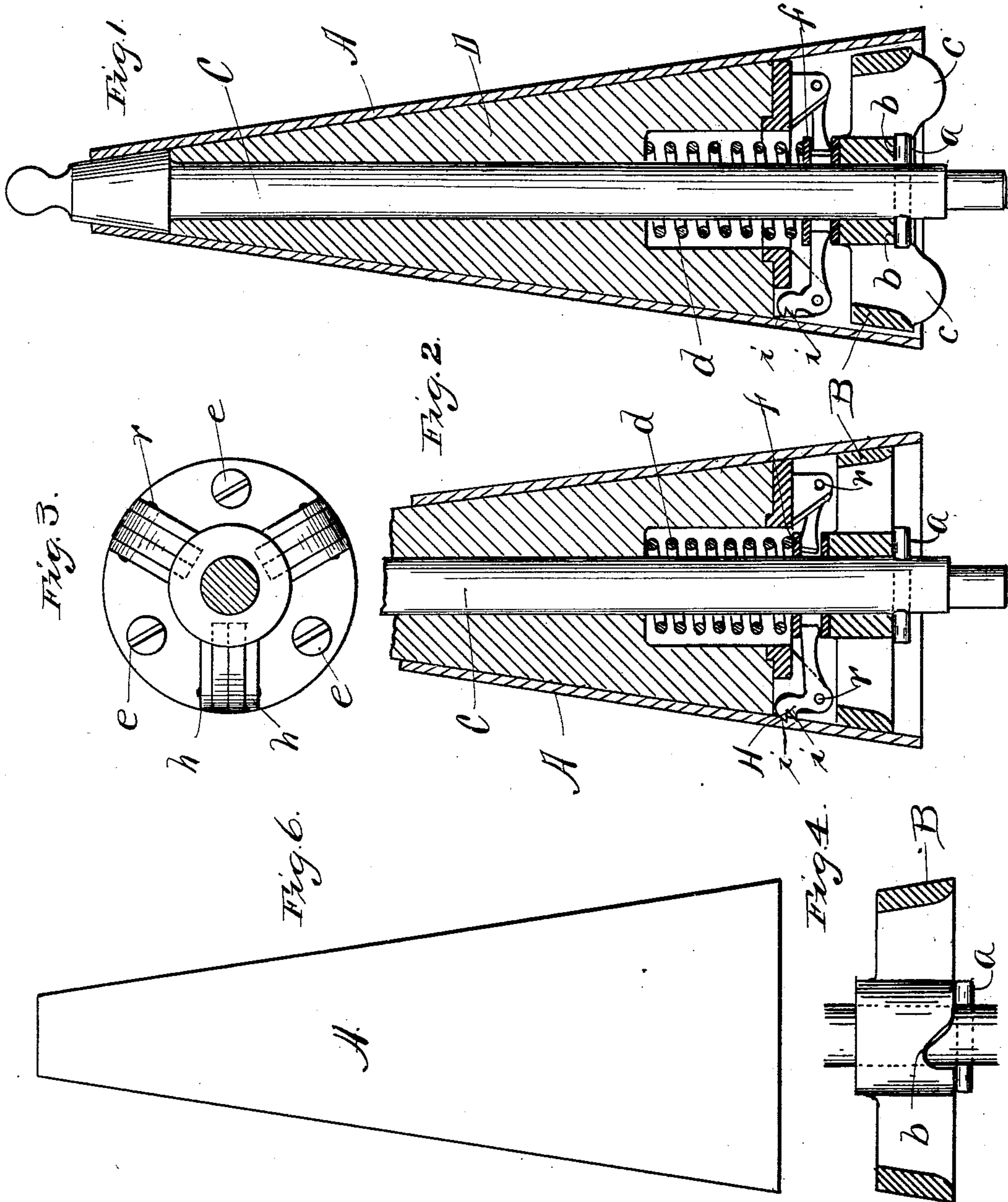


No. 664,643.

Patented Dec. 25, 1900.

D. JACKSON.  
COP TUBE MANDREL.  
(Application filed Apr. 9, 1900.)

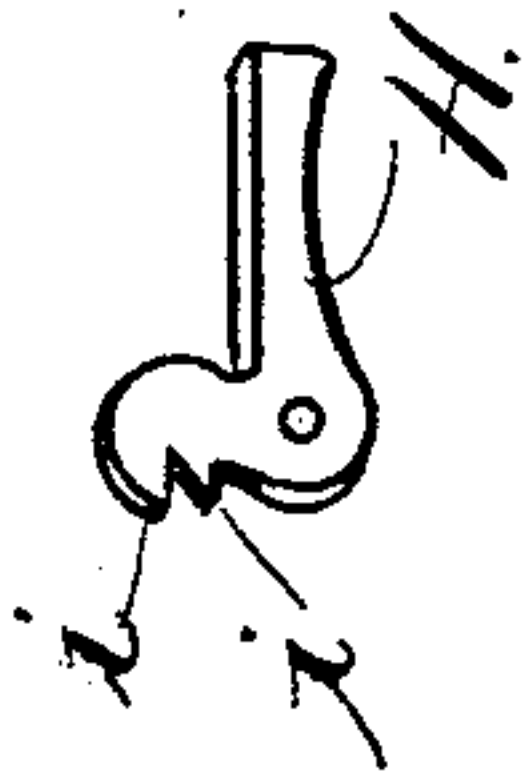
(No Model.)



Witnesses.

*E. S. Marsh.*  
*John A. Hamblin*

*Fig. 5.*



Inventor.

*David Jackson.*

*By Arnold & Bailor.*  
Attorneys.



# UNITED STATES PATENT OFFICE.

DAVID JACKSON, OF PAWTUCKET, RHODE ISLAND, ASSIGNOR TO THE JACKSON PATENT SHELL ROLL COMPANY, OF SAME PLACE.

## COP-TUBE MANDREL.

SPECIFICATION forming part of Letters Patent No. 664,643, dated December 25, 1900.

Application filed April 9, 1900. Serial No. 12,062. (No model.)

*To all whom it may concern:*

Be it known that I, DAVID JACKSON, of Pawtucket, in the county of Providence and State of Rhode Island, have invented certain new and useful Improvements in Cone-Tube Mandrels; and I do hereby declare that the following is a full, clear, and exact description thereof, reference being had to the accompanying drawings, and to the letters of reference marked thereon, which form a part of this specification.

The object of this invention is to provide a cone-tube mandrel for holding shells or cop-tubes while having the yarn wound on them, to which the shell can be easily applied and as readily removed when the cop is wound, and which will hold the shell rigidly in place and prevent it from slipping, which would make the winding irregular and cause the yarn to break in the unwinding. It is fully explained and illustrated in this specification and the annexed drawings.

Figure 1 is a vertical section of the shell and cone with the spindle in elevation, showing the holding devices disengaged from the shell. Fig. 2 is a vertical section and elevation of the same parts as Fig. 1, with the holding devices engaged with the shell, as when the yarn is being wound on it. Fig. 3 is a view of the under side of the spindle and the holding mechanism. Fig. 4 is an enlarged view of the holding devices. Fig. 5 represents one of the toothed dogs separate. Fig. 6 is a front elevation of the paper shell or cop-tube on which the yarn is wound.

C is the winding-spindle, to which power is applied to do the winding.

D is a cone of wood or other material made fast on the spindle C to receive the shell or cop-tube A (see Fig. 6) and to hold the retaining devices.

B is a cam-wheel made to turn freely on the spindle C and is held in place on a pin *a*, which is made fast in the spindle below the cam. The cam portion of the wheel B consists of two notches or recesses *b b*, made in the two opposite sides of the lower end of the hub. One side of each recess is made gradually inclined outward, and the other sides are made nearly in a line with the axis of the spindle C. (See Fig. 4.) When the cam-

wheel B is turned to the position seen in Fig. 1, it will slip down on the spindle until the projecting ends of the pin *a* are in the bottom of the recesses *b* on each side; but as the cam is turned to the position of Figs. 2 and 4 it will be raised by sliding the inclined sides of the recesses up on the pin *a*. The two arms of the cam B have ears *c c* on their lower sides to turn the cam by. A circular plate is made fast to the lower end of the cone *d* by means of screws *e e e*. This plate has three pairs of ears *h h* on it that project downward to receive a toothed dog H between each pair, and a screw or rivet *r* is put through each pair of ears and the dog between them to make bearings for the dogs to swing on. One of these dogs H is shown in Fig. 5. They are held between the ears *h* with the short ends, which have teeth *i i* made on them toward the outer edge of the cone D, and their inner ends extend in between the upper end of the hub of the cam B and a washer *f*, held loose on the spindle C above the dogs, so that the inner ends of the dogs will move up or down with the motion of the cam on the spindle. An open spring *d* is put on the spindle C in a recess made for it in the lower end of the cone D, with the lower end of the spring bearing on the washer *f* and carrying the cam and the inner ends of the dogs H downward on the spindle whenever the position of the cam on the pin *a* allows it to do so. It will be readily seen that as the part of the dog outside the pivot *f* is turned up nearly to a right angle to the inner end when the inner end of the dog is raised the outer toothed end will be thrown outward and downward and the operation of the device will be as follows: Before the shell is put on the mandrel the cam B is turned on the spindle C to the position seen in Fig. 1 with the pin in the top of the notch *b*. Then the shell is put on and the cam B turned to the position shown in Fig. 2, in which the cam has raised itself on the pin *a*, and by raising the tails of the dogs it throws the outer ends of said dogs forward and downward, causing the teeth to catch in the inner surface of the shell A, thereby drawing it down tightly and holding it firmly to the cone D. This gives a secure hold on the shell, which can only be released by turn-



ing the cam B back with the thumb or finger until the pin *a* passes into the cam-recess and allows the spring to push the cam and the tails of the dogs down and draw back the  
5 teeth out of contact with the shell.

Having thus described my improvements, I claim as my invention and desire to secure by Letters Patent—

1. The combination in a cop-tube mandrel  
10 of a spindle, a cone or bearing held thereon for a shell or cop-tube, a plate fast on the lower end of the cone toothed dogs held in a vertically-radial position on said plate, a cam for raising the inner ends of said dogs and  
15 throwing the outer ends outward and downward, substantially as described.

2. The combination in a cop-tube mandrel of a spindle a cone or bearing thereon for a shell or cop-tube, a collar held to turn and  
20 slide loosely on said spindle, a pin fast in the spindle, cam-shaped notches made in the hub of said collar, dogs held in a vertically-radial position in a plate fast on the lower end of said cone, substantially as described.

3. In a cop-tube mandrel the combination 25 of a spindle, a cone or bearing fast thereon for a shell or cop-tube, a collar held free to slide and turn freely on the spindle below the cone or bearing and provided with notches, a pin fast in the spindle below the same, a 30 plate attached to the lower end of said cone, toothed dogs held to swing in pivots on said plate, a spiral spring held on the spindle to depress said collar and inner ends of the dogs, substantially as described. 35

4. In a cop-tube mandrel, a spindle, a bearing for the cop-tube or shell on said spindle, dogs held on pivots on said bearing in a vertically-radial position to be operated by a cam sliding on said spindle, and said cam, sub- 40 stantially as described.

In testimony whereof I have hereunto set my hand this 5th day of April, A. D. 1900.

DAVID JACKSON.

In presence of—

HOWARD E. BARLOW,  
BENJ. ARNOLD.