(No Model.)

G. E. TAFT & H. F. WOODMANCY.

SUPPORT FOR SPINNING FRAME SPINDLES.

No. 412,996. Patented Oct. 15, 1889.

Fig. 1.

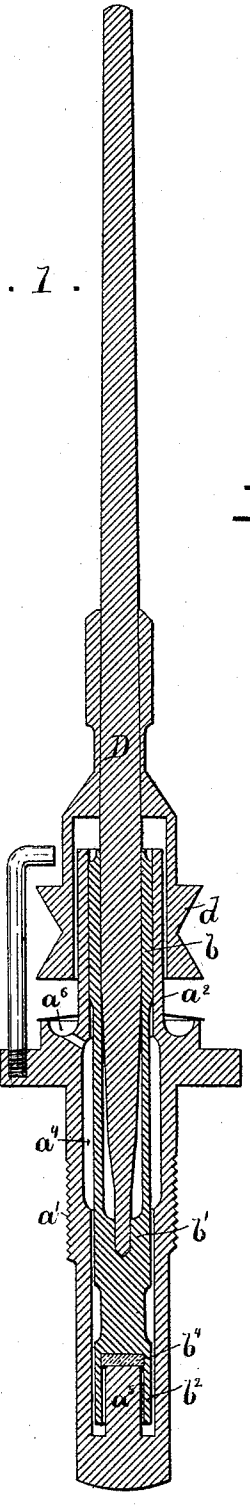


Fig. 2.

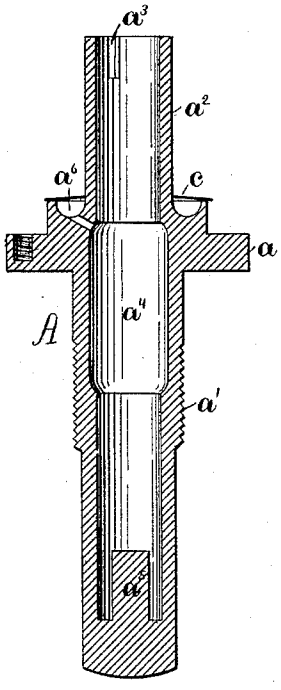
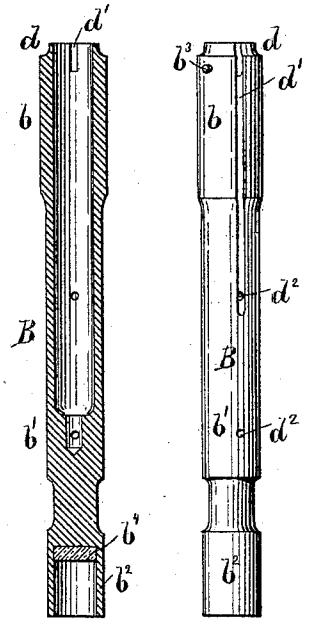


Fig. 3. Fig. 4.



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UNITED STATES PATENT OFFICE.

GUSTAVUS E. TAFT AND HENRY F. WOODMANCY, OF WHITINSVILLE, ASSIGNORS, BY MESNE ASSIGNMENTS, TO THE SAWYER SPINDLE COMPANY, OF BOSTON, MASSACHUSETTS.

SUPPORT FOR SPINNING-FRAME SPINDLES.

SPECIFICATION forming part of Letters Patent No. 412,996, dated October 15, 1889.

Application filed October 3, 1885. Serial No. 178,913. (No model.)

To all whom it may concern:

Be it known that we, GUSTAVUS E. TAFT and HENRY F. WOODMANCY, citizens of the United States, residing at Whitinsville, in the county of Worcester and State of Massachusetts, have invented certain new and useful Improvements in Supports for Spinning-Frame Spindles, of which the following is a specification, reference being had therein to the accompanying drawings.

Our present invention relates to the bolster and its bearing in the bolster-case for supporting the spindles of spinning-machines.

The objects of our invention are to prevent the chatter, vibration, and noise in spinning-machine spindles running at high speed and to secure a firm lateral support for the spindle-bolster, (metal against metal,) which support presents a large surface and prevents the driving-band from drawing the spindle out of its true vertical position. We attain these objects by the construction illustrated in the accompanying drawings, in which—

Figure 1 is a vertical section showing a spindle provided with a sleeve-whirl supported in a combined bolster and step secured in a bolster-case constructed according to our invention. Fig. 2 is a vertical section through the bolster-case. Fig. 3 is a vertical section of the combined bolster and step. Fig. 4 is a side view of the same.

Heretofore many attempts have been made to secure a spinning-machine spindle that can be run at a high speed without the thumping, jarring, heating, wabbling, and uneasy motion of spindles running at high speed, the most common method being by means of bolsters having more or less freedom within their supporting cases or holders, held in the vertical position by means of elastic packing or springs placed so as to bear against the bolster, so that (in accordance with the theory set forth in most patents relating to such structures) the spindle can automatically adjust itself to any change in the center of gravity caused by any inequality of bobbin or the yarn load on the spindle.

After a series of practical experiments we have constructed a combined bolster and step for spinning-machine spindles which has a firm support of considerable length in the bolster-case at the upper end of the bolster, which support extends above and below the center of the whirl, so that the pull of the driving-band cannot change the vertical axial position of the bolster by moving the spindle and bolster laterally, and have given the step the capacity of slight lateral play. We support this combined bolster and step on an elastic disk placed in the bottom of the bolster-case, and find that this spindle can be run at the highest practical speed without noise, heating, wabbling, or the uneasy motion incidental to other spindles provided with bolsters as heretofore constructed.

In the drawings, A is the bolster-case provided with the flange a, by which it rests on the bolster-rail, and the screw-thread a' on which a screw-nut is placed, which, by being screwed against the lower surface of the bolster-rail, secures the bolster-case in the bolster-rail.

The bolster-case A is provided with the tube a^2 extending above the flange a. The bore of the tube a^2 is bored and finished to form a cylinder of uniform diameter, or as nearly so as the modern tools and usual skill will make it.

a^3 is a shallow groove formed on the inner surface of the tube a^2.

a^4 is an enlargement of the bore of the bolster-case A, which forms an oil-reservoir.

a^5 is a pin projecting from the bottom of the bolster-case.

a^6 is an oil-cup surrounding the tube a^2 and connecting, by a duct or ducts, with the oil-reservoir a^4. This oil-cup a^6 is covered by a light sheet-metal ring made convex on top and extending over and beyond the outer edge of the oil-cup. This form prevents the lodgment of dust and lint on the cap and allows the cap to be easily raised when oiling.

B is the combined bolster and step which forms the bearing for the spindle. The upper portion b is turned and finished of uniform diameter throughout, or as nearly so as modern tools and skilled workmen will make it.

The portion b of the bolster B is of a di-

ameter to fit the bore of the tube a^2 of the bolster-case A and allow the combined bolster and step to be inserted or removed when required. The fit between the bolster the whole length of the enlargement b and the bore of the tube a^2 of the bolster-case is not a driven fit, but a close sliding fit, the periphery of the bolster the whole length of the enlargement b being in contact with the interior cylindrical surface of the tube a^2, so as to secure a bearing for the bolster in the bolster-case and hold the same against lateral movement in any direction, and also maintain the axial relation of the bolster to the bolster-case by reason of the length of this bearing, which, as is clearly shown in Fig. 1, extends from a point above to a point below the whirl. The lower portion of the combined bolster and step at b' is of less diameter than the bore of the bolster-case, thus allowing lateral play of the step, as hereinbefore stated, and the extreme lower end is formed into the cup b^2, in which a disk of elastic material b^4 is secured, which, resting on the pin a^5, acts as an elastic cushion interposed between the metal of the combined bolster and step and the bottom of the bolster-case. That part of the tube which connects the parts b and b' has walls so thin that this part will bend elastically to allow the step b' to move laterally with the foot of the spindle to the slight extent required in high-speed spindles.

D is the spindle, provided with the sleeve-whirl d, which surrounds the tube a^2 of the bolster-case A and the upper end b of the combined bolster and step B. The lower end of the spindle rests in the step of the combined bolster and step at b', and has the usual fit and bearing at the upper end of the bolster-tube at b on a line with the whirl.

To prevent the spindle and bolster-tube from turning together from the want of proper lubrication or the binding of the spindle in the bolster-tube, the bolster-tube is provided with the pin b^3, which enters the slot a^3 of the bolster-case, and to facilitate the return of the oil raised by the revolving spindle above the bolster-tube the bolster-tube B is provided at its upper end with the channel d, which channel connects with the vertical groove d', formed in the side of the bolster-tube and extending down to the oil-chamber.

d^2 d^2 are ducts connecting the oil-chamber a^4 with the interior of the bolster-tube or combined bolster and step B.

Having thus described our invention, we claim as new and desire to secure by Letters Patent—

1. A combined bolster and step having its upper part of a diameter to closely fit the bolster-case above and below the center of the whirl, and its lower end provided with a chamber and an elastic disk placed within said chamber, in combination with a bolster-case provided with an internal stem projecting upward from its bottom to support the bolster upon its elastic disk, substantially as and for the purpose described.

2. The combination of a spinning-spindle and its whirl, and a bolster-case provided with an internal stem projecting upward from its bottom, with a combined bolster and step having a chamber and elastic disk in its lower end, its upper part b forming a cylinder to fit closely into the bolster-case above and below the center of the whirl, as and for the purpose described.

3. A spindle-support consisting of a combined bolster and step, and the bolster-case supporting and inclosing it and forming a close-fitting bearing for the bolster above and below the center of the whirl, and a loose fit on the lower portion of the bolster, in combination with a spindle and whirl, as described.

4. The combination of a spindle and whirl with a spindle-support consisting of a bolster-case constructed to be secured to a spinning-machine and form an oil-reservoir from which oil is supplied to the spindle-bearings and bolster and step bearings contained in said case, the bolster-bearing being firmly held in the bolster-case against lateral motion above and below the center of the whirl, and the lower or step bearing having capacity of slight lateral motion, as described.

5. The combination of a spindle and whirl with a spindle-support consisting of a bolster-case forming an oil-reservoir, and a bolster-tube containing the bolster and step bearings held in the bolster-case firmly against lateral motion above the whirl and below the same, the step portion being of less diameter than the interior of the bolster-case, and an elastic or yielding cushion supporting said bolster and step bearing, as described.

6. The combination, with the bolster-case A and the bolster-tube B, rigidly secured in the bolster-case against axial or lateral motion near the upper end, of an elastic or yielding material supporting said bolster-tube to form a yielding vertical bearing for the spindle, as and for the purpose set forth.

7. The combination, with the bolster-case and the sleeve whirl-spindle, of the tube B, containing bolster and step bearings for the spindle, the said tube being fixed in the bolster-case at b opposite the bolster-bearing within the sleeve-whirl to resist the band-pull and supported within the chamber of the bolster-case, the said bolster-bearing extending both above and below the center of the whirl, substantially as described.

8. The combination, with the sleeve whirl-spindle, of a tube B, containing the bolster and step bearings of the spindle, and a support for the said tube supporting the latter within the whirl to resist the band-pull, the said tube extending below the point of its support, and the bolster-bearing extending both above and below the center of the whirl, substantially as described.

9. A sleeve whirl-spindle and a rigid bolster

or support therefor below its junction with the whirl, combined with a step and means to support the same loosely and permit it to move laterally with the foot of the spindle.

10. The combination, with a sleeve whirl-spindle, of a bolster case or support having a rigid bearing therein for the spindle, the sleeve-whirl surrounding the said bearing so that the band pulls the spindle against the said rigid bearing, and a step mounted loosely in the bolster case or support to move laterally therein with the foot of the spindle.

11. The combination, with a holder having a rigid bearing therein and a spindle, of a cushioned step-bearing having both vertical and lateral motion in or with relation to the said holder.

12. The combination of a bolster-case with bolster and step bearings placed therein, the said case having an oil-chamber and constructed to hold the bolster or upper bearing against axial or lateral motion, and the step or lower bearing having lateral motion.

13. The combination, with the bolster-case and the bearing-tube rigidly secured in the bolster-case against axial or lateral motion near the upper end, of an elastic or yielding support for the said bearing-tube to form a yielding vertical bearing for the spindle.

In testimony whereof we affix our signatures in presence of two witnesses.

GUSTAVUS E. TAFT.
HENRY F. WOODMANCY.

Witnesses:
W. E. JOHNSON,
C. A. TAFT.