

(No Model.)

T. J. TELLEFSEN & C. S. LOCKWOOD.  
OIL RETAINER AND DISTRIBUTER FOR HOLLOW ROLLS OF ROLLER  
BEARINGS.

No. 588,667.

Patented Aug. 24, 1897.  
*Fig. 1.*

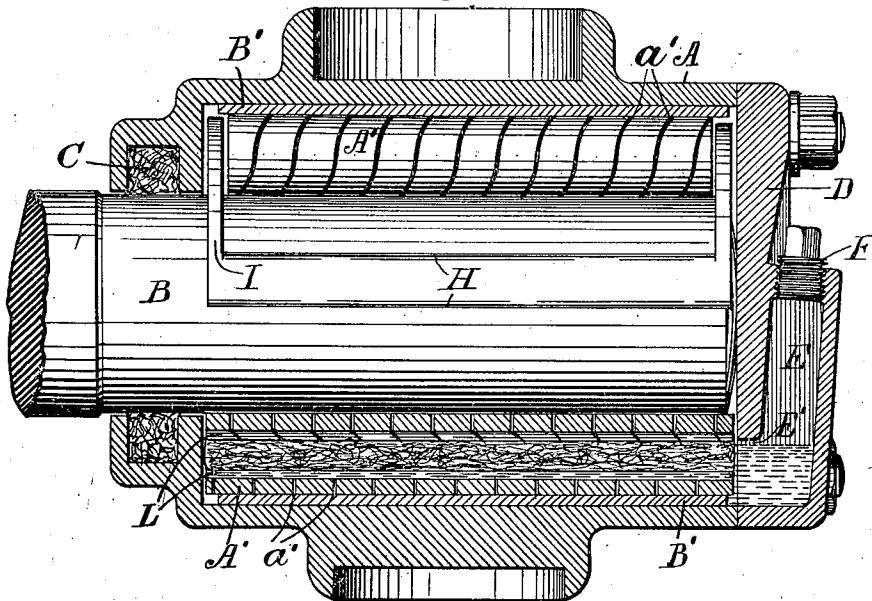


*Fig. 2.*

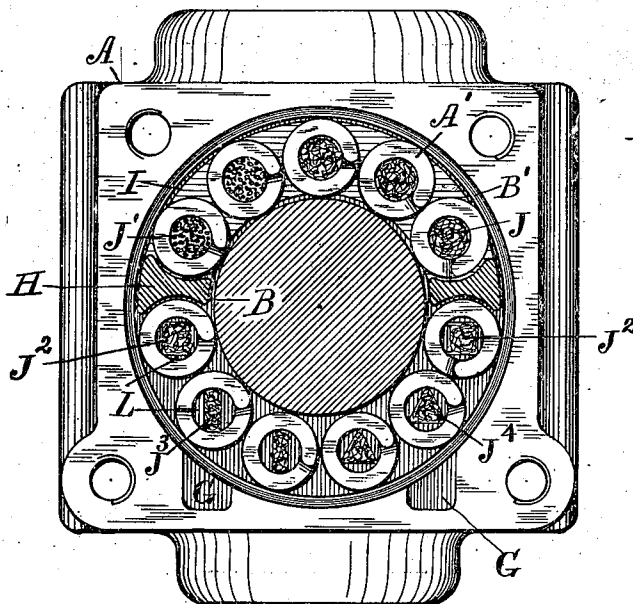
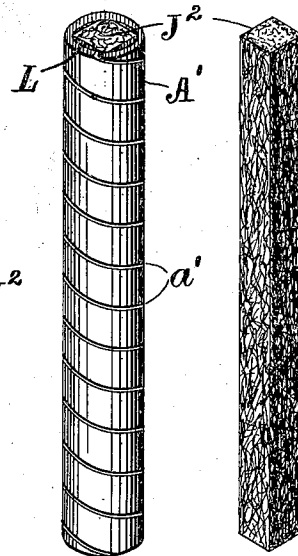


*Fig. 3. Fig. 4.*



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# UNITED STATES PATENT OFFICE.

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## OIL RETAINER AND DISTRIBUTER FOR HOLLOW ROLLS OF ROLLER-BEARINGS.

SPECIFICATION forming part of Letters Patent No. 588,667, dated August 24, 1897.

Application filed October 24, 1896. Serial No. 609,983. (No model.)

*To all whom it may concern:*

Be it known that we, THEODORE J. TELLEFSEN and CHARLES S. LOCKWOOD, citizens of the United States, residing at Newark, county of Essex, State of New Jersey, have invented certain new and useful Improvements in Oil Retainers and Distributers for Hollow Rolls of Roller-Bearings, fully described and represented in the following specification and the accompanying drawings, forming a part of the same.

The object of this invention is partly to distribute the lubricant in an antifriction-bearing in which the shaft is provided with hollow rolls and partly to prevent the loss of oil from the casing of the bearing when the lubricant is supplied thereto. This lubricator has been designed and is particularly adapted for use with rolls formed of a spiral spring, such as are claimed in John W. Hyatt's patent, No. 487,530, issued December 6, 1892. These objects are both attained by providing the body of the antifriction-rolls with an absorbent material. Such material performs a double function, as it operates, first, when the lubricant is introduced to the casing to absorb such lubricant, and thus prevents its loss by leakage around the shaft or from the joints of the casing, and, second, it operates to gradually distribute the oil over the shaft and casing when the shaft is in motion. The bore of the hollow roll may be supplied with a granular or fibrous material to absorb the oil, and may, if desired, be wholly filled with such material, the oil gaining access thereto at the ends of the roll or through apertures provided in the sides of the same. We have found by experience that soft felt is well adapted for the absorbent material and that it is not desirable to wholly fill the interior of the roll, and we therefore employ a square bar or longitudinal strip of the fibrous material which when inserted in the bore of the roll leaves at its flat sides longitudinal channels through which the oil may move freely. By this construction the oil when supplied to the casing is circulated rapidly within the rolls and is freely taken up by the absorbent material.

In the annexed drawings the invention is

illustrated in a car-axle box provided with tubular rolls formed of spiral springs, the successive coils of the roll being slightly separated, which affords numerous apertures or channels for the distribution of the oil to the shaft and the casing; but the invention may be applied to tubular rolls of any description.

Figure 1 shows a car-axle box in longitudinal section at the center where hatched, one of the rolls and the parallel guide for the rolls being shown with the axle in elevation. Fig. 2 shows the front end of the box with the cap removed. Fig. 3 is a perspective view of one of the antifriction-rolls; and Fig. 4, a perspective view of a strip of absorbent material, as felt or other fibrous substance.

A designates the casing, within which the rolls A' and axle B are supported, and which is shown provided with a steel lining-sleeve B'. The rear end of the casing is provided with an annular recess containing a dust-guard C, and the front end is provided with a cap D, having an oil-inlet E for supplying the casing with oil. The inlet is shown closed by a plug F, and its lower end connects by openings E' with longitudinal grooves G in the casing, which feed the oil to the lower part of the same at both ends of the lining B'.

Eleven of the rolls A are shown inserted between the shaft and the lining, the rolls being divided into two groups by the usual parallel guides H, which are fitted between the shaft and lining at opposite sides and connected at opposite ends by yokes I. Such guides travel around freely within the casing with the rolls to hold them parallel.

The rolls above the guides H are shown filled with a core of absorbent material, which may consist of matted fibers J—as, for instance, vegetable pulp or bundles of long fiber, as J'.

The rolls below the guides H are shown supplied each with a bar of angular cross-section made of fibrous material, which is preferably formed of felt, with the corners adapted to crowd inside the bore of the roll to be held securely therein by friction. Square bars J<sup>2</sup> are shown inserted in two of the lower rolls, flat bars J<sup>3</sup> in two of such rolls, and triangular bars J<sup>4</sup> in the remaining rolls.

In the roll at the top of the bearing in Fig. 1 the spiral coils are shown separated by a narrow space  $a'$ , and it is obvious that when the felt or elastic absorbent material formed with corners is forced within such rolls the corners will project into such spaces and thus be held from longitudinal movement within the rolls.

The spaces between the sides of the angular bars and the bore of the roll within which it is fitted form longitudinal channels L, through which the oil which enters the ends of the roll can flow freely for absorption by the porous material. Such channels are plainly shown in the lower roll in Fig. 1 with the oil filling the lower channel. A square bar of fibrous material is shown in Fig. 4 and the contact of its corners with the roll is shown in Figs. 1 and 3.

It is common to supply a liberal charge of oil to such a casing when required for protracted consumption, and when the oil fills the casing to the bottom of the journal it tends to leak past the dust-guard C. When such a charge of oil is furnished, it is also at first distributed very freely over the axle-journal and is liable to leak from the casing all around such journal, which not only causes a loss of the oil, but the soiling of adjacent objects by such fluid.

By providing the cores of absorbent material within the rolls, as described herein, a liberal charge of the lubricant may be supplied to the casing without any loss of the oil and the whole of such charge be at first absorbed by the absorbent cores of the rolls, such charge gradually escaping from the cores as the rolls rise to the upper part of the casing and being reabsorbed as the rolls are carried by the rotation of the axle into the lower part of the casing, where any excess of the oil is most likely to accumulate.

Roller-bearings have frequently been used without any supply of lubricant in fluid form; but the friction is diminished and the durability of the parts is increased by a liberal supply of oil, and the present invention facilitates the use of the oil liberally without losing the same wastefully from the casing. The oil or other lubricant carried by such cores is gradually distributed over all of the wearing-surfaces, including the axle, the lining of the casing, and the surfaces of the rolls, and its distribution is much more uniform during the operation of a given charge of oil than where the rolls are unprovided with any absorbent material.

Even a core of soft wood operates to absorb oil and give it out gradually, and thus operates in a better manner than the hard substance of a mere metallic roll.

Where the rolls are formed of spiral coils, as indicated in the drawings, the distribution of the lubricant is especially effective; as the channels  $a'$  between the coils permit the lubricant when once absorbed by the core to subsequently pass out at many different

points. The channels perform a corresponding function when the lubricant is first supplied to the casing, as it affords many openings for the oil to reach the absorbent material, and thus quickly takes up the same and prevents its leakage from the casing. The bearing having rolls provided with the absorbent cores may therefore be supplied with a larger charge of oil than one containing mere metallic rolls.

It is obvious that the invention is applicable to plain tubular rolls, and the absorbent material performs substantially the same function in such rolls.

From the above description it will be seen that the absorbent material which is used as a core for the hollow rolls serves as an oil-retainer within the same. It is not necessary in our invention to furnish all of the rolls in a roller-bearing with an absorbent core, as the provision of one or more of such rolls with absorbent cores serves, through the agency of such cores, to distribute the oil constantly upon the wearing-surfaces.

By furnishing all of the rolls with the absorbent cores the bearing may be supplied with a larger charge of oil, and thus be adapted to operate for a very protracted period without renewing the lubricant.

The absorbent material operates quite effectively to filter the lubricant and to thus keep the journal in a clean and cool condition, as the impurities which may be carried by the oil when it is absorbed by the fibrous material are retained by such material when the oil is gradually discharged upon the journal. If the oil is of such a nature as to rapidly clog the pores of the absorbent material, such material would be renewed at suitable intervals to perform its functions properly.

We are aware that it is common in lubricators for car-journals to coat a perforated cylinder-roll with an absorbent or porous covering and revolve the same in contact with the under side of the journal to supply oil thereto; but such rolls are not adapted for use in a roller-bearing, as they are incapable of supporting the load upon the journal, while our device furnishes a roll with the lubricator inside of the same, so as to preserve the smooth and hard metal upon the exterior to support the journal.

Having thus set forth the nature of the invention, what we claim herein is—

1. A roller-bearing comprising a casing having an oil-inlet for supplying the casing with oil, and a series of tubular rolls in said casing rotatably movable in contact with the casing to support the shaft, such rolls having smooth and hard exteriors, and the whole or part of such rolls having absorbent cores to absorb and distribute the oil as the rolls move around the shaft within the casing, substantially as herein set forth.

2. In a roller-bearing, a roll having a tubular bore and a core of angular cross-section

fitted to the bore with longitudinal channels at its sides, as and for the purpose set forth.

3. A roller-bearing comprising a casing having an oil-inlet for supplying the casing with oil, and a series of tubular rolls in said casing for supporting the shaft, and one or more of such rolls having a core of absorbent material, as and for the purpose set forth.

4. A roller-bearing comprising a casing having an oil-inlet for supplying the casing with oil, and a series of tubular rolls in said casing for supporting the shaft, such rolls having absorbent cores, and apertures in the sides to serve as channels for absorbing and distributing the oil, substantially as herein set forth.

5. A roller-bearing comprising a casing

having an oil-inlet for supplying the casing with oil, and a series of tubular rolls in said casing formed of spiral coils, and one or more of such rolls having an absorbent core, and the coils of the rolls having the spiral channels *a'*, permitting the absorption and distribution of the oil, substantially as herein set forth.

In testimony whereof we have hereunto set our hands in the presence of two subscribing witnesses.

THEODORE J. TELLEFSEN.  
CHARLES S. LOCKWOOD.

Witnesses:

P. S. STERNSTRUP,  
T. S. CRANE.