

A. BALL.  
Cop-Tube.

No. 218,471.

Patented Aug. 12, 1879.

*Fig. 1.*



*Fig. 2.*



*Attest:*

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# UNITED STATES PATENT OFFICE.

ALBERT BALL, OF CLAREMONT, NEW HAMPSHIRE.

## IMPROVEMENT IN COP-TUBES.

Specification forming part of Letters Patent No. **218,471**, dated August 12, 1879; application filed April 25, 1879.

*To all whom it may concern:*

Be it known that I, ALBERT BALL, of Claremont, in the county of Sullivan and State of New Hampshire, 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 of this invention is to produce a long flexible cop-tube of tapering form, which will prevent waste, will retain the cop upon its exterior without danger of its being thrown off in the process of weaving, and will be light and durable in use, as well as cheap to manufacture; and my invention consists in a long flexible tapering cop-tube, constructed of a strip of tape, or other equivalent narrow textile fabric, wound spirally, and with the edges of the coils secured together by sewing or by gum.

In the drawings, Figure 1 represents the improved cop-tube having the edges of the coils sewed together without lapping, and Fig. 2 the tube with the edges of the coils of tape lapped.

A is the cop-tube, which is made long enough to extend entirely through the cop. The tube is made of a strip of tape, (or other narrow textile fabric, such as cloth cut into strips,) which is wound spirally upon a mandrel of proper tapering shape and suitable size, and the coils of tape secured together by sewing or by an elastic glue or gum.

The edges of the coils of tape may be lapped when secured, and if constructed in this manner would form a spiral rib to hold the cop; but the roughness of the tape alone would probably be sufficient to retain the cop upon the tube. The tape is cut off square at the ends of the tube, as shown.

The tube may be coated with an elastic glue or gum to give it greater stiffness, and this would be especially desirable at the ends of the tube.

A flange or head may be placed on the large end of the tube; but I prefer to make the tube without such a flange.

I am aware that a cop-tube has been made of strips of woven fabric, first prepared with a composition of flour, starch, china-clay or gypsum, and gelatine, and then finished by beetling or calendering and rolling into form, and by securing the edges with gum and metallic rivets.

What I claim as my invention is—

A long flexible tapering cop-tube constructed of tape wound spirally, and the edges secured by sewing or gum, substantially as described.

This specification signed and witnessed this 20th day of February, 1879.

ALBERT BALL.

Witnesses:

J. DUNCAN UPHAM,  
HERMON HOLT.