(No Model.)

J. WALKER.

LUBRICATING MECHANISM FOR JOURNAL BOXES.

No. 342,486. Patented May 25, 1886.

Fig. 2.

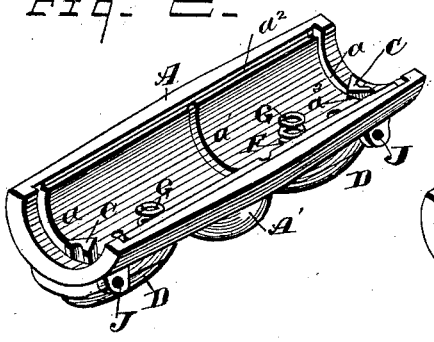


Fig. 3.

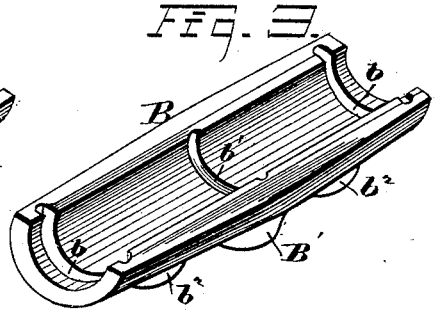


Fig. 1.

Fig. 4.

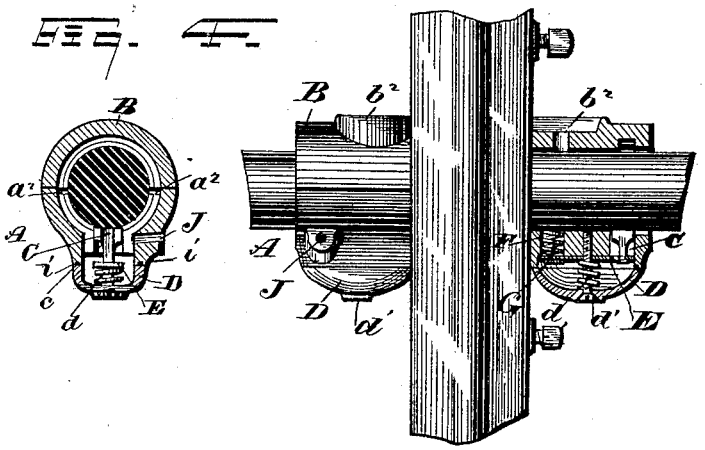
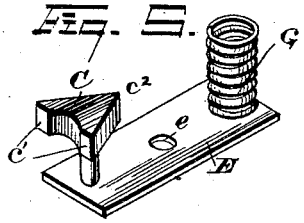


Fig. 5.



WITNESSES

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LUBRICATING MECHANISM FOR JOURNAL-BOXES.

SPECIFICATION forming part of Letters Patent No. 342,486, dated May 25, 1886.

Application filed October 31, 1885. Serial No. 181,519. (No model.)

To all whom it may concern:

Be it known that I, JOHN WALKER, of Cleveland, in the county of Cuyahoga and State of Ohio, have invented certain new and useful Improvements in Lubricating Mechanisms for Journal-Boxes; and I do hereby declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it pertains to make and use the same.

My invention relates to improvements in lubricating mechanism for journal-boxes, having for its object a detachable oil-cup below the journal-box, with a spiral coil of wire or equivalent device extending from the oil-cup to the shaft, to elevate the oil, and a scraper for removing the oil at the end of the journal-box, to return by gravity to the oil-cup, and the spiral and scraper supported by a cross-bar resting on a spring, and the parts held in position by the screw that holds the oil-cup in place.

A further object is to provide a groove or recess along the side of the box to receive oil for the shaft, and an annular groove in the box to receive the oil from the recess and distribute it in the central part of the box.

A further object is to provide a hole for filling the oil-cup, so located that the cup cannot be overflowed.

With these objects in view my invention consists in certain features of construction and in combination of parts hereinafter described, and pointed out in the claims.

In the accompanying drawings, Figure 1 is a side elevation, partly in section, of a journal-box with my improvement attached, and a portion of a supporting-hanger. Figs. 2 and 3 are views in perspective of the two parts of the box. Fig. 4 is a transverse-vertical section of the box on the line *x x*, Fig. 1. Fig. 5 is a view in perspective of the scraper, spiral, and the supporting-plate.

As shown in Fig. 1, the box is supported by a hanger; but this is not essential, as the box might rest on any support. The box is in two parts, A and B, and as self-adjusting boxes are in common use, will usually have bosses A′ and B′ that form a part of a ball-and-socket attachment, although any other attachment for supporting the box may be had when required.

The bottom part, A, has the grooves *a* and *a′*, that correspond with the grooves *b* and *b′* in the cap B, and has also recesses or grooves a^2 along the edges, that connect the said annular grooves. The end grooves receive the surplus oil from the box, and by means of the opening *c* return it to the oil-cup D. The recesses a^2 receive more or less oil from the shaft, a portion of which finds its way into the groove *a′ b′*, where it accumulates until it reaches the bottom of the shaft, and is distributed and insures a thorough lubrication of the central portion of the box. In the openings *c*, that lead from the bottom of the respective grooves *a* to the oil-containers below, operate the scrapers C. These scrapers are preferably of about the form shown in Fig. 5, and may be slightly concaved on top to fit the shaft. The scraper is attached to the plate E, from which it receives a gentle pressure upward that holds it in contact with the shaft, and scrapes the oil therefrom, that, escaping from the box, adheres to the shaft. Any oil that might be thrown from the shaft by centrifugal force is caught in the groove *a b*, so that all of the oil escaping from the box is returned to the container below. The heel of the scraper at *c′* rests against the outer wall of the groove *a*, and the point c^2 fits easily in the V or correspondingly shaped groove a^3, by means of which the scraper is guided; but the opening *c* is of such ample size that the oil is not obstructed in reaching the container by the location of the scraper therein.

A suitable distance toward the center of the box from the openings *c* are the holes F, through which the spirals G pass loosely to a contact with the shaft. These spirals rest on one end of the plate E, opposite to the scrapers, and the plate rests upon and is pressed gently upward by the light spiral spring *d*. The screw-bolt *d′*, that holds the oil-cup against the under side of the box, passes inside of the spring *d* and through the hole *e* in the plate, so that both the plate and spring are held in position and guided by the said bolt, and the force of the spring in pressing the plate upward is about equally applied to the scraper and spiral G. This spiral is of wire, coiled as close as may be, so that the coils are preferably more or less in contact. The coils are usually about

one-half inch (more or less) in diameter, and of such length as will reach from the shaft well down into the oil-cup. The plate E may be, and usually is, more or less elastic, and in such case co-operates with the spring *d*. I have constructed these plates with a downward curve in the center, to rest on the bottom of the cup and serve the double purpose of a spring and support for the scraper and spiral; but such construction is objectionable, because the bending of the plate throws the scraper and spiral out of line, and causes them to move too hard in their respective openings. The plate E therefore is preferably so stiff as to bend but little at most. The spiral presents to the oil a comparatively large surface, and the gradual incline of the coils doubtless makes the ascent of the oil more easy, for it is found that the spiral will raise oil much more freely and to a greater distance than tubes or plates. Capillary or analogous action is probably the principal cause, aided, perhaps, by suction caused by the motion of the shaft. Whatever the cause or complication of causes, it is found that the spirals, arranged as shown, will furnish such an abundant supply of oil to the journal-box that large quantities of oil are discharged from the ends of the box, and are returned to the oil-container in the manner aforesaid. A metal plug with a screw-thread in place of the wire spiral will raise oil slowly in the same manner, and if the plug be made hollow and threaded on the inside its capacity for the purpose will be correspondingly increased. The wire spiral seems to operate the better of the two, and is also preferred on account of its cheapness.

Either the wire or hollow-plug spirals are entirely free from clogging or gumming, such as wicks are subject to and that render wicks so unreliable for this purpose.

For convenience in placing and removing the mechanism the spiral and scraper are both preferably attached to the plate E in any suitable manner.

By loosening the bolt *d'* the oil-cup, scraper, spiral, and connected mechanism may be removed in mass and cleaned and returned in a few moments, and this may just as conveniently be done when the shaft is in motion.

In starting a shaft on which there is no oil—as, for instance, a new shaft—oil should be freely applied through the tallow-cups b^2, and after a few moments the oil will commence to feed by means of the spiral, after which no attendance is required in starting or running the shaft other than to supply the cups below with oil from time to time—say once a month, sooner or later—according to the capacity of the oil-container.

A ground joint may be made between the oil-cup and the bottom of the box, or packing or cement may be used, and if the latter a slight groove, as shown at *i*, will be found useful in holding the cement.

An oil-hole, J, is provided for filling the cups, and is located so that at the outer end about half of the diameter of the hole is below the inner line of the box at the extreme end outside of the groove *a*, where the oil would overflow if the cup were filled too full, and by means of which such overflow is prevented, as the oil would first run out of the oil-hole J.

The parts are convenient for casting, and so little fitting is required that the box and mechanism complete can be made at a small initial cost, and the simplicity, durability, and convenience of the parts in cleaning render the journal-box in every way desirable.

What I claim is—

1. In a journal-box, the combination, with oil containers below the box, of a spiral, preferably of wire, extending from the containers to the journal and held in contact with the latter by a yielding pressure, substantially as set forth.

2. In a journal-box, an oil-container below the box, a scraper and spiral engaging the journal, and the spring and scraper mounted on a single plate or lever that is pressed upward by a single spring, substantially as set forth.

3. In a journal-box, an oil-container below the box, suitable openings for feeding the oil to the journal and returning the surplus oil to the container, and a scraper and spiral located, respectively, in the said openings, with a supporting plate and spring, substantially as set forth.

4. In a journal-box, an oil-container below the box, a scraper and spiral extending from the journal to the oil-container and supported by a single plate and spring, that embrace and are guided by the bolt that secures the oil-container, substantially as set forth.

5. In a journal-box, the combination with oil containers below the box and means for automatically feeding the oil to the journal and returning the surplus oil to the container, of one or more longitudinal grooves or recesses in the box in open relation with one or more annular grooves, to aid in distributing the oil in the central part of the box, and a scraper, all of the above parts combined substantially as set forth.

In testimony whereof I sign this specification, in the presence of two witnesses, this 10th day of July, 1885.

JOHN WALKER.

Witnesses:
CHAS. H. DORER,
ALBERT E. LYNCH.