No. 695,807. Patented Mar. 18, 1902.

S. M. FULTON & A. T. AMES.

THRUST BEARING FOR SHAFTS.

(Application filed Dec. 10, 1901.)

(No Model.)

Fig. 1.

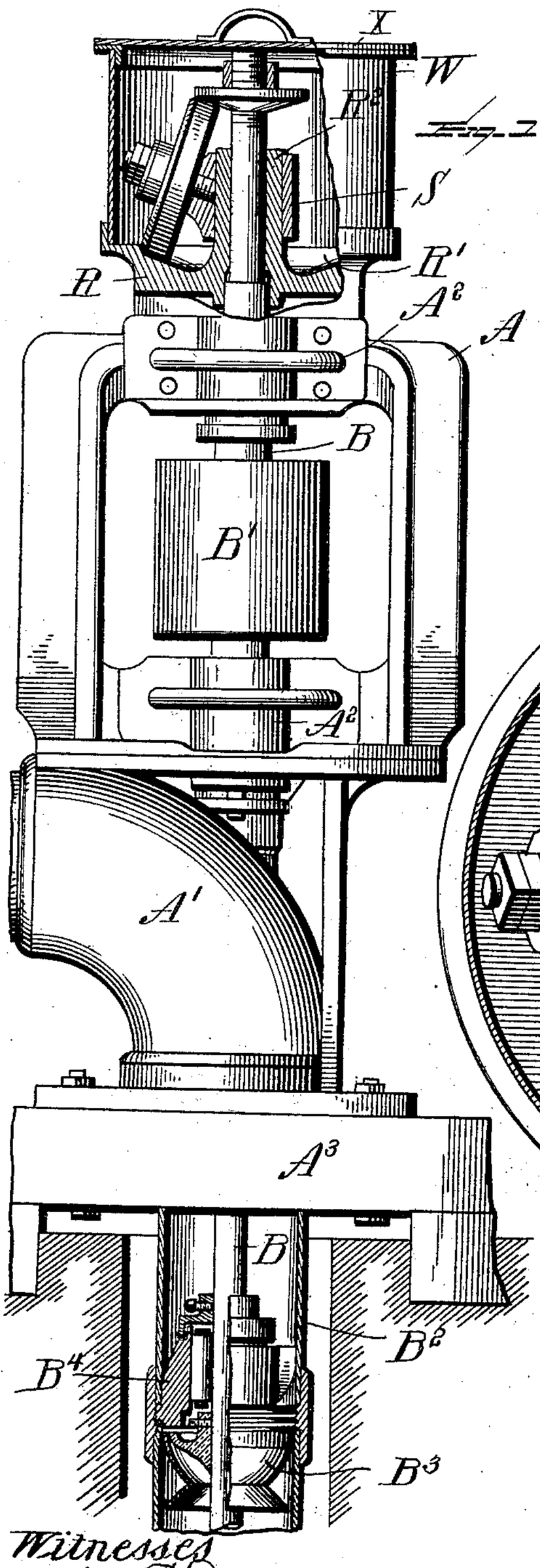


Fig. 4.

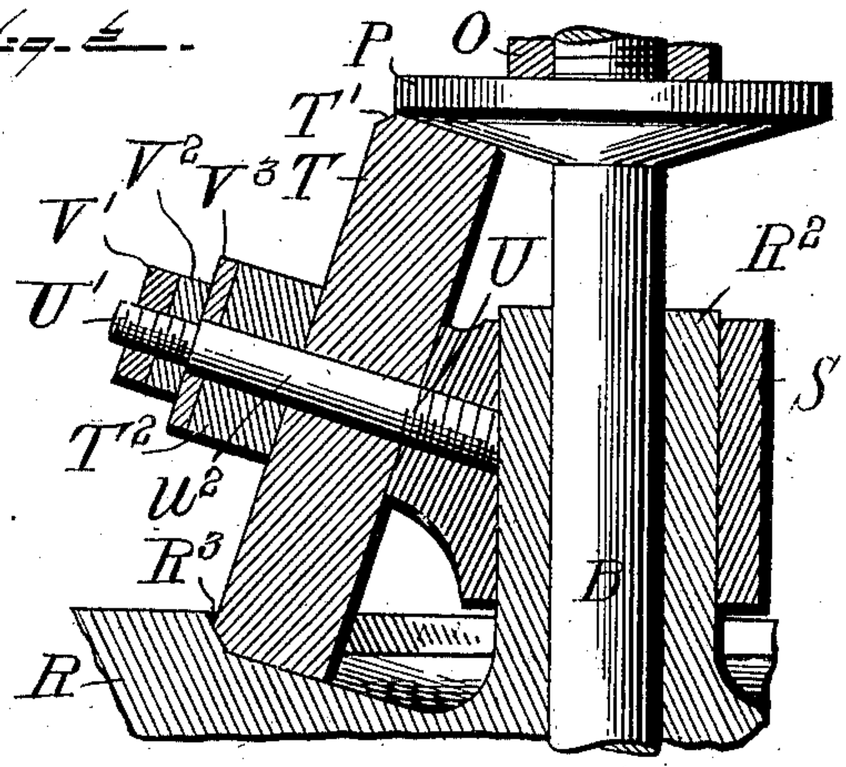
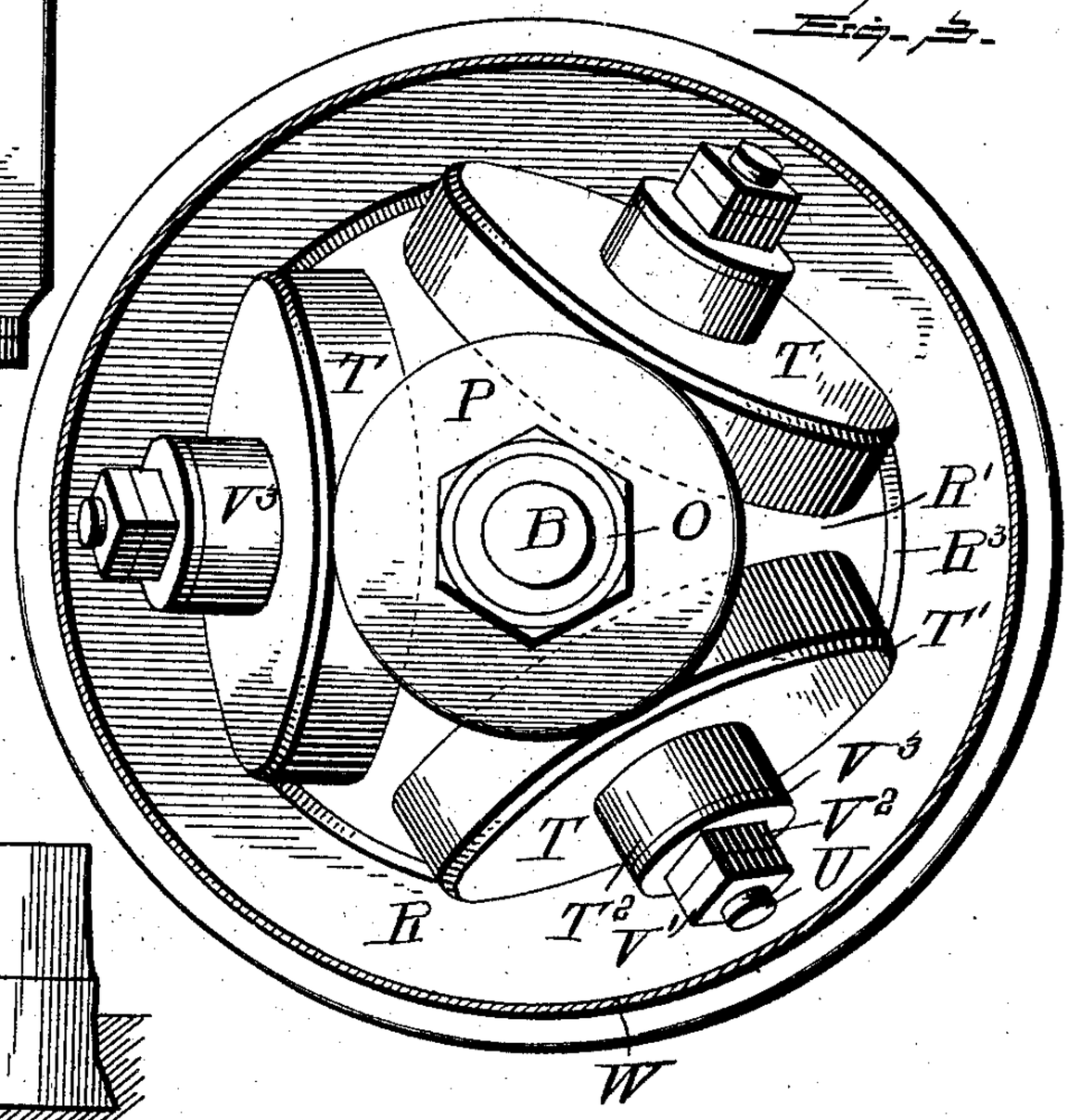


Fig. 5.



Witnesses
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UNITED STATES PATENT OFFICE.

SAMUEL M. FULTON AND ALDEN T. AMES, OF GALT, CALIFORNIA; SAID FULTON ASSIGNOR TO SAID AMES.

THRUST-BEARING FOR SHAFTS.

SPECIFICATION forming part of Letters Patent No. 695,807, dated March 18, 1902.

Original application filed September 7, 1901, Serial No. 74,694. Divided and this application filed December 10, 1901. Serial No. 85,386. (No model.)

To all whom it may concern:

Be it known that we, SAMUEL M. FULTON and ALDEN T. AMES, citizens of the United States, residing at Galt, in the county of Sacramento, State of California, have invented certain new and useful Improvements in Thrust-Bearings for Shafts, of which the following is a specification, reference being had therein to the accompanying drawings.

This invention relates to a thrust-bearing for shafts, and particularly to a construction of parts for suspending a vertically-disposed shaft from its upper portion.

The invention has for an object to provide a thrust-bearing adapted to support a vertically-disposed shaft with the least possible frictional resistance and to provide means for thoroughly lubricating movable parts of the bearing.

Other and further objects and advantages of the invention will hereinafter appear in the following description, and the novel features thereof will be particularly pointed out in the appended claims.

In the drawings, Figure 1 represents an elevation of the bearing applied to a pump with parts in section and broken away. Fig. 2 is a detail vertical section through the bearing, and Fig. 3 is a horizontal section showing the supporting-rollers in plan.

Like letters of reference indicate like parts throughout the several figures of the drawings.

This case is a division of our prior application for centrifugal pump, filed September 7, 1901, Serial No. 74,694, in which this construction of thrust-bearing is shown and described. The bearing, however, is not in anywise confined to the particular application shown, but adapted for use in any art or character of machine.

In the application of the invention shown by Fig. 1, the letter A indicates a frame head or casing adapted to support the upper end of a driving-shaft B, which casing is provided with a discharge-nozzle A′ and bearing-boxes A^2 to receive and support the shaft B, which carries a driving-pulley B′. This casing or frame is supported upon any suitable foundation, as shown at A^3, and the shaft B extends downward into a wall-casing B^2 and is shown as provided with a rotating runner B^3 for lifting liquid, said shaft being passed through a fixed guide and bearing B^4. The form of support and character of device carried by this shaft is immaterial, as the novel feature in this application is the supporting-bearing applied at the upper portion of the shaft B.

In the application of the invention, as shown in Fig. 1, the head is provided with a casing R, supported from the frame A and through which the upper end of the shaft B extends. This casing is formed with a hollow track or way R′ at its central portion and a vertically-disposed collar R^2, surrounding the shaft B. Upon this collar a loosely-fitting cage S is rotatably mounted and provided at any desired points with studs U, adapted to receive the bearing-rollers T, which carry the weight of the shaft B by contact with the inclined track R′ and an inclined bearing-disk P, secured to the upper portion of the shaft B by any desired means—for instance, a nut O, as shown in Fig. 2. These rollers are located upon the studs U, placed at an angle of one hundred and twenty degrees apart, so that the roller has a rotary movement upon its stud, and the cage carrying all of the rollers also is adapted for a rotative movement upon the sleeve R^2, which acts as a guide therefor and also steadies the upper end of the shaft B. These rollers are disposed at any desired angle, preferably, as shown in Fig. 1, at an angle of sixteen degrees from the perpendicular, and the track R′ and disk P are each provided with beveled faces disposed at such an angle, for the purpose of securing the proper contact between the parts. It will also be noticed that the outer edge T′ of the roller T is suitably beveled and adapted to ride against a similar wall R^3 in the track or way R′ to prevent an outward movement of the roller from the track. The rollers may be retained in position by any desired means—for instance, a spacing-collar T^2, having a washer V^3, adapted to coöperate with a nut V^2, locked by a jam-nut V′. It will be understood that the outer end of the stud U is suitably threaded, as at U′, for the application of these nuts, while the portion V^2, beneath the spacing-

sleeve T^2 and the roller T, is provided with a bearing-surface, and all of the parts of the head are suitably inclosed between a casing W, provided with a removable cover X, by means of which access can be obtained to the parts and the splashing of oil upon the other portions of the machinery prevented. The hollow track in casing R is filled with oil, and as the rollers revolve the oil is carried up to the bearing-disk P, and the rapid rotation thereof throws the oil in a fine spray over all of the bearings, from which it is caught by the drum W and directed back into the track R'. This construction produces a self-lubricating antifriction-bearing requiring the minimum of attention, with all of the parts so protected as to prevent the entrance of grit or sand into the several parts.

It will be obvious that changes may be made in the details of construction and configuration of the several parts without departing from the spirit of the invention as defined by the appended claims.

Having described the invention, what is claimed is—

1. In a thrust-bearing, a head portion comprising an oil-reservoir having an inclined bearing-track and an upwardly-extending collar, a driving-shaft passing through said collar and provided with a bearing-disk at its upper portion having its bearing-face parallel to said track, a cage rotatably mounted upon said collar, and a roller rotatably mounted upon said cage and having its bearing-face parallel to said track and disk; substantially as specified.

2. In a thrust-bearing, a head portion comprising an inclined bearing-track and an upwardly-extending collar, a driving-shaft passing through said collar and provided with an inclined bearing-disk at its upper portion parallel to said track, a cage rotatably mounted upon said collar, a stud extending laterally from said cage and diagonally to the driving-shaft, and an inclined roller disposed at an angle to said shaft and parallel to said disk and track; substantially as specified.

3. In a thrust-bearing, a head portion comprising a bearing-track and an upwardly-extending collar, a driving-shaft passing through said collar and provided with a bearing-disk at its upper portion, a cage rotatably mounted upon said collar, a stud extending laterally from said cage, and an inclined roller mounted upon said stud and having an inclined face at its outer edge to coöperate with a face of the track or way; substantially as specified.

4. In a thrust-bearing, a head portion comprising an oil-reservoir and having a bearing-track and an upwardly-extending collar, a driving-shaft passing through said collar and provided with a bearing-disk at its upper portion, a cage rotatably mounted upon said collar, a stud extending laterally from said cage, an inclined roller mounted upon said stud and having an inclined face at its outer edge to coöperate with a face of the track or way; and a casing surrounding all of said parts; substantially as specified.

5. In a thrust-bearing, a head portion comprising a hollow track inclined toward its center and forming an oil-reservoir, a driving-shaft passing through said head portion and provided with a bearing-disk at its upper end having its contact-face parallel with said track, and a bearing-roller having its face parallel to said track and disk and adapted to travel in the hollow track of said head and in contact with said disk to feed oil to the latter and sustain the weight of the driving-shaft, substantially as specified.

In testimony whereof we affix our signatures in presence of two witnesses.

SAMUEL M. FULTON.
ALDEN T. AMES.

Witnesses:
JAMES GRAHAM,
JOHN QUIGGER.