

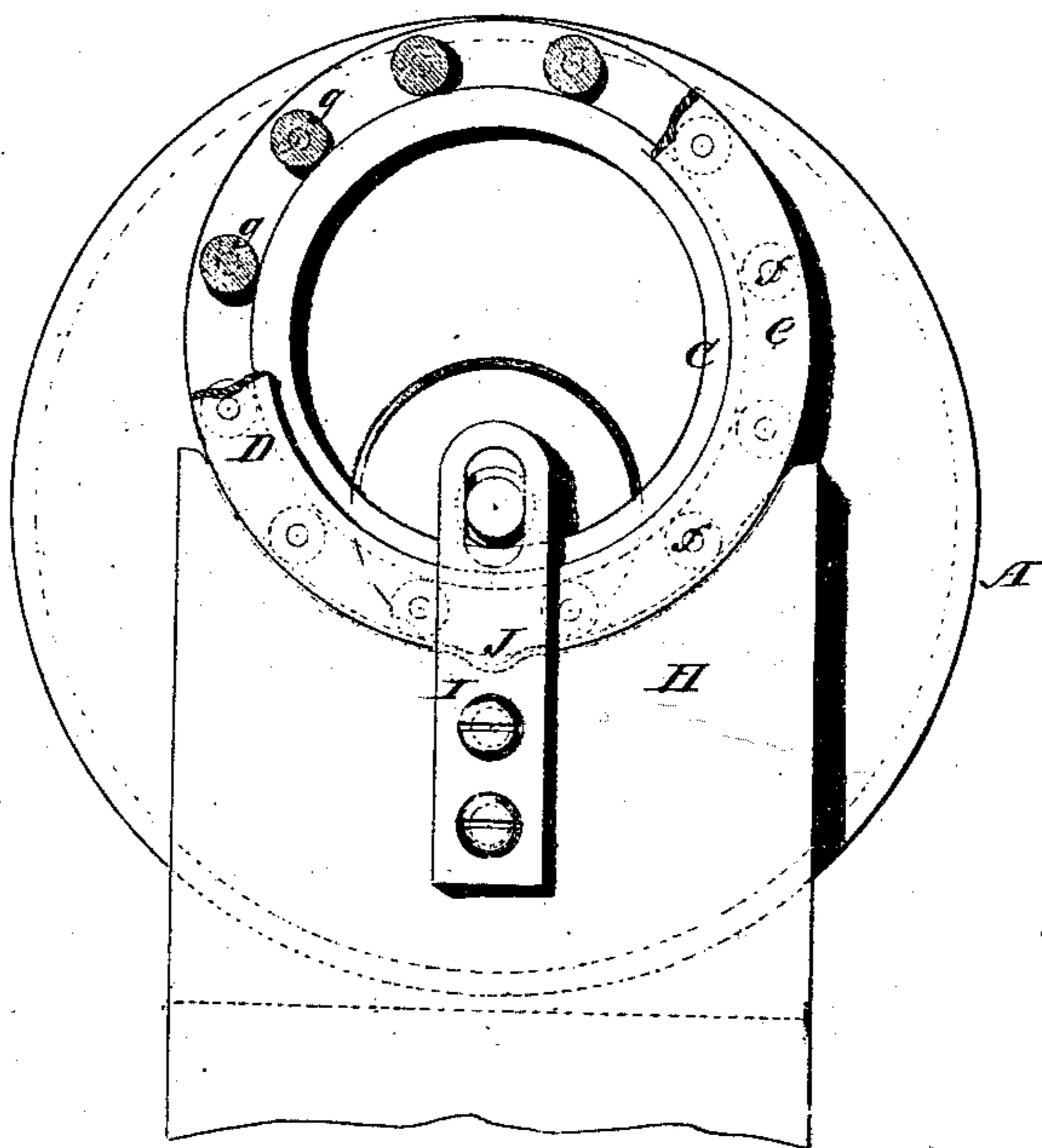
*R. G. Hatfield,*

*Anti Friction Roller.*

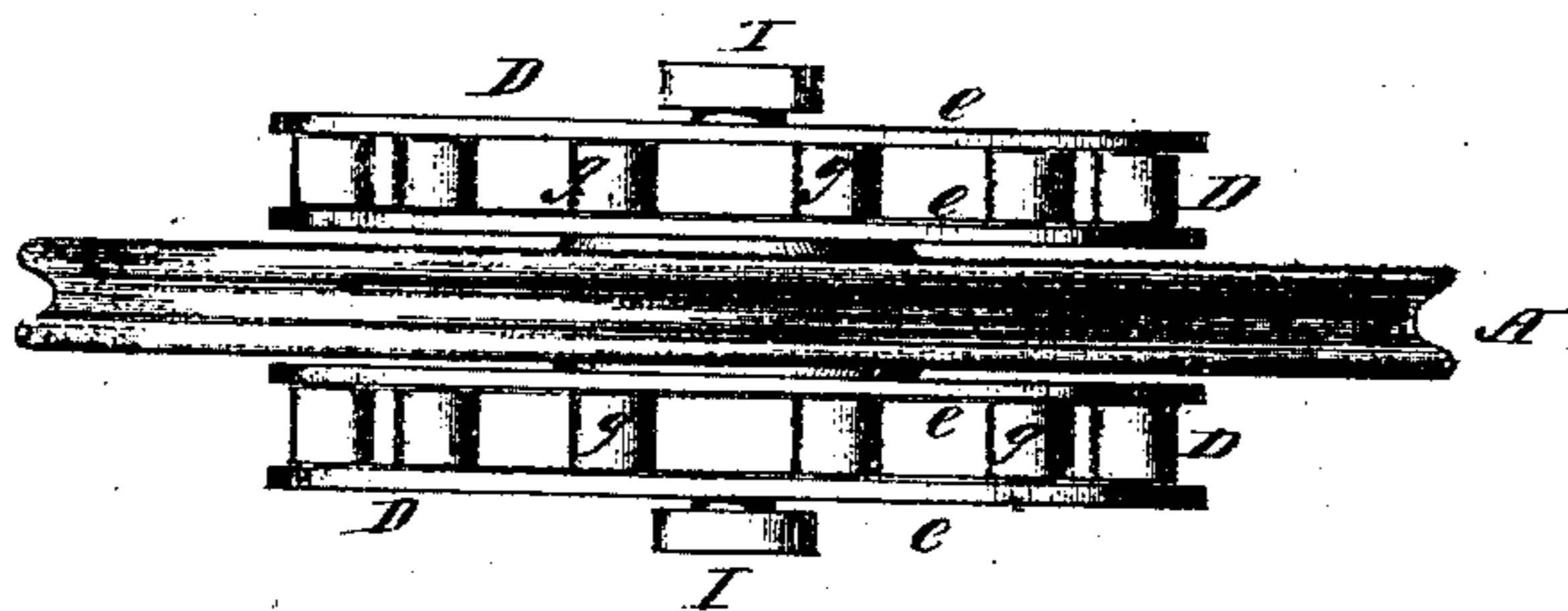
*No. 99566.*

*Patented Feb. 8. 1870.*

*Fig. 1.*



*Fig. 2.*



**Witnesses:**  
*Gustave Dietrich*  
*Alex T. Roberts*

**Inventor:**  
*R. G. Hatfield*  
**PER** *Wm. C. [Signature]*  
**Attorneys.**

# United States Patent Office.

R. G. HATFIELD, OF NEW YORK, N. Y.

Letters Patent No. 99,566, dated February 8, 1870.

## IMPROVEMENT IN ANTI-FRICTION JOURNAL-BEARINGS.

The Schedule referred to in these Letters Patent and making part of the same.

To all whom it may concern:

Re it known that I, R. G. HATFIELD, of the city, county, and State of New York, have invented a new and useful Improvement in Anti-Friction Journal-Bearings; and I do hereby declare that the following is a full, clear, and exact description thereof, which will enable others skilled in the art to make and use the same, reference being had to the accompanying drawings, forming part of this specification.

This invention relates to a new and useful improvement in journal-bearings, whereby the journal is relieved of frictional or rubbing contact, and revolves on a moving surface; and

The invention consists in a revolving ring, (upon which the journal rests,) supported by a series of friction rolls in a revolving frame, arranged and operating as hereinafter more fully described.

In the accompanying drawing—

Figure 1 represents a side view (partly in section) of the arrangement.

Figure 2 is a top view.

Similar letters of reference indicate corresponding parts.

In this example of my invention, I show a pulley on a shaft, the journals of which revolve on my anti-friction bearing, and according to my invention.

This arrangement is more especially designed for journals which have a continuous rotating motion in one direction; but I do not confine myself to any particular application, as the device is adapted to a reciprocating rotary motion, or to journals, the rotary motion of which is reversed, as in pulleys or wheels of hoisting-machines, as well as to journals which have a continuous rotary motion in one direction.

A represents the pulley.

B, the journal.

C, the bearing-ring, upon which the journal rests, which ring is revolved by the rolling contact of the journal.

D, the revolving frame, composed of two annular plates *e e*, connected together by rods or pins *f*.

*g*, friction-rolls, which revolve freely on these rods or pins *f*.

H is a support, upon which the frame D revolves.

The plates *e e* project slightly beyond the friction-rolls, and when the revolving frame is on the stand, as represented, the plates *e e* project on each side of the stand, so that the bottom of the frame is kept in

place on the stand, and the rolls only are allowed to bear upon it.

I represents a guide-stand for the journal, which is rigidly attached to the stand H, as seen in the drawing. The journal revolves in the slot in the stand, and lateral movement of the journal is thereby prevented.

Directly beneath the centre of the revolving frame D, there is an indentation or recess made in the bearing-surface of the stand or support H, on which the rolls run, as seen at J, in dotted lines. This recess relieves the roll directly under the journal from pressure on the stand, and transfers the weight at that point to the two rolls on each side of the centre. Relieving the roll directly beneath the journal of a bearing, in this manner, allows the frame to revolve with a smooth and uniform motion, and prevents the rocking and jerking, which is so destructive to friction journal-boxes, as ordinarily constructed.

A journal-bearing constructed in this manner requires no lubrication. There is no rubbing or frictional surface; the journal is revolved on a moving surface and by rolling contact; the traction thus produced on the bearing-ring and the friction-roll frame revolves both the frame and the bearing-ring.

By this arrangement, journals of every description, especially the journals of heavy shafting, may be almost entirely relieved of friction, thus greatly reducing the power ordinarily required for driving machinery.

Having thus described my invention,

I claim as new, and desire to secure by Letters Patent—

1. In combination with a journal, the revolving bearing-ring C, arranged and operating substantially as and for the purposes described.

2. The revolving friction-roll frame D, in combination with the bearing-ring C and journal B, arranged and operating substantially as and for the purposes set forth.

3. The stand H, guide-stand I, friction-roll frame D, and bearing-ring C, in combination with a journal, substantially for the purposes described.

4. In the construction of the anti-friction journal-box, the recess J, or its equivalent, operating in conjunction with the friction-rolls, substantially as herein shown and described.

Witnesses:

R. G. HATFIELD.

FREDERIC H. BETTS,  
JOSEPH FETTRECH.