(No Model.)

S. S. WEBBER.

SPINDLE.

No. 328,096. Patented Oct. 13, 1885.

Fig. 1.

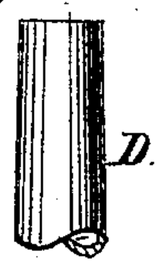


Fig. 2.

Fig. 3.

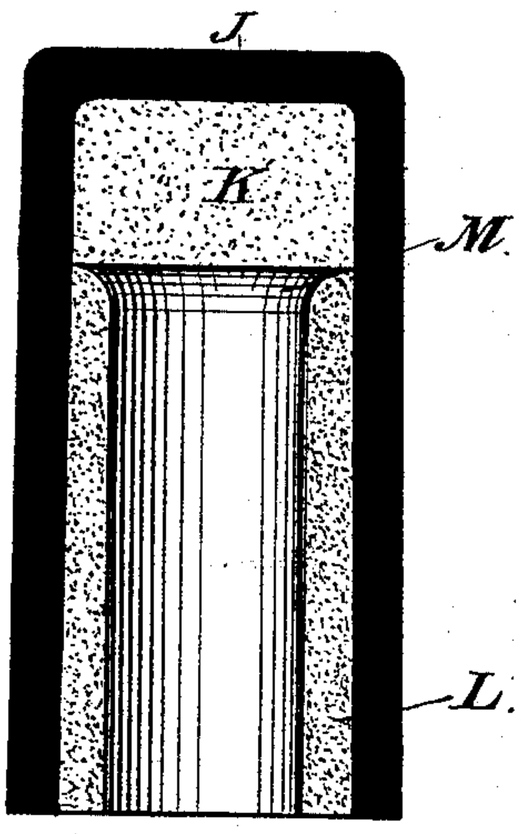
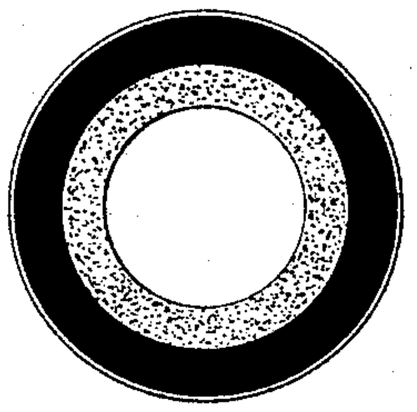
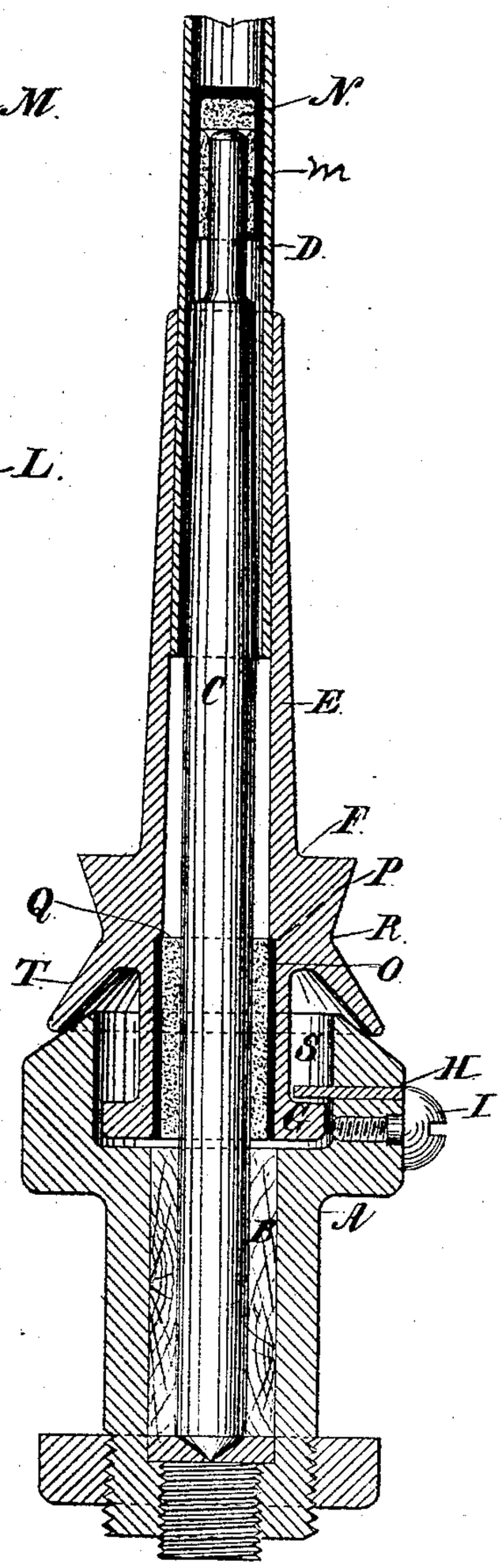


Fig. 4.





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SAMUEL S. WEBBER, OF LAWRENCE, MASSACHUSETTS.

SPINDLE.

SPECIFICATION forming part of Letters Patent No. 328,096, dated October 13, 1885.

Application filed February 16, 1884. Serial No. 120,926. (No model.)

To all whom it may concern:

Be it known that I, SAMUEL S. WEBBER, of Lawrence, Essex county, Massachusetts, have invented a new and useful Improvement in Spindles, of which the following is a specification.

The invention relates to spindles for spinning cotton, &c.; and it consists in a step-bearing having a cup or box containing a solid anti-friction substance, in which substance is formed a cylindrical recess, having the inner edge of its periphery flared or enlarged, as hereinafter more particularly set forth.

In the accompanying drawings, Figure 1 is a vertical longitudinal section of my improved spindle and bearings, the dead-spindle being in elevation. Fig. 2 is an elevation of the fixed or dead spindle. Fig. 3 is an enlarged vertical longitudinal section of the upper step-bearing. Fig. 4 is a transverse section of the same.

Similar letters of reference indicate like parts.

A is a support for the dead-spindle, arranged in the rail of the spinning-frame. It is tubular in form and contains a bushing, B, preferably of wood, in which the lower end of the dead-spindle C tightly fits. The bushing B prevents contact between the support A and dead-spindle C, and thus prevents abrasion and wear between spindle and support due to the vibration of the spindle in said support. The live-spindle is tubular and tapering, and consists of two parts—the spindle proper D and the tapering sleeve E of the whirl F. These parts may be made in one or separately, as shown. On the lower end of the sleeve E is formed a flange, G. Through the wall of the tubular support A is inserted a movable pin, H, which extends over the flange G, and prevents upward movement of the whirl and live-spindle; also, inserted in the wall of the support A, is a screw, I, having a broad head, which laps over the end of the pin H, and prevents outward displacement of the latter.

The upper or step-bearing of the live-spindle, shown in detail in Fig. 3, consists in a brass cup, J, in which I insert a hard anti-friction compound, preferably that known as "metaline." I first form a cylinder or plug, K, of that material, which is driven or otherwise inserted, so as to be tightly held in the bottom of the box or cup J. I then make a tube, L, of the same anti-friction material, which also tightly fits within the box J. The upper inner edge of this tube L is rounded or beveled, so that the tube makes contact with the plug or cylinder above it only at its outer circumferential edge. In this way I form an annular chamber, M, between the tube and the cylinder or plug, the object and purpose of which is to receive any particles of the metaline which may be ground off between the dead-spindle head and the under side of the plug K, thus preventing the particles of metaline wedging between the adjacent dead-spindle head and the bushing, and causing too tight a fit of the spindle.

I do not limit myself to a lining of anti-friction material made in two pieces, as described, inasmuch as it may be formed of several pieces, to conform to the shape shown, or of a single cylindrical piece with an opening of the form represented, made in it by boring and reaming.

The upper bearing, formed, as described, is shown at N, Fig. 1, and is inserted into the hollow tapering live-spindle D as far as it will go—that is, until it binds against the tapering inner periphery of said spindle. In this way the bearing N is tightly wedged in place, and yet may easily be detached and removed when desired.

In the lower portion of the hollow spindle is placed the lower bushing, O, which consists of a brass sleeve or tube, P, containing a tube, Q, of metaline or other anti-friction compound. The lower end of the spindle or sleeve E is slightly enlarged to receive the bushing O, the upper end of which bears against a shoulder in said sleeve formed by the said enlargement. The bushing O is held by frictional contact tightly in the sleeve. This peculiar construction of lower bearing, however, I do not herein claim. The upper edge of this bushing is placed on a level with or a little below the center line of the groove R in the whirl. In this way the strain of the band passing around said groove is concentrated on the lower bearing, O, leaving but very little side pull on the upper bushing—in fact just sufficient to keep the revolving or live spindle D steady when in motion. Thus

all the side or lateral wear is taken by the lower bushing, so that the upper bushing practically sustains the weight and downward wear of the spindle. I prefer to adopt the aforesaid construction, but do not claim the same as my invention herein.

It will be observed that the diameter of the upper or step bearing, with its case, is such that it can be taken out downwardly through the lower or whirl bushing, thus allowing of its renewal or repair without disturbing the lower bushing. So, also, the lower bushing with its metal case can be removed from the spindle without removing the upper bushing.

The fixed or dead spindle is preferably of steel, and the base or support A may be of cast-iron. I find a wood bushing, B, useful to prevent contact and wear between the spindle and base due to the vibration of the dead-spindle in the base.

In the upper part of the base or support A, I form a cavity or recess, S, which receives the flanged lower end of the live-spindle, as shown in Fig. 1. I bevel the outer upper edge of the support A, and elongate the lower rim, T, of the whirl, so that the latter serves as a shield to prevent dust, &c., entering the recess S, and thence finding its way to the lower bearing or accumulating in said recess.

I claim as my invention—

1. A step-bearing consisting of a cup or box containing a solid anti-friction substance, in which substance is formed a cylindrical recess having the inner edge of its periphery flared or enlarged, substantially as described.

2. A step-bearing consisting of a cup or box containing a closely-fitting plug or cylinder of solid anti-friction material, and in contact with said plug a tubular lining or bushing of similar material, the said tubular bushing having the inner circumferential edge of its interior periphery rounded, flared, or beveled, substantially as described.

3. The combination of a hollow live-spindle, and a fixed or dead spindle, and a cup-shaped step-bearing arranged inside the hollow live-spindle to receive the upper end of the dead-spindle, the said step-bearing being lined with a solid anti-friction material with which the dead-spindle comes in contact at its periphery and at the apex of its extremity, the said anti-friction lining being removed to form an annular chamber around said apex, substantially as described.

4. The combination of a dead or fixed spindle, a hollow live-spindle, and a removable bearing or bushing consisting of a metal shell or case lined with a hard self-lubricating material, and contained within said live-spindle, and receiving the upper extremity of the fixed spindle, substantially as described.

5. A step-bearing for spindles, formed of hard anti-friction material, and an inclosing box or case containing a recess to receive the end of the spindle, and an annular chamber to receive particles removed by abrasion, &c., both recess and chamber being formed in the body of said anti-friction substance, substantially as described.

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