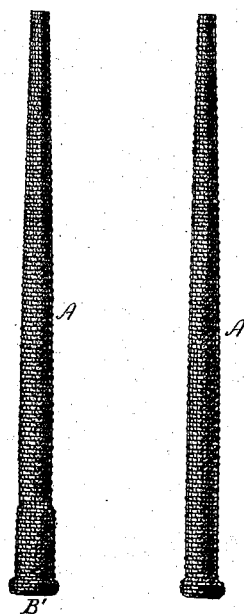


J. ESSEX.  
Cop-Tube.

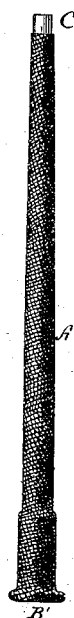
No. 216,839.

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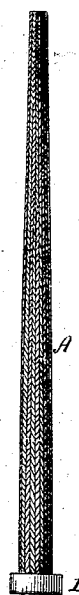
*Fig. 1.*



*Fig. 2.*



*Fig. 3.*



*Attest:*  
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R. T. Dyer.

*Inventor:*  
Jeremiah Essex  
by George W. Dyer  
Atty

# UNITED STATES PATENT OFFICE.

JEREMIAH ESSEX, OF BENNINGTON, VERMONT.

## IMPROVEMENT IN COP-TUBES.

Specification forming part of Letters Patent No. **216,839**, dated June 24, 1879; application filed December 3, 1878.

*To all whom it may concern:*

Be it known that I, JEREMIAH ESSEX, of 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.

My invention has for its object to produce a long cop-tube of less weight than a metallic cop-tube, and flexible, as distinguished from a rigid tube; and it consists in a tapering seamless cop tube woven, braided, or knit in tapering form in one piece.

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

Figure 1 represents two woven cop-tubes. Fig. 2 represents a braided cop-tube; and Fig. 3 represents a knit cop-tube, with an elastic ring at its lower end.

Similar letters denote corresponding parts in each figure.

In the drawings, A represents the body of the tube, which is of a cylindro-tapering form, and is woven, knit, or braided without a seam, as shown. The tubes are either woven or braided in the same manner that the coverings for whip-handles are braided or woven, or may be woven or knit as cylindrical wicks and other cylindrical articles are woven or knit, and may be made of any kind of thread or wire. The lower end of these tubes may have an india-rubber or elastic ring, B, secured upon the body in any convenient manner, or a flanged metallic

end, B', may be used either outside or inside of the tube, or the end may be thickened with the same material woven, braided, or knit, of two or more thicknesses at that point. This tube may be coated with any varnish, sizing, or glue adapted to preserve it and to give it a sufficient rigidity, and it may have a metallic or other durable tip, C, outside or inside to protect the upper end, or the end may be protected with gum or varnish. It should be made of a size to fit pretty closely to the mule-spindle, as its elastic nature will hold it in the proper position upon the spindle.

It is evident that in many instances this cop-tube may be used without the elastic ring at its bottom with great advantage, and that the elastic ring, when used, will also assist in holding the tube upon the shuttle-skewer in the act of weaving.

The advantages of these tubes lie in their lightness, which does not overload the mules or spring the spindles, in the facility with which they can be used upon spindles and skewers of various sizes, the ease with which they may be doffed, and in their immunity from serious injury when bent or crushed in handling.

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

A seamless cop-tube woven, braided, or knit in tapering form in one piece, substantially as described.

This specification signed and witnessed this 7th day of October, 1878.

JEREMIAH ESSEX.

Witnesses:

LUTHER WHITE,  
L. M. FERRY.