(No Model.)

W. G. MORRISON.

SPINDLE BEARING FOR SPINNING MACHINES.

No. 548,651. Patented Oct. 29, 1895.

Fig. 1

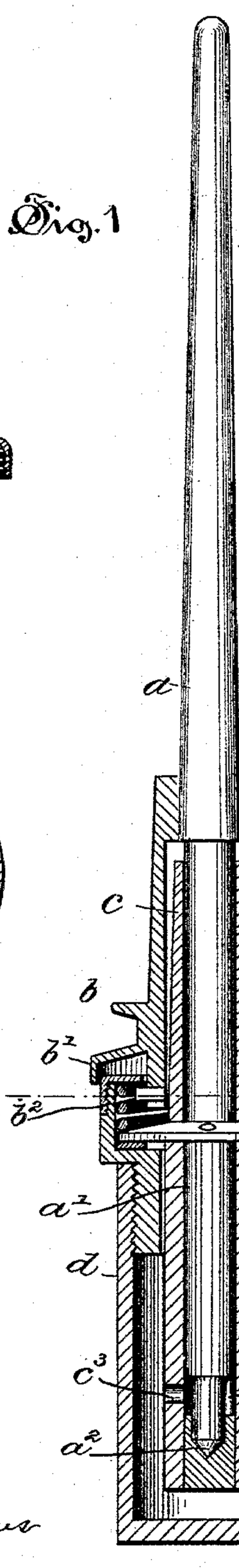


Fig. 3

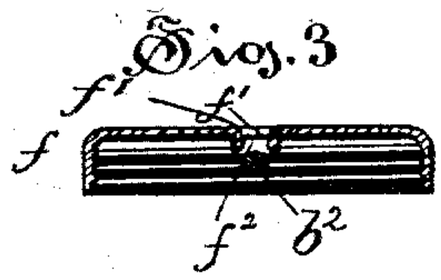


Fig. 2

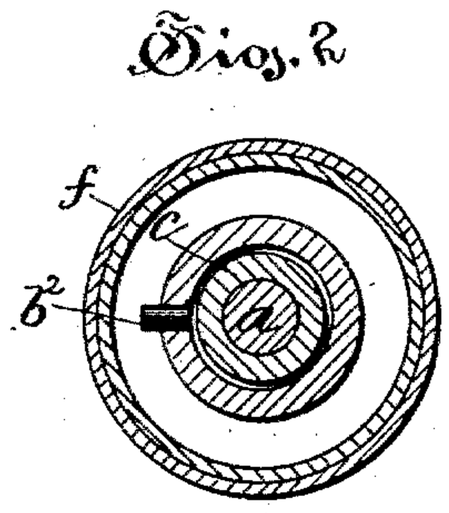
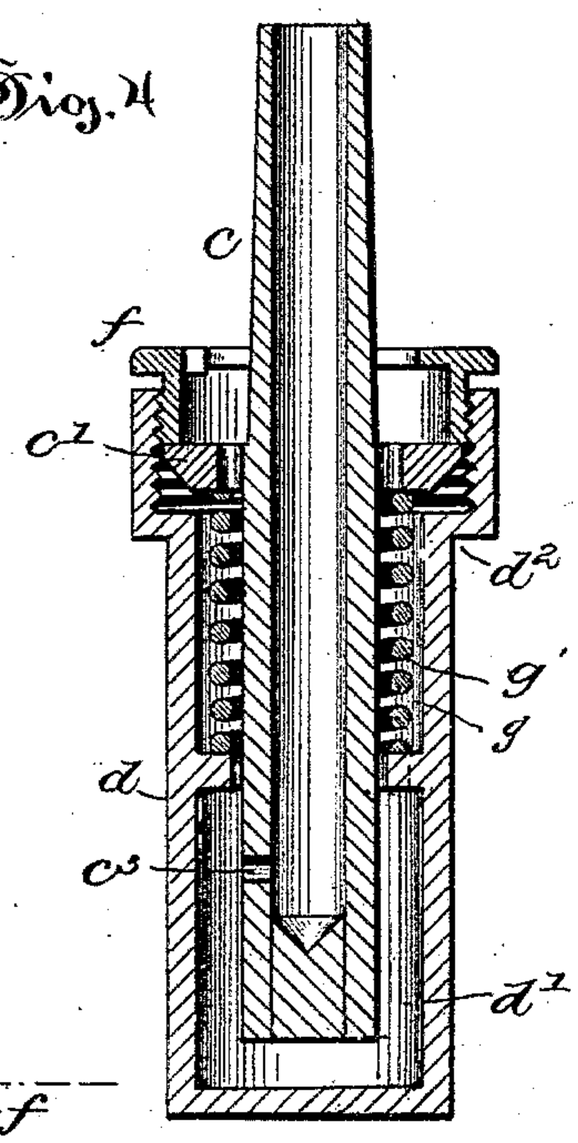


Fig. 4



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UNITED STATES PATENT OFFICE.

WALTER G. MORRISON, OF WILLIMANTIC, CONNECTICUT.

SPINDLE-BEARING FOR SPINNING-MACHINES.

SPECIFICATION forming part of Letters Patent No. 548,651, dated October 29, 1895.

Application filed February 18, 1891. Serial No. 381,985. (No model.)

To all whom it may concern:

Be it known that I, WALTER G. MORRISON, of Willimantic, in the county of Windham and State of Connecticut, have invented certain new and useful Improvements in Spindle-Bearings for Spinning-Machines, of which the following is a full, clear, and exact description, whereby any one skilled in the art can make and use the same.

The object of my invention is to provide a spindle particularly adapted for use in spinner and twister frames, that shall possess certain advantages in construction, whereby the proper lubrication of the spindle is insured and the latter shall be so united to the base piece as to enable it to yield slightly in the rotary movement of the spindle, the latter being held securely against removal from within the oil-cup and with its bearings parts protected from dirt.

Referring to the drawings, Figure 1 is a view in central vertical section of a spindle and its bearing embodying my invention. Fig. 2 is a detail view in cross-section through the top portion of the oil-cup. Fig. 3 is a detail view of the interior of the oil-cup, showing the spindle-lock. Fig. 4 is a view in central vertical section of a modified form of spindle-bearing embodying my invention, with the sleeve-whirl and pulley removed.

In the accompanying drawings the letter a denotes the spindle; b, the sleeve-whirl fast thereto, the bearing portion a' of the spindle within and below the whirl being preferably cylindrical and terminating in a suitable step-bearing a^2, that is directly supported against endwise movement in the bottom of an extension of the tubular bolster c. This tubular bolster has about midway of its length a projecting flange or collar c', that fits within the upper part of the oil-cup d and rests upon a shoulder formed by the contraction of the cup to such dimension as leaves but a comparatively small annular opening or passage between the downwardly-extending portion of the oil-cup and the tubular bolster.

The spindle fits snugly within the bolster, that acts as an immediate lateral support to the spindle, the fit of the spindle-bearing within the bolster being close and such as to permit but little if any lateral shake or play, and yet allow for the passage of a thin film of oil upward through the tubular bolster about the spindle-bearing. The spindle is cut away near its bottom, so as to form an annular chamber c^2, the opening c^3 leading from such annular chamber into the oil-well d' for the passage of oil from the oil well into said chamber.

The lower end of the sleeve 6 extends within the cup to a point below the plane of its upper edge, while the lower flange b' of the pulley formed on the whirl overhangs and projects below the plane of the upper edge of the cup and serves as a dust-excluder. The cup is provided with a cover f, that is preferably secured in place by means of a screw-thread, and this cover is so formed as to fit snugly about the lower end of the sleeve and forms an additional dust-excluder as well as oil-retainer. Near the edge of the circular opening in this cover an opening f^2 is formed, on one or both sides of which is a downturned lug f', the size of the opening being sufficient to permit the passage of the pin b^3, that is located on and projects from the lower part of the sleeve that is located within the oil-cup, and the function of this downturned lug f' is to prevent the accidental lifting out of place of the spindle.

The cover is preferably made of sheet metal formed to shape, the pin-opening being formed by bending down the metal on both sides, so as to form lugs f', the normal position of the pin, of course, being below the lower ends of the lugs, so as not to interfere with the spindle in its rotary movement in its bearings.

The oil-cup d extends downward below the bottom of the tubular bolster that is, in fact, located within the cup, so as to form an oil-well, and this cup may be formed in two portions, as shown in the drawings, or may be formed in one part, and, if desired, the bottom may be plugged in any convenient manner.

The spindle is secured in place in the rail by thrusting the lower portion of the oil-cup in the hole in the rail, the shoulder d^2 near the upper part of the cup resting upon the top of the rail, and the whole is secured in place, as by means of a clamp-screw fast to the rail, if desired. The collar c' on the bolster is perforated to allow of the passage of oil with which the cup is filled to a point

above the collar and preferably quite to the top of the cup. As the spindle runs the oil passes from the well through the opening c^3 into the chamber c^2 and from that chamber up and along the cylindrical spindle-bearing a' and over the top edge of the tubular bolster and down again within the sleeve-whirl to the upper part of the oil-cup. The inclosed cup prevents any spattering of oil by the rapid rotary movement of the spindle, and dust, dirt, and waste are perfectly excluded from the running parts, and the outer part of the spindle offers no roughness or projecting part on which the dust or waste can accumulate.

It will be seen that in a device constructed as above described the whole length of the spindle within the tubular bolster is utilized to provide a side bearing for the spindle, that for this reason runs truer and more freely, at the same time means being provided to prevent the accidental removal of the spindle. In order to give to this spindle a certain degree of laterally-yielding motion, a spiral spring is located within the oil-cup, with its upper end thrusting against the cover of the cup and its other end resting upon the upper surface of the collar, and the spindle is thus permitted to adjust itself to an unbalanced load.

In the modified form of my invention shown in Fig. 4 the oil-cup has a central receptacle for the tubular bolster, and this is counterbored to form a spring-socket g, the spring g' being located in such socket and surrounding the bolster, with one end thrusting against the bottom of the socket and the other against the under side of the collar on the bolster. The cover of the oil-cup fits within it and is held in place by the interengaging threaded parts, the lower edge of the cover being adapted to rest upon the top of the collar on the bolster, and this construction enables the degree of compression of the spring to be graduated by means of the cover, that may be turned down so as to tightly compress the spring or turned up so as to release the tension. This collar is provided with the locking mechanism similar to that already described, the opening f^2 in both instances allowing the pin on the sleeve-whirl to pass freely in attaching the spindle in place, and the downturned lugs f' preventing the accidental removal of the spindle.

In doffing a bobbin a twist is often given to it at the same time with a lifting-pull, and this is liable to bring the pin on the sleeve under the opening in the cap, if its under side is plain, and allow the spindle to be pulled out of its seat. To prevent this, the lugs are formed so that the pin will bring up against a lug just before it reaches the opening above described, and thus prevent any accidental removal of the spindle.

I claim as my invention—

1. In combination with a sleeve whirl spindle having a cylindrical bearing and a locking pin borne on the sleeve thereof, the oil cup having a seat for a collar on the tubular bolster, the tubular bolster having a projecting collar located within the oil cup, the spring engaging said collar in such manner as to afford yielding lateral movement for the bolster, the cup cover secured to the cup and forming a means of adjusting the tension of the spring and provided with downturned locking lugs located on the under side of the cup cover, all substantially as described.

2. In combination with an oil cup having a removable cover with a central opening and an aperture for the passage of a locking pin, the sleeve whirl spindle having a bearing within the oil cup and a flange on the sleeve adapted to overhang the upper part of the oil cup and having the locking pin borne on the sleeve thereof, all substantially as described.

3. In combination with an oil cup having a removable cover with a central opening and an aperture for the passage of a locking pin and also provided with downturned locking lugs located one on each side of said aperture, the sleeve whirl spindle having a bearing within the oil cup and a flange on the sleeve adapted to overhang the upper part of the oil cup and having the locking pin borne on the sleeve thereof, all substantially as described.

4. In combination with a sleeve whirl spindle having a cylindrical bearing, a locking pin extending outward from the sleeve, a tubular bolster, a collar located on the bolster, an oil cup having a seat for said collar, a cup cover having a downturned flange overhanging the wall of the cup and with downturned locking lugs projecting from the under side of the cover, all substantially as described.

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