

1,210,001.

F. S. RANDALL.
WIRE COVERING MACHINE.
APPLICATION FILED FEB. 10, 1916.

Patented Dec. 26, 1916.
3 SHEETS—SHEET 1.

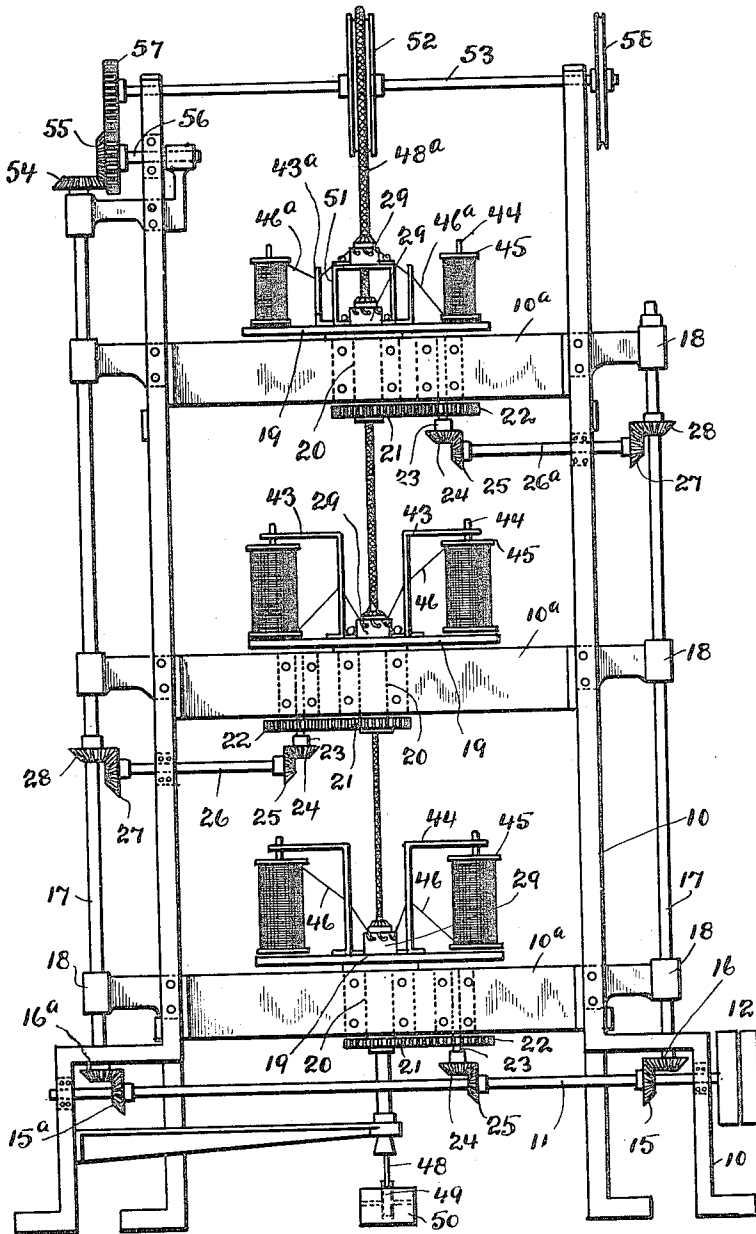


Fig. 1.

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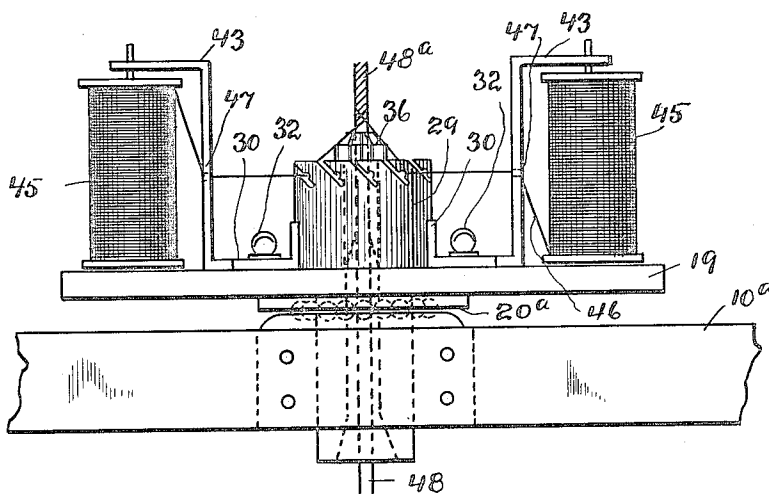


Fig. 2

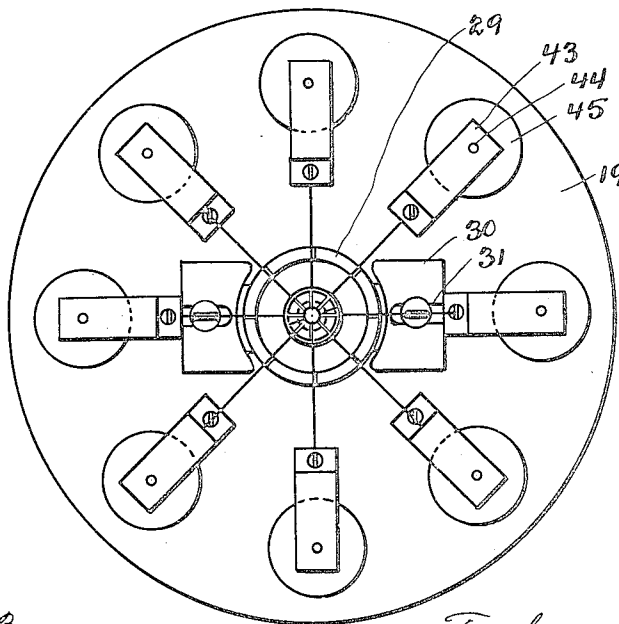


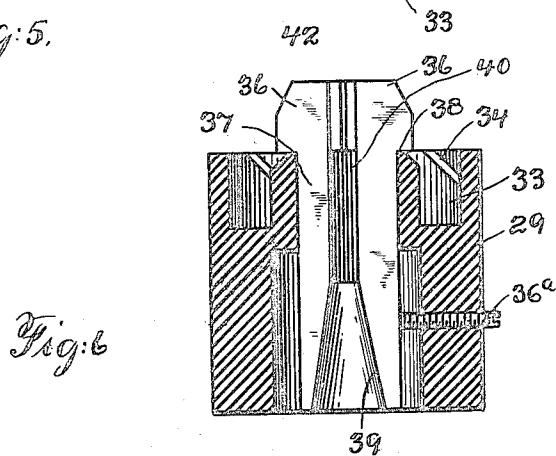
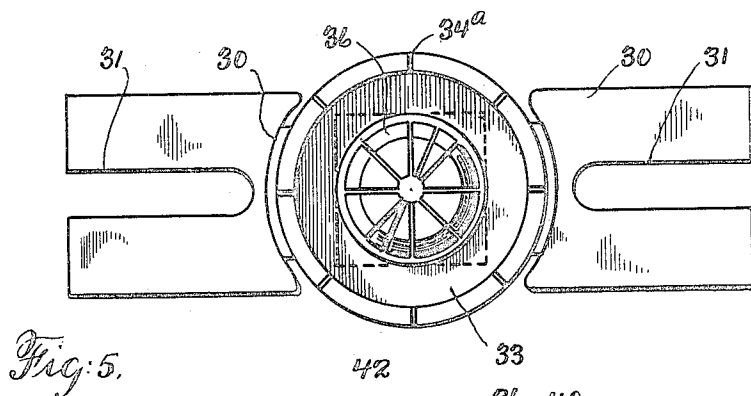
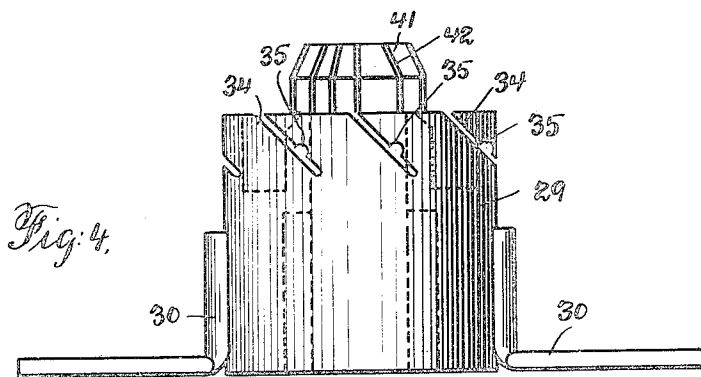
Fig. 3.

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UNITED STATES PATENT OFFICE.

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WIRE-COVERING MACHINE.

1,210,001.

Specification of Letters Patent.

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To all whom it may concern:

Be it known that I, FRANKLIN S. RANDALL, a citizen of the United States, and a resident of Jersey City, 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 which are used for covering a metallic wire with a coating for the purpose of insulating the wire and also protecting it.

My invention is especially adapted to cover a wire with cotton roving, and then bind the covering in place by twine, after which the covered wire is dipped as usual in a solution to saturate and cover the fibrous material and give the wire its final shape and protection. Previously wires have been covered with various fibrous material and with cotton sliver, but an objection to the last covering is that the sliver is very apt to break and so make breaks or imperfectly covered parts in the wire.

The object of my invention is to produce a simple machine which will handle cotton roving nicely and without breaking, and wind it evenly upon a wire which has preferably been covered with a sticky solution, then smooth or iron down the covering so that it will be of an even thickness and nicely spread on the wire, and finally bind the covering to the wire with twine. After this the covered wire is dipped as usual.

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 front elevation of the machine embodying my invention. Fig. 2 is an enlarged detail side elevation of one of the winding tables and its accessories. Fig. 3 is a plan of the winding table shown in Fig. 2. Fig. 4 is an enlarged detail side elevation of one of the heads used for guiding the roving to the wire. Fig. 5 is a plan view of the head shown in Fig. 4, and Fig. 6 is a vertical cross section of the head.

The machine is provided with a suitable frame 10 at the lower part of which is preferably arranged a driving shaft 11 having tight and loose pulleys 12, although obviously the shaft can be arranged at any de-

sired point and driven in any preferred way. At the sides of the frame are vertically arranged shafts 17 which are supported in brackets 18, and the shaft on the right is driven by bevel gears 15 and 16 connecting it with the shaft 11, while similar gears 15^a and 16^a drive the shaft on the left side of the machine as shown clearly in Fig. 1.

At intervals on the machine are rotary feed tables 19 which are placed one above the other in vertical alinement, and rest on the cross braces 10^a of the machine frame, being preferably provided with ball bearings 20^a as shown in Fig. 2. Each table is provided with a hollow shaft 20 which extends down through the brace 10^a, and is driven by gears 21 and 22 connecting with a short vertical shaft 23, and the latter connects by bevel gears 24 and 25 with a counter shaft 26 or 26^a as the case may be, and these shafts connect by gears 27 and 28 with the shafts 17 at the side of the machine. Obviously the means for rotating the tables is not important, but I have shown a simple and preferred means of connecting them with the driving shaft 11.

Arranged centrally on each feed table is a guide head comprising a member 29 which is preferably cylindrical, and which is provided with angle brackets 30 by which it can be secured to the table 19. Each bracket has the lower member slotted as shown at 31 to provide for the binding screw 32 by which the bracket is fastened in place, and it will be seen that by the means described the head 29 can be centered. The head 29 is provided with an annular chamber 33 at the top (see Fig. 6) so that easy access may be had to the oblique slots 34 which are made in parallel relation—although the parallelism is not essential—in the upper outer wall of the head, and each slot has in its upper wall a recess 35 through which the roving passes, as presently described, and the head thus serves to guide the several strands of roving. The roving hereinafter referred to is slipped into the slots 34 and into the recesses 35, where it is guided as described more particularly below.

A sliding member 36 is vertically adjustable in the head 29, being held in place by the set screw 36^a which passes through the wall of the head. The member 36 is preferably made in two parts, that is it is split

longitudinally, and it has a recessed lower portion or stem 37, thus forming a shoulder 38 which can rest on the top of the head 29 and prevent the member 36 from falling through. The member 36 is enlarged at the lower end as shown at 39, and has a hollow neck portion 40 which is longitudinally corrugated as shown in Fig. 6. This is an important feature of the invention as the covered wire passes through the corrugations of the head in all except the lower head of the machine, and the corrugations serve to iron or smooth out any lumps or protuberances in the wire, thus making the covering smooth and even. The upper end of the member 36 is preferably beveled slightly as shown at 41 and provided with slots 42 which are guides for the strands of roving presently referred to.

Disposed around each of the two lower tables 19 are holders 43 for steadying the spindles 44 on which the spools 45 carrying the roving 46 are placed. I have not shown this arrangement in detail, because it is common to mount spindles on a rotating table in this general manner, and any suitable means for holding the spools can be substituted. The roving from the several spools is threaded into the slots 34 and recesses 35 of the head 29, and also through the slots 42 of the member 36, and this insures an even distribution of the strands of roving around the wire 48 which is being covered. The spools 45 on the upper table 19 carry twine 46^a, and the upper table is provided with two sets of heads 29 superposed, the upper one being carried by a framework 51, so that either head can be used as desired. The roving passes through eyes 47 (see Fig. 2) of the members 43, and the twine 46^a passes through the guide member 43^a.

The wire 48 is drawn over a guide pulley 49 in a tank 50 which carries the proper coating solution for the wire, and then it passes up through the several members 36 and over a pulley 52 on the cross-shaft 53 at the top of the machine (see Fig. 1). This shaft can be driven in any suitable way, and I have shown it driven from one of the shafts 17, the connection being by means of bevel gears 54 and 55 with a stud 56, and this is geared to a gear 57 on the shaft 53. I have shown the shaft 53 also provided with a pulley 58 which has nothing to do with the invention, but from which power can be taken to drive a reel not shown which takes care of the wire after it is coated.

It will be seen that as the wire 48 is drawn up through the several members 36 covered with a sticky solution, the several strands of roving 46 carried by the spools 45 on the rapidly rotating tables 49 will be wound upon the wire, thus making a thorough covering, and the roving has sufficient tenacity to enable this to be done without breaking

the roving. As the covered wire passes through the several members 36 above the lower one, the coating will be ironed down smooth by the corrugated part 40 of each member 36, and as the covered wire leaves the upper member 36 it is wound with twine 46^a. From here the wire is carried to any suitable dipping arrangement for putting on the final covering.

It will thus be seen that I have provided a very simple and efficient machine, and furthermore it is adapted to use cotton roving which, for the reason stated, makes a very serviceable and smooth covered wire. If desired the lower heads 29 can be left unslotted and the machine will still work satisfactorily.

I claim:—

1. A machine of the kind described comprising a plurality of rotatable spool carrying tables arranged one above the other and spaced apart, means for drawing a wire longitudinally through the tables, a guide head having slots and recesses therein to guide the material from the spools to the wire, and a vertically adjustable member arranged within the guide head, said member having a bore for the passage of the wire, and slots in its upper end to act as guides for the material as it is delivered to the wire.

2. A machine of the kind described comprising a series of rotatable tables arranged one above the other and spaced apart, spools of wire covering material supported on the tables, guide heads for each table having slots to guide the stock from the spools, and a member in each guide head having an internally corrugated surface to engage the covering on the wire.

3. A machine of the kind described comprising means for moving a wire longitudinally, a series of hollow members spaced apart through which the wire passes, said members having guide slots therein to direct the covering material to the wire and having internally corrugated parts to engage the covering of the wire.

4. A machine of the kind described comprising means for moving a wire longitudinally, means for guiding covering material to the wire, and ironing members clasp ing the wire at intervals, said members having internally corrugated portions to engage and smooth the wire.

5. A machine of the kind described comprising means for moving a wire longitudinally, means for feeding covering material to the wire, means for winding the material upon the wire, and an ironing member clasp ing the covered wire and having an internally corrugated surface to engage and smooth the covering on the wire.

6. A machine of the kind described comprising means for moving a wire longitudinally, a series of rotatable tables arranged

one above the other and spaced apart, spools
of stock carried on the said tables, heads car-
ried on the tables and through which the
wire passes, said heads having guide slots
5 therein for the stock, and hollow members
longitudinally movable in the heads, said
members having guide slots for stock in
their upper parts and having internally cor-
rugated portions to engage the stock cover-
10 ing.

7. A machine of the kind described com-
prising a series of rotatable tables turning
on vertical axes and arranged one above the
other, said tables being spaced apart and

provided with openings for the passage of a 15
wire through the middle part thereof, spools
of stock carried by the said tables, slotted
heads on the said tables, the slots receiving
the stock from the spools, vertically movable
members in the heads, said members having 20
slots to guide the stock to the wire, and
means for moving a wire longitudinally
through the tables, heads, and guide mem-
bers.

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Witnesses:

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DANIEL G. HEINTZELMAN.

Copies of this patent may be obtained for five cents each, by addressing the "Commissioner of Patents,
Washington, D. C."