No. 662,248. Patented Nov. 20, 1900.

J. H. VINTON.

PROCESS OF JAPANNING WIRE.

(Application filed May 4, 1900.)

(No Model.)

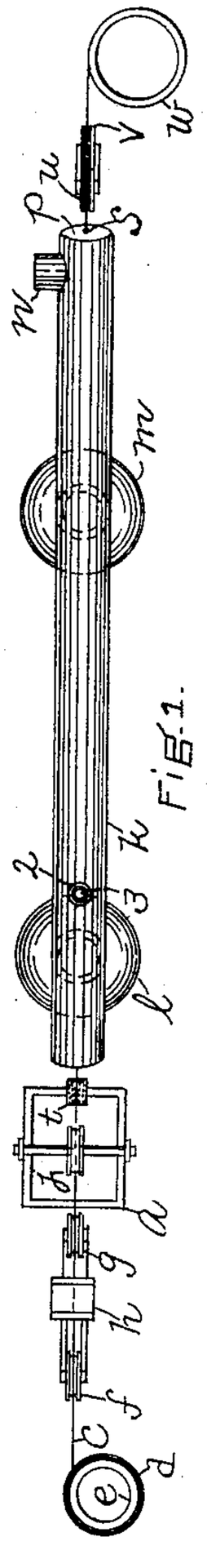

FIG. 1.

FIG. 3.

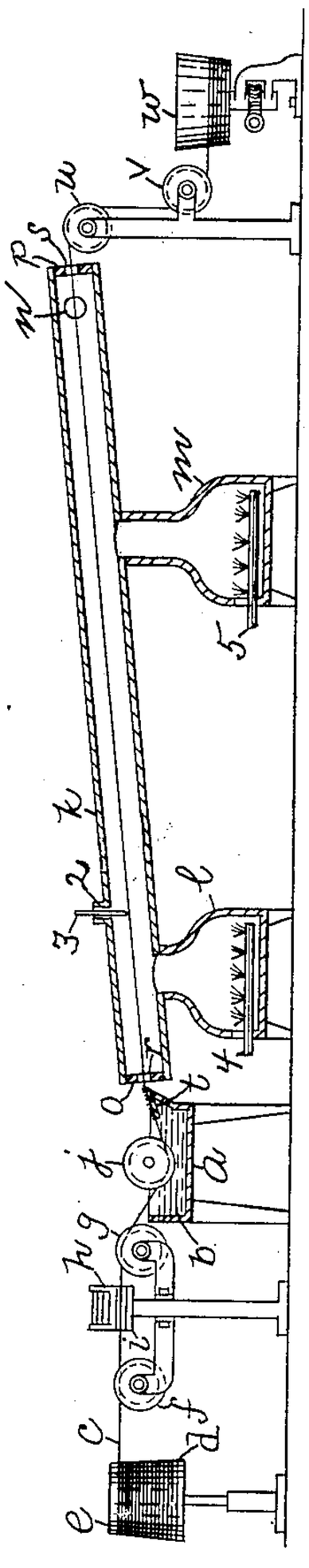

FIG. 2.

WITNESSES.
C. H. Garnett.
J. Murphy.

INVENTOR.
John H. Vinton
by Jas. H. Churchill
Atty.

UNITED STATES PATENT OFFICE.

JOHN H. VINTON, OF BOSTON, MASSACHUSETTS, ASSIGNOR TO GEORGE E. PARKER, OF SAME PLACE.

PROCESS OF JAPANNING WIRE.

SPECIFICATION forming part of Letters Patent No. 662,248, dated November 20, 1900.

Application filed May 4, 1900. Serial No. 15,484. (No specimens.)

To all whom it may concern:

Be it known that I, JOHN H. VINTON, a citizen of the United States, residing in Boston, in the county of Suffolk and State of Massachusetts, have invented an Improvement in Processes of Coating Wire, of which the following description, in connection with the accompanying drawings, is a specification, like characters on the drawings representing like parts.

This invention relates to a method of covering long lengths of wire with a coating, so that the wire may be taken from a reel covered with the coating and wound into the form of a coil without danger of contiguous convolutions of the coil being cemented together and so that the coiled wire may be unwound and bent without stripping, cracking, or breaking off the coating, thereby enabling the coated wire to be supplied to the trade in the form of coils of any desired length and capable of being used with automatic machines. For this purpose the wire is first drawn through a bath of thin coating material of a composition, as will be described, which is laid on smoothly and uniformly by a wiper of fibrous material partially immersed in said bath, then through an oven of suitable length and heated to a substantially high temperature to enable the coating to be firmly baked onto the wire without burning the said coating, and from said oven the coated wire is wound into the form of a coil ready for use. The wire on its passage through the baking-oven is kept taut or placed under tension sufficient to prevent it touching the walls of the oven, which, if permitted, would strip the coating from the wire, and thus spoil the same for practical purposes.

Figure 1 is a plan view of one form of apparatus with which to practice this invention. Fig. 2 is a partial elevation and section of the apparatus shown in Fig 1; and Fig. 3, a detail, on an enlarged scale, of the coated wire.

Referring to the drawings, *a* represents a suitable receptacle or vessel containing a substantially thin coating liquid *b*, which is to be applied to the wire *c*, taken from the coil *d*, placed upon a suitable revolving reel *e*. The wire *c*, as shown in the drawings, is passed over suitable guiding and supporting rolls *f g* and between suitable friction-jaws *h i*. The wire *c* after passing over the guide-roll *g* is immersed in the bath of liquid *b* by being carried under the roll or wheel *j*, which is partly submerged in said bath. The wire *c* after passing from the bath *b* is carried through a substantially long baking-oven (represented in the present instance as a pipe *k*) inclined upward from its inlet to its outlet end and supplied with heat, as herein shown, by gas-furnaces *l m*, the oven *k* constituting in the present instance the outlet-pipe for the furnaces *l m* and being provided at its upper end with a branch outlet-pipe *n*, which in practice is connected with the chimney. The oven *k* is provided with end pieces *o p*, having suitable ports or openings *r s*, through which the wire is passed.

The wire as it leaves the bath of coating liquid is passed over a wiper *t*, of any suitable fibrous material and preferably felt, which has its lower end immersed in the liquid, and through which wiper the wire is drawn and, in fact, is embedded in the same, so that a thin, smooth, uniform, and even coating 10 of the liquid is applied to the wire. The wiper *t* is kept saturated with the thin liquid *b* by capillary attraction, which insures a uniform coating, which is rendered smooth by the passage of the wire through said wiper.

The coated wire on its passage through the oven *k* is subjected to a substantially uniform heat, preferably to about 550° Fahrenheit, which by the time the wire reaches the outlet end of the oven effectively bakes the coating upon the wire, and the temperature of the oven is controlled, so that the coating material is not exposed to a heat sufficiently high to burn the same.

If the wire is subjected to a heat sufficiently high to burn the same, the life is taken out of the coating and the latter is reduced to a powdered form, which is readily brushed or stripped off of the wire.

The wire *c*, with the coating 10 baked thereon, issues from the outlet port or opening *s* of the baking-oven and passes over a guide-roll *u* and under a second guide-roll *v*, from which it passes to a reel *w*, rotated by suitable machinery and upon which the coated wire is wound into the form of a coil. The

oven *k* is preferably provided with a suitable opening 2 for the reception of a thermometer 3, whereby the temperature of the oven may be ascertained.

In the present instance the furnaces *l m* are shown as gas-furnaces having suitable gas-burners 4 5. The oven *k* is made substantially long, so that the coated wire may be gradually heated and the coating effectively baked thereon without destroying its vitality, and in practice I have ascertained that as the oven is increased in length the temperature of the same may be materially reduced.

The bath *c* is composed of gum-copal, linseed-oil, and turpentine in suitable proportions to form a thin liquid of the consistency of water, which has imparted to it the black color desired by the addition of bone-black, which I have found is particularly efficacious in connection with the copal-varnish to produce the coating desired, and the proper or desired consistency of the coating-bath may be obtained by first making the black liquor by adding one part of bone-black to eight parts of the copal-varnish and then thinning down this black liquor by mixing one part of black liquor with about twenty parts of the copal-varnish. During the process of coating the wire the bath *c*, if permitted, would become more or less concentrated and too much of the coating material would be applied to the wire, which would result in too thick a coating, that is liable to be stripped off in the automatic machine and is further liable to crack or break off when the wire is bent over a small former to form a small article, such as a staple, and therefore the bath is maintained very thin and at a substantially constant consistency like water by the addition from time to time of the thin copal-varnish without the bone-black.

Prior to this invention I am not aware that a wire of any material length, and especially a coil of wire, has ever been coated so as to enable it to be used with automatic machinery, such as button-setting machines, as it is impracticable to immerse a coil of the uncovered wire into a bath of coating material and then dry or bake the coating thereon, for it will readily be seen that by this method the convolutions of the coil would be cemented together by the baking process, and when it was attempted to unwind the coil the coating would be stripped off of contiguous convolutions.

A coil of wire having a coating of the character described is available for many purposes, and among other uses it is particularly well adapted to be employed in connection with shoe machinery, and particularly with machines for attaching buttons to boots and shoes by metallic staples cut from the coated wire, and in this connection the coated wire is particularly serviceable, as the coating protects the wire from oxidation, and consequently protects the boot or shoe from discoloration, thereby removing a serious objection to the use of this form of fastening for buttons in connection with boots and shoes.

The coil of coated wire is also applicable for securing pieces of leather or other material together by staples, and the objection resulting from the discoloration of the material by rust is thereby avoided.

The apparatus herein shown and the article herein described are not herein claimed, as they respectively form the subject-matter of the applications Serial No. 7,639, filed March, 7, 1900, and Serial No. 15,483, filed March 4, 1900.

I claim—

The method of covering wire with a coating of the character described, which consists in passing the uncovered wire through a bath of thin coating liquid, and through a fibrous wiper partially immersed in said liquid, whereby a thin, smooth and uniform coating is applied to the wire, and then through an oven maintained at a temperature sufficiently high to bake the coating onto the wire without burning the same, such temperature being above 450° Fahrenheit, substantially as described.

In testimony whereof I have signed my name to this specification in the presence of two subscribing witnesses.

JOHN H. VINTON.

Witnesses:

JAS. H. CHURCHILL,

J. MURPHY.