

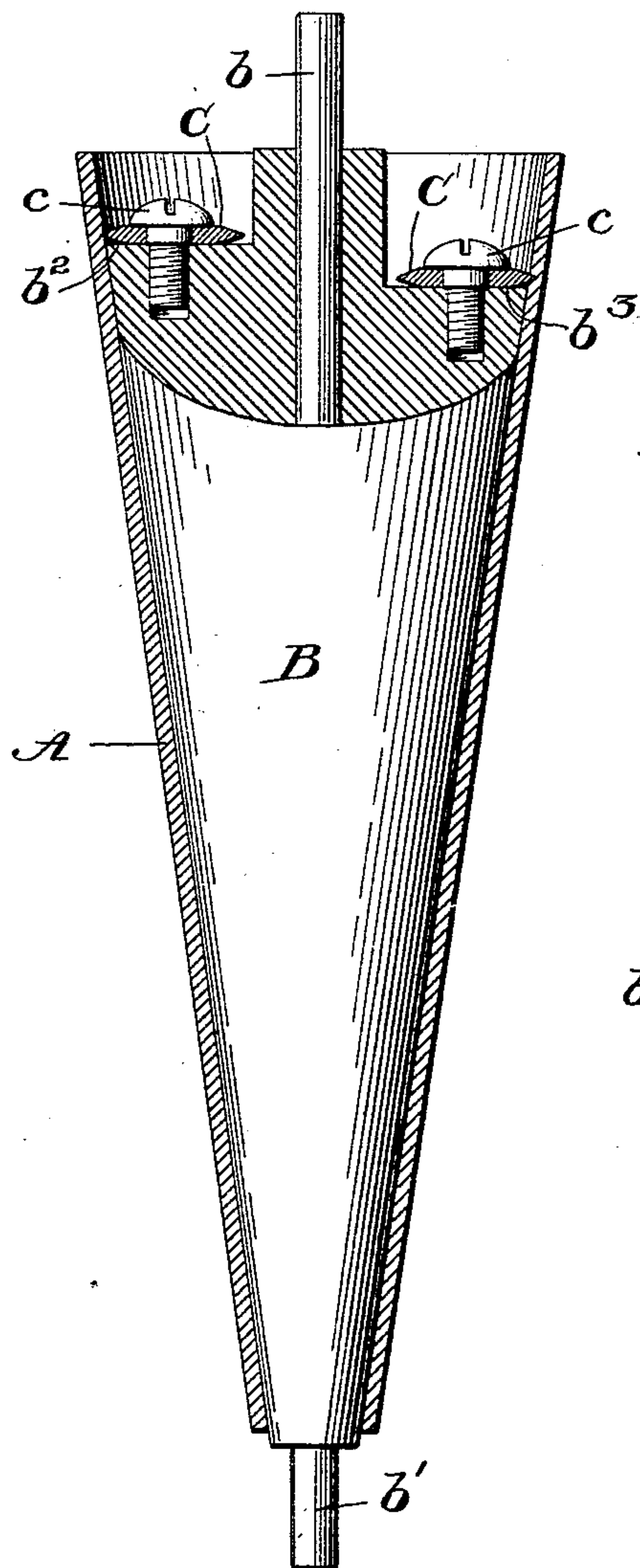
(No Model.)

O. LEVER & W. S. GRUNDY.  
CORE OR SPINDLE FOR COP TUBES.

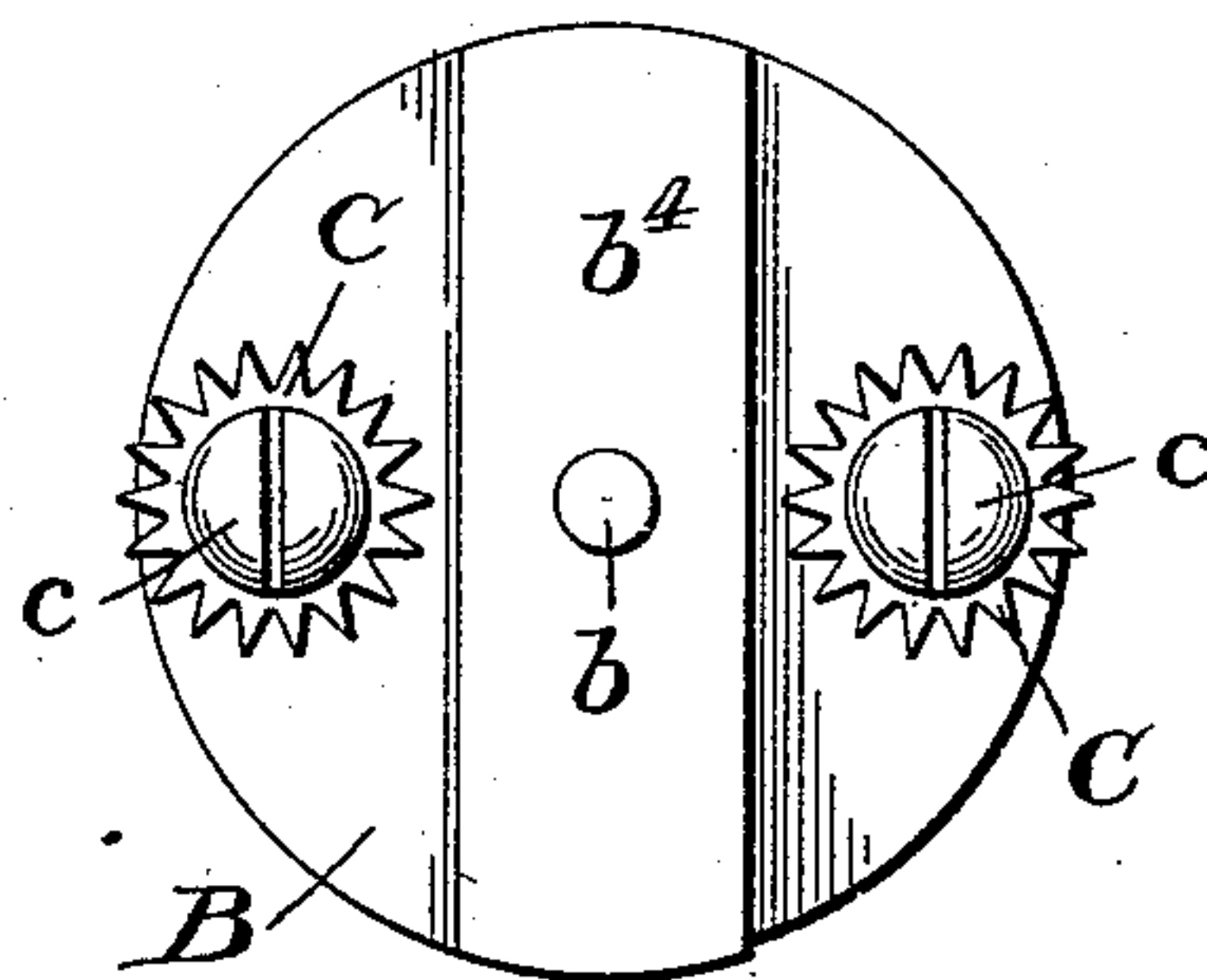
No. 563,043.

Patented June 30, 1896.

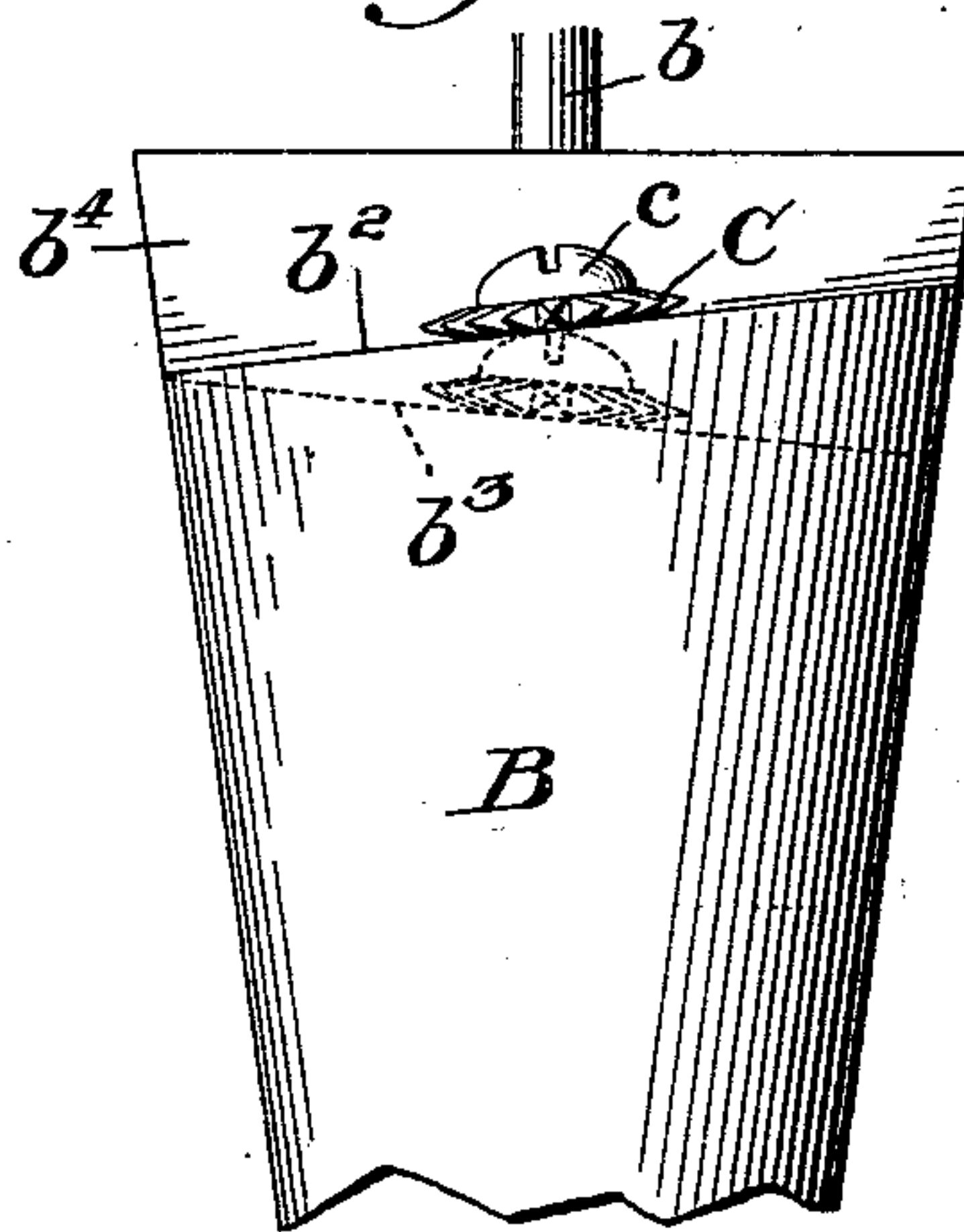
*Fig. 1.*



*Fig. 2.*



*Fig. 3.*



Witnesses.

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# UNITED STATES PATENT OFFICE.

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## CORE OR SPINDLE FOR COP-TUBES.

SPECIFICATION forming part of Letters Patent No. 563,043, dated June 30, 1896.

Application filed July 27, 1895. Serial No. 557,380. (No model.)

*To all whom it may concern:*

Be it known that we, OSWALD LEVER and WILLIAM SMITH GRUNDY, citizens of the United States, residing at the city and county of Philadelphia and State of Pennsylvania, have invented certain new and useful Improvements in Cores or Spindles for Cop-Tubes, of which the following is a full, clear, and exact description, reference being had to the accompanying drawings, forming a part of this specification.

The object of this invention is to provide a core or spindle for cop-tubes, whereby the tubes may be readily applied to the core and be effectually retained thereon and whereby the tubes, when they have been supplied with yarn, may be as readily removed from the core.

The invention accordingly comprehends a core or spindle provided with a peripheral projection or projections, inclined or pitched in respect to the axis of the core and adapted to bite into the inner wall of the tube during the application of the latter to the core, so as to draw the tube tightly upon the core and retain it thereon; such projections being preferably, though not essentially, in the nature of rotatable star-wheels, which are suitably mounted on the core, as will be hereinafter fully described and claimed.

In the annexed drawings, Figure 1 is a longitudinal section of a cop-tube and its core or spindle, the latter being partially in elevation. Fig. 2 is a plan of the core or spindle, and Fig. 3 is an elevation of the upper portion thereof. A is a cop-tube of usual construction, and B the core therefor, such parts being ordinarily conical in form. The core is provided with the end journals  $bb'$ , as usual. Suitably mounted on the core, near the head thereof, are freely-rotatable star-wheels C, the points of which project slightly beyond the periphery of the core. These wheels are preferably arranged on the opposite sides of the core, being slightly inclined or pitched in respect to the axis of the latter similarly to a screw-thread, so that when the tube is applied to the core, and the latter is properly turned in relation to the tube, the projecting points of the wheels will bite into the inner wall of the tube and draw it up tightly upon the core. Inasmuch as the star-wheels are rotatable the traveling points will readily pene-

trate the tube and thus facilitate its application to the core. The wheels, however, may be plain disks devoid of points, and, moreover, in that case they may be fixed instead of being rotatable, without in either case affecting the principle of our invention.

In the present instance the top of the core is cut away on each side to form inclined surfaces  $b^2b^3$ , on which the respective star-wheels are mounted by means of stud-screws  $c$ , the intermediate portion  $b^4$  of the cone forming a convenient thumb-piece, whereby the core may be grasped and "screwed" into the shell. By this construction it will be seen that when the tube is applied to the core, the tube is effectually drawn and locked upon the core in such a manner that during the yarn winding or unwinding operation there is no liability of longitudinal or lateral displacement of the tube; that the locking means is confined entirely within the tube, no external projections being presented to interfere with the free windings or unwinding of the yarn on and from the cop-tube; and, further, that the core may be quickly released and withdrawn from the tube by the mere act of, so to say, unscrewing the core.

We claim—

1. The cop-tube core or spindle provided with a peripherally-projecting freely-rotatable wheel pitched or inclined in respect to the axis of the core or spindle, substantially as described.

2. The cop-tube core or spindle provided with a peripherally-projecting, freely-rotatable star-wheel, pitched or inclined in respect to the axis of the core or spindle substantially as described.

3. The cop-tube core or spindle provided with the inclined surfaces on one end thereof and with the intermediate thumb-piece, in combination with the peripherally-projecting wheels on said surfaces, substantially as described.

In testimony whereof we have hereunto affixed our signatures this 9th day of July, A. D. 1895.

OSWALD LEVER.  
WILLIAM SMITH GRUNDY.

Witnesses:

JOHN R. NOLAN,  
H. T. FENTON.