

(No Model.)

G. L. RICHARDSON.

BEARING FOR TURBINE WATER WHEELS.

No. 391,918.

Patented Oct. 30, 1888.

Fig. 1.

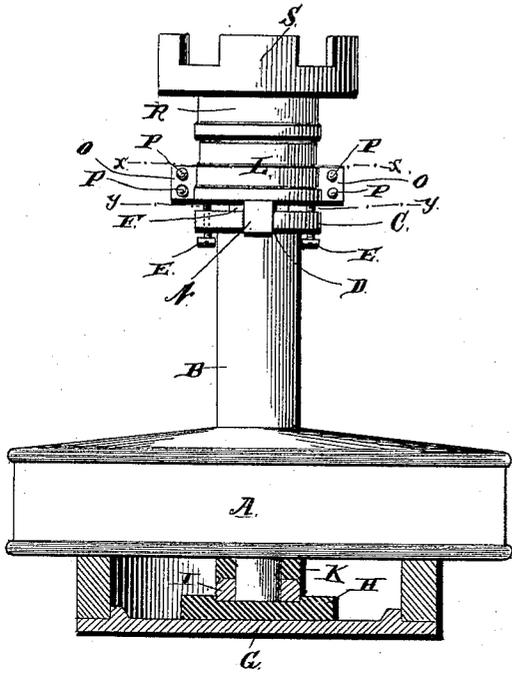


Fig. 2.

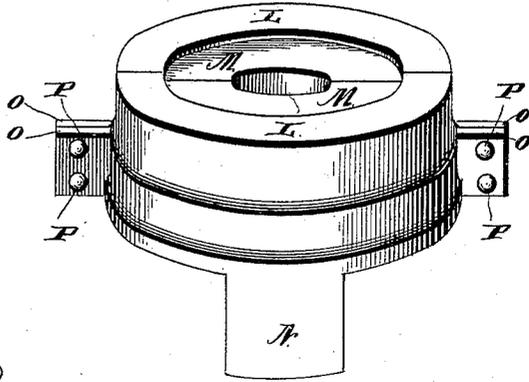


Fig. 3.

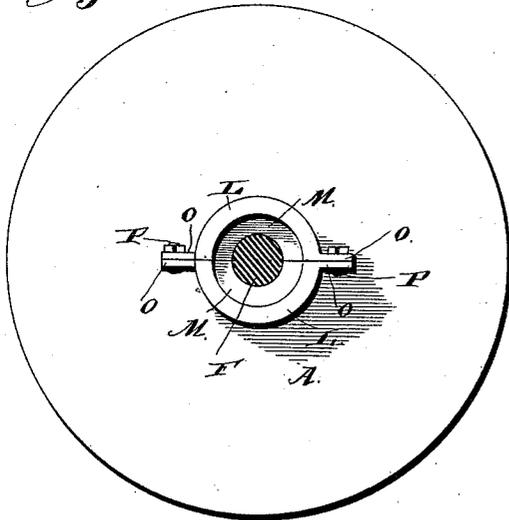
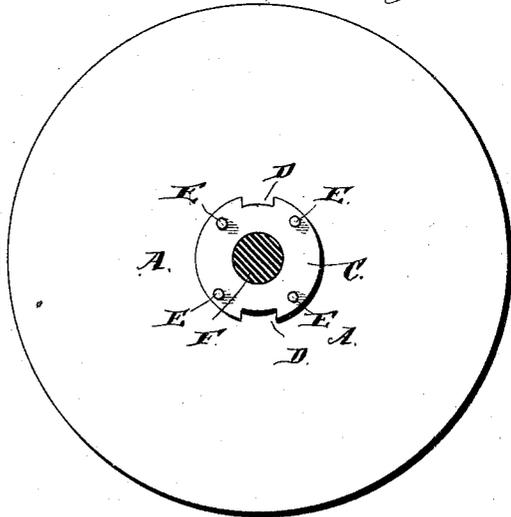


Fig. 4.



Witnesses,

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*J. Hanna*

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By *his* Attorneys

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# UNITED STATES PATENT OFFICE.

GEORGE LINCOLN RICHARDSON, OF BRUNSWICK, MAINE.

## BEARING FOR TURBINE WATER-WHEELS.

SPECIFICATION forming part of Letters Patent No. 391,918, dated October 30, 1888.

Application filed August 7, 1888. Serial No. 282,151. (No model.)

*To all whom it may concern:*

Be it known that I, GEORGE LINCOLN RICHARDSON, a citizen of the United States, residing at Brunswick, in the county of Cumberland and State of Maine, have invented a new and useful Improvement in Bearings for Turbine Water-Wheels, of which the following is a specification.

My invention relates to an improvement in bearings for turbine water-wheels; and the object of my invention is to provide means whereby wear on the lower end of the wheel-shaft is prevented, and whereby the wheel may be vertically adjusted in its casing.

To these ends my invention consists in the peculiar construction and combination of devices, that will be more fully set forth hereinafter, and particularly pointed out in the claims.

In the accompanying drawings, Figure 1 is an elevation, partly in section, of a turbine water-wheel and casing provided with bearings embodying my improvement. Fig. 2 is a detached perspective view of one of my improved bearings. Fig. 3 is a horizontal sectional view taken on the line  $x x$  of Fig. 1. Fig. 4 is a similar view taken on the line  $y y$  of Fig. 1.

A represents the wheel-casing, which is of the usual construction, and is provided in its upper side at its center with the usual vertical cylindrical tube, B. At the upper end of said tube is formed an outwardly-extending flange, C, which is provided at diametrically-opposite points with vertical recesses D.

E represents a series of elevating-screws which extend through threaded openings in the collar C.

F represents the shaft of the water-wheel, which is journaled in and extends downward through the cylindrical tube B. Across the lower side of the depending flange of the wheel-casing extends a bridge-plate, G, on the upper side of which, at its center, is arranged a circular metallic plate, H, having an annular recess in its upper side. In said recess is fitted the lower side of a ring, I, which is made of wood and has its upper edge beveled on its outer side.

K represents an annular collar, which is made of metal, is recessed on its under side to receive the upper end of the wooden ring I,

and in the said collar K and in the ring I is stepped the lower end of the wheel-shaft.

L represents a pair of semicircular metallic sections, which are provided in their upper sides with semicircular recesses M, have ears or lugs N depending from their outer sides, and are provided at their ends with projecting ears O. A central opening is formed in the opposing edges of the said section L, so that the same may be closed on the shaft F at a point above the flange C, and the sections L are then secured together by bolts P, which extend through-transverse openings in the ears O. The said sections L constitute a separable collar to bear upon the upper ends of the adjusting screws E, and the depending arms N of said sections engage the openings D in the flange C and serve to guide the said separable collar on the shaft and prevent it from rotating therewith, as will be readily understood.

In the recesses M in the upper side of the metallic separable collar is secured the lower side of an integral wooden collar, R, through which the shaft F also extends.

Rigidly secured to the upper end of the shaft F is a coupling-section, S, which bears upon the wooden collar R, the latter thereby serving to sustain the weight of the water-wheel and prevent the lower end of its shaft from being worn. The friction between the revolving coupling S and the wooden collar R causes the latter to wear, and as the latter wears away the adjusting-screws E are turned from time to time, so as to elevate the metallic collar L, and thereby compensate for the wear of the wooden collar R and prevent the wheel from being gradually lowered in its casing. When the collar becomes worn to such an extent as to be useless, the same is removed and a new one substituted in its stead.

Having thus described my invention, I claim—

1. The combination of the wheel-casing having the tube B, provided with the flange C, having notches D, the wheel-shaft arranged in the tube, the sectional collar L, secured loosely on the shaft and having the depending arms N arranged in the notches, the wooden collar secured on the sectional collar, and the coupling rigidly secured to the wheel-shaft and bearing on the wooden collar, and the adjust-

ing-screws E, engaging flange C and supporting the collar L, substantially as described.

2. The combination of the wheel-casing having the bridge-plate G, the metallic collar H, secured thereon, the wooden collar I, secured to the metallic collar, the metallic collar K, fitted on the wooden collar, and the wheel-shaft having its lower end stepped in the collars I and K, substantially as described.

In testimony that I claim the foregoing as my own I have hereto affixed my signature in presence of two witnesses.

GEORGE LINCOLN RICHARDSON.

Witnesses:

D. D. GILMAN,

H. A. RICHARDSON.