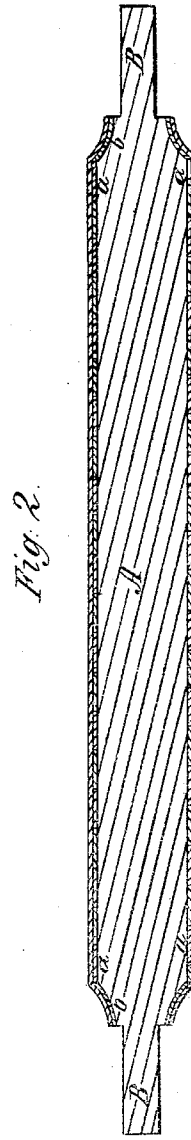
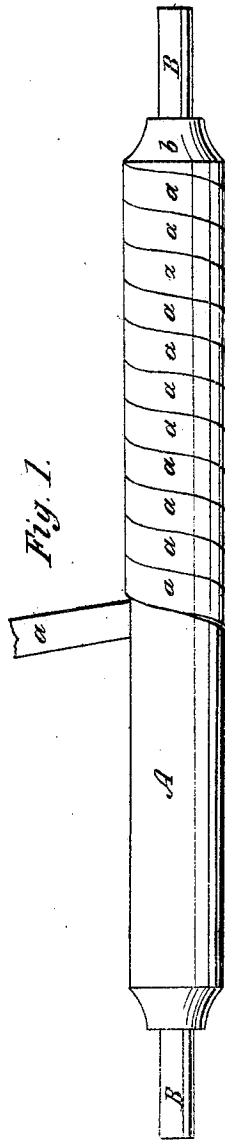


J. W. Wilcox.

Electroplate Rolls.

N^o 23033.

Patented Apr. 12. 1859.



Witnesses

Cornelius Cowing
Sarah Cowing

Inventor.

John W. Wilcox

UNITED STATES PATENT OFFICE.

JOHN W. WILCOX, OF WEST ROXBURY, MASSACHUSETTS.

IMPROVEMENT IN CONSTRUCTING ELECTROPLATED ROLLERS.

Specification forming part of Letters Patent No. 23,633, dated April 12, 1859.

To all whom it may concern:

Be it known that I, JOHN W. WILCOX, of West Roxbury, in the county of Norfolk and State of Massachusetts, have invented certain new and useful improvements in the construction of electroplate or electrotypes rolls for printing, paper-making, or dressing-rolls, or for any other purpose for which such rolls are used; and I do hereby declare the following to be a full, clear, and exact description of the same, reference being had to the accompanying drawings, making a part of this specification, in which—

Figure 1 represents a roll in a partial preparatory state previous to its being covered with copper by electroplating, and Fig. 2 represents a longitudinal section through the roll when finished.

In the varied mechanical pursuits where rollers are used they have been made of many different kinds of material, such as iron, copper, tin, zinc, lead, soapstone, glass, wood, &c.; but the more common are iron covered with a paint or other composition, or with copper, or copper alone, or soapstone, the two latter alone being used for dresser-rollers. Copper rollers are very expensive, and the soapstone, being injuriously affected by the acid in the size used on the yarns, require frequent redressing.

I am aware that an iron roller has been covered with copper by the electroplate process; but this is an uncertain operation, because of the holes, seams, cracks, spongy places, and other defects in the iron which may and do escape the most critical inspection by the operator, but which the acid in the bath never fails to penetrate, and thus undermine the surface and destroy the roller without the operator's even knowing that such work of destruction is going on.

Iron rollers have also been covered with copper by making a copper tube and drawing it over or onto the iron base by dies; but this requires much more copper than is actually necessary for the purpose, and makes the roller very expensive. Besides, in such rollers there is no metallic union between the copper and the iron, and when (as in printing-rollers) the figures or designs are punched into the copper it loosens up the copper from the iron, and thus makes a defective roller.

Another plan to cover iron rollers with cop-

per is to bend a sheet of copper around the roll and solder the edges. This, too, is expensive, and there is no union between the metals. Besides, the solder, being softer than the copper at the joint, will wear away and leave a joint-mark, which on paper is so observable as to make it quite a serious objection.

My object and aim is to obviate all these heretofore-existing defects and objections, and I have effectually done so by the means hereinafter to be described.

My invention consists in making rollers for dressing, calico-printing, paper-making, and other purposes by winding a ribbon of copper, brass, or other suitable metal around an iron or any other proper support or base, and then coating the surface of the roller with copper by the ordinary electroplating process, as will be stated.

To enable others skilled in the art to make and use my invention, I will proceed to describe the same in connection with and by reference to the accompanying drawings.

A may represent an iron or any other shaft or proper support or base for being covered with copper. This shaft, base, or support may be hung by its journals B B, and turned true and smooth. A fillet or ribbon, *a*, of copper, brass, or any other suitable metal, is then wound spirally around this shaft, base, or support, and while it is under the strain of the winding-machine it is soldered at its ends or throughout the entire line of its spiral joint, and for some purposes (as will be mentioned) the fillet or ribbon is soldered to the base throughout its entire length, as well as where the edges of it abut against each other. In a dresser-roller, or for any light work, the ribbon need not be soldered throughout—that is, the inner surface of the ribbon to the roller shaft or base—as a few inches of such soldering at the ends will suffice; but the spiral line must be soldered throughout its length to prevent any moisture from getting to the shaft, and to insure a perfect deposit of the copper on the entire surface. For calico-printing rollers the ribbon should be soldered throughout its entire inner surface to the base, as well as its joint or spiral line, so that the punches and milling-tools of the engraver may not injure or disturb the surface when stamping in the figures. A brass or copper cap, *b*, may be put at the end of the roll or shoulder next the

journals and soldered thereto, so that all that part of the roll which the size can get to may be covered with copper to resist the action of its acids. The roll or base being thus covered with the fillet or ribbon *a* and capped, if the capping be necessary or desirable for its intended purpose, by the end pieces, *b*, its whole surface is then dressed down smooth and true by turning, grinding, or any other of the well-known ways. The journals may be protected in any of the well-known ways, and the roller is ready to go into the bath for the electroplating.

The roll, so far as above described, and without the electroplating, would be a perfect roll, if the solder were of the same degree of hardness as the brass or copper; but it is not, and hence the necessity of coating it with a uniformly-hard metal. The fillet or ribbon and the solder covers all the imperfections in the iron or base of the roll, and so far remedies this defect; but its imperfect surface, on account of this soldered joint, remains, hence the necessity of covering the surface with a pure deposit of copper by electroplating. By this fillet or ribbon covering and soldering I avoid the necessity of the potash boiling and of the cyanide depositing, and all the trouble-

some processes of preparing the article for the acid solution; and when the roll is coated with the copper it protects the soldered seam and has but one kind of metal on its surface, and that of the purest kind, which resists the acids of size and other material used on or with them.

The electroplating is of the ordinary well-known kind, and done in the usual way. I do not propose to describe the process, as it is well known; and it is only necessary to remark that the rolls being in some cases very heavy, and their objects or uses different, they must remain in the bath until the necessary thickness of the deposited copper is attained.

Having thus fully described the nature and object of my invention, what I claim therein as new, and desire to secure by Letters Patent, in making electroplate rollers, is—

Covering the shaft, base, or support with a fillet or ribbon of metal, soldered or otherwise secured thereto, and depositing the copper on said surface by electroplating, substantially as described.

JOHN W. WILCOX.

Witnesses:

SARAH COWING,

CORNELIUS COWING.