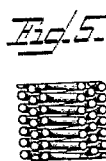
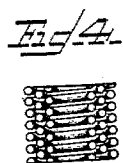
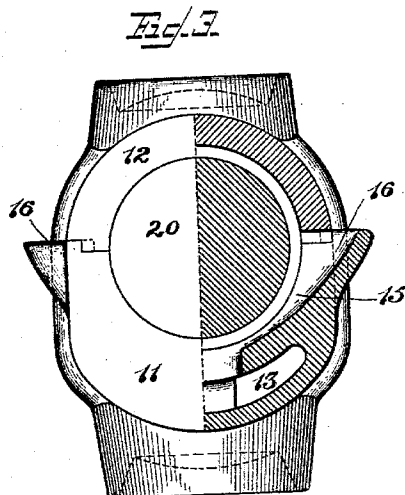
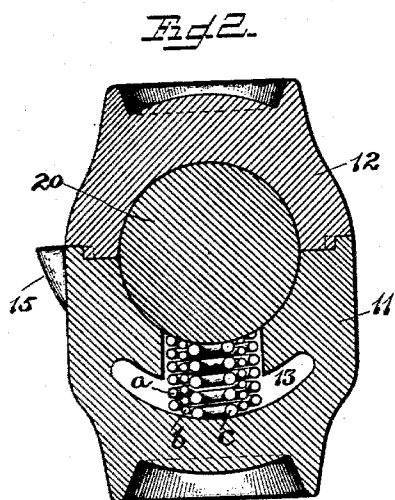
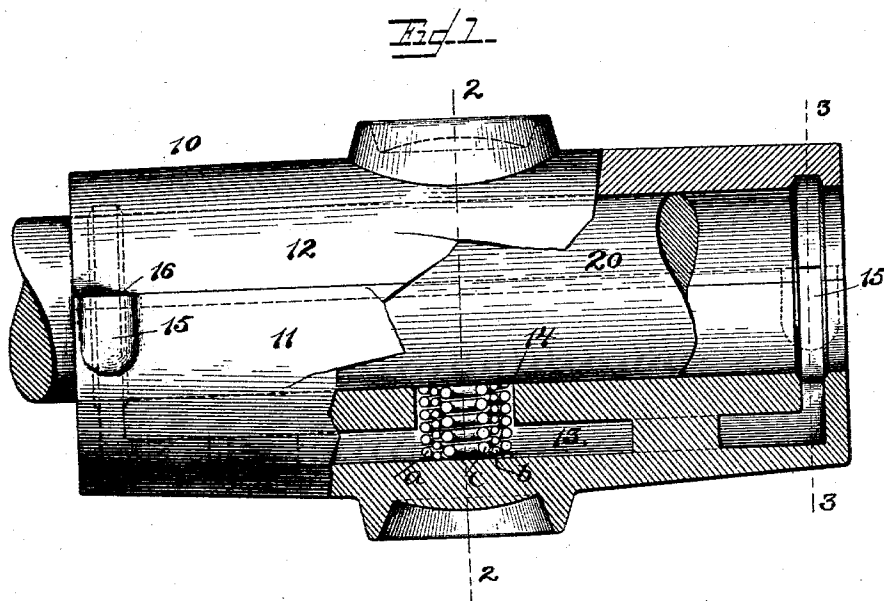


(No Model.)

E. D. TUCKER.
LUBRICATING DEVICE.

No. 569,847.

Patented Oct. 20, 1896.



ATTEST
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THEODORE H. MEAD, AND CHARLES W. CARPENTER, OF SAME PLACE.

LUBRICATING DEVICE.

SPECIFICATION forming part of Letters Patent No. 569,847, dated October 20, 1896.

Application filed June 17, 1896. Serial No. 595,878. (No model.)

To all whom it may concern:

Be it known that I, EDWIN D. TUCKER, a citizen of the United States, residing at New York, county of New York, and State of New York, have invented certain new and useful Improvements in Lubricating Devices, fully described and represented in the following specification and the accompanying drawings, forming a part of the same.

This invention relates to a device for lubricating journal-bearings.

It has long been customary in proving for the lubrication of journal-bearings to make use of capillary attraction to elevate oil from a reservoir beneath the journal; but great difficulty has been experienced with the devices heretofore used for so feeding the oil on account of the clogging of the narrow spaces in which it is intended the oil shall rise, thus necessitating frequent renewing or cleaning of the elevating device or medium. This difficulty is especially noticeable when wicks are used, it being necessary to frequently renew such wicks.

The present invention aims to produce a device for feeding oil or other lubricating liquids or semiliquids to a journal by capillary attraction which will not become clogged and which will be cheap and highly efficient.

To these ends I employ as the medium on which the oil may rise under the influence of capillary attraction a device consisting of a plurality of spiral springs arranged successively one inside the other, which when placed with one end in the oil and the other bearing against the journal will act to feed the oil to the journal.

The accompanying drawings show the invention in the preferred form as applied to a journal-box of a usual construction, in which—

Figure 1 is a side view of such journal-box, partly broken away and showing the lubricating device in section. Fig. 2 is a section on line 2 of Fig. 1. Fig. 3 is an end view taken from the right-hand side of Fig. 1, partly in elevation and partly in section, on line 3 of Fig. 1. Figs. 4 and 5 are detail views of modified forms of the lubricating device.

In the drawings, 10 represents a common form of journal-box, made up of a body portion 11 and a cap-piece 12, and having an oil-reservoir 13 in the part 11 beneath the bearing and communicating with the bearing-chamber by an opening 14, which reservoir may be filled through channels 15 at either end of the box having mouths 16, said channels 15 being extended entirely around the bearing to serve to return the excess oil from each end of the bearing to the reservoir, all as usual.

For the purpose of raising the oil from the chamber 13 to the journal 20 there is provided, in the preferred construction shown in the drawings, a device consisting of a plurality of spiral springs *a b c*, arranged successively one within the other, and this device is placed in the opening 14 with the lower ends of the spirals extending into the reservoir 13 and their upper ends bearing against the journal.

The device may be made up of any number of spirals, but three, as shown in the drawings, are found to give excellent results. The spirals should be closely coiled or sufficiently compressed when in use so that the successive coils of each spiral shall lie sufficiently close together to form capillary spaces between them.

To prevent the successive spirals from becoming sidewise displaced relatively to each other, they are preferably formed of different pitch and of different size wires, as shown in Figs. 1 and 2. The spirals are also, preferably, of such pitch that the spaces between their coils is less than the diameter of the wire of the adjoining spiral or spirals, as shown. This feature alone may be depended upon to prevent the sidewise displacement of the spirals, and it is to be noted that it is sufficient for this purpose if each alternate spiral is formed so that the space between its coils is less than the diameter of the wires of its adjoining spirals, as, for example, when three spirals are employed it will be sufficient if either the intermediate spiral or the first and third spirals are so formed. I have shown in Fig. 4 a construction in which the spirals are all of the same pitch and formed of the same

size wire, the spaces between the coils of each spiral being less than the diameter of the wires.

The sidewise displacement of the spirals may, however, be prevented in any other suitable way, as, for example, by employing alternately right-hand and left-hand spirals, as shown in Fig. 5, where *a* and *c* are right-hand spirals and *b* is a left-hand spiral.

The successive spirals are preferably of such relative sizes as to lie closely one within the other, so as to form capillary spaces between the coils of the successive spirals, and the spirals should be of such length that when in position they will be sufficiently compressed so that their upper ends will be pressed against the journal.

Such a device is well adapted to feed the oil to the journal, the narrow passages favorable to the capillary ascension of the oil being formed between the successive coils of each spiral and between the coils of the several successive concentric spirals. It is customary to allow journals a slight endwise movement in their bearings, and the upper ends of the spirals of the lubricating device will be moved by such endwise movement of the journal and by the rotary movement of the journal, thus causing a more or less constant shifting of the several spirals, and the attrition between the successive coils of each spiral and between the coils of the several successive concentric spirals will prevent clogging, and the device will be kept clear and free to act, and being under compression the upper ends of the spirals will be held in close contact with the journal without the use of other means for this purpose.

It will thus be seen that I have provided a lubricating device which possesses important advantages over the means heretofore used for this purpose, and which is inexpensive and efficient to a high degree.

It will be understood that the device may be used in connection with any suitable construction of bearings and any suitable reservoir or oil supply and may be used for feeding oil or any other liquid or semiliquid lubricant which has the property of rising under the influence of capillary attraction, and that the term "oil," as used in the claims, is intended to include any and all such lubricants, and that the spiral springs may be made of any material and of any form that may be found suitable.

What I claim is—

1. A lubricating device consisting of a plurality of spiral springs having their successive coils lying so closely together as to form capillary spaces between them, and arranged successively one within the other, substantially as described.

2. A lubricating device consisting of a plu-

65 rality of spiral springs having their successive coils lying so closely together as to form capillary spaces between them, and arranged successively one within the other, the successive spirals varying in pitch and being formed of different-sized wires, substantially as described.

70 3. A lubricating device consisting of a plurality of spiral springs having their successive coils lying so closely together as to form capillary spaces between them, and arranged successively one within the other, the successive spirals varying in pitch, substantially as described.

80 4. A lubricating device consisting of a plurality of spiral springs having their successive coils lying so closely together as to form capillary spaces between them, and arranged successively one within the other, the successive spirals varying in pitch and the spaces between the coils of one or more of the spirals being less than the diameter of the wire of the adjacent spirals, substantially as described.

85 5. A lubricating device consisting of a plurality of spiral springs having their successive coils lying so closely together as to form capillary spaces between them, and arranged successively one within the other, the spaces between the coils of one or more of the spirals being less than the diameter of the wire of the adjacent spirals, substantially as described.

90 6. A lubricating device consisting of a plurality of spiral springs arranged successively one within the other, the spaces between the coils of one or more of the spirals being less than the diameter of the wire of the adjacent spirals, substantially as described.

100 7. The combination with a journal-bearing and an oil-reservoir beneath the bearing, of a lubricating device consisting of a plurality of spiral springs having their successive coils lying so closely together as to form capillary spaces between them, and arranged successively one within the other, substantially as described.

110 8. The combination with a journal-bearing and an oil-reservoir beneath the bearing, of a lubricating device consisting of a plurality of spiral springs having their successive coils lying so closely together as to form capillary spaces between them, and arranged successively one within the other, the spaces between the coils of one or more of the spirals being less than the diameter of the wire of the adjacent spirals, substantially as described.

115 In testimony whereof I have hereunto set my hand in the presence of two subscribing witnesses.

EDWIN D. TUCKER.

Witnesses:

F. W. H. CRANE,
E. L. SPEIR.