

(No Model.)

W. H. ROOK, Jr.
BALL BEARING STEP.

No. 563,720.

Patented July 7, 1896.

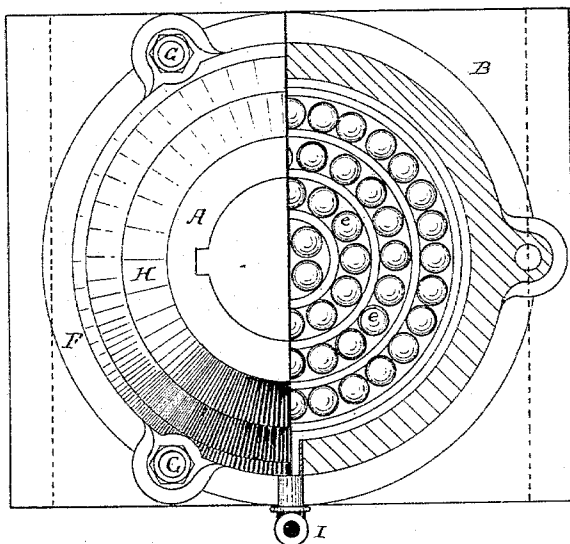


Fig. 1.

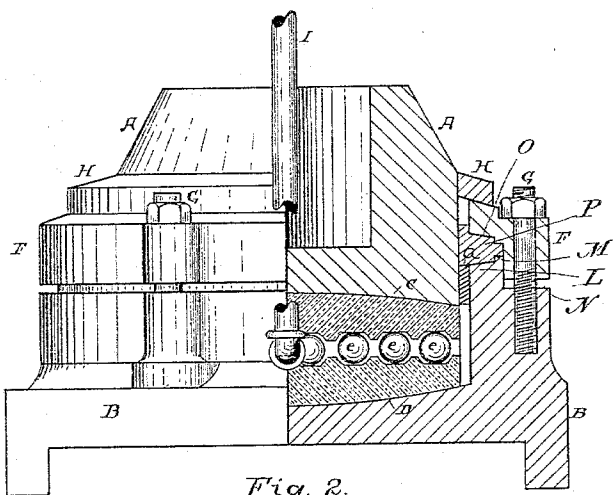


Fig. 2.

WITNESSES
James L. Butler.
E. West.

INVENTOR
WILLIAM H. ROOK, JR.
By *Humphrey Humphrey*
ATTORNEYS.

UNITED STATES PATENT OFFICE.

WILLIAM H. ROOK, JR., OF AKRON, OHIO, ASSIGNOR TO THE TAPLIN
RICE & COMPANY, OF SAME PLACE.

BALL-BEARING STEP.

SPECIFICATION forming part of Letters Patent No. 563,720, dated July 7, 1896.

Application filed April 10, 1896. Serial No. 586,941. (No model.)

To all whom it may concern:

Be it known that I, WILLIAM H. ROOK, JR., a citizen of the United States, residing at Akron, in the county of Summit and State of Ohio, have invented a certain new and useful Improvement in Ball-Bearing Steps, of which the following is a specification.

My invention has relation to improvements in steps for vertical shafting, and is adapted for the central shaft of clay-grinding mills, line-shafting in mills, and analogous purposes; and it has for its object the production of a step which will reduce the resistance due to friction to a minimum, and the further object of regulating the bearing so as constantly to be self-centering and equalize the pressure on all parts.

To the aforesaid objects my invention consists in the peculiar and novel construction, arrangement, and combination of parts hereinafter described, and then specifically pointed out in the claims, reference being had to the accompanying drawings, forming a part of this specification.

In the accompanying drawings, in which similar reference-letters indicate like parts in the different views, Figure 1 is a plan of my improved ball-bearing step, one-half cut away to show the upper face of half the lower element of the step; and Fig. 2, a side elevation of the same, one-half in vertical central section.

Referring to the drawings, A is the shaft-seat, which is adapted to receive the shaft, and is concave on the under face, and B the foundation-block, similarly concave on its upper face. Fitting in these respective cavities are two plano-convex steel disks C D of a slightly less diameter than the opening in the foundation, but of even diameter with the shaft-seat A, and having their plane faces in juxtaposition; and in these plane faces are a number of similar, shallow, annular, concentric grooves, the grooves in these adjacent faces adapted to register with each other, and in these grooves are a number of hard steel balls *e e*.

Surrounding the concave part of the foundation-block B is a raised rim L, its upper face sloping slightly upward and outward

until it reaches a narrower rim M, and thence descends a short distance to an abrupt shoulder N, forming a seat of a binding-ring F, which is retained to the foundation-block by bolts and nuts G. This binding-ring has an internal notch O, similar in shape to the notch in the face of the rim L of the block B, but sloping upward, its internal face parallel with the face of the rim of the foundation-block, the two thus forming an annular space about the moving parts to retain a rubber packing-ring P to prevent the entrance of dust and dirt to the moving parts, and below this is a composition bearing-ring *a*.

Above and resting on the top of the binding-ring F is a removable ring H, which fits the shaft-seat A and upper face of the binding-ring F and effectually closes the opening in which the packing is placed against the entrance of coarse dust or grit. A pipe I serves to carry oil to the working parts.

I claim as my invention—

1. In a ball-bearing step, the combination of two plano-convex metallic disks arranged with their plane faces in juxtaposition, said plane faces having corresponding annular concentric grooves, with metallic balls to run in said grooves, the lower disk mounted in a foundation-block having a raised rim; the upper disk bearing a shaft-seat; a binding-ring inclosing said shaft-seat and bolted to the raised rim of said foundation-block, and a removable ring inclosing said shaft-seat above said binding-ring and projecting thereover and arranged to keep dust from the moving parts of said step, substantially as shown and described.

2. In a ball-bearing step, the combination with two plano-convex metallic disks arranged with their plane faces in juxtaposition, said plane faces having corresponding annular concentric grooves; metallic balls adapted to run in said grooves; a foundation-block bearing the lower disk therein, and having a raised rim; the upper disk supporting a shaft-seat; a binding-ring inclosing said shaft-seat; said raised rim of said foundation-block and binding-ring having its inner adjacent corners cut away to form an annular channel around the shaft-seat; a packing-

ring adapted to fit therein and exclude dust and a removable ring inclosing said shaft-seat and projecting over said binding-ring substantially as shown.

5 3. The combination with the shaft-seat A, foundation-block B, plano-convex grooved disks, C, D, balls, e, ring F, and bolts, G, of the free ring H, adapted to close the opening

between the ring F, and shaft-seat A, substantially as shown and described. 10

In testimony that I claim the above I hereunto set my hand.

WILLIAM H. ROOK, Jr.

In presence of—

C. P. HUMPHREY,

C. E. HUMPHREY.