J. Eaton.

Spinning Mach. Spindle.

No. 39,557. Patented Aug. 18, 1863.

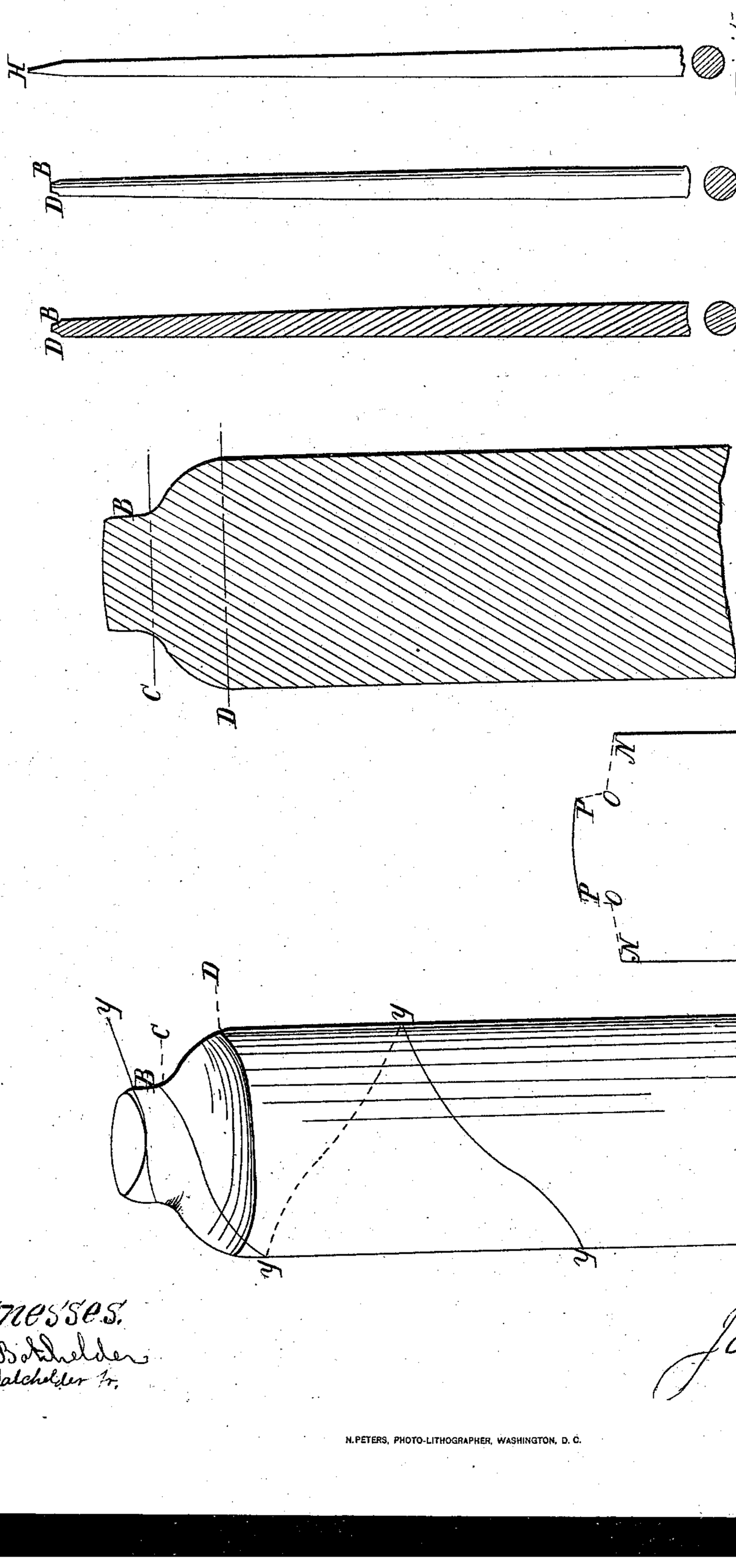

Fig. 5. Fig. 4. Fig. 3. Fig. 2. Fig. 6. Fig. 1.

Witnesses.
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JAMES EATON, OF BOSTON, MASSACHUSETTS.

IMPROVEMENT IN SPINDLES OF SPINNING-MACHINES.

Specification forming part of Letters Patent No. **39,557**, dated August 18, 1863.

To all whom it may concern:

Be it known that I, JAMES EATON, of Boston, in the county of Suffolk and State of Massachusetts, have invented an Improvement in Spindles; and I do hereby declare that the following is a full and exact description thereof, reference being had to the accompanying drawings, and to the letters and figures marked thereon.

Figure I represents a perspective view of the spindle, enlarged; Fig. II, a vertical section of the same, enlarged; Fig. III, a vertical section, natural size; Fig. IV, a perspective view, natural size; Fig. V, tapered spindle, illustrative.

My improvement relates to that class of spindles that receive the thread at the upper end or tip of the spindle, as in the mule and other spinning machines, and is not applicable to the dead-spindle.

It is well known that in mule-spinning, when the carriage holding the spindles recedes from the rollers, the yarn begins to vibrate. This vibration is greatest at the middle point between the roller and spindle, and it gradually increases until the carriage reaches the end of its traverse, the thread or yarn being at this time about five feet in length. This constant vibration or trembling of the yarn while being spun causes the fibers to stand out and fly off, thus causing a waste of the fibrous material and reducing the quantity of yarn. This violent motion is caused by the snapping or slipping of the yarn over the tip of the spindle, the vibration from this cause being greater when the tip is of large diameter and blunt at the end than it is when pointed or sharp—that is to say, the vibration increases in proportion to the increase of the distance from the axis to the periphery of the spindle. By my improvement this difficulty is obviated, the waste is less, an even thread is produced, and less power is required for driving the machines.

It is evident that if the thread, while being spun, could be brought to the axis of rotation of the spindle no vibratory motion would be produced. In my spindle the thread is brought as near to the center as possible, being received upon a small projection or nipple, B, Fig. II, which forms a part of the top of the spindle, its base on the horizontal line C being about one-half or one-third the diameter of that part of the spindle just below it, (marked D.) Between these lines C and D there is a shoulder which extends from the base of the nipple to the outer edge of the spindle in a curved form, as represented in the drawings. This curvature of the shoulder may be slightly altered as found desirable, according to the size of the spindle and other varying conditions. The same parts are also shown in Figs. I, III, and IV. By means of this shoulder, which prevents the yarn *y*, Fig I, from being wound upon the spindle, I am able to make the tip B very small and bring the thread that is wound upon it very near to the axis of rotation, the tip being as small as that shown at H, Fig. V. The latter form cannot be used for spinning, for if the spindle is tapered to a point the yarn will slip off; but if it draws from the nearly vertical sides of the tip, as shown in Fig. I, the yarn is properly held in the required position for spinning, and also readily runs back from the tip and shoulder, when it is to be wound upon the cop or bobbin. The height of the sides of the tip should be very small, so as not to allow more than one or one and a half turn of the yarn to remain upon it, the height or length of the tip being varied according to the number or size of the yarn.

My improvement is not confined to the exact shape of the shoulder or the tip represented in the drawings, as the form may be varied, and in some cases I prefer to make it with the outline shown in the dotted lines N O P, Fig. VI, having the shoulder nearly square, or at right angles with the tip, the main feature being that the tip rises from a base that is of less diameter than the upper part of the spindle.

What I claim, and desire to secure by Letters Patent, is—

The small nipple or projection, having its base upon a shoulder which extends to the periphery of the spindle, by which means the yarn is brought near to the axis of rotation, and at the same time prevented from slipping off the end of the spindle, as herein described.

JAMES EATON. [L. S.]

In presence of—
J. M. BATCHELDER,
SAML. BATCHELDER, Jr.