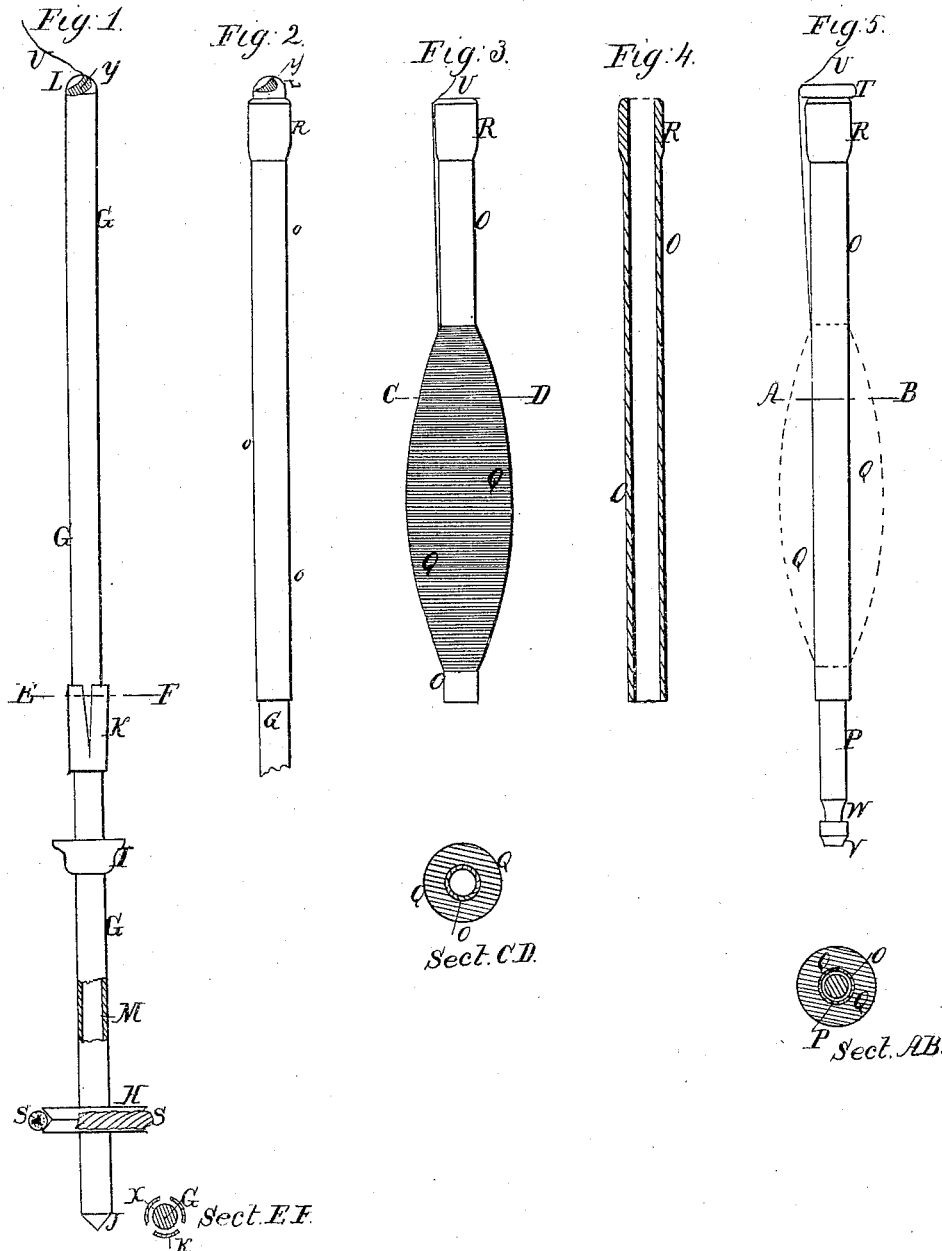


J. Eaton. Spindle

N^o 49988.

Patented Sept. 19, 1865.



Witnesses
Henry Davenport
John M. B. Schelder

Inventor.
James Eaton

UNITED STATES PATENT OFFICE.

JAMES EATON, OF BOSTON, MASSACHUSETTS.

IMPROVEMENT IN SPINNING-MACHINES.

Specification forming part of Letters Patent No. 49,988, dated September 19, 1865.

To all whom it may concern:

Be it known that I, JAMES EATON, of Boston, in the county of Suffolk, and State of Massachusetts, have invented an Improvement in Spinning Machinery; and I do hereby declare that the following is a full and exact description of the construction and use of the same, reference being had to the accompanying drawings, and to the letters and figures marked thereon.

Figure I is a front view of the spindle; Fig. II, view of the tube or bobbin applied to the spindle. Fig. III represents the tube or bobbin with the yarn upon it; Fig. IV, vertical section of the tube or bobbin. Fig. V shows the position of the cop and bobbin when placed upon the spindle or shank of the shuttle.

My improvement relates to the construction of the spindle and bobbin used for spinning cotton and other fibrous substances, and is intended chiefly for use in a mule-frame for making filling or weft; but it may also be adapted to other frames.

The distinctive features of my invention are these, viz: The main part or body of the spindle is cylindrical, the diameter being uniform throughout its whole length. This part is also usually made hollow or tubular. The cylindrical spindle, either solid or tubular, is combined with the helical tip, and also with the cylindrical tube or bobbin upon which the yarn is wound.

I do not claim any particular mode of operating or driving the spindle, or restrict its use to any particular kind of spinning-machine, the whole of my improvements being confined to the spindle and bobbin and to the connection of this bobbin or tube with the independent spindle or shank that holds the bobbin in the shuttle.

The practical advantage obtained by the use of my invention as compared with other systems of spinning are these, viz: The cylindrical tin tube or bobbin being longer than the cop, the mass of yarn is supported and kept in shape throughout its length. The successive layers of yarn are thus kept in the exact position given them when the yarn is spun and laid upon the bobbin, while the cop formed upon the short tin or paper tubes heretofore used, which are usually about one or two inches in

length, is often broken or badly bruised before it is placed in the shuttle, thus causing the filling to break and producing much waste.

In the mule-frame the yarn is usually spun upon the bare spindle, which is tapered or conical in form, so that yarn can be readily doffed or slipped off when the cop is full. This could not be done if the yarn were spun upon a bare cylindrical spindle, but is readily accomplished by means of my improved tube or bobbin.

Tapered spindles are more difficult to make and more expensive than cylindrical ones, and the latter can be made by the process of tube-drawing, by which a hard and condensed surface is obtained, and the spindle, being hollow, is much lighter than the common solid tapered spindle.

Another important advantage consists in this, that by means of a cylindrical spindle and cylindrical tube I am enabled to use a detached shuttle-spindle, which can be thrust into the tube at its top and have a perfect fit throughout the length of the cop.

The spindle G is made in one piece of steel, with the exception of the tip L and base J, and has near its lower end the whirl or wharve H, to receive the driving-band S, which causes the spindle to revolve at a high velocity. I prefer to make the tip L with a helical slot or groove, Y, at the center or apex of which the thread U remains while it is being drawn and twisted, the same being fully described in Letters Patent of the United States granted to me on the 6th day of May, 1862, and numbered 35,145.

The bobbin or tube O, Fig. IV, is made of tin-plate or thin metal, its diameter being such as to allow it to fit loosely upon the spindle G and not permit any play or vibration. A collar or ferrule, R, is in some cases soldered to the tube O, to give it stiffness, and also to cover the edges of the joint of the tin-plate at the end. The length of the tin bobbin or tube is such as to hold a cop, Q, of the required length and leave sufficient space not covered by yarn at the bottom and the top.

At about the middle of the spindle, and above the collet I, a circular holder or clamp, K, is placed, its base being soldered to the spindle G, while the upper end is open, as shown in section at X, to receive and hold firmly the lower

end of the bobbin. When the bobbin is pressed into this annular space, the top should be about one-fourth of an inch below the top of the spindle.

In Fig. V the shank or spindle of a shuttle is represented at V P T, its diameter being the same as the spindle G of the mule or spinning-frame. It is provided with an enlarged tip at T, and near the base V there is a notch, W. This spindle or shank is thrust through the bobbin, Fig. III, the upper end of the bobbin being in contact with the enlarged end T of the spindle. The lower end of the spindle is confined in the shuttle by means of the notch W, the mode of securing and using the same being fully set forth in Letters Patent of the United States granted to me on the 3d day of August, 1858, and numbered 21,068.

What I claim, and desire to secure by Letters Patent, is—

1. A cylindrical spindle, either solid or tubular, of a mule or other spinning-frame, provided with a helical tip, as herein set forth.

2. The cylindrical tube or bobbin, either with or without the ferrule or band R, in combination with a spindle having a helical tip.

3. The combination of the cylindrical tube or bobbin O with a cylindrical spindle having a helical tip, or its equivalent, substantially as herein described, and for the purpose specified.

JAMES EATON. [L. S.]

Witnesses:

HENRY DAVENPORT,
JOHN M. BATCHELDER.