F. J. RABBETH.

Reservoir Bolster Bearing for Spindle of Spinning Machinery.

No. 204,085. Patented May 21, 1878.

Fig. 1.

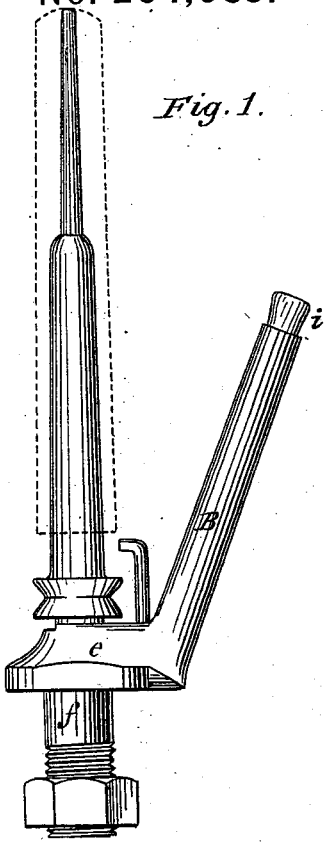


Fig. 2.

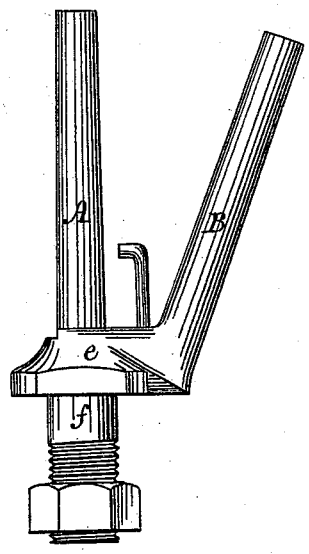


Fig. 3.

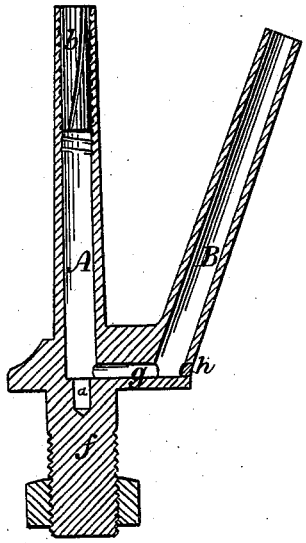
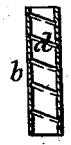


Fig. 4.

Fig. 5.



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UNITED STATES PATENT OFFICE.

FRANCIS J. RABBETH, OF PAWTUCKET, RHODE ISLAND.

IMPROVEMENT IN RESERVOIR BOLSTER-BEARINGS FOR SPINDLES OF SPINNING-MACHINERY.

Specification forming part of Letters Patent No. **204,085**, dated May 21, 1878; application filed November 17, 1875.

To all whom it may concern:

Be it known that I, FRANCIS J. RABBETH, of Pawtucket, in the county of Providence and State of Rhode Island, have invented certain new and useful Improvements in Reservoir Bolster-Bearings for Spindles of Spinning Machinery, of which the following is a specification:

My said improvements relate exclusively to spinning machinery and to that class of spindle bolster-bearings which are combined with reservoirs for containing a lubricant.

The object of my invention is the proper control of the oil which is contained within the reservoir, which also contains the spindle, bolster-bearing, and step. The spindle, between its step and the top of the bolster, being surrounded by oil, its rapid motion is conducive always to a greater upward draft of oil than is requisite for its proper lubrication, and this involves not only a serious waste of oil, but also much labor in keeping the spinning-frame properly wiped. In that class of spindles which have an annular oil-reservoir in the bolster-tube for lubricating the bolster only a comparatively small quantity of oil is contained, and for this reason various means have been heretofore devised for inducing an interior upward current and an exterior downward current for maintaining a continuous circulation of oil from and to the reservoir. In the class of spindle-bearings which have a reservoir containing the lower end of the spindle and its step, and which have also an auxiliary or feeding reservoir, provision has heretofore been made for returning from the top of the bolster-tube the excess of oil carried upward by the spindle into the upper end of the auxiliary reservoir. Wherever this circulation occurs the oil is obviously continuously exposed more or less to contact with the atmosphere and to dust and dirt, thereby impairing its value as a lubricant.

By reason of my invention the oil is not circulated, as heretofore, but is confined within the reservoir, and the parts are so constructed and arranged that while the spindle cannot fail to carry upward sufficient oil for properly lubricating the upper or bolster bearing, it cannot carry upward any excess of oil.

My invention consists, broadly stated, in the combination, with a live spindle and an oil-reservoir which contains the step and the bolster-bearing for the spindle, of a bolster-bearing which is scored or grooved spirally. Now, while this combination of elements is a novel one, no practical value accrues therefrom unless the spiral scores or grooves are so cut and arranged with relation to the spindle, and the direction in which it is revolved in service, that the spindle when rotated will cooperate with the spiral scores or grooves to check, prevent, and force downward the excess of oil which the spindle would otherwise carry upward, and I therefore limit my invention not only to the combination as stated, but also to such a construction of the spiral grooves and their arrangement with relation to the spindle as will prevent an excess of oil from being carried upward by the spindle.

To more particularly describe my invention, I will refer to the accompanying drawings, in which—

Figure 1 represents, in side view, a spindle with bearings and reservoirs embodying my improvements. Fig. 2 represents, in side view, the reservoirs and bearings with spindle detached. Fig. 3 represents the reservoirs and bearings in vertical central section. Fig. 4 represents, in perspective, the tubular bushing which constitutes the upper bearing for the spindle in which the spiral ducts are embodied. Fig. 5 represents the same bushing in longitudinal central section.

The bolster-reservoir is shown at A, at the bottom of which is the spindle-step *a*, which is readily prepared for the spindle after the reservoir has been reamed. The upper bearing is at *b*. This is a tubular bushing, which is similar in its general form and its arrangement with relation to the bolster-reservoir to bushings heretofore employed in connection with the single reservoir. Two kinds of spiral grooves or scores are shown on this bushing, neither of which is novel when considered merely as spiral scores or grooves in a bolster-tube, although such have never, to my knowledge, been used prior to my invention within an oil-reservoir which contains both the step and bolster bearing.

The main groove or score is shown in Fig. 4 at *c*. This score is formed by a spiral slot cut

wholly through the metal tube. It will be seen, when this tube is in position, that this score is in fact a three-sided groove, of which the interior wall of the bolster-reservoir constitutes one side, and that its effect as a groove will be the same as if a cut had been made wholly from within the bushing, leaving the outer surface intact. The minor score is shown in Fig. 5 at *d*. This minor score is cut spirally in a direction corresponding with that of the main score *c*, but is much longer, and the interior of the tube is encircled several times. I prefer to employ both of these scores, although either will separately produce approximately the results desired.

As the oil, which is carried upward by the spindle, has a spiral movement corresponding in direction with the rotative movement of the spindle, the scores or grooves in the tube or bolster should be spiraled in the same direction—that is to say, when viewed from above the spiral groove or score should correspond in its direction with the rotative movement of the spindle; but when viewed from below, of course, the spindle would, under the same conditions, be rotated in a direction opposite to the direction of the spiral groove or score.

An independent or supply reservoir is shown at B provided at its upper end with a plug, as at *i*. It is a tube cast solidly with the bolster-reservoir A, the base *e*, and screw-shank *f*. It is, of course, impracticable to cast these reservoirs with an open duct for connecting them with each other, and therefore I form this duct, as at *g*, by drilling laterally from the outside of the supply-reservoir near its base, through and across the interior thereof, and into the bolster-reservoir at a point considerably above the spindle-step. When thus drilled the outer end of the duct is plugged, as at *h*, either with iron wire, or with solder or other soft metal, or by means of a small screw, as may be desired.

In operation, the scores in the bushing, instead of serving as upward ducts or conduits for oil, as heretofore, serve as checks or obstructions to the upward delivery of the oil, and this is due to the fact that a right-hand spindle is combined with a spiral groove, which, when viewed from above, is a right-hand spiral, and a left-hand spindle is combined with a left-hand spiral.

I have herein referred to pre-existing spindles provided with oil-reservoirs, and also to pre-existing spiral scores or grooves in spindle-bolsters; but I know of no spindle prior to my invention with which an oil-reservoir and spiral scores or grooves were so employed that oil would be prevented by the scores from being unduly carried upward on the spindle from the reservoir.

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

The combination, with a live spindle and an oil-reservoir which contains the step and the bolster-bearing for the spindle, of a bolster-bearing which is scored or grooved spirally for forcing downward the excess of oil carried upward by the spindle when in motion, substantially as described.

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