(No Model.)

G. H. ALLEN.

BEARING FOR SPINNING SPINDLES.

No. 254,526. Patented Mar. 7, 1882.

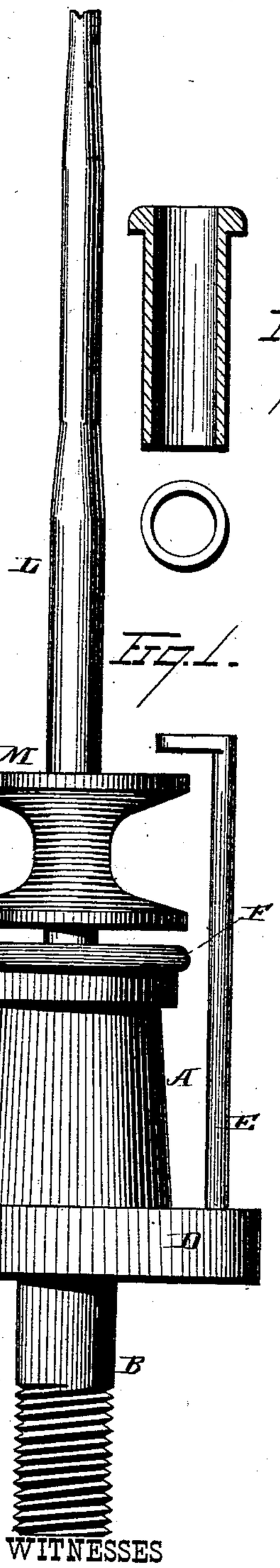

Fig. 1.

Fig. 3.

L

Fig. 2.

Fig. 4.

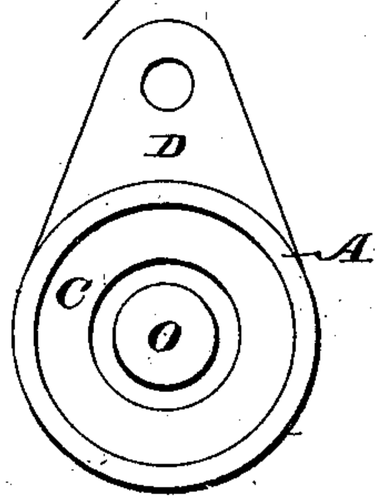

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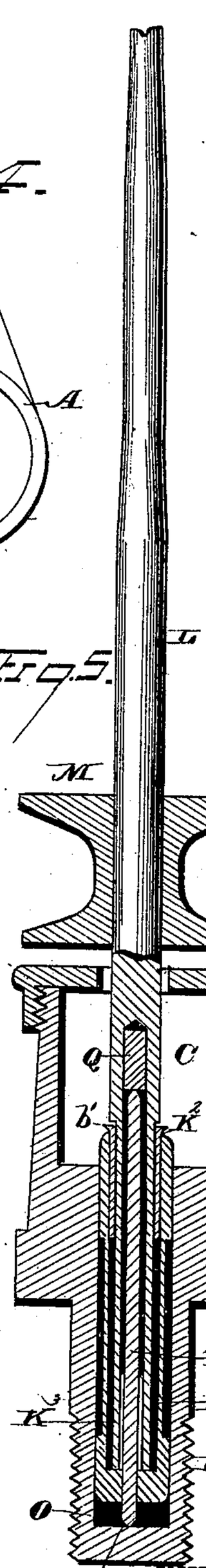
Fig. 5.



WITNESSES

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BEARING FOR SPINNING-SPINDLES.

SPECIFICATION forming part of Letters Patent No. 254,526, dated March 7, 1882.

Application filed March 18, 1881. (No model.)

To all whom it may concern:

Be it known that I, GEORGE H. ALLEN, a citizen of the United States, residing at Ayer, in the county of Middlesex and State of Massachusetts, have invented certain new and useful Improvements in Bearings for Spinning-Spindles, of which the following is a specification.

My invention relates to an improvement in spindles for spinning cotton, the object of the same being to relieve the lateral bearing thereon while in operation, so that there will be less friction and wear, requiring less power to drive same and insuring a positiveness of revolution and evenness of twist in the yarn never before attained in the old styles of spindles; and with these ends in view my invention consists in certain details in construction and combinations of parts, as will be more fully explained, and pointed out in the claims.

In the accompanying drawings, Figure 1 represents a side view of the spindle as set in the rail. Fig. 2 is a vertical section of the same. Fig. 3 is a detail view of the bushings. Fig. 4 is a view of the bottom of the oil-reservoir, showing the opening of the well; and Fig. 5 is a modification.

A represents the bolster-case, having the elongated screw-threaded stem B, by which it is secured to the step or spindle rail and oil-reservoir C, and a flange or projection, D, to which the finger E, having the bent extremity, is secured, for preventing the spindle from being lifted out of place in the operation of doffing the bobbin. This stem B is hollowed throughout part of its length and provided at the bottom thereof with a step, B′, for the standard G, supporting the spindle. The well thus formed by hollowing out the stem opens into the bottom of the oil-reservoir C, and is of sufficient size to receive the movable magazine H, in which the spindle is supported. This movable magazine is open at the top and provided with a central perforation in the bottom, into which the hardened metallic standard G is inserted, which forms the vertical bearing for the spindle. The standard G is driven through the bottom of the magazine H, and terminates in a point which rests upon the flat standard-step B′, the standard G at the point of contact being also hardened. The upper end of the standard G rests flush with the inner surface of the bottom of the magazine H and forms the bearing on which the spindle L revolves. This spindle is provided with the whirl M, which, when the said spindle is in position in the bolster, rests immediately over the centrally-perforated cap F, which covers the oil-reservoir. The lower part of the spindle L, or that portion thereof which enters the well O, is slightly smaller in diameter than the portion above the well, the said portions being separated by the shoulder *a*, extending entirely around the circumference of the spindle. The lower end of the spindle L, which bears on the standard G, is conical or pointed, and is held in position, without allowing any lateral movement thereon, by the movable bushing K, the latter being externally of the same size as the internal opening of the magazine, while its central opening or bore is of the same size as the end of the spindle L, which fits therein. The upper portion of the spindle L resting in the magazine is held in position and prevented from laterally moving therein by the movable bushing K′, which latter is provided with an annular rim or flange, *b*, adapted to bear on the upper end of the magazine and prevent it from entering any farther therein. The bushings K and K′ can be of hardened steel or not, as required.

If desired, one or more movable rings or bushings can be introduced in the magazine and around the spindle between the bushings K and K′; but the two bushings already described answer all the necessary purposes.

The point of contact between the standard G and spindle L is variable, and is so arranged that the spindle takes its center from the bushings K and K′.

Instead of having the upper end of the standard G flat and the lower end of the spindle L cone-shaped, the arrangement may be reversed, my main object being to have the opposing faces pointed and flat, as described.

The spindle L in revolving will, in case of friction, communicate its motion to one or both the movable bushings K K′, and the bushings, in case of friction with the movable magazine, communicate the motion thereto, causing it to turn upon the hardened step at the bottom of the well, thus in part overcoming the retard-

ing and wearing force of the friction, while the spindle L is constantly finding a new place of lateral bearing in the bushings K and K′, and the said bushings also finding new lateral bearing against the sides of the movable magazine H.

At the point of bearing at the lower end of the standard a conical or convex surface meets a hardened flat surface, and forms the vertical bearing for the magazine, the magazine in its motion taking its center by the walls of the well O, in which it is inclosed, and not at any particular point on the step B′.

In the modification represented in Fig. 5 the construction of the parts of the device are exactly similar in every respect, with the exception of the standard G and spindle L, the former being lengthened considerably to extend up into the spindle, which is hollowed out for the purpose, thereby bringing the vertical bearing of the spindle up in the oil-reservoir instead of at the bottom of the oil-well.

The magazine H in the modification is provided with the elongated standard P′, the latter adapted to bear on the step at the lower end of the well, like the standard G, first described. The standard P′ extends up above the top of the magazine H and bushing K^2, and is adapted to enter the lower end of the spindle and bear on the hardened step Q, inserted in the top of the recessed portion of the spindle L. The upper hardened portion of the standard P′ is conical or pointed, and affords a bearing for the flat hardened step Q, the said standard being driven through the perforation in the magazine, and terminating in a hardened point resting on the flat hardened step B′ at the bottom of the well, as has been already described.

The movable bushing K^2 is provided with the annular flange *b′*, which holds it up in position between the magazine and shell of the spindle at the point near where the spindle finds a vertical bearing upon the standard, while the movable bushing K^3 is placed between the standard P′ and inner wall of the shell of the spindle. The point of bearing or contact between the standard P′ and step Q is so arranged that the spindle may take its center from the movable bushings K^2 and K^3, the standard P′ being merely the vertical support of the spindle.

The arrangement of the bearing-points of the standard and spindle may be reversed so that the flat surface will be the upper end of the standard and the pointed bearing the step Q, my main object being to have the meeting-point flat and pointed, as described. In the case of friction in this modified device the motion is transmitted to the magazine through the intervention of the bushing K^2, which causes it to turn upon the hardened step at the lower end of standard P, thereby overcoming the retarding and wearing force of the friction and causing the spindle to find new place of lateral bearing in the bushing K^2 and K^3 and the bushing K^3 a new place against the wall of the magazine.

The movable bushings K^2 K^3 may be used in case of shell-spindles either externally or internally to the shell of the spindle, and in case of both shell and solid spindles a single movable bushing, extending the entire length of the magazine, may be used instead of the two shown and described. So, also, can the movable bushings be used in case of shell or solid spindles without the movable magazine H, the bushings in such a case finding lateral bearing against the wall of the well in the stem B.

I would have it understood that I do not limit myself to the exact construction and arrangement of parts shown and described, but consider myself at liberty to make such changes in the construction and arrangement of parts as come within the spirit and scope of my invention.

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

1. The combination, with a spindle and a step for supporting the spindle, of separate and independently-movable bushings loosely encircling different portions of the spindle and constructed and adapted to be rotated thereby, and supports for retaining the movable bushings in proper adjustment, substantially as set forth.

2. The combination, with a spindle, a magazine located on the lower portion of the spindle, and a step for supporting the spindle, of independently-movable bushings located between the spindle and upper and lower ends of the magazines, substantially as set forth.

3. The combination, with a spindle bolster-case having a well formed therein, a magazine located in said well, and a spindle having its lower portion situated in the magazine, of independently-movable bushings situated between the spindle and upper and lower ends of the magazine, substantially as set forth.

GEORGE H. ALLEN.

Witnesses:
E. D. READ,
C. D. READ.