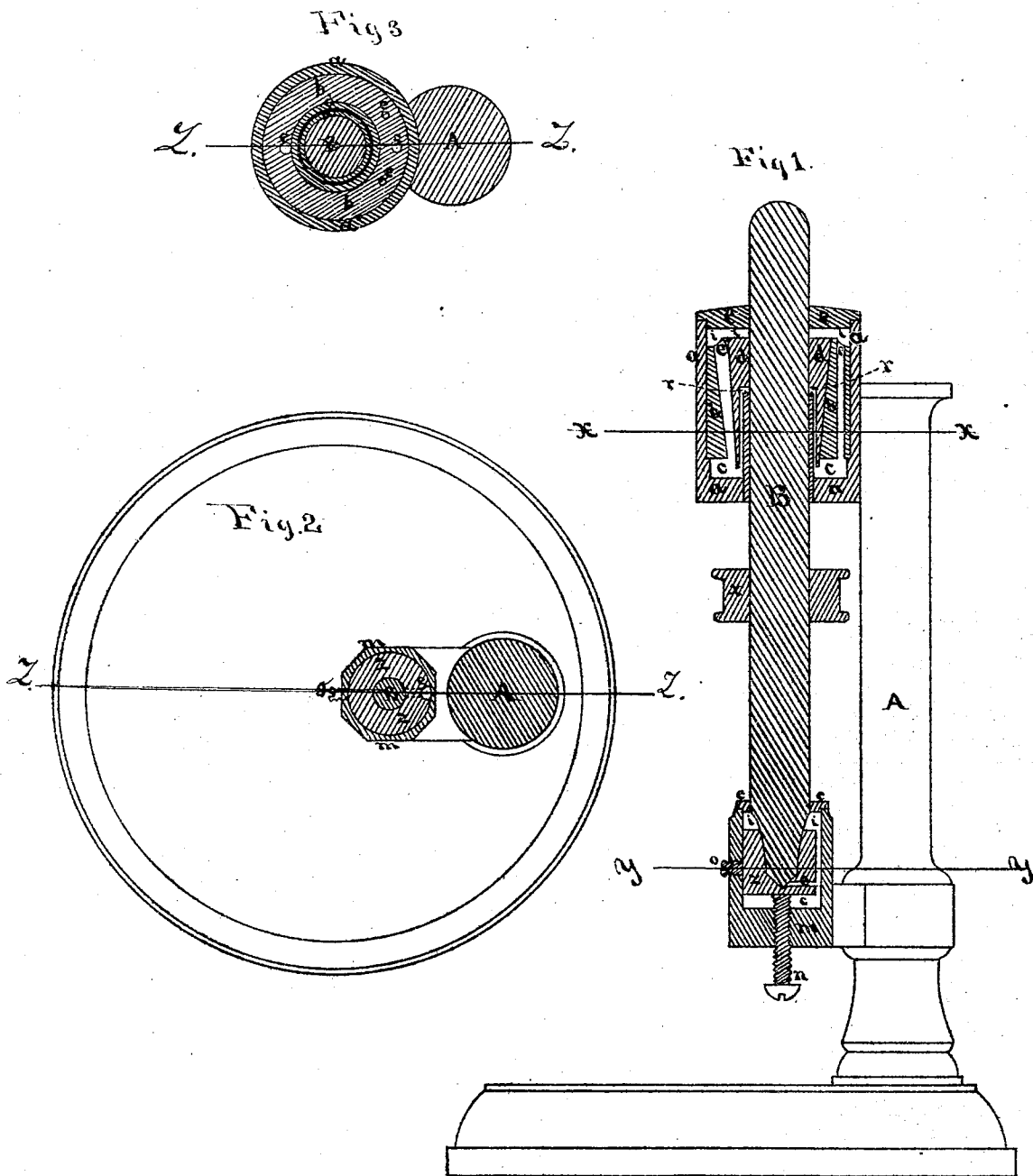


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Improvement in Lubricating Box and Bearing for Upright Shafts.

No. 123,562.

Patented Feb. 13, 1872.



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IMPROVEMENT IN LUBRICATING-BOXES AND BEARINGS FOR UPRIGHT SHAFTS.

Specification forming part of Letters Patent No. 123,562, dated February 13, 1872.

I, JONATHAN P. GROSVENOR, of Lowell, in the county of Middlesex and State of Massachusetts, have invented a new and Improved Self-Lubricating Box and Shaft-Bearing for Upright Shafts passing through the box, of which the following is a full, clear, and exact description, reference being had to the drawing accompanying and making part of this specification.

Figure 1 is a vertical section through the line *z z*, of Fig. 3, of a shaft, bearing, and box of my invention. Fig. 2 is a view of the base and the lower box in which the end of the shaft rests. Fig. 3 is a horizontal section of the shaft-bearing and box through the line *x x* of Fig. 1.

This invention relates, first, to the construction of the box with an oil-chamber below the shaft-bearing, and with connecting passage-ways outside the bearing and in the lining of the box from the oil-chamber to the top of the bearing so placed with reference to each other and to the projection *d* of the shaft into the oil-chamber that the centrifugal force generated by the revolution of the latter shall feed the oil through the passage-ways to the proper point at the top of the bearing for lubricating the same; second, to constructing the bearing of the shaft within the box upon the projection *d*, which is of greater lateral diameter than the shaft and the inside circular wall of the oil-chamber which surrounds it, and is so made that the periphery of the projection *d* extends beyond the inside wall of the oil-chamber, thus causing all surplus oil escaping from the bearing after lubricating it to return into the oil-chamber to be again used, instead of being wasted, as in other devices of this nature.

A is a base and standard, to which the box and shaft are represented as being attached in lieu of a machine-frame. B is a vertical shaft passing through the box, its lower end resting in the step *z*. *x* is a pulley, by means of which motion is communicated to the shaft. *a* is the exterior shell or jacket of the box, an interior circular wall of which, *r r*, projects upward around the shaft B without touching it, and forms a circular oil-chamber, *c*, between itself and the outer shell *a* of the box. *l l* is a cover fitted to the top of the box. *b b* is a lining fitted tightly within the outer shell of the box and secured by grooves fitting projections in the

outer shell of the box, so that it may be lifted out. This lining may be made in one piece with the outer shell of the box if desired. Through this lining are perpendicular passage-ways *e e*, connecting the oil-chamber *c* beneath with the space *i* at the top of the box. On the inside surface this lining is fitted to support the shaft-bearing which revolves within it, and one at least of the passage-ways *e e* opens through the lining upon the bearing between its upper and lower ends. In the upper end of the lining *b* is formed a small channel running entirely around it, in which the upper ends of the passage-ways *e e* terminate. *d* is a projection upon the shaft B, which is affixed to and revolves with the shaft, on the outer circumference of which the bearing of the shaft is turned to fit the lining *b*. The lower end of the projection *d* extends downward into the oil-chamber *c*, around and outside of the inner wall *r r* of the oil-chamber, but without touching the latter. Through the passage-way *e* which opens through the lining *b* upon the bearing between its ends, as before described, a piece of wicking or felt-ing is drawn, extending from the bottom of the oil-chamber *c* to the space *i*. The parts *m*, *z*, *i*, and *n* of the lower box, in which the end of the shaft rests, are shown to illustrate the method of adjusting the upper bearing *d* to its box, and securing it in position by the set-screws *n* and *o*.

The oil is poured into the space *i* at the top of the box, and allowed to run down the passage-ways *e e* and fill the oil-chamber *c* partially full. The revolution of the shaft B, carrying with it the projection *d*, creates centrifugal force within the oil-chamber *c*, which forces the oil to the outer wall of the chamber and carries it around the chamber, forcing it up the passage-ways *e e* to the top of the box, where it passes around the space *i* and lubricates the shaft-bearing. The surplus oil in the space *i* as the shaft continues to revolve, will pass down one or more of the passage-ways *e e* to fill the vacuum created by the expulsion of the oil from the chamber *c*, and be again forced up the passage-ways, thus creating a constant circulation of oil between the oil-chamber *c* and the top of the bearing. It is obvious that the more rapidly the shaft is rotated the greater will be the supply of oil furnished to the bearing. The oil

which escapes from the shaft-bearing *d*, after lubricating it passes immediately into the oil-chamber *c*, where it is again taken up and used, thus saving a great amount of oil usually wasted, and requiring little care in watching the oil-chamber to replenish it with oil, enabling the operator to run his shaft for a week at high speed without re-oiling.

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

1. Constructing a box and vertical shaft-bearing, as shown, or its equivalent, so that the oil for lubricating them is raised by the centrifugal force created by the revolution of the shaft

from an oil-chamber within and at the bottom of the box to the point of its application to them, substantially as described.

2. The bearing of the shaft, formed upon the outer circumference of the projection *d*, the periphery of which extends over the inner wall *r* of the oil-chamber *c*, substantially as described.

3. The vertical passage-ways *e e*, formed in the lining *b* outside the periphery of the projection *d*, in combination with the latter and the oil-chamber *c*, substantially as described.

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Witnesses:

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