J. WARREN & G. WILKES.

ANTI-FRICTION BEARING.

No. 183,729. Patented Oct. 24, 1876.

Fig. 2.

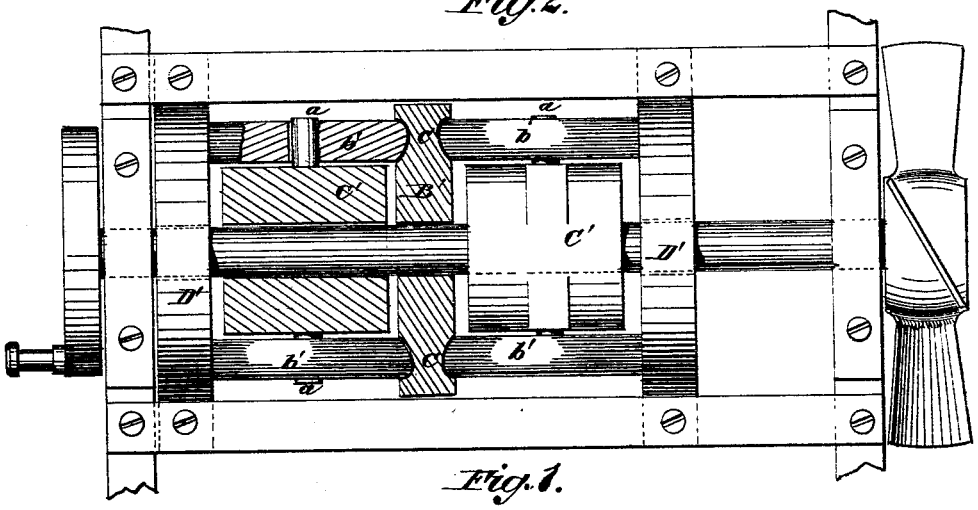


Fig. 1.

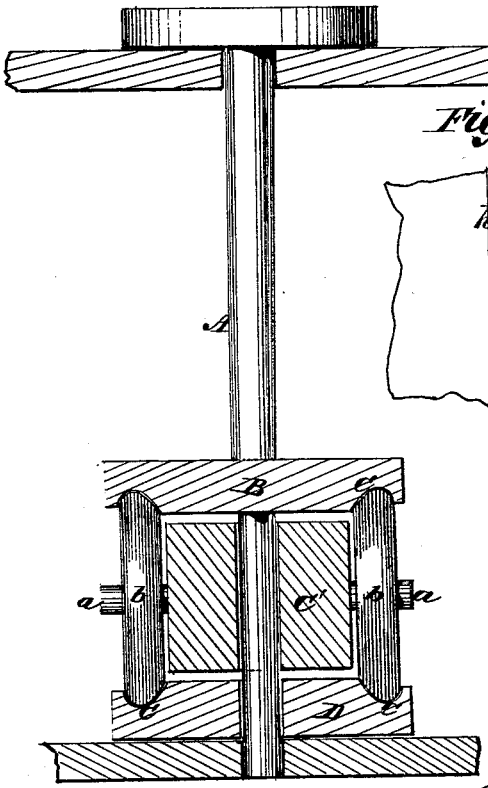
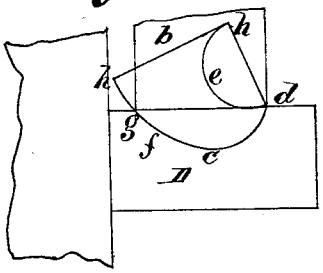


Fig. 3.



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JAMES WARREN AND GEORGE WILKES, OF MONROE, IOWA.

IMPROVEMENT IN ANTI-FRICTION BEARINGS.

Specification forming part of Letters Patent No. **183,729**, dated October 24, 1876; application filed August 21, 1876.

To all whom it may concern:

Be it known that we, JAMES WARREN and GEORGE WILKES, of Monroe, in the county of Jasper and State of Iowa, have invented a new and Improved Anti-Friction Bearing, of which the following is a specification:

Figure 1 represents the bearing applied to vertical shafts. Fig. 2 is a top view of one form of bearing, in part in section. Fig. 3 represents the method of delineating the curves of the grooves.

Similar letters of reference indicate corresponding parts.

My invention consists of an arrangement of rollers of peculiar form, and bearing-plates adapted to the rollers in such a way that the journals of the shaft to which they are applied will be relieved from end thrust, the object being to relieve the journals and steps of vertical and other shafts that are subjected to end pressure from strain and friction.

In Fig. 1, A is a vertical shaft, having a fixed collar, B. C is a movable hub placed on the shaft A, carrying two or more studs, *a*, upon which the rollers *b* revolve. These rollers are rounded at their periphery in such a way as to produce a minimum of friction between the rolling-surfaces. D is a fixed plate, through which the shaft A passes. The collar B and plate D are provided with annular grooves that fit the tread of the friction-rollers, a cross-section of the groove being nearly a semi-oval, as shown at *c*.

A roller and groove having this form are found to produce a minimum of wear and friction.

The shaft shown in Fig. 1 is arranged to take the downward thrust only. In Fig. 2 two sets of rollers, *b'*, are arranged on opposite sides of the collar B', and are each provided with a fixed bearing-plate, D', so that the thrust in either direction is taken by the rollers *b'* and plates D'.

Fig. 3 shows the method of obtaining the curve of the grooves in transverse section. The rollers match the grooves.

b represents the lower part of transverse section of roller in a case where the proportions of the mechanism render it desirable to use rollers of one inch thickness. *h h* is a line of one inch, equal to the thickness of roller. *h d* is the diameter of a circle whose circumference is just double that of the tangent *h h*.

The semicircle *h d e* is drawn upon the diameter *c d*, and is the evolute from which the involute *h d f* is evolved, by means of a semicylinder to match the semicircle, having a fine thread attached at *h*, the thread wound on the evolute to *d*, and then with a needle at the extreme end of the thread describe the involute *d f g*, and then measure one inch from *d* to intersect the involute at *g*, and we have the curve sought, *g f d*, in the plate D.

The advantages claimed for our invention are, that the peculiar form of the periphery of the friction-wheels and of the groove in the collar and plates, permits the wheels to revolve with the least amount of friction and wear. It also obviates any tendency of the wheels to leave their bearings or to perceptibly develope heat by the working contact of the parts concerned.

Having thus described our invention, we claim as new and desire to secure by Letters Patent—

The combination, with a shaft, of rollers, having semi-ovate acuminate peripheries and plates, whose groove is a cross-sectional involute, as shown and described, for the purpose of forming an anti-frictional bearing where there is end thrust.

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Witnesses:
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