

(No Model.)

E. STEMPEL.
ANTI-FRICTION BEARING.

No. 444,224.

Patented Jan. 6, 1891.

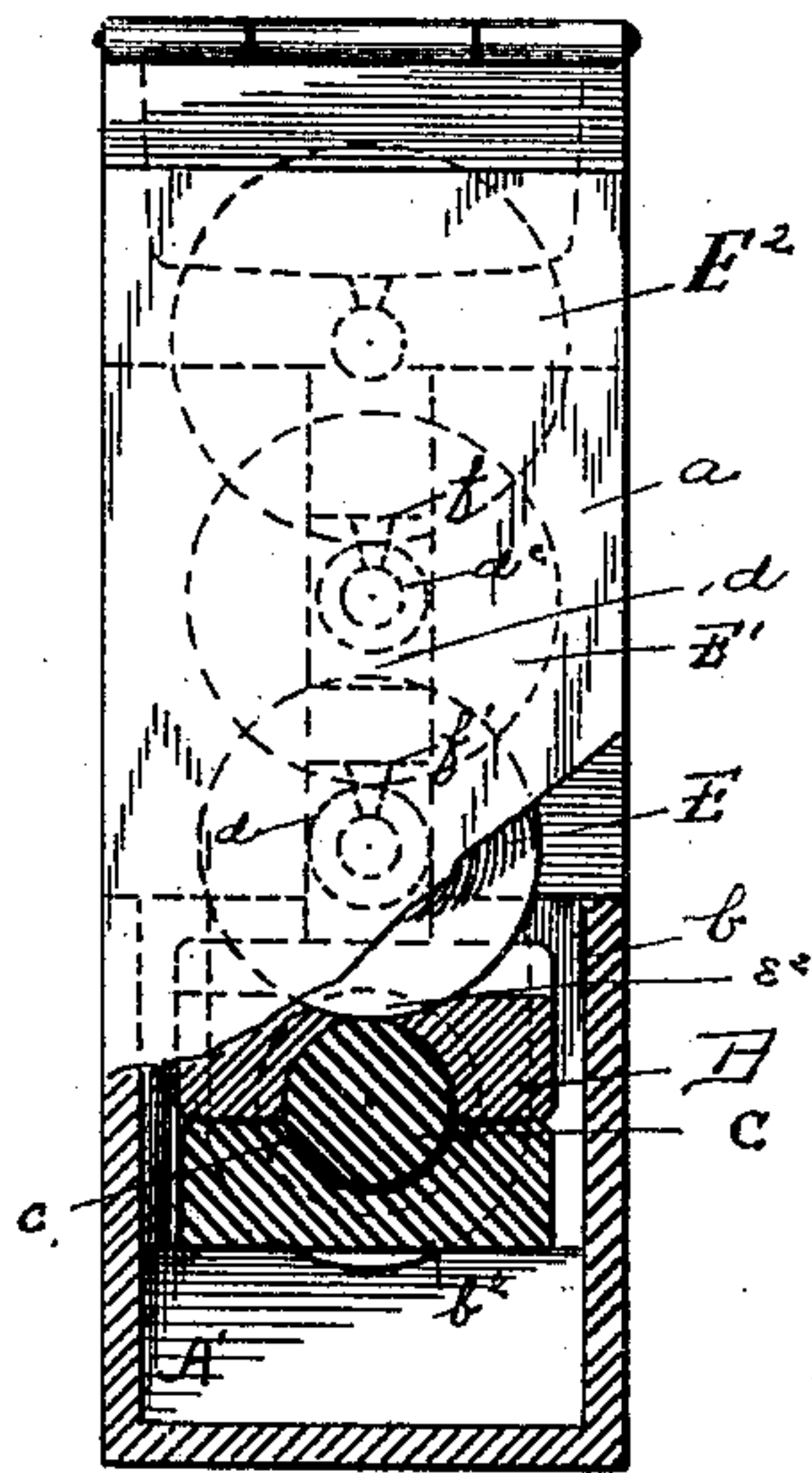
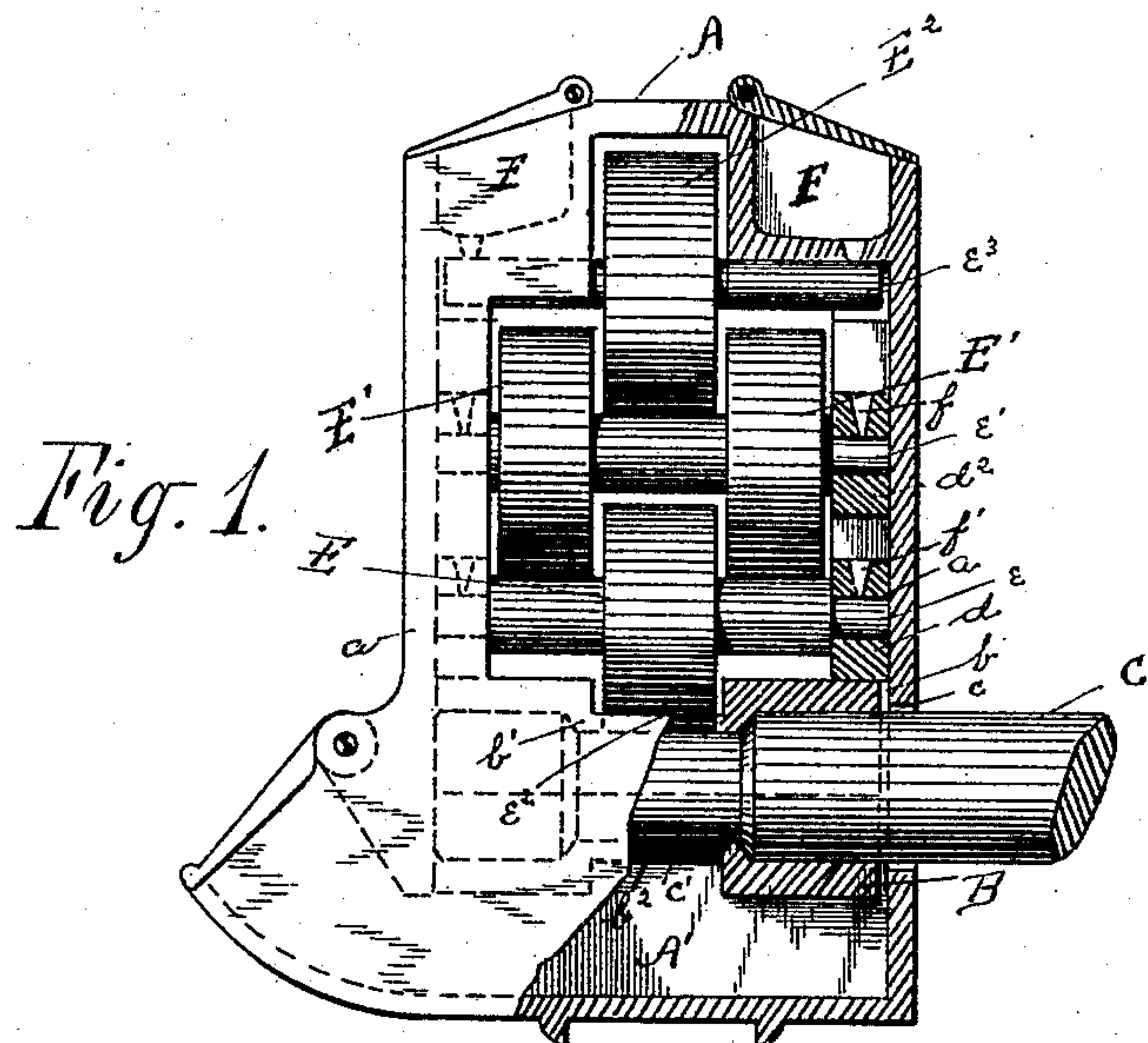


Fig. 2.

Witnesses.

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ANTI-FRICTION BEARING.

SPECIFICATION forming part of Letters Patent No. 444,224, dated January 6, 1891.

Application filed August 18, 1890. Serial No. 362,331. (No model.)

To all whom it may concern:

Be it known that I, EDWARD STEMPEL, a citizen of the United States, residing at the city and in the county of San Francisco, and State of California, have invented certain new and useful Improvements in Anti-Frictional Bearings; and I do hereby declare the following to be a full, clear, and exact description of said invention, such as will enable others skilled in the art to which it most nearly appertains to make, use, and practice the same.

My invention has relation to certain new and useful improvements in anti-frictional bearings, which consists of the details of construction and arrangement of parts, as will be hereinafter more fully shown in the drawings described, and pointed out in the specification.

The object of my invention consists in providing for the vertical arrangement of the bearing-rollers above the axial line of the rotating shaft, so that only the periphery of the lower one shall contact therewith, and at the same time located relatively to one another in line of greatest pressure and friction, thereby relieving the shaft of undue friction.

My invention further consists in providing a self-lubricating bearing which shall be simpler of construction, less expensive, and more effective in its operation than any device of a similar nature heretofore known to me.

Referring to the drawings forming a part of this application, in which similar letters of reference are used to denote corresponding parts throughout the entire specification and several views of the drawings, Figure 1 is a vertical sectional view in side elevation, and Fig. 2 a front view in elevation, partly broken away.

The letter A is used to indicate the outer casing, within which the anti-frictional rollers are movably secured. The inner faces of the lower end of said casing are somewhat enlarged or cut away, as shown at *b* so as to receive the journal-box B. The outer faces of said journal-box are channeled, so as to form guides which embrace the walls *a* of the casing, thus providing against the displacement thereof. The journal-box has a limited vertical movement within the cut-away portion of the casing, for the purpose hereinaf-

ter set forth. The shaft C passes through the journal-box opening *c*, formed centrally in box B, and inasmuch as the same is of less diameter in the center thereof, as shown at *c'*, is securely held in its adjusted position by means of the inner downwardly-projecting walls *b'* of the journal-box B, as shown in Fig. 1. Said journal-box projects into chamber A', within which the waste is held, and the same has the opening *b²* formed in its bottom, so as to allow of the waste contacting with the shaft C.

The inner faces of the outer-casing walls *a* have the channels *d* formed therein, within which the small journal-boxes *d d²* fit. Within these sliding journal-boxes I secure the ends of axles *e e'*. The axle *e* is provided with the bearing-roller E, which works within the opening *e²*, formed in the top of the journal-box B, as clearly shown in Fig. 1, and contacts with shaft C, secured within said journal-box. The axle *e'* has secured thereon the guide-rollers E' E', the peripheries of which bear against axle *e* on each side of roller E. Above said guide-rollers I locate the roller E², which works between the guide-rollers and upon the axle *e'* and obtains its motion therefrom. The axle *e³*, projecting from said roller, may work in journal-boxes similar to axles *e e'*. However, if so desired, these boxes may be dispensed with and the ends of said axles move within the vertical grooves or channels *d*, or they may be otherwise secured and guided. The bearing-roller E² is secured directly above roller E, the object being to bring the same in line with the greatest pressure.

By means of the guide-rollers E', which are secured between bearings E and E², I am enabled to maintain the bearing-rollers in true line with each other. By thus securing the guide and bearing rollers I transmit the weight or pressure from each to the other, while at the same time a free vertical movement is allowed thereto. The rotation of the shaft C, working in the sliding journal-box B, transmits motion to bearing E, which, working through opening *e²* of said box, contacts therewith, which in turn imparts motion to the guide-rollers E', the peripheries of which bear against the axle of bearing E, and these in turn transmit their motion to bearing E²,

which contacts with the axle thereof. Owing to the varying size of the wheels, the motion imparted to bearing E^2 is considerably slower than that of bearing E , which contacts directly with the journal-shaft. Any number of bearings may be secured within the casing, each so arranged as to receive motion from the other and to be in line of pressure. However, if so desired, bearing E^2 may be dispensed with without materially affecting the operation of my invention.

While the bearings herein shown and described appear from practical experiments sufficient to carry out my invention, still, however, a multiple of bearings may in many cases considerably lessen friction. Consequently I do not wish to be understood as confining myself to the number herein shown.

I am also aware that the location of the bearings may be varied.

In order to properly lubricate the several bearings, I provide at the upper end or top of the casing the oil-receptacles F F , which have the discharge-orifice thereof so located as to fall in line with the guides formed in the walls of the outer casing. Thus the oil first lubricating the upper bearings will pass on to the upper journal-boxes, which, being supplied with openings f , allow of a free passage therethrough into the lower boxes, which, being also provided with oil-openings f' , permit the passage of oil therethrough, from whence it falls into receptacle or chamber A' , which thoroughly saturates the waste contained therein, and inasmuch as the same contacts with shaft C tends to maintain the same continually supplied with oil, hence preventing hot boxes.

While I have shown my invention employed in connection with a railway-car axle, it is obvious that the same may be applied to all classes of machinery wherein it is desired that the friction thereof be reduced.

I am aware that minor changes may be made in the arrangement of parts and details of construction herein shown and described without necessitating or creating a departure from the nature and scope of my invention.

Having thus described my invention, what I claim as new, and desire to secure protection in by Letters Patent of the United States, is—

1. In an anti-frictional bearing, the combination, with the casing thereof, of the movable shaft journal-box located in the lower portion thereof, shaft secured within said journal, guide-channels formed within the casing-walls, and the successive bearings secured within the casing and adapted to move within the side channels, substantially as set forth and described.

2. In an anti-frictional bearing, the combination, with the outer casing thereof, of movable shaft-journal located within the lower portion, guide-channels formed in the inner face

of the casing-walls, journal-boxes working within the channels, bearing-rollers working within said boxes, and the guide for maintaining the bearing-rollers in relative position, substantially as set forth and described.

3. In an anti-frictional bearing, the combination, with the casing thereof, of bearing-rollers secured therein, oil-reservoir located in said casing, said reservoir communicating so as to lubricate the bearing-rollers automatically, and the movable shaft journal-box, substantially as set forth and described.

4. In an anti-frictional bearing, the combination, with the casing thereof, of the movable shaft journal-box secured within the lower portion of the casing, upper and lower openings formed in said journal-box, and the multiple bearings working within the casing, as set forth and described.

5. In an anti-frictional bearing, the combination, with the casing thereof, of lower chamber or compartment for reception of waste, movable shaft journal-box secured within the casing, said box having openings in its top and bottom, bearing-rollers working within the casing, and suitable bearing-roller guides for maintaining the bearings in position, substantially as set forth and described.

6. In an anti-frictional bearing, the combination, with the sliding journal-box, of frame or casing within which said box is movable in the direction of greatest pressure, bearing-wheel contacting with the journal-shaft and having its shaft ends journaled so as to move in guides or channels formed within the casing, and a second wheel or wheels bearing upon the axle of the first wheel and having its shaft in like manner journaled in movable boxes in the line of pressure, substantially as set forth and described.

7. In an anti-frictional bearing, the combination, with the shaft journal-box movably secured within the casing and extending into the lower chamber thereof, said box adapted to move in line of greatest pressure, of bearing-roller located above the shaft journal-box and adapted to contact with journal-shaft working therein, said bearing being movably secured within the casing in the line of pressure, guide-rollers located above the bearing-rollers and contacting with the axle thereof, said guide moving in line of greatest pressure, movable upper bearing-roller contacting with the axle of the guide-rollers and moving in corresponding direction therewith, and the lubricating-oil reservoir located in the upper portion of the casing and provided with discharge-orifice, substantially as set forth and described.

In testimony whereof I affix my signature in presence of two witnesses.

EDWARD STEMPEL.

Witnesses:

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