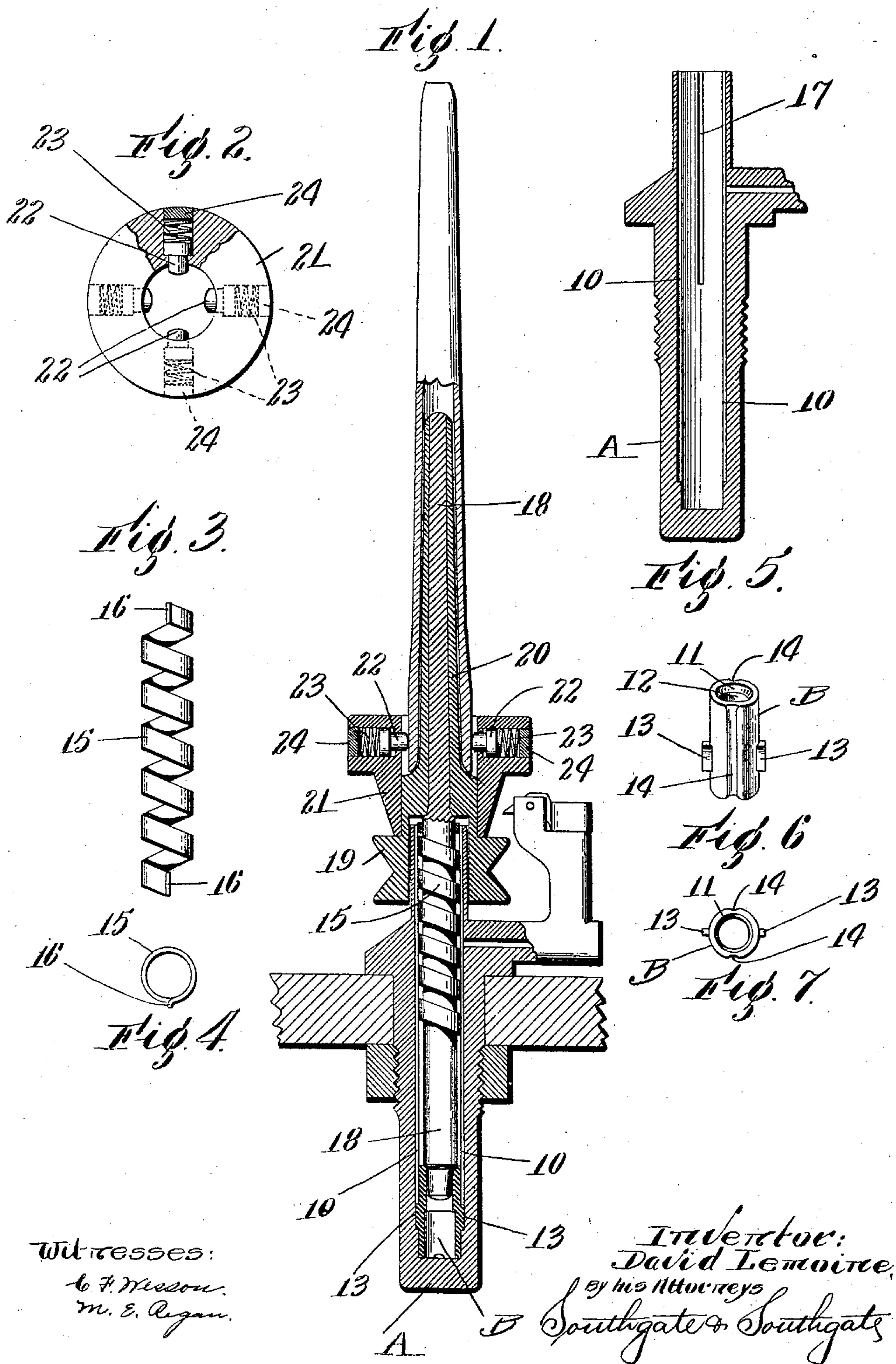


No. 860,676.

PATENTED JULY 23, 1907.

D. LEMOINE.
SPINNING SPINDLE.
APPLICATION FILED DEC. 22, 1904.



UNITED STATES PATENT OFFICE.

DAVID LEMOINE, OF GRAFTON, MASSACHUSETTS, ASSIGNOR OF ONE-HALF TO HIMSELF, ONE-FOURTH TO ADOLPHUS J. SOUCY, OF WORCESTER, MASSACHUSETTS, AND ONE-FOURTH TO JOHN WARD, OF WHITINSVILLE, MASSACHUSETTS.

SPINNING-SPINDLE.

No. 860,676.

Specification of Letters Patent.

Patented July 23, 1907.

Application filed December 22, 1904. Serial No. 237,876.

To all whom it may concern:

Be it known that I, DAVID LEMOINE, a subject of the King of England, residing at Grafton, in the county of Worcester and State of Massachusetts, have invented a new and useful Spinning-Spindle, of which the following is a specification.

The object of this invention is to improve the ordinary spinning spindle particularly with respect to the bearings thereof, the lubrication thereof, and the balancing thereof.

The improvements can be understood by describing the best form of apparatus now known to me for putting the improvements into practice.

A spinning spindle made according to my invention is shown in the accompanying sheet of drawings forming part of this application for patent.

In the drawing, Figure 1 is a sectional elevation of a spinning spindle embodying my improvements. Fig. 2 is a plan view partly in section of the bobbin gripping cup. Fig. 3 is an elevation, and Fig. 4 a plan view of the bolster. Fig. 5 is a sectional elevation of the base, and Fig. 6 is a perspective view, and Fig. 7 a plan view of the step.

Referring to the drawing and in detail, A designates the base or casing. Cut in the inside of the same are grooves 10—10 which extend nearly to the bottom as shown in Fig. 5.

B designates the step which is made in the form of a bushing, the upper end of which is bored out on a double taper 11 and 12. The step is provided with wings or projections 13—13 to engage the grooves 10—10 in the base, so that the step will be held from turning. Grooves 14—14 are cut down the sides of the step, and the lower end of the step is notched to correspond to these grooves. These grooves are provided so that any sediment or foreign matter coming down through the casing will have an opportunity to work down in the grooves 14—14 instead of accumulating and getting in between the bearing end of the blade and the step. The notches at the bottom of the groove allow the step to rest rigidly at the bottom of the casing, and prevent cushioning when the bushing is pushed into place.

The bolster is made out of a flat strip or wire twisted into a left-hand spiral, as shown in Figs. 3 and 4, and formed with projecting ends 16—16. The base or casing has a groove 17 cut part way down the inside of the same, as shown in Fig. 5. The bolster 15 is pressed inside of the casing so that its ends 16—16 engage and slide down in this groove 17, the end of the groove holding the bolster in proper vertical position. The bolster is thus made in the form of a spiral. The pitch of this spiral is left-hand and such that the rotation of the blade which is right-handed will tend

to lift the oil along the groove formed between the coils of the bolster, so that the bolster will be properly lubricated.

The rotation of a spinning spindle is always right-handed; that is to say, in the direction in which the hands of a watch turn, and by making the bolster-bearing 15 left-handed or opposed to said rotation, the lifting of the oil to obtain lubrication before described, will be obtained if the bearing engagement between the spindle or blade and said bolster-bearing extends below the surface at which the oil is maintained. The casing is provided with the usual oil supplying spout. By this arrangement the bolster will be kept lubricated its entire length until the oil falls below the end of the bolster. Any of the usual oil retaining devices may be placed on the blade to prevent the oil lifted up through the spiral bolster from falling over the top of the casing.

18 designates the blade. This is made out of steel and hardened and ground, and the upper tapered part of the same is made slightly smaller than usual. Then fitted on the same is a whirl 19 which has an extending jacket or thin sleeve 20 which is bored out so that the upper tapered portion of the blade can be forced into the same. This jacket or sleeve 20 extends to the tip of the blade and forms the bobbin engaging or supporting surface. The whirl and jacket are preferably made in one piece and are roughly finished before the blade is forced into the same. The jacket or sleeve 20 is then accurately finished off. This will make a balanced and true spindle.

The ordinary method of construction is to use a steel spindle and finish the same, and then to force the whirl and cup down over the finished portion of the spindle, or the spindle into these parts. This usually twists the spindle out of true or springs the same so that it is necessary thereafter to straighten the spindle, so that it will run accurately. By the construction before described this straightening operation is dispensed with, and an extremely true spindle is provided.

21 designates a bobbin clamping cup which is forced onto the combined jacket and whirl. This cup has four holes drilled at right angles to each other, the inside ends of the holes being smaller than the main portions thereof. Fitting in these holes are plungers 22 which have projecting ends extending through the reduced portions of the holes. Springs 23 are arranged to bear on the plungers, and the outside of the ends of the holes are closed by plugs 24 which are forced into the holes. By this construction when a bobbin is placed upon the spindle the lower end thereof can be forced down into the bobbin clamping cup so that the plungers thereof will tightly grip and hold the same. It will be seen that the plungers are arranged to act

inwardly and independently of each other, whereby the bobbin will be tightly and accurately held even if irregular in shape.

I do not herein claim the bobbin clamping cup, as it forms the subject of my divisional application for patent filed November 6, 1906, Serial No. 342,304.

By the arrangements before described a balanced spindle is provided which can be run at high speed, in which the lubrication is well provided for, and in which the bobbin will be clamped and held tightly as the yarn is wound thereon.

The details and arrangements herein described may be varied by a skilled mechanic without departing from the scope of my invention as expressed in the claims.

Having thus fully described my invention, what I claim and desire to secure by Letters Patent is:—

1. The combination of a spindle, and a bolster-bearing therefor made in the shape of a spiral of a pitch opposed to the rotation of the spindle and bearing on the spindle below the level of the oil, whereby the rotation of the spindle will lift the oil in the bolster-bearing and lubricate the same.

2. The combination of a spindle, and a bolster-bearing therefor made in the form of a left-handed spiral, the spindle bearing on said spiral below the level of the oil, whereby the rotation of the spindle will lift the oil in the bolster-bearing and lubricate the same.

3. In a spinning spindle, the combination of a grooved base, and a spiral bolster having projections engaging the groove of the base.

4. The combination of a spindle, and a step-bearing therefor comprising an externally grooved hollow bushing, the spindle engaging the interior thereof and having a shoulder engaging the upper end of the bushing, leaving the lower end of the spindle free for lubrication.

5. The combination of a spindle, a step-bearing therefor comprising a bushing, the end of the spindle fitting the interior and upper end of said bushing, said bushing having grooves cut down its side, and notches at the bottom of the bushing connecting said grooves with the interior thereof.

6. The combination of a spindle, and a step bearing therefor, comprising a grooved bushing, the end of the spindle engaging the inside and upper end of said bushing, notches at the bottom of said bearing, a grooved base, and projections on said bearing engaging the grooves of the base.

7. A spinning spindle comprising a blade, and a combined whirl and jacket secured thereto, the jacket forming the entire bobbin engaging or supporting surface.

8. A spinning spindle comprising a tapered blade, and a combined whirl and jacket into which the blade is forced, the jacket enveloping the tapered end of the blade and forming the entire bobbin engaging or supporting surface.

9. A spinning spindle comprising a tapered blade, and a combined whirl and jacket into which the blade is forced so as to fit the entire length thereof, the jacket enveloping the tapered end of the blade and forming the bobbin engaging or supporting surface.

In testimony whereof I have hereunto set my hand, in the presence of two subscribing witnesses.

DAVID LEMOINE.

Witnesses:

PHILIP W. SOUTHGATE,
HENRY H. LEPPER.