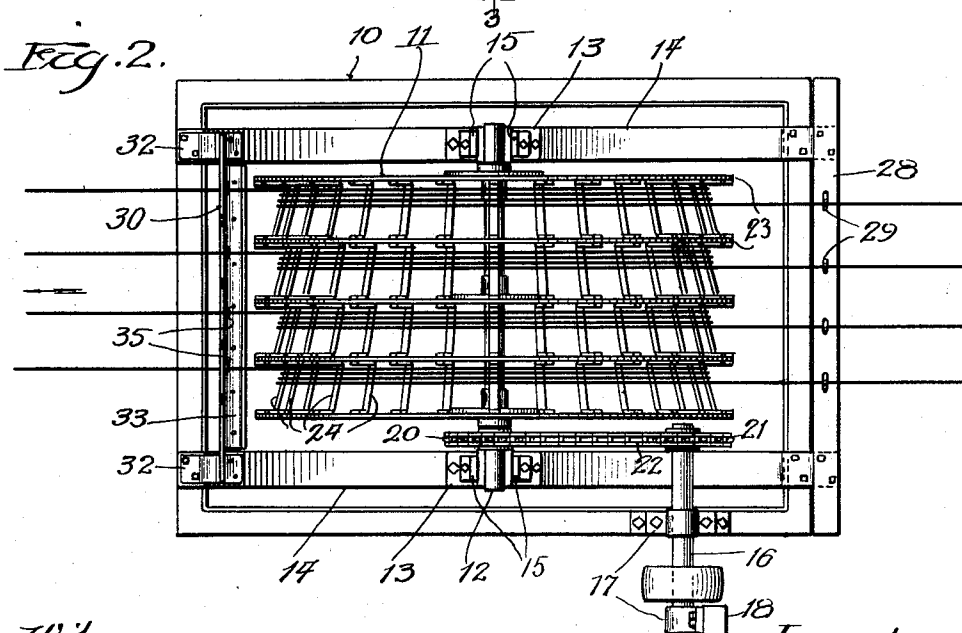
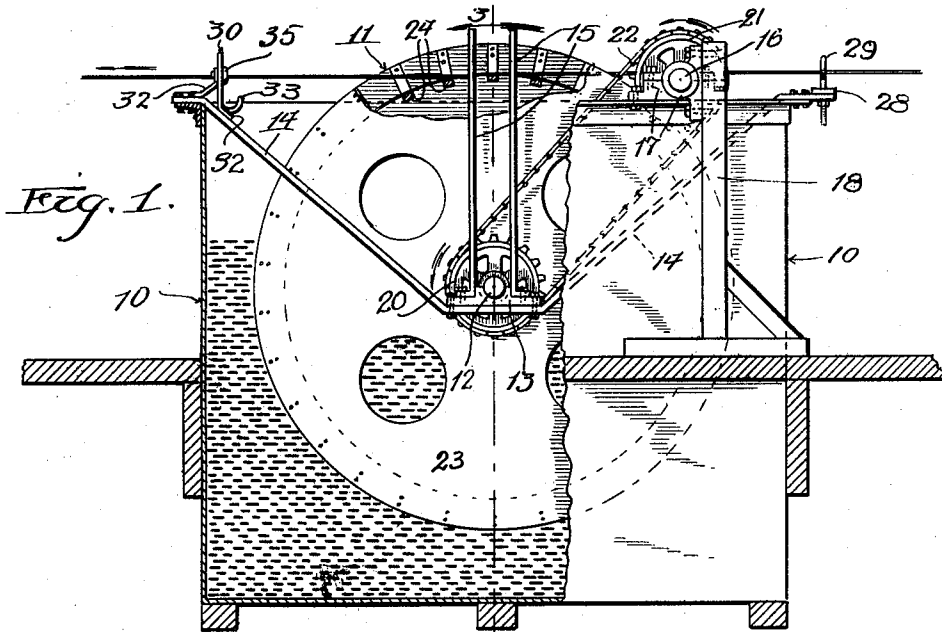


P. A. NEHRING.
INSULATED WIRE SATURATING MACHINE.
APPLICATION FILED DEC. 30, 1911.

1,028,827.

Patented June 4, 1912.

2 SHEETS—SHEET 1.



Witnesses:
Albert Nehring
Albert Hoffman

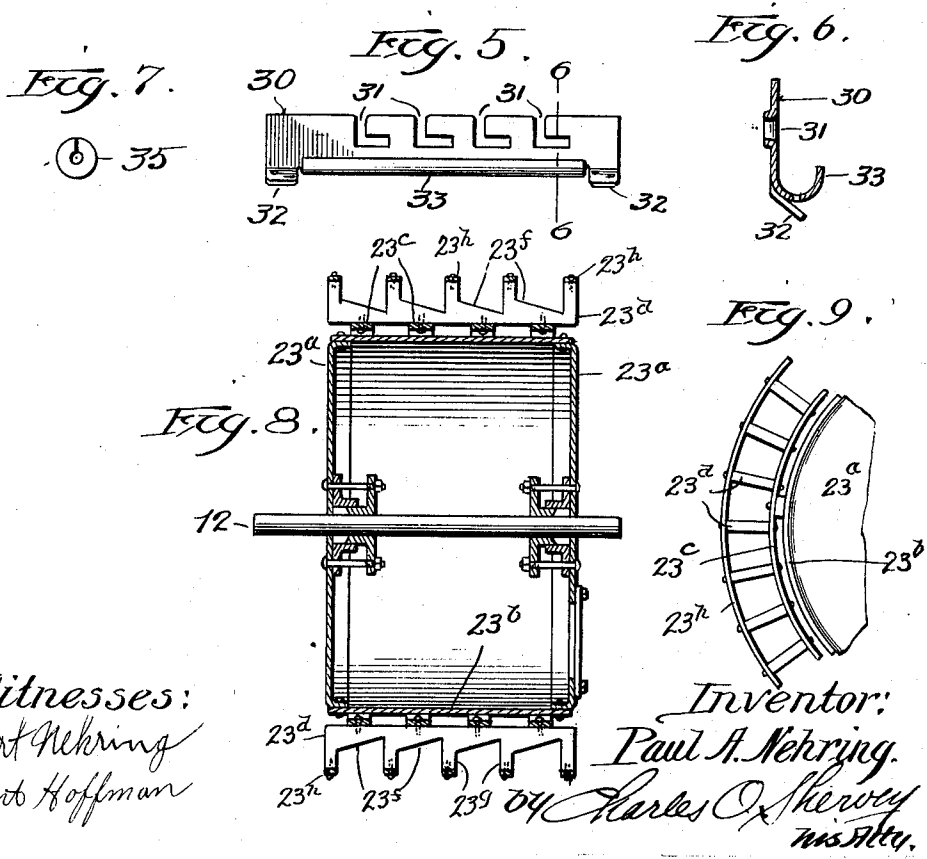
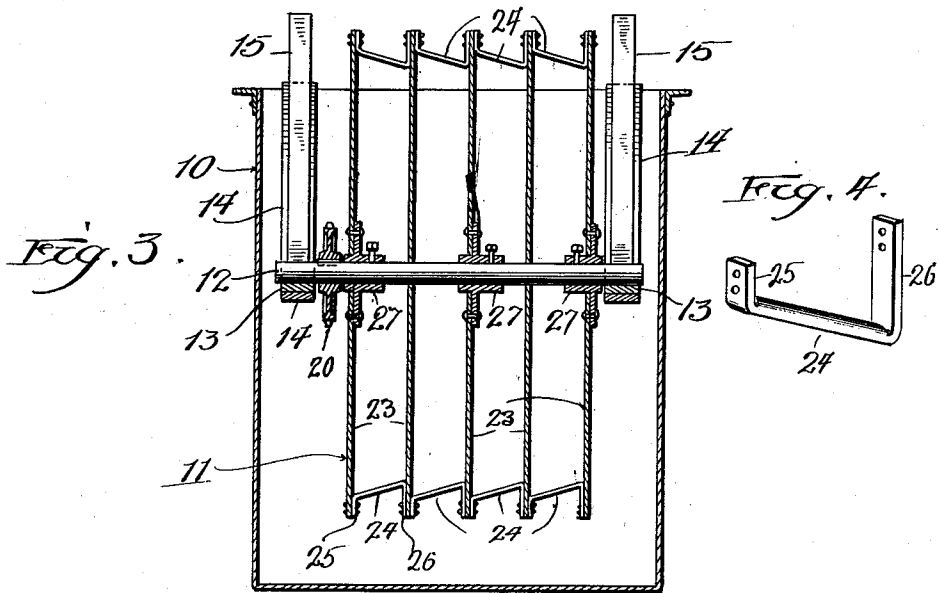
Inventor:
Paul A. Nehring.
by Charles O. Sherry
his Atty.

P. A. NEHRING.
INSULATED WIRE SATURATING MACHINE.
APPLICATION FILED DEC. 30, 1911.

1,028,827.

Patented June 4, 1912.

2 SHEETS—SHEET 2.



UNITED STATES PATENT OFFICE.

PAUL A. NEHRING, OF SYCAMORE, ILLINOIS, ASSIGNOR TO NEHRING INSULATED WIRE AND MANUFACTURING COMPANY, A CORPORATION OF ILLINOIS.

INSULATED-WIRE-SATURATING MACHINE.

1,028,827.

Specification of Letters Patent.

Patented June 4, 1912.

Application filed December 30, 1911. Serial No. 668,742.

To all whom it may concern:

Be it known that I, PAUL A. NEHRING, a citizen of the United States, residing at Sycamore, in the county of Dekalb and State of Illinois, have invented new and useful Improvements in Insulated-Wire-Saturating Machines, of which the following is a specification.

This invention relates to insulated wire saturating machines, and has for its main object to provide a machine of this class of improved and novel construction.

Machines of this class are employed for the purpose of saturating the woven covering of insulated wire with a suitable compound to perfect its insulating character and to make it proof against water and the inclemencies of the weather.

In the manufacture of insulated wire, it is customary to weave one or more layers of fabric around the wire to provide a covering therefor, and thereafter to immerse the covered wire in a tank containing a suitable compound for saturating the covering. In machines of the ordinary construction, a rotary drum is employed for dipping or immersing the wire into the compound contained in the tank, and in operation the wire is wound upon the partially immersed drum, until the entire length of the wire is wound thereon. Thereafter the wire is unwound from the drum, passed through a wiper board and rewound upon a suitable reel, after which it may be finished in any suitable manner. It is obvious that with a construction of this kind the initial end of the wire is immersed in the compound for a greater length of time than the terminal end and therefore the saturation is not even throughout the length of the wire, which is an objectionable feature. Furthermore, in unwinding the wire from the drum there is always the danger of stripping the wet covering from the wire itself as it passes through the wiper board, because the gradual decreasing diameter of the coil of wire upon the drum prevents the wire from passing through the wiper board in a straight line.

One of the objects of the present inven-

tion is to provide a machine capable of dipping and saturating the wire without subjecting the same to the dangers present in the ordinary wire saturating machine.

Another object is to provide means for effecting an even saturation throughout the entire length of the wire.

Other objects and advantages will appear in the course of this specification and with all of said objects and advantages in view, this invention consists in the several novel features of construction, arrangement and combinations hereinafter set forth and particularly defined in the claims.

The invention is clearly illustrated in the drawings furnished herewith, in which—

Figure 1 is a side elevation of a machine embodying the preferred form of the present invention, part of the wall of the tank being broken away to illustrate parts within the same, Fig. 2 is a plan of the machine, Fig. 3 is a detail, vertical cross section taken on the line 3—3 of Fig. 1, Fig. 4 is a perspective view of one of the struts that are employed in the construction of the dipping drum, Fig. 5 is a face view of a wiper board used in connection with the machine, Fig. 6 is a detail, vertical cross section taken on the line 6—6 of Fig. 5, Fig. 7 is a face view of a wiper, Fig. 8 is a central, longitudinal section through a modified form of drum and Fig. 9 is a side elevation of a fragment of the modified form of drum illustrated in Fig. 8.

In carrying out my invention, I employ a tank 10, arranged to receive a suitable compound, which, if desired, may be heated by steam coils contained in the tank in the usual manner. Journaled within the tank is a rotary dipping drum 11, secured upon a shaft 12, located wholly within the tank and journaled in journal blocks 13, mounted on supports 14, here shown as comprising two bars resting on the top of the tank and projecting down toward the middle thereof as shown in Fig. 1. The supports 14, are bolted or otherwise secured to the upper edge of the tank, which, as shown, is reinforced by angle irons extending around its upper edge. Secured to said journal blocks

and projecting up therefrom are posts 15, arranged in pairs and acting to form guide-ways for the shaft 12. The blocks 13, are preferably unprovided with caps, so that the drum may be removed by lifting it bodily from the tank. In returning the drum to the tank, the shaft 12, is let down between the members of each pair of posts 15, and is thereby guided to its bearings in the journal blocks 13. Gearing of some suitable kind is provided for rotating the drum, and in the form shown, I employ a drive shaft 16, journaled in boxes 17, carried by the tank and a post 18; sprocket wheels 20, 21, are secured upon the shafts 12, 16, respectively, and connected by a sprocket chain 22. Obviously any other suitable form of power transmitting connections may be employed as a substitute for the one shown for rotating the drum, but it is preferable to apply the power directly to the shaft of the drum. It is obvious that by placing the supports 14, within the tank and locating the driving connections, between the shafts 12, 16, within the tank, the necessity of providing holes in the tank for the shaft to project through to some form of driving means, and the necessity of providing stuffing boxes around the shaft at said holes is wholly avoided.

The drum is of novel construction and as shown in the preferred form, is preferably built of disks 23, spaced apart and secured to the shaft 12, in any suitable manner. Extending between the adjacent disks are struts 24, which are secured to the disks near their peripheries and arranged circumferentially to form an open drum face. As shown in Fig. 4, each strut is provided with transversely projecting lugs 25, 26, having perforations therein, through which bolts or rivets may be passed to secure the struts to the disks 23. The body of each strut is arranged in an inclined plane with respect to the axis of rotation of the drum, so that when the parts are assembled the inclined struts provide a tapered openwork drum face, tapering from one disk toward the other and toward the axis of rotation of the drum. The object of this construction is to enable a large or small number of turns of the wire to be wrapped around the drum face without the danger of the wire climbing up over the flanges at either end of the drum face, the tendency of the wire being to slide down the inclined face as the incoming wire is wound thereon. It is obvious that the drum may be made up with as many drum sections like the one described as is desired, in order to obtain the capacity required for the machine. I have shown certain of the disks as secured to the shaft 12, by means of hubs 27, riveted or otherwise secured to the disks and keyed or set-screwed to the shaft.

On the intake side of the tank is secured a bar 28, having guides 29, for the incoming wire, which guides may comprise eye bolts or other like wire guiding means for directing the passage of the wires to the faces of the drum. On the take-off side of the tank is secured a wiper board 30, having L shaped slots 31, therein, through which the wires pass from the drum to the take-up or re-winding mechanism (not shown). Said wiper board is shown as fastened to the upper ends of the supports 14, by flanges 32, and its lower edge is curled upward to provide a trough 33, for catching the drippings or other materials that may be stripped from the wire. Holes are formed in the bottom of the trough for the escape of any liquid substance. The L shaped slots 31, are preferably curled outward to present round edges as shown in Fig. 6, thereby eliminating any danger of the edges of said slots tearing the wet covering on the wire, as it passes through the slot. The guides 29, and slots of the wiper board are arranged in a line, tangent with the drum faces, and faces of the reels.

In the modified form shown in Figs. 8 and 9, I employ a hollow drum, which as shown, may be constructed of side plates 23^a, secured upon the shaft and having stuffing boxes around the shaft, as shown. A cylindrical wall 23^b, is secured to the outer edges of the side walls 23^a, and around said cylindrical wall 23^b, are a plurality of hoops 23^c, spaced therefrom and secured thereto in any suitable manner. Circumferentially arranged around said hoop 23^c, are a number of drum face members 23^d, having inclined edges 23^e, and radially projecting arms 23^f, the outer ends of which are connected by hoops 23^h. The inclined faces 23^e, form tapering drum faces of open construction, as in the preferred form, and the lugs 23^g, and hoops 23^h, form the side flanges of each section.

In the operation of the machine, the tank is filled or partially filled with a suitable compound and the initial ends of a number of wires threaded through the guides 29, and wrapped around the tapered faces of the drums, the number of wraps depending upon the length of time that it is desired to maintain each foot of the wire in the compound. The initial end is then passed through the L shaped slots and carried to the re-winding reels. A wiper 35, (see Fig. 7) preferably comprising a piece of leather or the like, having a central aperture and a slit running to the edge, is placed over each wire as shown in Figs. 1 and 2, immediately in front of the wiper board. The wiper removes any surplus compound adhering to the surface of the wire covering. Power being applied to the drive shaft 16, the dipping drum is

rotated, thereby unwinding the initial ends of the wires from the drum and winding up thereon more wire from the intake side; this operation is continuous. As the wire is unwound from the drum it is re-wound upon the re-winding reel, but no strain is placed upon the wire at any point, as the drum unwinds it as rapidly as it is re-wound upon the reel. It is to be observed that with this arrangement of drum and other parts, each section of the wire remains immersed in the compound for a predetermined period of time, so that each and every portion thereof is saturated evenly, the drum being given the proper speed to permit each strand of the wire to be thoroughly impregnated with the compound. By reason of the location of the guides 29, and the slots 31, of the wiper board 30, the incoming as well as the outgoing wires run tangential to the faces of the drum, thereby permitting the wires to pass said wiper board in a straight line, so that the edges of the slots may not tear, strip or otherwise injure the wet fabric or covering as the wires pass through the slots. When it is understood that the covering of said wire has just been saturated with a compound and is in a soft condition upon the wire, any scraping action of the wiper board upon said covering would have a tendency to tear the covering from the wire and this frequently happens in machines of the ordinary type. However, with an arrangement like that of the present type, the wire remains tangential at all times to the drum face, and the wire passes through a slot of the wiper board in a straight line, thereby avoiding danger of tearing of the edges of the covering. Inasmuch as the wire may be given a large number of turns around the drum face, the drum may be revolved quite slowly and therefore in case any one of the wipers 35, must be removed for some cause or other, it may be done without stopping the machine, and a new wiper slipped upon the wire.

One of the particular advantages of this machine consists in the fact that the operation of the machine is continuous, the wire being fed in at one side and passing out at the other, continuously, throughout the operation of saturating the same. Another advantage consists in the fact that the drum may be lifted out of the compound if occasion should require, without disconnecting the gearing.

I realize that various alterations and modifications of this device are possible without departing from the spirit of my invention, and I do not therefore desire to limit myself to the exact form of construction shown and described.

I claim as new and desire to secure by Letters Patent:

1. In a device of the class described, a compound containing tank, drum supports therein, a rotary wire dipping drum having a drum shaft located wholly within the tank, journal blocks open at their upper ends and mounted upon said supports, and vertical guide bars extending upward from said journal blocks upon either side of the shaft.

2. In a machine of the class described, a rotary wire dipping drum, comprising spaced disks secured upon a shaft, and a tapered drum face of open construction between said disks arranged to receive one or more turns of the wire to be saturated.

3. In a machine of the class described, a rotary wire dipping drum having one or more open, tapered drum faces, spaced apart and capable of receiving one or more turns of the wire to be saturated, and delivering each wire therefrom continuously in a line tangential to the drum face.

4. In a machine of the class described, a rotary wire dipping drum having supporting members carried by a shaft, and a plurality of circumferentially arranged struts secured to said supporting members, said struts being angularly disposed with respect to the axis of the drum and forming a drum face of tapered, open construction.

5. In a machine of the class described, a compound receiving tank, a rotary wire dipping drum journaled within said tank, and having one or more tapering drum faces of open construction, and a wiper board having one or more slots therein arranged in a plane tangential with respect to said drum faces, whereby wires may pass tangentially from the drum through said slots of the wiper board.

6. In a machine of the class described, a wiper board having L shaped slots therein, through each of which a dipped wire may be passed, said wiper-board being of trough-like formation at its lower end whereby it may receive material removed from the wires passing through the slots.

7. In a machine of the class described, a compound receiving tank, a rotary wire dipping drum journaled therein, and having one or more tapered drum faces of open construction, said drum having a continuous rotation in one direction, and being adapted to receive one or more turns of the wire to be dipped and from which said wire may be delivered in a line tangential with respect to the drum faces.

8. In a machine of the class described, a compound receiving tank, a rotary wire dipping drum journaled therein, and having one or more tapered drum faces of open construction, said drum having a continuous rotation in one direction, and being adapted to receive one or more turns of the

wire to be dipped and from which said wire
may extend in a tangential line, and a
wiper board having slots through which
said wire passes in a plane tangential with
5 the drum faces.

In witness whereof, I have hereunto
signed my name, at Sycamore, Dekalb

county, Illinois, this 27th day of December
1911.

PAUL A. NEHRING

Witnesses:

ALBERT NEHRING,
ALBERT HOFFMAN.