

(No Model.)

G. COOPER & A. A. BRIGHAM.
SPINDLE FOR WINDING MACHINES.

No. 547,770.

Patented Oct. 15, 1895.

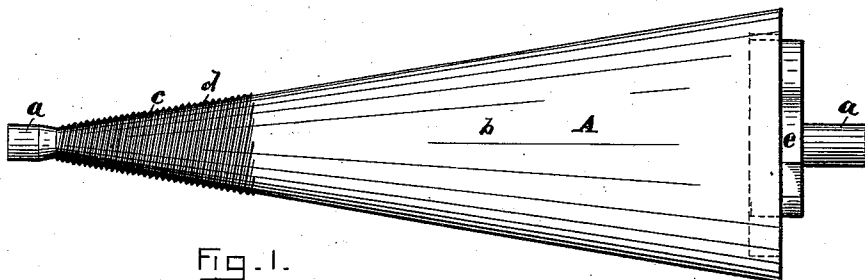


Fig. 1.

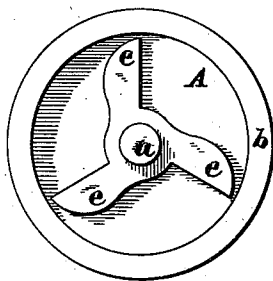


Fig. 2.

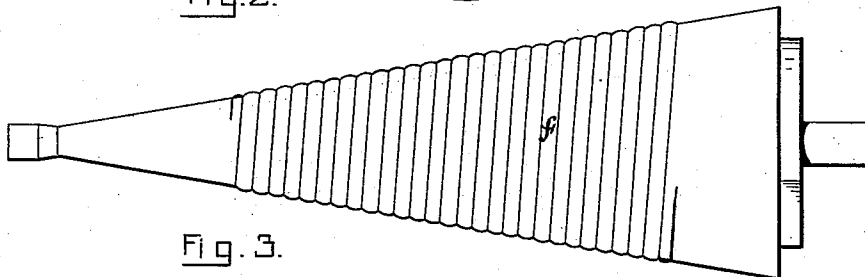


Fig. 3.

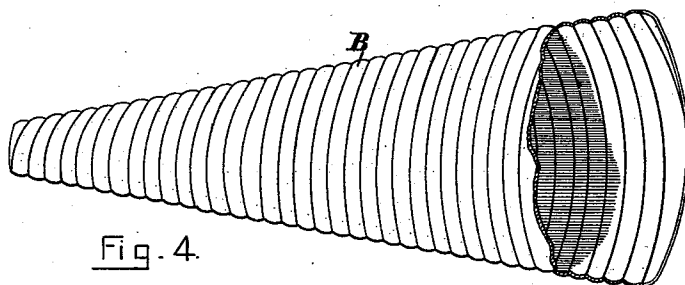


Fig. 4.

WITNESSES.

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UNITED STATES PATENT OFFICE.

GEORGE COOPER, OF PHILADELPHIA, PENNSYLVANIA, AND ARTHUR A. BRIGHAM, OF WESTON, MASSACHUSETTS; SAID COOPER ASSIGNOR TO SAID BRIGHAM.

SPINDLE FOR WINDING-MACHINES.

SPECIFICATION forming part of Letters Patent No. 547,770, dated October 15, 1895.

Application filed September 2, 1893. Serial No. 484,643. (No model.)

To all whom it may concern:

Be it known that we, GEORGE COOPER, residing at Philadelphia, in the county of Philadelphia and State of Pennsylvania, and ARTHUR A. BRIGHAM, residing at Weston, in the county of Middlesex and State of Massachusetts, citizens of the United States, have invented a new and useful Improvement in Spindles for Winding-Machines, of which the following is a specification, reference being had to the accompanying drawings.

Our invention relates to conical spindles for winding-machines, particularly to means or a device combined with the spindle for securing thereon the shell or cone upon which the yarn or thread is wound.

The invention consists of a spiral thread formed on the spindle, substantially as hereinafter described, and specifically pointed out in the claim.

In the drawings, Figure 1 shows a spindle embodying our invention when the spiral thread is formed on the small part thereof. Fig. 2 is an end view of the spindle. Fig. 3 shows a spindle having the spiral thread on the greater part thereof. Fig. 4 shows a shell or cone adapted to enter upon the spindle shown in Fig. 3.

When the shell or cone upon which the yarn or thread is to be wound has a smooth or even interior surface, it is best, in order to carry out our invention, to form a fine spiral thread on a metallic portion of the spindle, as shown in Fig. 1. The spindle A, having the two usual extensions *a* to enter the ordinary bearings therefor, we form, as to the greater part *b* of the conical portion thereof, of wood or other suitable material; but the smaller part, and preferably that end *c* of smaller diameter, we form of metal. Upon this end portion *c* we cut or form a spiral thread *d*. At the larger end of the spindle, arms or radial projections *e* are constructed of suitable shape to be readily seized by the fingers.

In operation the shell or cone, usually made of pasteboard, is thrust upon the conical spindle, and then, by slightly pressing the spindle

into the cone and giving the spindle a revolution or part of a revolution by means of the arms or radial projections *e* while the cone is held stationary, the thread *d* is screwed sufficiently into the material of the cone to cause the latter to be held so securely on the spindle as not to become loose thereon when placed in the machine and during the process of winding.

For certain kinds of winding it is desirable to corrugate or groove the exterior of the shell or cone. Such grooves may be spiral and so formed as to make a spiral thread on the interior surface of the cone B, as illustrated in Fig. 4. For such cones we form a spiral thread *f* on the greater portion of the spindle, as shown in Fig. 3. This thread corresponds to that on the interior surface of the cone. Thus, by revolving the spindle in the suitable direction while in the cone, which is held stationary, the spindle will be screwed into the cone, so that the latter will be held securely thereon.

Screwing the spindle into the cone, as specified, is a very simple operation, as, also, the reverse movement to remove the cone from the spindle, while the means or device can be very easily made and is of slight cost.

We claim as our invention—

A conical spindle for a winding machine, provided with a spiral thread on the exterior surface thereof, and with arms or projections at the end of the spindle to facilitate screwing the spindle into a shell or cone, said arms or projections not extending radially beyond the periphery of the spindle, substantially as set forth.

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