J. ESSEX.
Cop Tube.

No. 201,763. Patented March 26, 1878

Fig. 1.

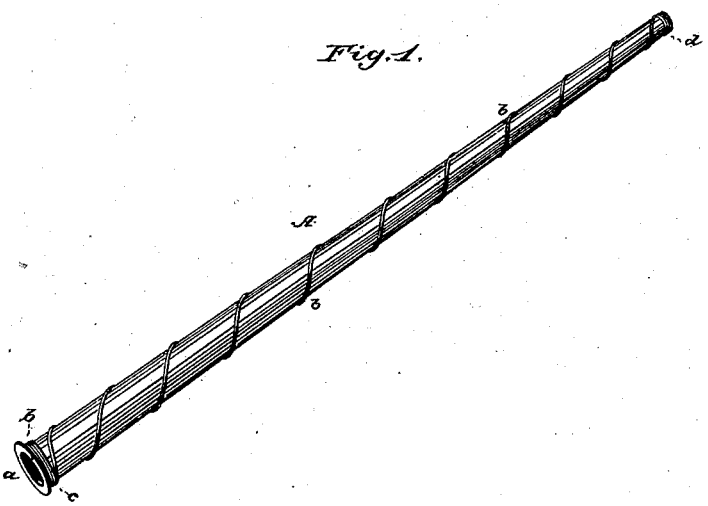


Fig. 2.

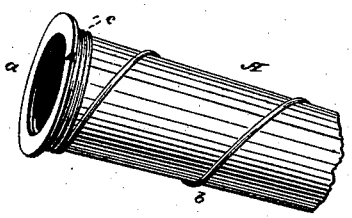
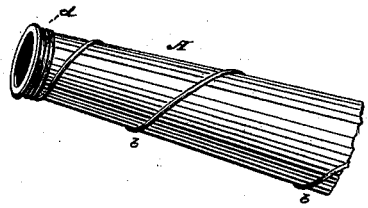


Fig. 3.



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UNITED STATES PATENT OFFICE.

JEREMIAH ESSEX, OF NORTH BENNINGTON, VERMONT.

IMPROVEMENT IN COP-TUBES.

Specification forming part of Letters Patent No. **201,763**, dated March 26, 1878; application filed January 2, 1878.

To all whom it may concern:

Be it known that I, JEREMIAH ESSEX, of North Bennington, in the county of Bennington and State of Vermont, have invented a new and useful Improvement in Cop-Tubes; and I 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 I have in view is the production of a metallic cop-tube intended mainly to prevent cop-waste, and provided with sufficient contrivances for holding the cop upon the tube, and for holding the tube upon the shuttle-skewer; and the invention therein consists in the peculiar construction of the tube itself, as more fully hereinafter described.

In order that those skilled in the art may know how to make and use my cop-tube, I proceed to describe the same, having reference to the drawings, in which—

Figure 1 is a view showing the external form of my tube; Fig. 2, an enlarged view of a portion of the lower end; Fig. 3, a similar view of a portion of the upper end.

Similar letters denote corresponding parts in each figure.

A designates the entire tube, which is constructed of suitable metal, is hollow from end to end, the interior tapering gradually, as does the outside from its bottom to its top. The length preferred is about six inches. The diameter of the interior is made to correspond with that of the mule-spindles to which it is adapted, and the material of which it is composed must absolutely be of the same thickness throughout.

I have found in practice that tin of suitable thickness is a very good material from which to make these tubes; but I do not wish to confine myself to any material that may prove suitable.

This tube is made solid from end to end, by which I mean that there are no openings of any sort in it, except that which constitutes its interior. Upon the bottom of this tube is a flange, *a*, extending all around the extreme lower end, which flange has various purposes and uses, viz: It gives greater firmness and rigidity to the tube, enabling it better to resist pressure; it gives a grasping and holding point in doffing or removing the tube with the cop on from the mule-spindle, and for holding the tube with the cop on when upon the shuttle-skewer.

It will be observed that by reason of the tube being made solid, as described, it is not well adapted for the ordinary split shuttle-skewer, and is intended for use upon a solid shuttle-skewer, tapering like the interior of the tube; and the shuttle is provided with a spring-detent, whose jaw embraces the bottom of the tube just above the flange when the skewer is down in place and the shuttle is ready for use in weaving.

A small wire, *b*, is wound closely around the bottom of the tube next to the flange *a*, first with several turns close together, as shown at *c*, the office of which turns is to give a more secure fastening to one end of the wire *b*, and also to give a better holding-surface to the detent before referred to. Leaving these close coils, the wire *b* is wound spirally around the tube its entire length, the space between the coils thus made gradually and regularly decreasing from the bottom to the top.

I have found in use that with fine wire (No. 32 preferred) the distance between the coils may be sufficient to hold ordinary cops when such distance at the bottom of the tubes is about three-eighths of an inch and at the top about three-sixteenths of an inch. Of course, if larger wire is used, the space between the coils may be greater, and if smaller wire is used the space may be less.

The object of the regular diminution of the distance between the coils is to prevent the cop from being twisted or unscrewed from the tube. At the top of the tube this wire *b* is wound closely together in several turns, as shown at *d*, ending at the extreme end of the tube. The object of these close turns at *d* is to give a better and more secure fastening to the end of the wire. This wire is secured firmly at all points upon the tube by soldering in a peculiar way, which way, however, forms no part of the invention described in this application.

In use this tube is placed upon the mule-spindle, and is held in position thereon by frictional contact of the exterior surface of the

mule-spindle and the interior of the tube, and, being of equal thickness throughout and perfectly balanced, has no inclination to rise while revolving. When the tube with the cop upon it is placed upon the solid shuttle-skewer, it is held in place there by means of the flange and detent, as above described.

The advantage of having the tube solid throughout is that thereby it can be perfectly balanced, which it cannot be if made otherwise, and, besides, it can be made of thinner material.

The general advantages of this tube will be apparent from the description to those skilled in the art, and thus need no particular mention.

Having thus described my invention, what I claim as new therein is—

A metallic cop-tube with solid walls, hollow throughout its entire length, having a flange at its larger end, and having a wire secured around it, first in close coils at the larger end, then spirally toward the top end, with regularly-diminishing coils, then in close coils at the top end, substantially as and for the purposes set forth.

This specification signed and witnessed this 25th day of December, 1877.

JEREMIAH ESSEX.

Witnesses:

HENRY E. BAILEY,

ALBERT ROSSITER.