(No Model.) 3 Sheets—Sheet 1.

H. D. KLOTS.

SPINNING SPINDLE SUPPORT.

No. 493,034. Patented Mar. 7, 1893.

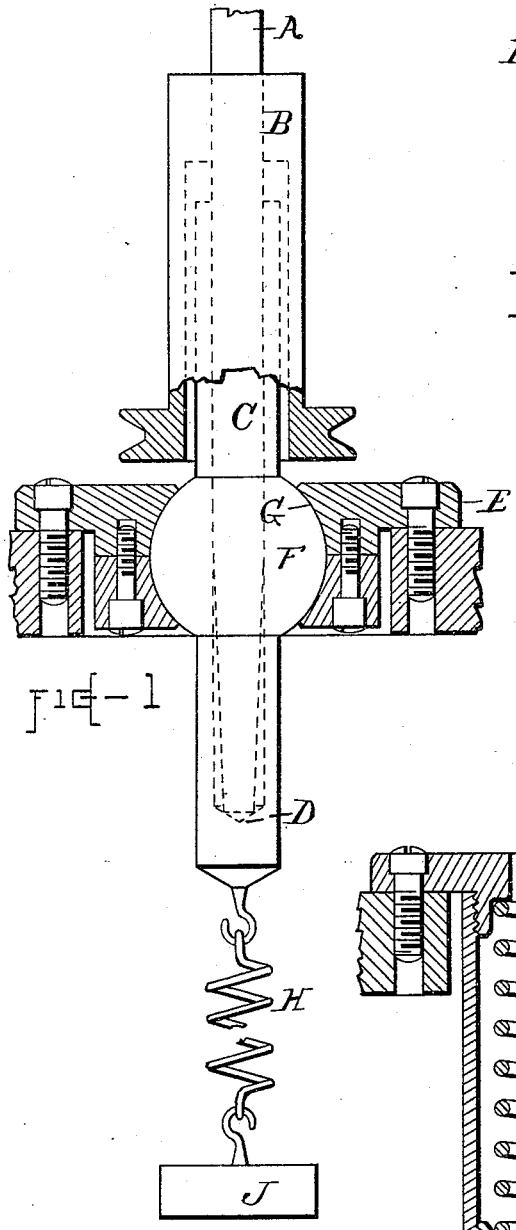

FIG-1

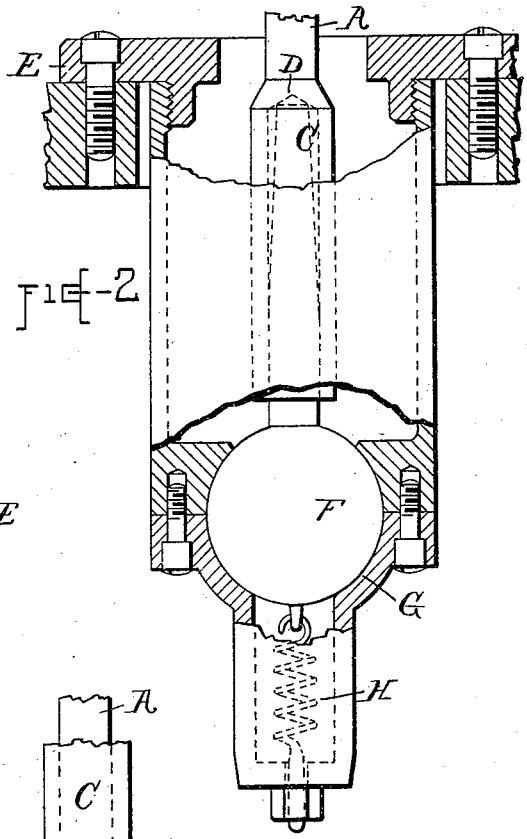

FIG-2

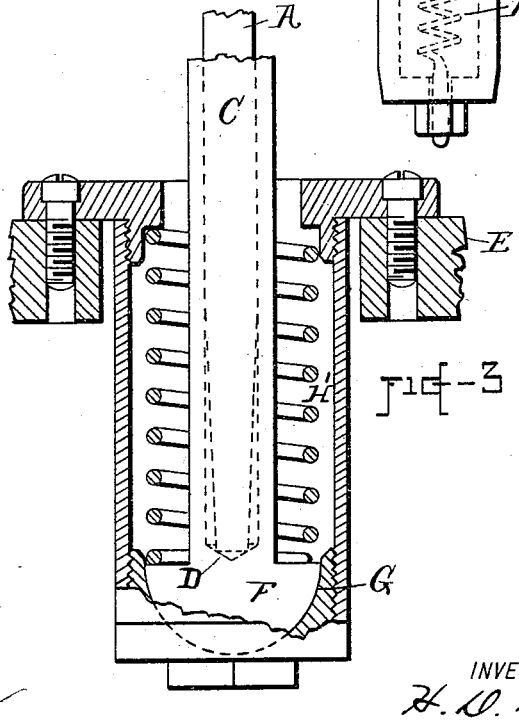

FIG-3

WITNESSES:

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(No Model.) 3 Sheets—Sheet 2.

H. D. KLOTS.

SPINNING SPINDLE SUPPORT.

No. 493,034. Patented Mar. 7, 1893.

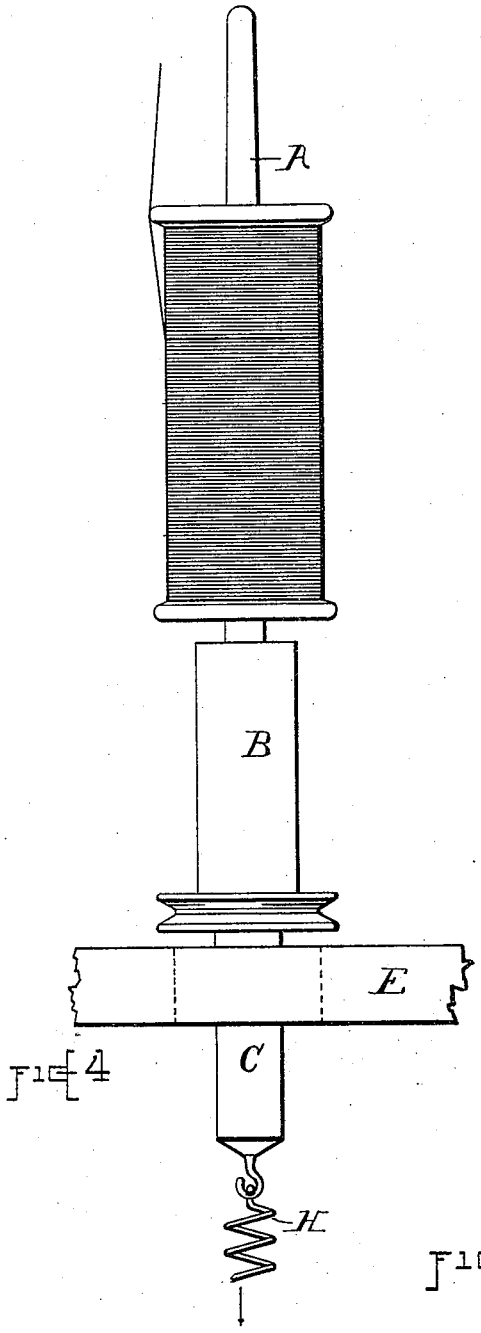

FIG. 4

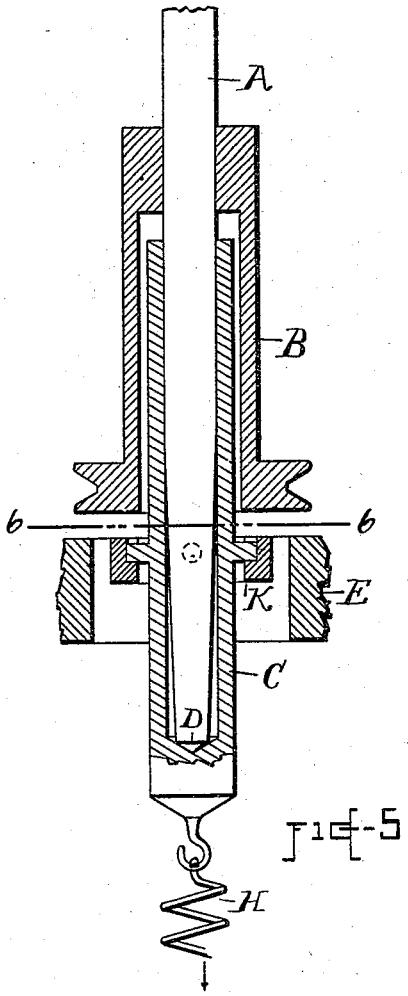

FIG. 5

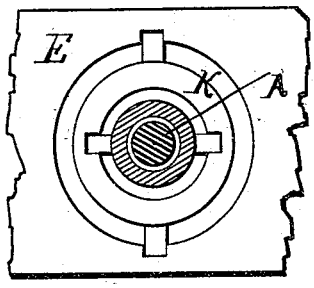

FIG. 6

WITNESSES:

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(No Model.) 3 Sheets—Sheet 3.

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SPINNING SPINDLE SUPPORT.

No. 493,034. Patented Mar. 7, 1893.

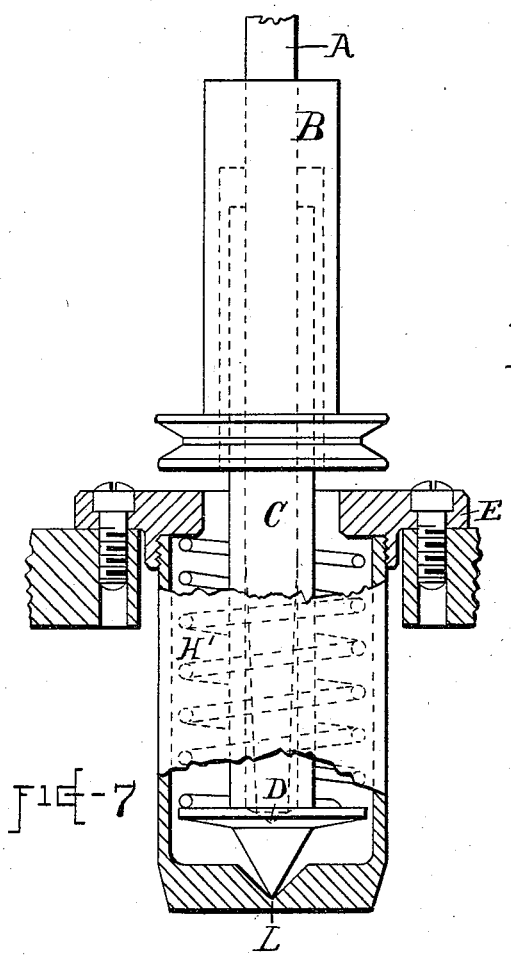

FIG-7

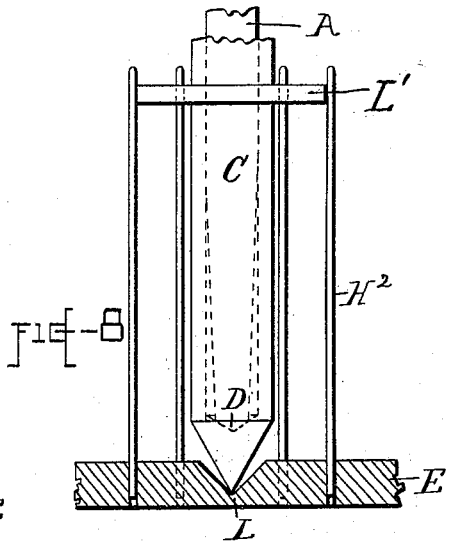

FIG-8

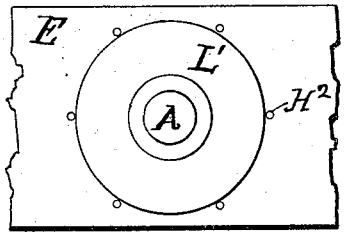

FIG-9

WITNESSES:

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UNITED STATES PATENT OFFICE.

HENRY D. KLOTS, OF NEW YORK, N. Y.

SPINNING-SPINDLE SUPPORT.

SPECIFICATION forming part of Letters Patent No. 493,034, dated March 7, 1893.

Application filed July 23, 1892. Serial No. 441,029. (No model.)

To all whom it may concern:

Be it known that I, HENRY D. KLOTS, a citizen of the United States, residing in the city, county, and State of New York, have invented a certain new and useful Improvement in Spinning-Spindle Supports, of which the following is a specification.

My invention relates to those supports for the upright bobbin-carrying spindles of silk and other spinning machines wherein the rigidly combined bolster and step bearing of the spindle is allowed a lateral movement on the spindle rail, resisted by a stiff spring, to accommodate the deviation of the spinning spindle due to an unbalanced load and thereby permit a higher rate of speed and prevent vibration and its resulting disadvantages. This deviation of the body of the spindle and of its foot has heretofore been accommodated by a spring-held bolster- and step-bearings, yielding both laterally and longitudinally independently of each other, to, supposedly, better accord with the local character of the deviation on the spindle; a spring-held integral bolster and step-bearing has also been mounted by a flat collar upon a flat shoulder in the bolster case so as to yield both laterally and longitudinally, its collar lifting upon said shoulder; but all these devices where the spring-held spindle bearings have been free to yield both laterally and longitudinally as above have failed to do away with the vibration. I have, however, effectually accomplished the result sought in a simple manner by my invention, which consists briefly of a spring-held rigidly combined bolster and step spindle bearing mounted on the rail by means of a ball-and-socket or other joint by which every point of the combined bearings and hence of the spindle-blade is allowed and compelled to move, when vibrating under an unbalanced load, in any direction in an arc of a circle circumscribed about one and the same fixed center.

In order that my invention may be clearly ascertained, I shall first describe in detail the manner in which it may be carried into effect and then particularly point out the invention in the claim.

Reference is to be had to the accompanying drawings forming part of this specification in which—

Figure 1 represents in sectional elevation a spinning spindle and its support embodying my invention. Fig. 2 is a similar view of a modification of the same. Fig. 3 is a similar view of another modification of the same. Fig. 4 represents in side elevation another form of spindle-support embodying my invention, a bobbin being shown in place on the spindle. Fig. 5 is a sectional side elevation of the same. Fig. 6 is a sectional plan view of the same on the line 6—6, Fig. 5. Fig. 7 represents in sectional side elevation another form of my invention. Figs. 8 and 9 are sectional side and plan views respectively of still another form of spindle support embodying my invention.

In all the figures like letters of reference designate corresponding parts.

In all the figures, A designates the spindle-blade, B the sleeve-whirl, C the cylindrical bolster-bearing of the spindle, D the step-bearing of the same and E the bearing-supporting case. The lower end of the spindle-blade A is represented as tapered to form an oil chamber within the bearing.

In the preferred form of my invention, shown in Fig. 1, I form the bolster-bearing C integrally with the step-bearing D, and the whole, just below the sleeve-whirl B, with a spherical enlargement or ball F, which is fitted to work within a spherical socket G formed in the fixed supporting case E, so that the combined bolster and step bearing C D, and hence the contained spindle, can swing universally about the fixed center of the ball-and-socket joint thus formed. A stiff spring H is stretched between the lower end of the combined bolster and step-bearing C D and a suitable fixed support J directly beneath the same to hold the combined bearing C D yielding in its normal position, *i. e.* its position when at rest. When the spindle, owing to an unbalanced load, from the bobbin or otherwise, tends, in spinning, to deviate laterally from its normal position, the universal mounting permits the combined bearing C D, and hence the spindle, to swing laterally on its fixed center against the tension of the holding spring H, until a new balance is attained, and on a re-balancing of the load the spring H instantaneously returns the bearing and spindle to the normal position. Long-continued

use of this arrangement has proven that by thus permitting the spindle to swing universally about a fixed center against the spring-tension, all vibration is absolutely taken up and removed.

In Fig. 2, the spring-held spindle bearing C D is similarly mounted on a ball-and-socket universal joint, but the spindle-bearing itself is of different character, the spindle-blade A being tubular and receiving within it the bolster and step bearing C D, after a well-known design.

In Fig. 3 the construction is similar to that shown in Fig. 1, save that the ball F and socket G are hemi-spherical, and are located at the lower end of the combined bearing C D, the holding spring H′ being compressed between the flat top of the "ball" F, and the case E.

In Figs. 4, 5, and 6, gimbals K are shown employed, instead of the ball-and-socket joint of Fig. 1, to mount the spring-held combined bearing C, D, universally in the case A. The action however is precisely the same as before.

The form of the invention shown in Fig. 7 is similar to that illustrated in Fig. 3, save that a universal pivot bearing L, is substituted for the hemi-spherical ball-and-socket.

In the modification illustrated in Figs. 8 and 9, the universal bearing is like that of Fig. 7, but, instead of the coiled compression spring H′ shown therein, erect straight springs H^2, bearing radially against a wide collar L′ on the bearing C D, are employed to hold the bearing in normal position.

I am aware that a rigidly combined bolster and step bearing such as described herein has heretofore been flexibly mounted on the rail so as to be universally movable thereon, to the same end as my invention, but the flexible joint has been formed of either a flexible packing, or abutting shoulders other than truly spherical, or otherwise so that the motion of the bearing and spindle was not about an absolutely fixed center, while in each and every form of my invention illustrated, such a motion is compelled.

The ball-and-socket gimbal, and cone pivot joints herein shown and described are each properly termed a "universal pivot joint," and I so distinguish them in the claim from the prior universal joints above referred to, which, while rendering the combined bolster and step bearing capable of movement in all directions, do not confine such movement to arcs of circles circumscribed about the same absolutely fixed center, as does my universal pivot joint, by which alone can the natural, like tendency of the combined bearing from its unbalanced load be properly accommodated.

I claim—

A rigidly combined bolster and step bearing for a spinning spindle mounted on the universal pivot joint herein described, the said combined bearing being held in a normal position by a spring, but free to move in every direction from the said normal position against the tension of said spring and confined in said movements to arcs of circles all circumscribed about the one fixed center of said universal pivot joint, as hereinbefore set forth.

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Witnesses:
CLARENCE L. BURGER,
ROSCOE C. TOOMBS.