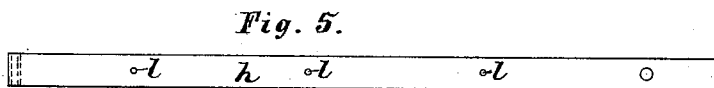
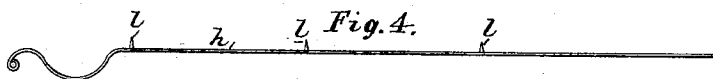
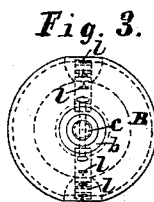
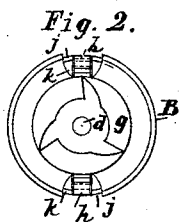
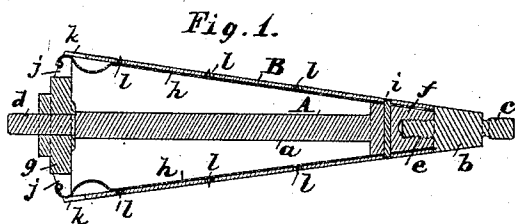


(No Model.)

A. A. BRIGHAM.
SPINDLE.

No. 484,698.

Patented Oct. 18, 1892.



WITNESSES:

J. F. Bryant,
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UNITED STATES PATENT OFFICE.

ARTHUR A. BRIGHAM, OF WESTON, MASSACHUSETTS.

SPINDLE.

SPECIFICATION forming part of Letters Patent No. 484,698, dated October 18, 1892.

Application filed December 26, 1891. Serial No. 416,234. (No model.)

To all whom it may concern:

Be it known that I, ARTHUR A. BRIGHAM, a citizen of the United States, residing at Weston, in the county of Middlesex and State of Massachusetts, have invented a new and useful Improvement in Spindles, of which the following is a specification, reference being had to the accompanying drawings.

It is customary for certain purposes to employ in winding-machines conical spindles to receive conical shells, which shells are generally made of strawboard or like material, and upon which the yarn is wound. Such spindles being of considerable diameter, to be revolved by friction at their surface or the surface of the load thereon, have heretofore been formed of wood as to the greater part thereof, in order to make them of light weight. The wood is apt to shrink, swell, or warp, so that the shells will not fit properly thereon or are with difficulty placed thereon or removed therefrom. It is the object of my invention to provide metallic spindles for said purposes, which, while not being of substantially if of any greater weight than those constructed in part of wood, will always maintain their proper shape and size. Furthermore, it is of my invention to combine with the spindle a fastening to hold a shell thereon which may be readily operated and which will not tear or otherwise injure the shell or yarn thereon.

The invention consists in the devices and combination of devices hereinafter set forth, and specifically pointed out in the claims.

In the drawings, Figure 1 is a longitudinal central section of a spindle embodying my invention. Fig. 2 is a view of one end, and Fig. 3 a view of the other end, of a spindle. Fig. 4 is a side view, and Fig. 5 a face view, of one of the springs having pointed projections or pins for securing a shell on the spindle.

I prefer to form the central portion A of the spindle of two parts *a* and *b*, providing journals *c* and *d* at the ends suitable for the usual bearings. These parts are screwed together at *e*. The part *b* is shaped to form one end of the conical spindle. At *f* the part *a* is formed to receive and hold one end of the exterior portion B of the body of the spindle. On the central portion of the spindle is secured a ring or collar *g*, which is shaped to receive and hold the other end of the part B. This part or shell B is made of

metal, and as thin as may be practicable to serve its purpose, by any suitable known method, its exterior being of the required shape to receive and fit the interior of the shell on which the yarn is to be wound.

Within the spindle are secured springs *h*. There are preferably two of these springs placed oppositely and longitudinally with reference to the body of the spindle, as shown, an end of each being fastened at the smaller end of the spindle, as by means of a pin *i*, which, extending through the outer shell B, the springs, and the central spindle, will hold these parts securely in position with reference to each other. In the collar *g* are openings *j*, and in the shell B corresponding openings *k*, whereby these ends of the springs may be sprung toward the center of the spindle. On the outer face of each spring are fastened pointed projections or pins *l*, as many as may be desirable, which extend through openings therefor in the shell B, and when the springs are sprung outward against the inner surface of the shell slightly beyond the exterior surface of the shell. By pressing the outer ends of the springs, which are found, as shown, for ready manipulation, inward the projections or pins *l* are withdrawn below the outer surface of the conical spindle and the shell on which the yarn is to be wound may be readily thrust on the spindle. When the springs are released, the projections or pins *l* may pierce the strawboard shell, but only so far as is sufficient to hold it on the spindle and without tearing or otherwise injuring the same or extending into the yarn thereon.

I claim as my invention—

1. In combination with a hollow spindle, a spring within said spindle and provided with pointed projections to extend through the outer surface of the spindle, substantially as and for the purpose set forth.

2. The combination of a central spindle, collars thereon, an outer shell, and a spring within said shell provided with projections to extend through said shell, one of the collars and the shell being provided with openings whereby the springs may be operated, substantially as described.

ARTHUR A. BRIGHAM.

Witnesses:

HERBERT G. McKENNA,
ARTHUR L. JACOBS.