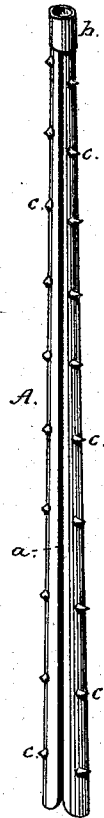


J. ESSEX & A. BALL.  
METALLIC COP TUBE.

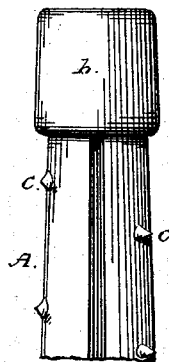
No. 263,881.

Patented Sept. 5, 1882.

*Fig. 1.*



*Fig. 2.*



Witnesses:

*W. H. Howard*  
*James W. Payne*

Inventor:

*Jeremiah Essex,*  
*Albert Ball,*  
*by Geo. W. L. J. atty*

# UNITED STATES PATENT OFFICE.

JEREMIAH ESSEX, OF NORTH BENNINGTON, VERMONT, AND ALBERT BALL,  
OF CLAREMONT, NEW HAMPSHIRE.

## METALLIC COP-TUBE.

SPECIFICATION forming part of Letters Patent No. 263,881, dated September 5, 1882.

Application filed December 19, 1879.

*To all whom it may concern:*

Be it known that we, JEREMIAH ESSEX, of North Bennington, in the county of Bennington and State of Vermont, and ALBERT BALL, of Claremont, in the county of Sullivan and State of New Hampshire, have invented a new and Improved Metallic Cop-Tube; and we do hereby declare that the following is a full and exact description of the same, reference being had to the accompanying drawings, and to the letters of reference marked thereon.

The object we have in view is the production of a long metallic cop-tube which shall fit sufficiently well the slightly-varying sizes of mule-spindles, which shall cling to such spindles sufficiently well without the need of holders, cups, or sockets to hold them in position, which shall have sufficient roughness upon the outside to hold the yarn of the cop when it is woven off and deliver the yarn over the point or small end in a free way without danger of catching or breaking; and our invention consists in the peculiar construction of the tube for the purposes above mentioned, which construction is now fully described, in order that those skilled in the art may know how to make and use them.

Reference is made to the accompanying drawings, in which Figure 1 represents the entire cop-tube, and Fig. 2 an enlarged view of the top or point of the same.

Like letters denote the same part in each figure.

The cop-tube A is made or folded in any convenient way of thin sheet metal, tapering from end to end, and of sufficient length to pass entirely through a cop. It has a slit, *a*, running its entire length from the larger end

to the top or point *b* of the same. This top or point *b* is composed of a solid ring or cap a little larger both outside and inside than corresponding parts of the tube at the portion next to it. The cop-tube is also provided with small projections *c c*, preferably arranged in spiral form, to serve to hold the yarn upon the tube. This cop-tube, when placed upon the spindle, will fit those of slightly-varying sizes by reason of the slit *a*, which permits expansion of the body of the tube, and from its spring will cling tightly to the spindle. The cap or point *b*, being slightly larger than the portion of the tube next to it, will lift the thread from the surface of the tube in weaving, and, covering the slit at the extreme end of the tube, will entirely prevent the cutting of the thread at the end of the tube, as would be the case if the tube were slitted its whole length.

Having thus described our invention and some of its advantages, what we claim as new therein, and desire to secure by Letters Patent, is—

A long tapering metallic cop-tube having a ring or cap, *b*, at the smaller end and slitted longitudinally from the larger end as far as said ring or cap and provided with protuberances to hold the yarn, substantially as described and shown.

This specification signed and witnessed this 22d day of November, 1879.

JEREMIAH ESSEX.  
ALBERT BALL.

Witnesses:

DARWIN MURPHY,  
G. H. DUNSMOOR.