

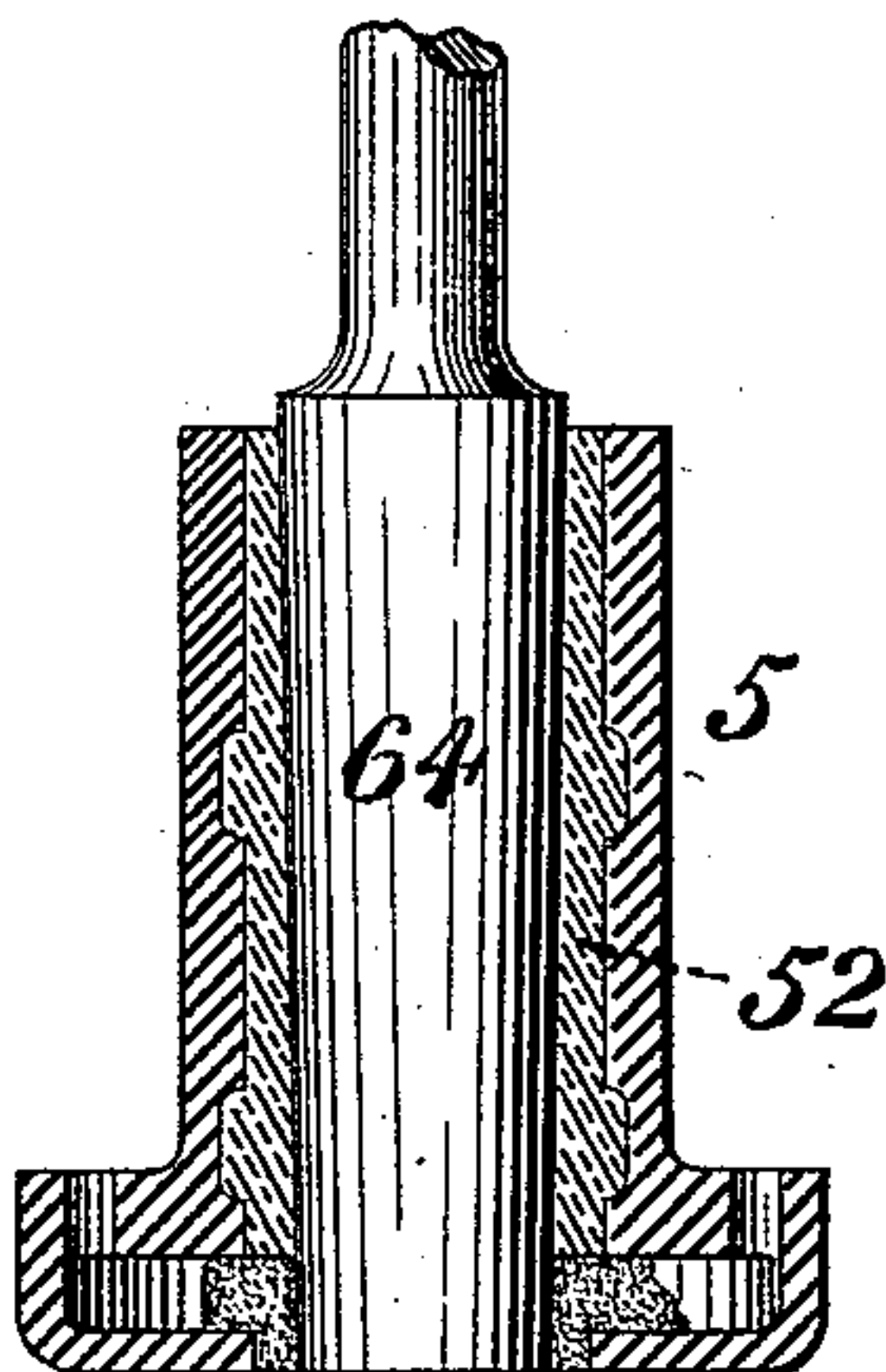
(No Model.)

H. TABOR.  
SHAFT BEARING.

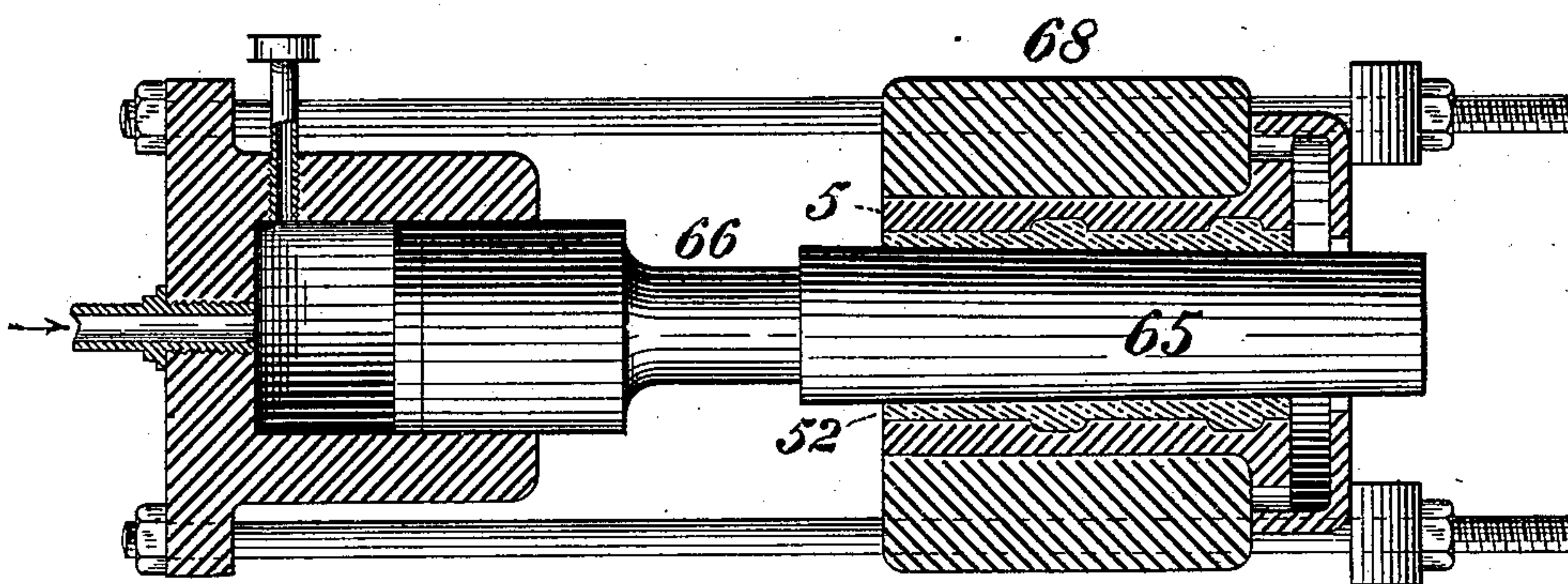
No. 297,312.

Patented Apr. 22, 1884.

*Fig. 1.*



*Fig. 2.*



Witnesses:  
J. Snowden Bell.  
C. M. Clarke.

Inventor:  
Harris Tabor,  
By George H. Christy  
George H. Christy



# UNITED STATES PATENT OFFICE.

HARRIS TABOR, OF ALLEGHENY, ASSIGNOR TO THE WESTINGHOUSE MACHINE COMPANY, OF PITTSBURG, PENNSYLVANIA.

## SHAFT-BEARING.

SPECIFICATION forming part of Letters Patent No. 297,312, dated April 22, 1884.

Application filed February 28, 1884. (No model.)

*To all whom it may concern:*

Be it known that I, HARRIS TABOR, a citizen of the United States, residing at Allegheny, county of Allegheny, State of Pennsylvania, have invented or discovered a new and useful Improvement in Shaft-Bearings; and I do hereby declare the following to be a full, clear, concise, and exact description thereof, reference being had to the accompanying drawings, making a part of this specification, in which—like letters indicating like parts—

Figure 1 is a longitudinal central section through a shaft-bearing, illustrating the manner of casting a soft-metal lining therein; and Fig. 2, a similar section showing the manner of finishing the same.

The object of my invention is to provide efficient and desirable means for firmly securing a soft-metal lining in a shaft bearing or box, accurately fitting the same to the journal which is to rotate within it, and producing a hard and solid bearing-surface of perfect truth and smoothness.

To this end my improvement consists in a novel method of forming and finishing a soft-metal lining by first casting the same around a core-mandrel of smaller diameter than the bore of the lining when finished, and thereafter expanding the lining into its socket or receptacle in the bearing, and simultaneously truing and finishing its wearing-surface by the application of pressure to a hardened finishing-mandrel of the diameter desired for the finished lining; also, in a shaft-bearing having a soft-metal lining which is cast of a diameter smaller than that of its finished bore, and secured in its bearing and brought to finished diameter by internal pressure, as hereinafter more fully set forth.

In the practice of my invention I form and finish the soft-metal lining 52 of a shaft bearing or box, 5, by first placing within the bearing 5, concentric with its axis, a core-mandrel, 64, which is either of cylindrical or conical form, in correspondence with that of the journal which the lining is designed to receive, and is of a diameter slightly less than that of said journal. I then cast the lining 52 by pouring Babbitt metal or other suitable and preferred metal or alloy into the space

between the core-mandrel 64 and bearing 5, and withdraw the mandrel upon the solidification of the lining in the bearing. I next proceed, by a single operation, to secure, align, and finish the bearing-surface of the lining 52, which results are effected by forcing into the bore thereof a finishing-mandrel, 65, of hardened steel, having a true and highly-finished surface, and corresponding accurately in form and diameter with the journal which is to be supported upon the lining when the bearing is located in the machine or structure of which it is to form a part. I have found in practice that the required pressure can be most effectively applied to the finishing-mandrel by means of a hydraulic press, and for this purpose inclose the bearing 5 in a strong ring or casing, 68, which is designed to receive and sustain the applied outward strain, and rest one of its ends against chocks or abutments 67, which sustain the end-thrust exerted upon the bearing by the ram or plunger 66 of the press. Hydraulic pressure—which may be about fifteen tons to the square inch—being then exerted upon the plunger 66, and thence upon one end of the mandrel 65, the latter is forced into the lining 52 to such determined point as is required to enlarge the bore of the lining to the proper diameter, the lining being in the operation expanded tightly into the bearing 5, truly aligned axially, and finished to a high degree of smoothness and accuracy upon the surface which receives the journal.

I attain by my invention the advantages of securing the lining perfectly against looseness and departure from adjustment by shrinkage in its box, producing an accurate longitudinal alignment and a smooth and perfectly-finished surface, and retaining the natural skin or surface of the metal, which experience has demonstrated to possess superior anti-friction and wearing qualities to the softer metal beneath.

I claim herein as my invention—

1. The method of forming and finishing soft-metal linings for bearings, which consists in first casting a lining around a core-mandrel of less diameter than the journal which the lining is to receive, and thereafter expanding

said lining into its bearing or box, and coincidentally truing and finishing its bore by the internal pressure of a finishing-mandrel of larger diameter than the core-mandrel, substantially as set forth.

2. As a new article of manufacture, a shaft-bearing having a soft-metal lining which is expanded into position in the bearing and coincidentally trued and finished by the application of internal pressure, substantially as set forth.

3. The combination of a shaft-bearing and a lining of soft metal, having the wearing-surface of its bore trued and finished by compression exerted upon the natural skin or surface of the metal, substantially as set forth.

In testimony whereof I have hereunto set my hand.

HARRIS TABOR.

Witnesses:

J. SNOWDEN BELL,  
R. H. WHITTLESEY.