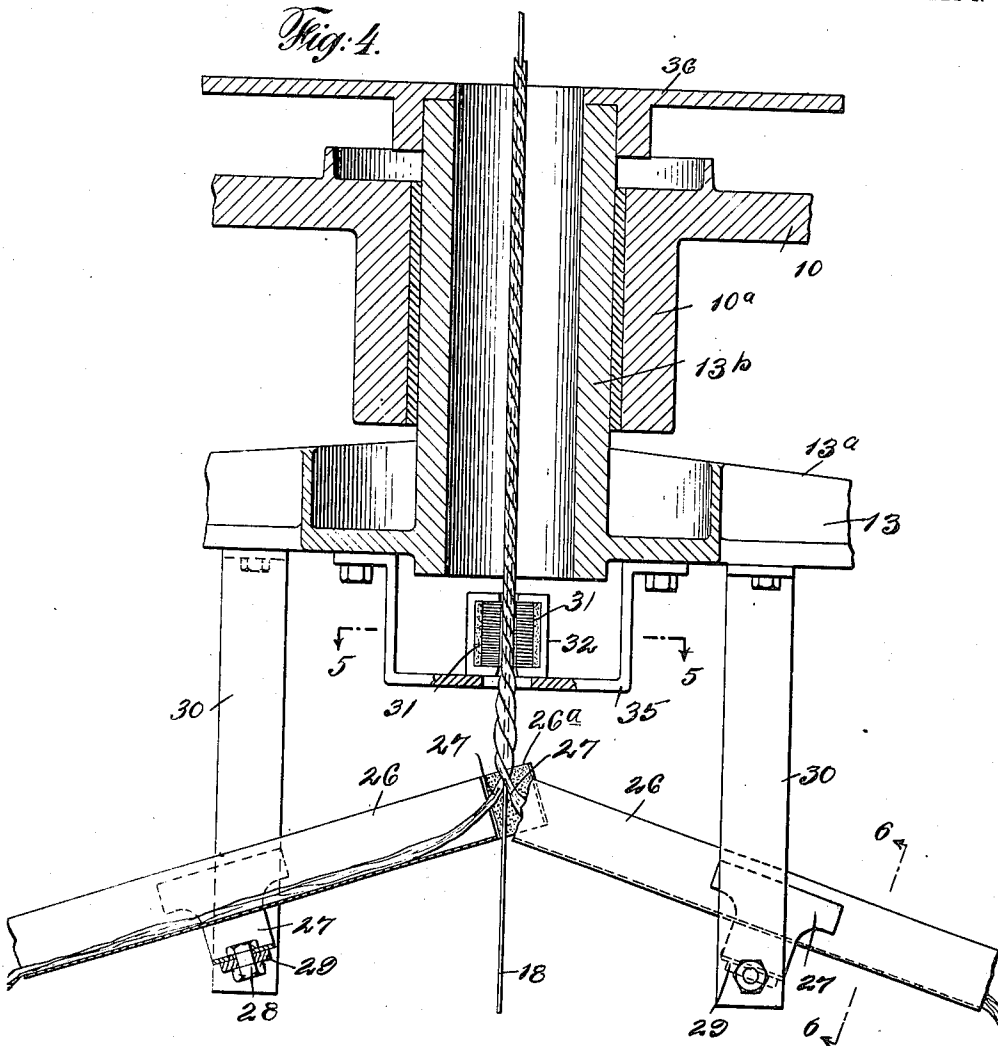


Fig. 7.

Franklin S. Randall, Inventor.
By his Attorney,
W. B. Hutchinson.

Witnesses:
Max B. A. Goring
Arthur J. Russell,

UNITED STATES PATENT OFFICE.

FRANKLIN S. RANDALL, OF JERSEY CITY HEIGHTS, NEW JERSEY, ASSIGNOR TO PEERLESS INSULATED WIRE AND CABLE COMPANY, OF NEW YORK, N. Y., A CORPORATION OF DELAWARE.

WIRE-COVERING MACHINE.

1,045,183.

Specification of Letters Patent.

Patented Nov. 26, 1912.

Application filed April 28, 1911, Serial No. 623,954. Renewed April 12, 1912. Serial No. 690,335.

To all whom it may concern:

Be it known that I, FRANKLIN S. RANDALL, of Jersey City Heights, Hudson county, New Jersey, have invented a new and useful Improvement in Wire-Covering Machines, of which the following is a full, clear, and exact description.

My invention relates to improvements in machines for covering electrical conducting wires with insulating material.

My machine while adapted to cover or coat wires of this class so as to adapt the wires for any work whether inside or outside, is especially adapted to provide covering which will resist the action of the weather and make the wires suitable for out-door work.

My machine is intended to economically and rapidly cover wires of the class specified in such a manner as to make them better than ordinary insulated wires, and at the same time provide means for doing the work so rapidly and economically that the wires will not be expensive. It has been found desirable to cover wires of this class with a fabric, especially if the fabric can be laid on in even layers and then immerse the fiber or fabric in a solution which will be absorbed by the fabric and will make the coating impervious to moisture and suitably insulated. For this purpose raw cotton generally applied in the form of sliver, or other light fibers are especially desirable, but a difficulty has been to apply the fibrous material in such a way that it will lie perfectly even, be compact, and will not be blown away or disturbed by air currents in the process of manufacturing.

In carrying out my invention I provide means for feeding the wire longitudinally through the machine, and I rotate the means for supplying fiber, preferably in the form of cotton, to the wire, which means rotates around the wire, and further I provide wind guards and guides which will carry the fiber from the container to the wire so that it will not be disturbed by the action of the air while being carried around the wire, but will be laid on in a suant coating, next I provide means for combing the material with card clothing or its equivalent so that the fiber is compactly and suantly applied to the wire, and finally I bind the fibrous material in place by means of spirally wound

cords, although the latter feature can be dispensed with, and after these operations are accomplished the wire and its covering are adapted for immersion in any suitable composition.

In general, my invention has for its object the carrying out of the aforesaid process in a convenient, practical and inexpensive way.

Reference is to be had to the accompanying drawings forming a part of this specification, in which similar reference characters indicate corresponding parts in all the views.

Figure 1 is a side elevation of the machine embodying my invention. Fig. 2 is an elevation at right angles to that shown in Fig. 1. Fig. 3 is a plan of the apparatus. Fig. 4 is an enlarged detail sectional view showing especially the means for guiding the fibrous material to the wire and for combing the material about the wire. Fig. 5 is a detail section on the line 5—5 of Fig. 4. Fig. 6 is a detail on the line 6—6 of Fig. 4 of the guide chute and wind guard, and Fig. 7 is a top view of the end of the guide chute and wind guard showing extension and comb.

The machine is provided with a suitable frame 10 which may be of any approved design, and it has preferably cross braces 11 which serve as supports for the turn-table which comprises essentially the lower and upper rings 12 and 13 which are connected by the bracing and spacing rods 14 and are also braced by the radial ribs 12^a and 13^a. The turn-table is provided with a hollow hub or support 15 which is mounted in suitable bearings and to one end of which is applied the driving pulley 16 or its equivalent. The turn-table carries containers 17 for the raw cotton or other fibrous material, which containers are open at the top and which revolve around the wire 18 so that as hereinafter shown, the fiber will be spirally wound around the wire as the latter progresses through the machine. The wire 18 passes over a suitable guide pulley 20 in a bath 19, the latter containing any suitable composition which will coat the wire and make it sticky, and the wire passes vertically upward through the machine and over the guide pulley 21 which is carried by the shaft 22, the latter being supported in hangers 23 on the top of the machine.

After passing over the guide pulley 21, the wire is wound on a reel 24, but the latter has nothing to do with the invention and the wire can be carried forward through any bath if preferred. The above mechanism is not claimed broadly as new, and on the other hand, any equivalent means can be provided for feeding the wire and the fiber supply, and for spirally applying the fiber, without affecting the invention. The reel 24 is carried by a shaft 25, and the means for rotating the shaft and for driving the machinery generally, will be hereinafter described.

The fiber, preferably in the form of cotton sliver, is drawn from the tops of the containers 17, and as these revolve around the wire 18 and as the latter is moved longitudinally, it will be seen that the fiber will be laid in spiral overlapping layers upon the wire, but as the fiber is very light, any wind which may blow across the machine, or the air currents generated by the rotation of the containers are likely to displace and break the fiber, and this heretofore has been a most serious obstacle in the way of carrying out the covering of wire on the lines which I disclose. To obviate this difficulty I use the wind guards and stock guides 26 which are hollow as shown clearly in Figs. 4 and 6, and are sufficiently large to permit the sliver or fiber 27 to pass freely through them. These guards and guides 26 extend close up to the wire 18 as the drawing shows, and also extend to the top openings of the containers. It is desirable to have them adjustable, and I show a convenient means of effecting this adjustment without however, limiting myself to such means. As illustrated the guides or guards 26 are held in bifurcated clips 27^a which are fastened by means of suitable bolts and nuts shown at 28 to a cross-piece 29, and the latter is held by a bolt 29^a to the hangers 30 which depend from the top 13 of the turn-table. It will be seen therefore, that by adjusting the bolts and nuts just referred to, the guards 26 can be arranged at the desired angle and securely fastened.

As the fiber 27 if wound upon the wire 18 without any pressure, may be loose and bulging, I provide extensions to the guides 26 as shown at 26^a in Fig. 7. These extensions 26^a carry combs in the form of card clothing 26^b, and are adapted to press against the fiber as it is wound upon the wire. As the amount of pressure may be regulated, this enables me to wind the fiber upon the wire with any desired firmness. It is understood that the combs 26^b may be omitted and the extension 26^a of the wind guard may be pressed against the fiber and wire, but I prefer to use the combs 26^b. After the fiber 27 is applied to the wire 18, in order to remove any unevenness or bulging I cause it to pass through a suitable

tapering comb so that it will be evenly felted and matted around the wire, and this comb is most effectively made of card clothing 31, and in two parts which can be conveniently clamped around the wire. I have shown the card clothing held in opposite parts of the framework or housing 32, which housing has flanges 33 held by bolts 34 to the hanger 35 which is secured to the top 13 of the turn-table as shown in Fig. 4. Reference to this same figure will show that the effect of revolving the card clothing on the covered wire is to cause the sliver or fiber 27 to be drawn evenly and snugly felted and matted around the wire. In this same view it will be seen how the wire and its covering is permitted to pass upward through the top of the turn-table and its bearings, and the turn-table has a hub 13^b at the top which rotates in the bearing 10^a of the machine frame.

The combing of the fiber around the wire will be sufficient to hold it in place until it is dipped, under usual conditions, but to make this absolutely certain I prefer to bind the fiber in place with strands of twine or equivalent, and to this end I show at the top of the hub 13^b a table or plate 36 which carries spindles 37 on which are held the twine spools 38, and the twine from these spools may be fastened to the covered wire so that as the latter moves, the twine will be carried around with the turn-table 12—13 and the wire fiber or covering will be securely bound in place.

I have described the manner in which the apparatus operates, and I will now refer to the means disclosed for driving the operative parts, but it will be understood that any suitable driving mechanism can be substituted for that shown. A driving shaft 39 (see Fig. 1) is provided with tight and loose pulleys 40 or equivalent mechanism, and is mounted on posts 41. The driving shaft connects by gears 42 and 43 with a shaft 44 on the side of the machine, which shaft is vertically arranged, and has a pulley 45 which alines with the pulley 46 on the hub of the turn-table 12—13, so that by means of a suitable belt the turn-table and the containers 17 may be rotated. At its upper end the shaft 44 connects by gears 47 and 48 with a counter-shaft 49, which is mounted in suitable brackets 50, and the shaft 49 connects by means of gears 51, 52 and 53 with the gear wheel 54 on the shaft 22 already referred to, so that the latter is suitably driven to carry the wire 18 and to rotate the reel 24, as will be presently seen. I prefer to have one of the intermediate gears just referred to, as for instance the gear 53, mounted on a lever 55, which is centrally fulcrumed and which moves opposite the slotted segment 56 to which it can be fastened by means of nuts and bolts,

as shown at 57. Thus the gear 53 may be thrown out to stop the mechanism and to permit the gear 54 to be changed for a larger or smaller one so as to change the feed.

The shaft 22 carries a pulley 58 from which a belt 59^a may be run to the pulley 29 on the shaft 60 (see Fig. 3) and this shaft connects by gears 61 and 62 with the reel shaft 65.

From the foregoing description it will be seen that I have provided a comparatively simple machine for feeding and covering the wire with fiber, and more especially that I provide means for feeding the loose fiber spirally to the wire, for preventing any deflection of the fiber by wind or air currents, and that finally I provide a convenient means for combing the fiber so as to obtain a compact, suant layer on the wire. It will be readily understood that in this condition the wire is adapted to be immersed in a weather-proofing composition so as to make it highly insulating and capable of great wear and long use.

I do not wish to limit myself to the manner shown for supporting the means for applying pressure to the fiber while it is being wound upon the wire. It is apparent that this means instead of being supported upon the end of the fiber chutes may be held against the wire in any other desired way without departing from the principle of my invention, as I claim broadly means for applying pressure to the fiber against the wire while the former is being wound upon the latter.

It will be seen that I have disclosed a means for applying fiber such as cotton sliver in a suant layer to the wire, that as the wire travels longitudinally and the fiber guides revolve around it, the fiber will be wound very evenly upon the wire, that the combs at the ends of the guards 26 are arranged to press and mat the fiber evenly upon the wire, and that this action is completed by the comb 31 which encircles the wire and fiber and absolutely prevents any unevenness. It will also be noticed that the fiber is guarded thoroughly against any deflec-

tion by wind currents, and that it is sure to lie evenly and snugly upon the wire.

I claim:—

1. A wire covering machine comprising means for feeding a wire longitudinally, means for winding fibrous material upon the wire, fiber guides and wind guards extending from a source of supply to a point near the wire, and a comb arranged near the ends of the guides to mat the fiber around the wire.

2. A wire covering machine comprising means for feeding a wire longitudinally, means for winding fiber upon the wire, and a comb of card clothing encircling the wire and arranged to comb or mat the fiber thereon.

3. A wire covering machine comprising means for feeding a wire longitudinally, a rotatable fiber supply moving around the wire, wind guards adapted to carry the fiber from the source of supply to the wire, means located near the ends of the wind guards to mat the fiber thereon, and a comb encircling the wire and adapted to give an additional matting or combing effect to the fiber.

4. A wire covering machine comprising means for feeding a wire longitudinally, a rotatable fiber supply moving around the wire, a fiber guide for each strand of fiber extending from the source of supply to the wire, wind guards supported on the guides and overlapping the wire, and means carried by the wind guards and overlapping the wire to press or mat the fiber upon the wire.

5. A wire covering machine comprising means for feeding a wire longitudinally, a rotatable fiber supply moving around the wire, a fiber guide extending from the source of supply to the wire, means carried by the guide for feeding the fiber against the wire as the fiber is wound thereon, and a comb encircling the wire and arranged to comb or mat the fiber thereon.

FRANKLIN S. RANDALL.

Witnesses:

ARTHUR G. DANNELL,
HENRY G. MADDEN.