(No Model.)

# T. HENRY, Jr.

## COP TUBE.

No. 529,445. Patented Nov. 20, 1894.

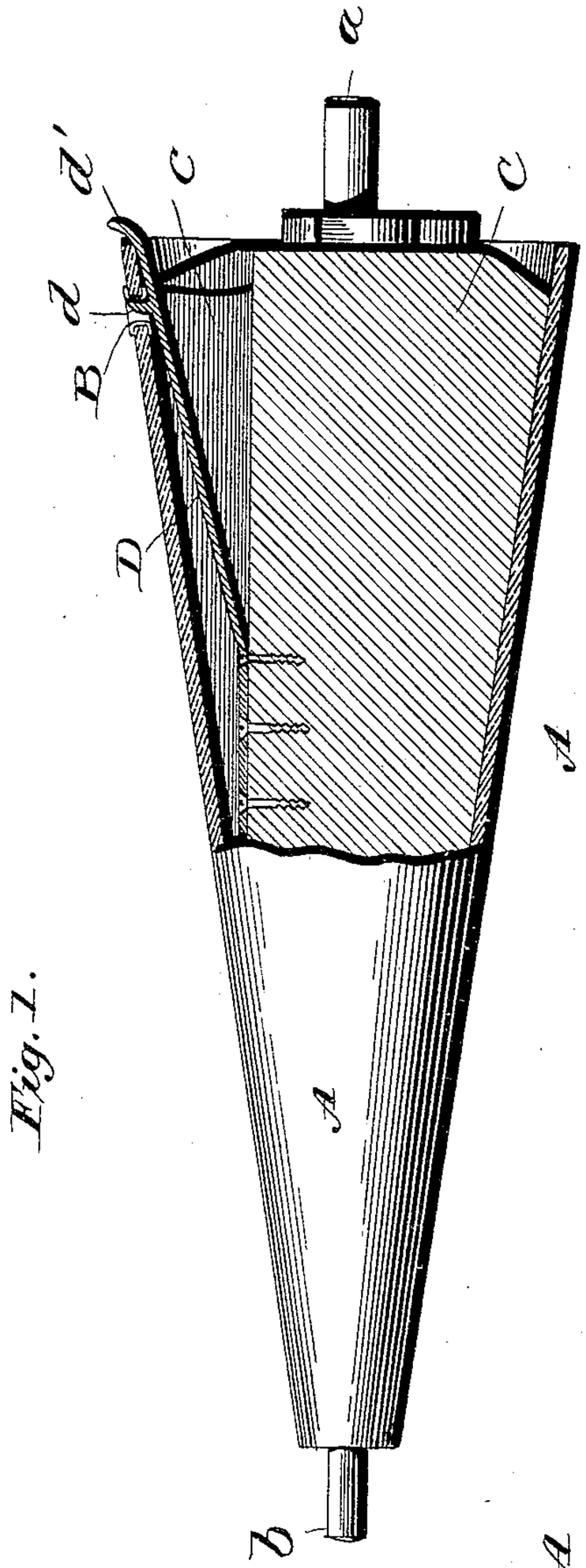


Fig. 1.

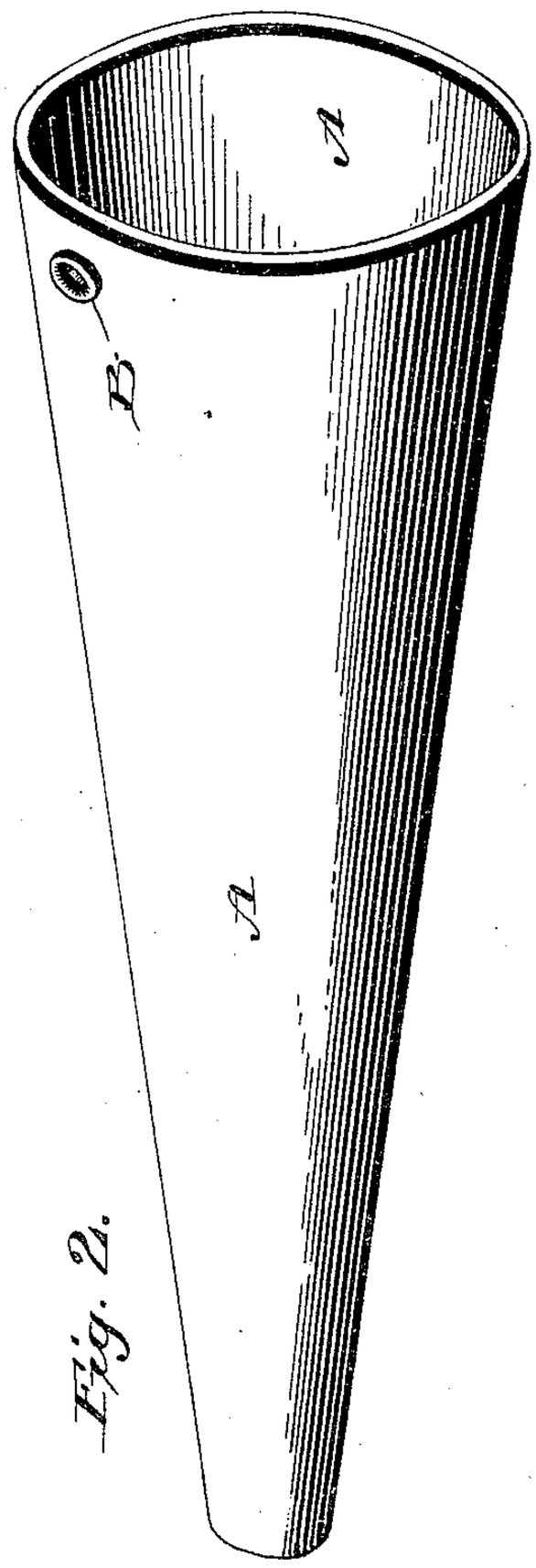


Fig. 2.

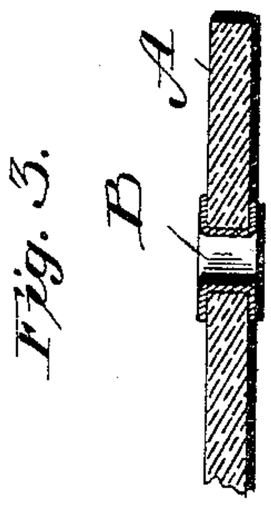


Fig. 3.

Witnesses:
L. C. Hills.
E. M. Bond.

Inventor:
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# UNITED STATES PATENT OFFICE.

THOMAS HENRY, JR., OF PHILADELPHIA, PENNSYLVANIA.

## COP-TUBE.

SPECIFICATION forming part of Letters Patent No. 529,445, dated November 20, 1894.

Application filed April 12, 1894. Serial No. 507,281. (No model.)

*To all whom it may concern:*

Be it known that I, THOMAS HENRY, Jr., a citizen of the United States, residing at Philadelphia, in the county of Philadelphia, State of Pennsylvania, have invented certain new and useful Improvements in Cop-Tubes, of which the following is a specification, reference being had therein to the accompanying drawings.

This invention relates to certain new and useful improvements in cop-tubes, having for its object among others to provide a simple and cheap holder attachment by the use of which all waste of yarn is obviated. There can be no back winding, the holder cannot come in contact with the yarn, and the latter will run entirely off the cop-tube or cone and thereby save all waste to the knitter, an even selvage is produced and the parts cannot slip.

I form the paper cone or cop-tube with an eyelet to receive the projection on the spring of the mandrel and locate this eyelet at a point beyond where the yarn is wound. The projection of the spring is arranged near the end of the spring to engage in the eyelet without extending beyond the outer face thereof and the end of the spring is turned outward slightly to engage over the end of the tube or cone to aid in holding the parts in their relative positions and enable it to be easily disengaged from the cone or tube when desired.

Other objects and advantages of the invention will hereinafter appear and the novel features thereof will be specifically defined by the appended claims.

The invention is clearly illustrated in the accompanying drawings, which, with the letters of reference marked thereon, form a part of this specification, and in which—

Figure 1 is a view partly in elevation and partly in longitudinal section, of a spindle embodying my invention. Fig. 2 is a perspective view of the cone or cop-tube. Fig. 3 is a sectional detail showing the eyelet in the cop-tube or cone.

Like letters of reference indicate like parts throughout the several views.

Referring now to the details of the drawings by letter, A designates the shell or cone formed preferably of straw-board, paper-pulp or some analogous material, being in all respects similar to the well known forms of cop-tubes, except that in proximity to its larger end it is provided with an opening in which is affixed an eyelet B as seen in all of the views of the drawings.

C is the mandrel or holder. It is preferably of wood in conical form corresponding to the taper of the cone. It is provided at the ends with the journals *a* and *b* as seen in Fig. 1 for the usual bearings.

D is a spring held at one end within a channel or recess *c* in the mandrel and its outer end is extended in a direction inclined with relation to the axis of the mandrel as shown in Fig. 1 and near its outer end it carries a projection *d* at a point where it will enter the eyelet when the mandrel is in its farthest limit within the cone. One face of this projection is rounded as seen in Fig. 1 while its outer face is at a right angle to the spring so that while the projection may readily enter the eyelet as the mandrel is pushed into the cone it cannot be withdrawn until the spring is forced inward to disengage the said projection from the eyelet. In order to facilitate the disengagement of the projection from the eyelet the extreme end of the spring is bent outward as shown at *d'* and this outward bending of the end of the spring adapts it to engage over the end of the cone and aid in holding the parts in position. The advantages of this construction are manifold. The cone is not pierced by the projection of the spring so as to in any way interfere with the yarn either to injure it or to hinder its being entirely unwound from the cone. The parts cannot shift position relatively to each other and hence there can be no back winding. There will be no uneven selvage, and the empty cone can be easily adjusted in putting on the mandrel. The eyelet may sometimes be omitted and the projection engage in the hole in the cone, but it is preferred that the eyelet be present.

What I claim as new is—

1. A conical cop tube having a reinforced

aperture in its wall in proximity to its larger end and beyond the yarn-receiving portion thereof, substantially as specified.

2. A conical cop tube having an aperture in its wall in proximity to its larger end and beyond the yarn-receiving portion thereof, said aperture being reinforced to receive the projections of the retaining device of a spindle, combined with a spindle and its retaining device substantially as specified.

In testimony whereof I affix my signature in presence of two witnesses.

THOMAS HENRY, JR.

Witnesses:
WILLIAM SMITH,
WALTER HALL.