(No Model.)

J. BOOTH.

STEP FOR SPINNING SPINDLES.

No. 388,392. Patented Aug. 28, 1888.

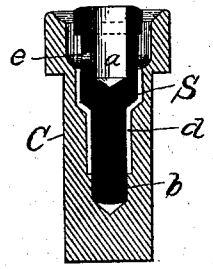

Fig. 1.

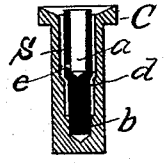

Fig. 2.

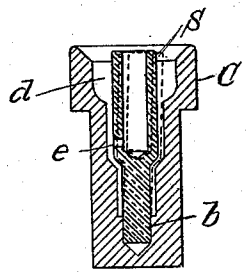

Fig. 3.

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UNITED STATES PATENT OFFICE.

JOHN BOOTH, OF CENTRAL FALLS, RHODE ISLAND.

STEP FOR SPINNING-SPINDLES.

SPECIFICATION forming part of Letters Patent No. 388,392, dated August 28, 1888.

Application filed August 1, 1887. Serial No. 245,787. (No model.) Patented in England March 15, 1887, No. 3,925.

To all whom it may concern:

Be it known that I, JOHN BOOTH, of Central Falls, in the county of Providence and State of Rhode Island, have invented certain new and useful Improvements in Steps for Spinning-Spindles, (for which I have obtained Letters Patent of Great Britain, dated March 15, 1887, No. 3,925,) of which the following is a specification.

My invention has relation to steps for spinning-spindles, and has for its object, first, to provide a step which, while yielding to allow of slight lateral play to the spindle, will obviate any undue unsteadiness of motion thereof, so that it will quickly find its true center of rotation, and, second, to provide a construction which shall be at once efficient, durable, and economic of manufacture.

My invention is particularly applicable to the steps of spindles of mules and jacks, and to the steps of what are commonly known as "old-style" frame-spindles, though it is not necessarily limited thereto.

The invention consists broadly in the combination, with a case, of a step of hard or vulcanized rubber rigidly secured at substantially its lower end in the case, provision being made above the point at which it is secured in the case for slight lateral movement of the spindle attained through the yielding or resilient nature of the vulcanized rubber, whereby the spindle may be allowed to find its true center of rotation, and yet be held from having undue vibration, and the objections consequent thereon—that is, the construction is such that while it permits the spindle to have slight lateral play it tends also to hold it rigidly, so as to quickly take up any "wabbling" motion and to make it run more steadily.

Spindle-steps have heretofore been constructed which have been loosely fitted in the case, and in some instances they have been seated upon a spring, and again an elastic cushion has been interposed between their sides and the sides of the case, and still other constructions not necessary to enumerate have been devised, all with a view to providing for a vibration of the spindle in order to permit it to seek its true center of rotation. One or more of several objections attend these constructions, chief among which is that the spindle is allowed undue lateral play, so that it will break the "end" or cause imperfect work before "going to sleep"—that is, before being brought to run steadily on its true center. Again, they are comparatively expensive of construction and soon become so worn as to necessitate repair.

By my invention the several objections mentioned are overcome, all as I will now proceed to describe, reference being made to the accompanying drawings, and to the letters of reference marked thereon, forming a part of this specification, in which drawings—

Figure 1 represents a vertical longitudinal section of a frame step and case embodying my invention. Fig. 2 is a like view of a mule or jack step and case constructed in accordance with my invention. Fig. 3 is a view similar to that represented in Fig. 1, showing a slightly modified form of step.

In the drawings, C represents the case, and S the step. The former may be constructed in any desired form and of any material suited to the purpose, while the latter (the step S) is made of hard or "flint" vulcanized rubber, and provided, as usual, with a seat, *a*, for the foot of the spindle. The step S is rigidly secured at its lower end, as at *b*, in the case C, and above the point *b*, at which the step is so secured in the case, the bore of the latter is considerably larger than the diameter of the step, as indicated by *d*, so as to permit said step to be sprung to a considerable distance to one side before coming in contact with the side of the case, as shown exaggerated in dotted lines in Fig. 3. This increased diameter in the bore of the case C above the point *b* also provides an ample chamber, *d*, for a lubricant with which the step S may be kept continually surrounded. A small hole, *e*, is made through the side of the step so as to admit the lubricant from the chamber *d* to the foot of the spindle. With this construction the spindle will be allowed all of the lateral play necessary for it to accommodate itself to an uneven load or to find its true center of rotation, owing to the resilient nature of the hard or vulcanized rubber, and yet it will be held against undue lateral vibration and the objections consequent thereon, as has been hereinbefore mentioned.

The step being made of hard or vulcanized

rubber and so arranged as to be continually supplied with or surrounded by a lubricant, a construction is provided which is made more durable than any now known to me. At the same time the construction is simple and very economic, and is readily applied to old-style spindles, as indicated in Figs. 1 and 3, or may be applied to mules and jacks, as indicated in Fig. 2.

It is to be noticed that the seat *a* for the foot of the spindle is located an appreciable distance above the point *b* at which the step is rigidly secured in the casing C. By this construction the extreme foot of the spindle is permitted to yield laterally, as indicated by the dotted lines in Fig. 3, and which would not be the case if the foot of the spindle were seated on a line with or below the point at which the step is rigidly secured in the casing C.

Having thus described my invention, what I claim is—

1. The combination, with a case, of a step of hard or vulcanized rubber rigidly secured at substantially its lower end in the case, the point at which the foot of the spindle is seated in the step being an appreciable distance above that at which the step is rigidly secured in the case, as set forth.

2. The combination, with a case, of a step of hard or vulcanized rubber rigidly secured at substantially its lower end in the case, the point at which the foot of the spindle is seated in the step being an appreciable distance above that at which the step is rigidly secured in the case, and the bore of the case above the point at which the step is secured therein being considerably larger than the diameter of the step, as set forth.

In testimony whereof I have signed my name to this specification, in the presence of two subscribing witnesses, this 26th day of July, A. D. 1887.

JOHN BOOTH.

Witnesses:
ARTHUR W. CROSSLEY,
C. F. BROWN.