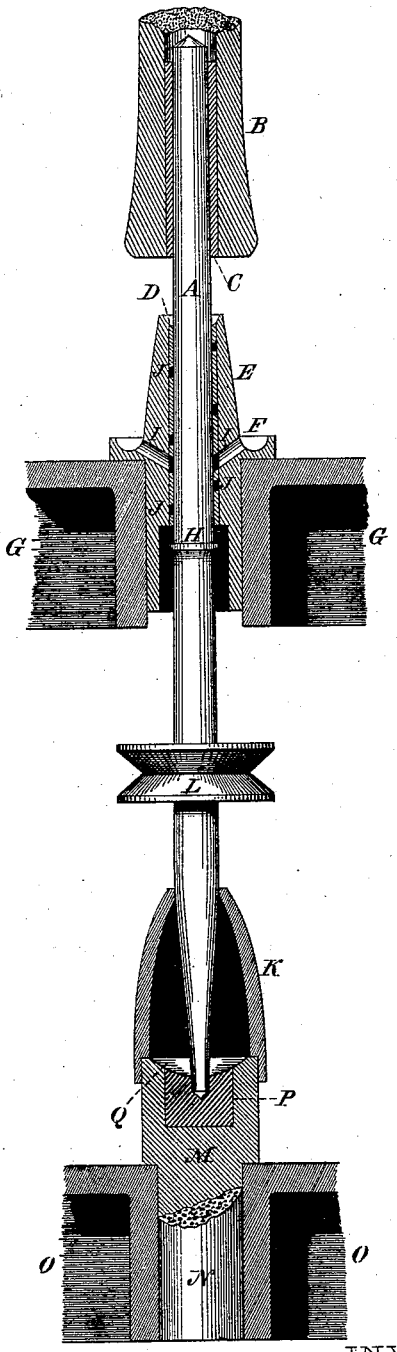
J. ESSEX.

SPINNING-FRAME SPINDLE AND BOBBIN.

No. 183,386. Patented Oct. 17, 1876.



WITNESSES.

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UNITED STATES PATENT OFFICE.

JEREMIAH ESSEX, OF NORTH BENNINGTON, VERMONT.

IMPROVEMENT IN SPINNING-FRAME, SPINDLE, AND BOBBIN.

Specification forming part of Letters Patent No. **183,386**, dated October 17, 1876; application filed June 24, 1876.

To all whom it may concern:

Be it known that I, JEREMIAH ESSEX, of North Bennington, in the county of Bennington and State of Vermont, have invented a new and Improved Spinning-Frame, Spindle, and Bobbin, of which the following is a specification:

This invention pertains to that class of spindles and bobbins designed for use in frames for spinning cotton warps, and a correct delineation of the construction and principles of operation of the same may be gathered from the accompanying drawing, which is made a part of this specification.

In the figure, G G and O O represent partial vertical longitudinal sections in the same plan of the bolster and step-rails, respectively, of an ordinary spinning-frame. The step-socket M is provided at its lower end with a shank or stem, N, which passes through a hole in the step-rail O, provided therefor, and is held firmly therein by means of the shoulder on the same, and a set-screw passing through the rail and impinging against said shank. In the upper end of the step-socket M is inserted the step proper, P, which is made of any suitable anti-friction material adapted to such uses. This step P forms the bearing for the bottom end of the spindle A. The upper end or top of the step is made concave or dishing, so as to constitute an oil or lubricating reservoir, as seen at Q. Surrounding the spindle, and resting upon the top of the step-socket, is the hood or cap K, the use of which is to exclude dirt, &c., from and protect the step-bearing aforesaid, and is vertically movable. The bolster is shown at E in vertical longitudinal section. The lower part is chambered out to receive the shoulder or collar on the spindle A, and that portion of it which furnishes the bearing for the upper part of the spindle is provided with a perforated bushing or lining of bronze or other anti-friction metal. This lining is bored or reamed out so as to exactly fit the spindle, and is the adjunct mainly relied on for keeping the spindle in perfect adjustment. The top end of the bolster is countersunk around the spindle, as shown at D, to facilitate lubrication, and to provide for and catch any overflow of oil. An annular flange formed with an open sink or gutter, F, resting on the bolster-rail, and being a constituent part of the bolster itself, is furnished, having downwardly-slanting radial apertures I I, leading directly to the spindle at a point intermediate between the top and bottom of the bearing. By means of this flange the bolster is supported in its seat in the bolster-rail G G. The lining has perforations J J J, which facilitate the distribution of the lubricating material and afford lodgment for the products of attrition. This arrangement of spindle and bolster, and the means provided for oiling, contemplates the working through and escape of the worn-out or "black oil," as it is termed, and the replenishing with fresh oil at D, as occasion requires. The bolster E may be confined in the rail by any appropriate means. At B is shown in vertical section the bottom end of the bobbin attached to the spindle A. This bobbin is bushed at its lower end for a distance of perhaps an inch, or an inch and a half, with a metallic bushing, C, which is bored out to fit the top of the spindle perfectly, and is sufficiently thick to be absolutely inflexible and unyielding, as the successful operation of the bobbin and spindle depends upon complete rigidity of this bushing. Such bobbin, so constructed and attached, is a substitute for and takes the place of the spindle to all intents and purposes, so far as the spinning process is concerned, and the metallic bushing serves as a coupling for connecting the bobbin with the driving-spindle. The external surface of this bobbin is finished with reference to the bore of the bushing, so that it may run truly, and that part of its length from the top of the bushing C to the top of the bobbin may be chambered out, so as to make it as light as the nature of the material will admit of. In cases when wooden bobbins from any cause become bent or sprung, as frequently happens, the same may be slipped onto a mandrel by means of the bushing, and turned off or straightened, said bushing being specially constructed and adapted to such purpose. The spindle A is constructed so that there shall be only a sufficient projection of the same through and above the bolster to re-

ceive and hold the bobbin. The spindle shown is slightly tapered, but need not necessarily be so. The bobbin is held and driven by force of frictional contact alone, and the bushing C therein is barely long enough to maintain the axial adjustment of the bobbin, and provide the desired amount of surface for frictional contact. By cutting the top of the spindle off at the top of the bushing C, a large amount of weight and material of the spindle is disposed of, and when the bobbin is constructed after the system described, its upper portion may be chambered out very materially, and by these two operations a large amount of superabundant weight and material in both spindle and bobbin is disposed of, and as a resultant the power required to drive the spindle is diminished, while the speed of the same may be increased. The spindle is driven by the whirl L, in the usual way, and the collar or flange H prevents the spindle from lifting out of the step. The cap K may be elevated to get at the step or bottom of the spindle for lubricating purposes.

Having thus described my invention, I claim as new and patentable the following:

1. The spindle A, constructed substantially as shown, and projecting above the bolster a distance barely sufficient to receive and drive a bobbin by frictional contact applied only at the bottom thereof, substantially as specified.

2. The bobbin B, provided at its bottom with a metallic bushing, C, adapted to be attached to a spindle, substantially as set forth.

3. The spindle A, restricted in its projection above the bolster, as specified, in combination with the bobbin B, with or without metallic bushing, and adapted to be driven by frictional contact, substantially as shown and described.

In testimony whereof I have hereto affixed my hand at North Bennington, Vermont, this 21st day of June, A. D. 1876.

JEREMIAH ESSEX.

In presence of—
F. W. GIFFORD,
RICHARD WELCH.