(No Model.)

H. F. WOODMANCY.

SPINNING AND TWISTING MACHINE SPINDLE.

No. 480,984. Patented Aug. 16, 1892.

Fig. 1.

Fig. 2.

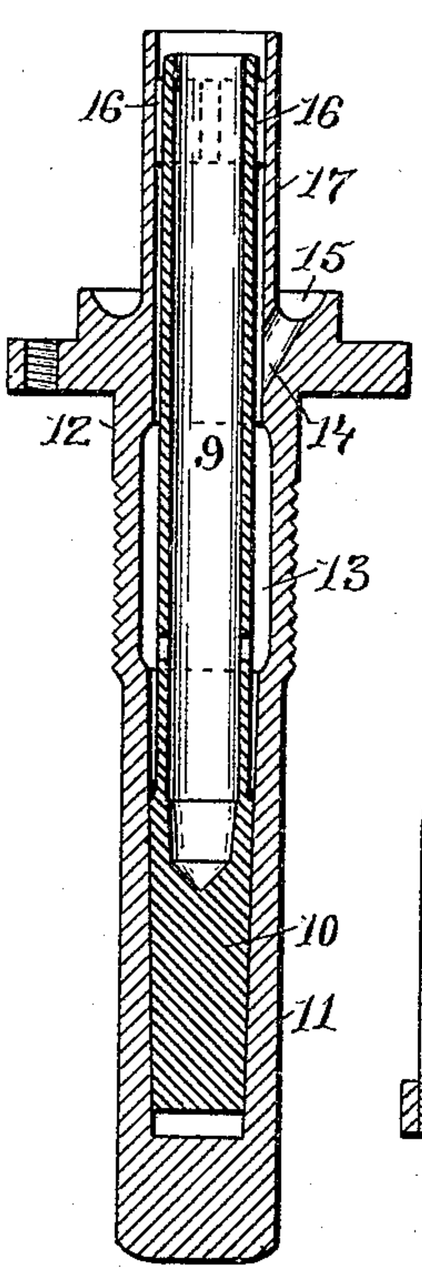


Fig. 3.

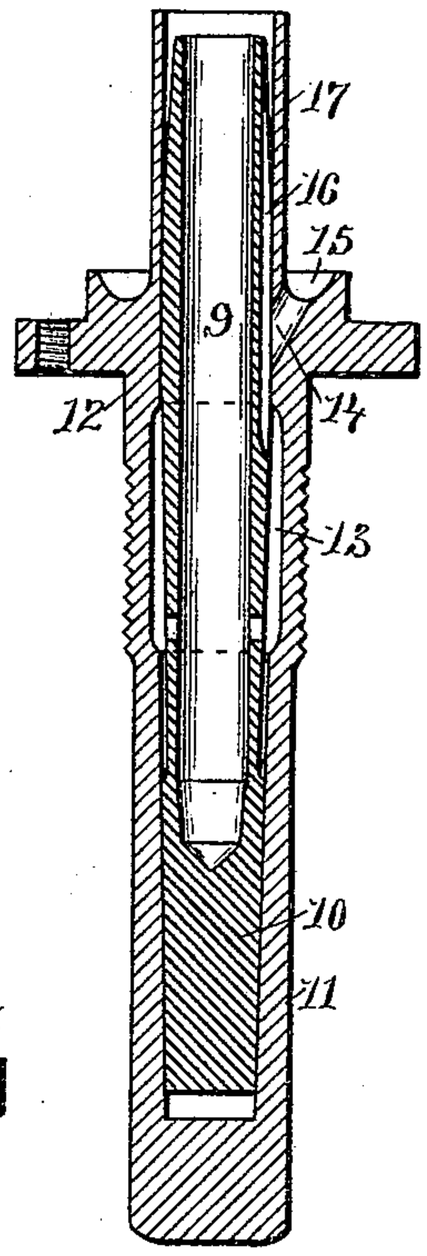
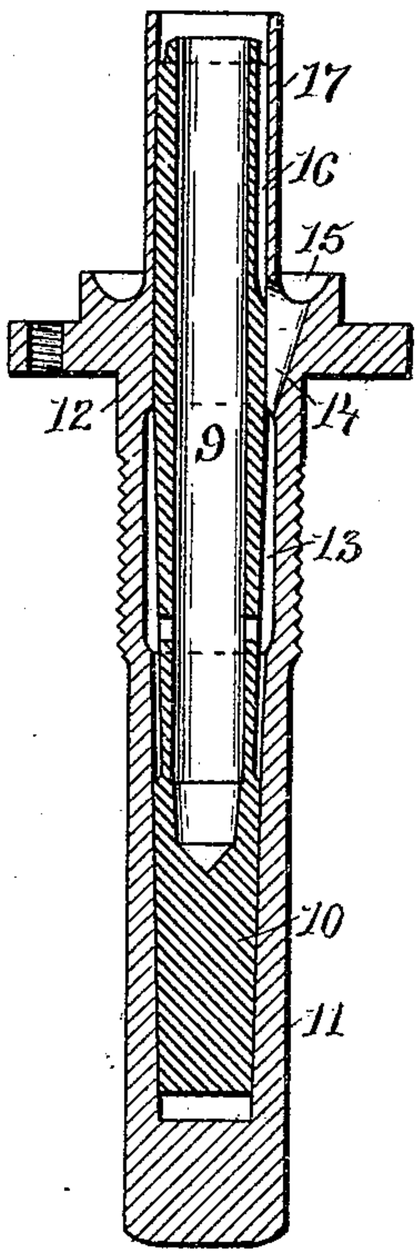


Fig. 4.



WITNESSES:

Chas. H. Luther Jr.

Henry J. Miller

INVENTOR:

Henry F. Woodmancy

by Joseph A. Miller & Co.

Attys.

UNITED STATES PATENT OFFICE.

HENRY F. WOODMANCY, OF WHITINSVILLE, MASSACHUSETTS.

SPINNING AND TWISTING MACHINE SPINDLE.

SPECIFICATION forming part of Letters Patent No. 480,984, dated August 16, 1892.

Application filed November 4, 1891. Serial No. 410,818. (No model.)

To all whom it may concern:

Be it known that I, HENRY F. WOODMANCY, of Whitinsville, in the county of Worcester and State of Massachusetts, have invented a new and useful Improvement in Spinning and Twisting Machine Spindles; and I hereby declare that the following is a full, clear, and exact description of the same, reference being had to the accompanying drawings, forming part of this specification.

Spindles for spinning and twisting machines require to be run at high speed and so perfectly true that at all points of the reciprocation of the ring-rail the spindle will revolve in the ring, so that the yarn will be exactly concentric with the ring and the draft on the traveler at all points of the ring uniform.

The object of this invention is to secure such a spindle; and to this end the invention consists in the peculiar and novel construction of a bolster-case having a cylindrical tubular extension above the supporting-flange and oil-cup, a rigid combined bolster and step-tube rigidly secured at its lower end in the bolster-case and firmly held against lateral motion at or near its upper end, and a spindle having a long bearing of uniform diameter in the bolster, provided with a sleeve-whirl surrounding the upwardly-extending tube of the bolster-case and the spindle-bearing, more fully set forth hereinafter.

Figure 1 is a vertical sectional view through the center of the spindle and its support. Fig. 2 is a vertical sectional view of the bolster-case, in which a combined bolster and step-tube are rigidly secured at the bottom in the bolster-case and firmly supported at the upper end. Fig. 3 is a vertical sectional view of the bolster and a combined step-tube and bolster firmly secured at its lower end in the bolster-case and firmly held against lateral motion near its middle in the bolster-case. Fig. 4 is a vertical section of a bolster-case and a combined bolster and step-tube rigidly secured at its bottom and firmly held for a considerable distance at its upper part in the bolster-case.

To enable others to clearly understand my invention, I will say that my aim has been to construct a spindle-support, as near as it is practicable, of one piece and to give the spindle a rigid bearing of considerable length. After a series of practical tests I constructed a number of such supports by firmly securing a rigid bolster and step-tube, by a tapering driven fit at the bottom, in the bolster-case and supporting the upper part of the combined bolster and step-tube at some place on its upper part in the bolster-case, so as to produce a rigid support for the spindle. I have given the spindle a long cylindrical bearing in this support and surrounded this bearing and the upper end of the bolster-case with the whirl.

Similar numbers of reference designate corresponding parts throughout.

In the drawings the spindle 5 is provided with the sleeve-whirl 6 and has the long cylindrical bearing 7 of uniform diameter and extending above and below the center of the whirl, the foot of the spindle resting on the step 8. The spindle is supported in the combined bolster and step-tube 9, the lower end 10 of which is slightly tapering and fits into the slightly-tapering socket 11 in the lower end of the bolster-case 12, into which it is forced or driven and so firmly secured that the bolster and step-tube and the bolster-case are practically as if made of one piece. The upper part of the combined bolster and step-tube is made to fit the upper part of the bolster-case, so as to form a close sliding fit.

The bolster-case 12 has the downwardly-projecting portion provided with the enlargement 13, which forms an oil-chamber surrounding the bolster and step-tube. This oil-chamber is connected with the interior of the combined bolster and step-tube by holes or openings in the wall of the bolster and step-tube, so that the oil flows freely into the same and is thus applied to the spindle-bearings.

The enlargement 13 or oil-reservoir is connected by means of the duct 14 with the oil-cup 15, and the portion of the upper part of the combined bolster and step-tube in contact with the interior of the bolster-case is provided with the channels or grooves 16, by which the oil raised up by the rotation of the spindle is permitted to run down again into oil-reservoir. The bolster-case is provided with the tube 17, extending upward above the oil-cup 15 and above the upper end of the

combined bolster and step-tube 9. The sleeve-whirl extends over the upwardly-extending tube 17 and surrounds the same, as well as the long cylindrical bearing of the spindle. By this construction a firm and rigid support for the spindle is secured. The bolster-case and the spindle and step-tube combine to secure this rigidity and also facilitate the construction of the oil-reservoir to secure thorough lubrication.

The point of contact of the upper end of the bolster and step-tube with the bolster-case may be varied. In Fig. 1 the combined bolster and step-tube fits the bolster-case below the oil-cup. In Fig. 2 the close-fitting supporting-surface is near the upper end of the bolster and step-tube. In Fig. 3 it is shown to extend above and below the oil-cup, while in Fig. 4 the whole of the upper length of the combined bolster and step-tube is in close contact with and forms a close sliding fit in the upper end of the bolster-case. With this rigid support and the long cylindrical bearing of the spindle in the same the spindle runs mathematically perfect without the slightest wabbling or uneasy motion. It runs perfectly with a tight band and as perfectly with a slack band. The ordinary difference in the bobbins or in the yarn-load does not affect the running of the spindle, and this spindle essentially differs from all the spindles constructed with the avowed idea to prevent the wabbling and gyration of the spindle and its load by giving to the same the capacity to wabble, for in this spindle, no matter what the load may be, it is so firmly supported that it cannot yield to the force of any unbalanced load, but must run on its axial center.

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

1. A spindle-support consisting of the rigid bolster-case 12, having the long conical socket 11, the upwardly-extending tube 17, and the enlargement 13, forming the oil-reservoir, and the combined bolster and step-tube 9, having the conical pin 10 at its lower end, held in the socket 11 with a rigid fit, the upper end of the bolster fitting the bolster-case with a close sliding fit, the bolster-case extending above the bolster-tube and provided with a groove or channel forming a passage for the return of the oil, the whole adapted to form a rigid support for the spindle, as described.

2. The combination, with the spindle-support consisting of the rigid bolster-case 12, provided with the long conical socket 11, the tube 17, extending upward above the bolster-tube and having the oil-chamber 13, and the combined bolster and step-tube 9, rigidly secured in the conical socket by the pin 10 and closely fitting the upper part of the bolster, of the spindle 5, provided with the sleeve-whirl 6, extending down over and surrounding the upward extension of the bolster-case, the whole adapted to support the spindle and hold the same against lateral or oscillating motion, as described.

HENRY F. WOODMANCY.

Witnesses:
JOSEPH A. MILLER, Jr.,
M. F. BLIGH.