Dec. 18, 1923. 1,478,048

R. MÜNZENMAIER ET AL

SPINDLE MOUNTING

Filed May 16, 1922

Fig.1.

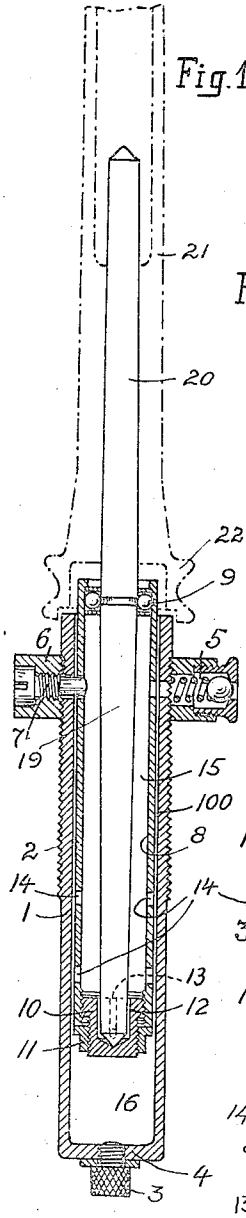


Fig.2.

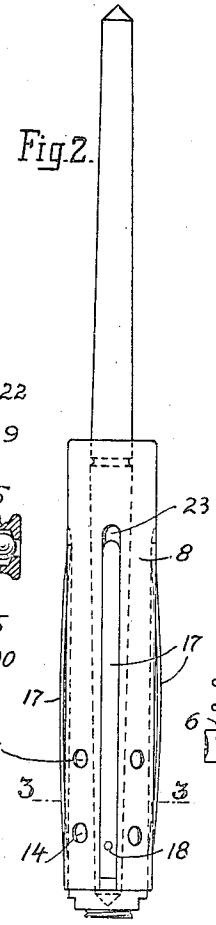
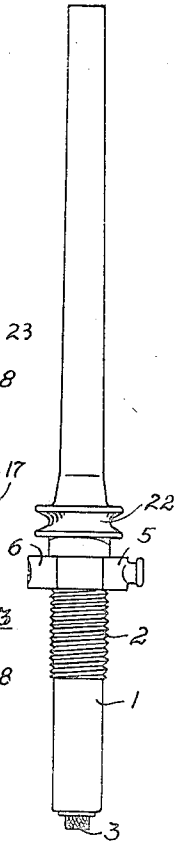


Fig.4.



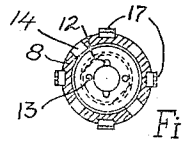


Fig.3.

Fig.5.

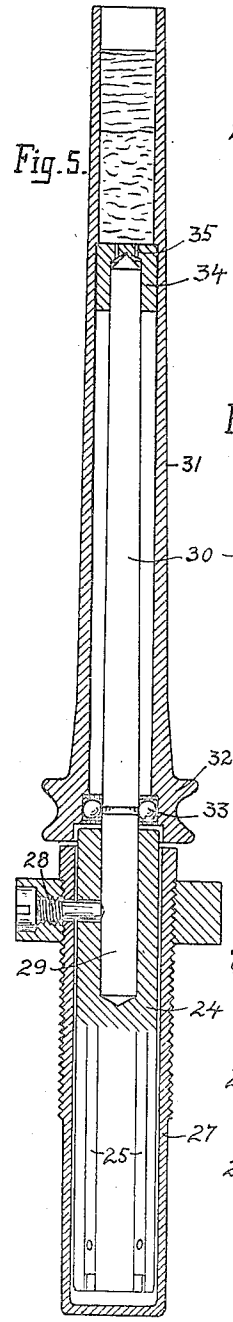


Fig.7.

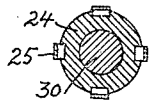
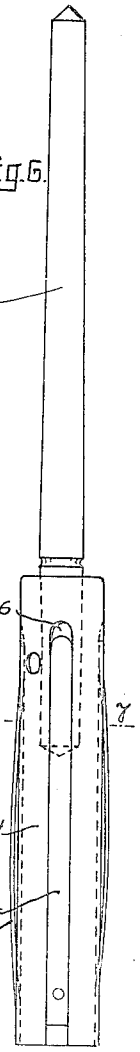


Fig.6.



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UNITED STATES PATENT OFFICE.

RICHARD MÜNZENMAIER, ADOLF MÜNZENMAIER, AND HEINRICH MÜNZENMAIER, OF STUTTGART-CANNSTATT, GERMANY.

SPINDLE MOUNTING.

Application filed May 16, 1922. Serial No. 561,302.

To all whom it may concern:

Be it known that we, RICHARD MÜNZENMAIER, ADOLF MÜNZENMAIER, and HEINRICH MÜNZENMAIER, citizens of Germany, residing at Stuttgart-Cannstatt, Germany, have invented certain new and useful Improvements in Spindle Mountings, of which the following is a specification.

The present invention has reference to improvements in means for mounting the spindles of spinning machines, and its object is to provide means for so mounting the spindle shaft or blade that the various operative stresses are readily compensated and the spindles will not become liable to run out of true and then operate wabbly, which as is well known in the art is the annoying cause of irregular spooling and frequent breaking of the thread. With this object in view we mount the spindle shaft in a special drum, which latter is then inserted into the holder case, which in turn is rigidly secured to a fixed machine part, and we interpose elastic means, for instance, as described hereinafter by way of example, a plurality of leaf springs equidistantly disposed on the outer circumference of the drum, between the latter and the holder case, the spindle thus relatively yieldably floating, so to say, in its holder.

Our invention will best be understood when described in connection with the accompanying drawing, in which Fig. 1 is a longitudinal section through a preferred embodiment; Fig. 2 is a side elevation of the spindle drum with its circumferentially disposed leaf springs; Fig. 3 is a section on line 3—3 of Fig. 2; Fig. 4 illustrates a side view of the complete device; Fig. 5 is a longitudinal section through a modification, partly in elevation, of which Fig. 6 shows a detail in side elevation, and Fig. 7 is a section on line 7—7 of Fig. 6.

Referring first to the construction according to Figs. 1–4 inclusive, the tubular holder case 1 is provided with the external thread 2 for attachment to the spinning machine frame and with a drain plug 3 in its bottom 4. Near its upper extremity there are provided diametrically oppositely the self-closing lubricant valve 5 and the seat 6 for the screw stud 7, which latter in its innermost position extends into the interior of the case 1. Within this case is arranged the drum 8, in the upper end of which is mounted a ball bearing 9 and whose lower end is closed by a step bearing 10, the relative position of which can be adjusted by the counternut 11. Oil ducts 12 and 13 are provided in this step bearing 10, and oil passages 14 in the wall of the drum which serve to conduct the lubricant, which is introduced through the valve 5 into the drum interior 15, into the narrow annular space 100 between the drum and the case walls and down into the lower end 16 of the case interior, from where the spent lubricant can be run-off by removal of the plug 3.

The drum 8 is provided on its circumference with a plurality of slightly outwardly curved leaf springs 17, each one in its own bed 23, countersunk into the outer circumference of the drum, and suitably secured at one end to the drum wall, for instance by means of rivets 18, the other spring end freely contacting with the drum wall within the bed 23. The spring drum is slid into the case under compression of the curved leaf springs and is secured therein against relative rotary and longitudinal displacement by the screw stud 7, which latter, as it were, serves as a pivot to allow the drum to assume more or less oblique positions within its case. The lower spindle shaft end 19 is journaled in this drum by the aid of the ball bearing 9 and the step bearing 10, as clearly shown in Fig. 1. To the upper spindle shaft end 20 is fixed the bell 21 with its whorl 22.

Instead of rotatably journaling the spindle shaft and fixing bell and whorl to it, we may also mount the spindle shaft stationarily within the spring drum and rotatably mount the bobbin tube with its whorl on the upper end of the spindle shaft, as illustrated in Figs. 5 and 6. In this instance the drum 24 is provided, as above described, with leaf springs 25 curvedly rising from their countersunk beds 26, and it is similarly secured in the outer case 27 against relative rotary and longitudinal displacement by means of the set screw 28, which latter here also rigidly clamps the lower spindle shaft end 29 and prevents its relative displacement in any direction. On the upper spindle end 30 is rotatably journaled the bobbin tube 31 with its whorl 32 by means of the ball bearing 33 below, and above by the

head bearing 34. Lubricant, in this instance, is preferably introduced from above through the ducts 35.

In both constructional embodiments of the invention the spring drum elastically floats, so to say, in its surrounding holder case, the one-endedly fixed leaf springs readily yielding to the various operative stresses, whereby the danger of the spindle running untrue and operating wabbly is effectively obviated.

What we claim as our invention is:—

1. In a spindle mounting of the character set forth, in combination, a supporting case, a bolster member in said case including a roller bearing near the upper extremity and an adjustable step bearing closing its lower extremity, said bolster member presenting on its outer circumference parallel, equidistantly spaced longitudinally directed recesses, flat outwardly curved springs rigidly secured at one end to said bolster member and their other free ends operable in said recesses, for normally equidistantly spacing said bolster member within said case practically all over its length, and means for relatively freely pendulously supporting said bolster member and for simultaneously preventing both relative longitudinal and rotary displacement thereof, comprising a fulcrum member operable near the upper extremity of said case and loosely engageable in said bolster member at a single point of its circumference.

2. In a spindle mounting of the character set forth, in combination, a supporting case, a bolster member therein, comprising a shell including inner roller-bearing and step-bearing means, and presenting outer equidistantly spaced, longitudinally directed countersunk recesses, said bolster member shell presenting lubricating perforations and a fulcrum bearing perforation, elongated flat, outwardly curved springs operable in said longitudinal recesses, their one ends being rigidly secured to said shell and these springs being of such an extent that they support said bolster member within said case practically over its entire operative length, and a support member for one-sidedly freely pendulously suspending said bolster member and for preventing its relative longitudinal and rotary displacement, comprising a pin laterally operable in said case and freely extending into the fulcrum-bearing perforation of said bolster member.

In testimony whereof we affix our signatures.

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