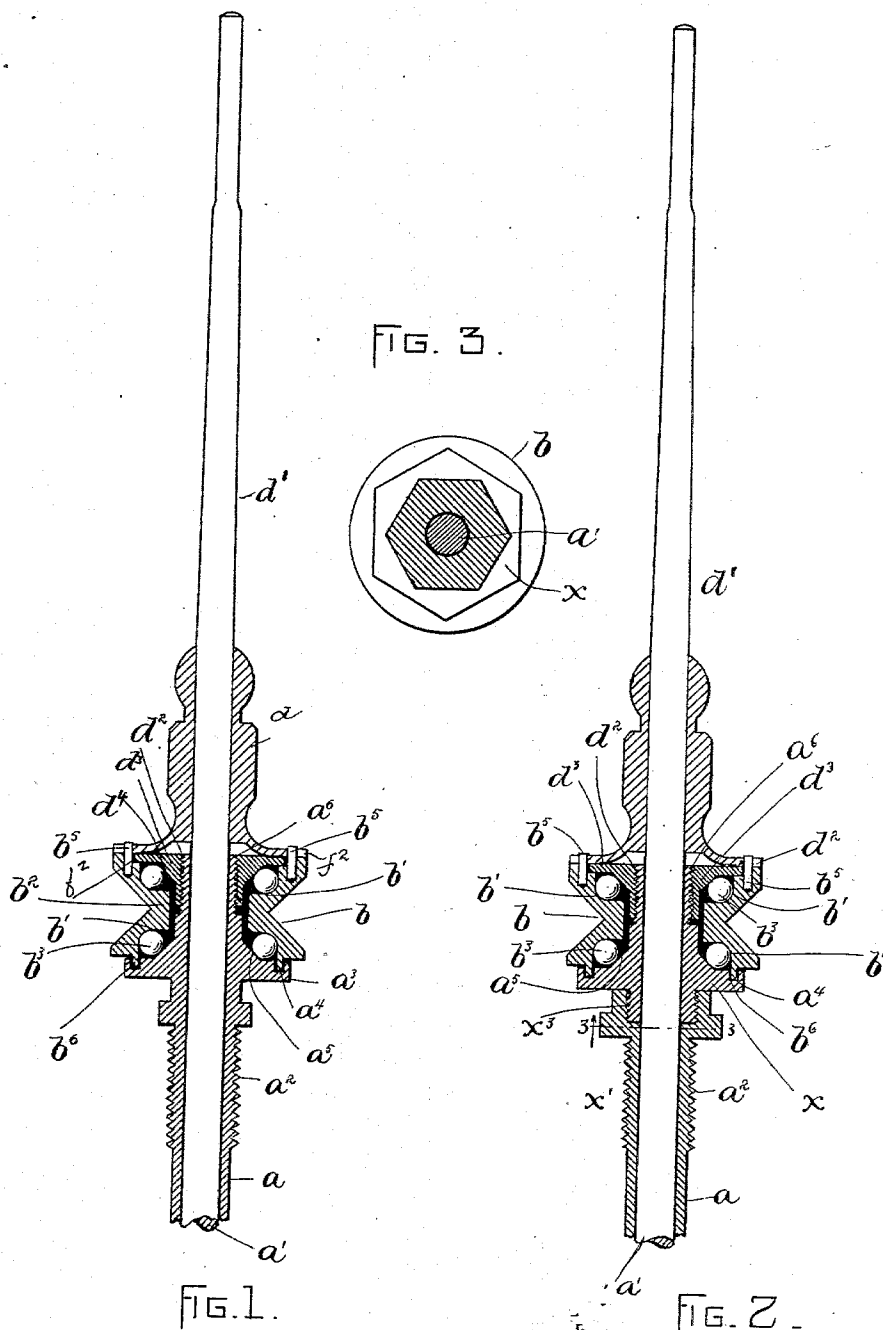


(No Model.)

H. H. HAM.
BALL BEARING.

No. 548,440.

Patented Oct. 22, 1895.



WITNESSES:

H. A. Hall,
A. D. Hanson

INVENTOR:

Herbert H. Ham
Wright & Brown & Quincy
attys.

UNITED STATES PATENT OFFICE.

HERBERT H. HAM, OF BOSTON, MASSACHUSETTS.

BALL-BEARING.

SPECIFICATION forming part of Letters Patent No. 548,440, dated October 22, 1895.

Application filed April 19, 1895. Serial No. 546,292. (No model.)

To all whom it may concern:

Be it known that I, HERBERT H. HAM, of Boston, in the county of Suffolk and State of Massachusetts, have invented certain new and useful Improvements in Ball-Bearings for Spindles, of which the following is a specification.

This invention relates to an improvement in ball-bearings for spindles; and it consists in the novel feature of construction and relative arrangement of parts hereinafter fully described in the specification, clearly illustrated in the drawings, and particularly pointed out in the claim.

Reference is to be had to the accompanying sheet of drawings, forming a part of this specification, in which like characters indicate like parts wherever they occur.

In the drawings, Figure 1 is a vertical sectional view of a spindle constructed in accordance with my invention. Fig. 2 is a similar view showing a modified form of my invention. Fig. 3 is a cross-section on the line 3 3 of Fig. 2, looking in the direction of the arrow.

As the bolster-rail and bolster-case form no part of my invention, I have not illustrated them in the drawings, but only the bolster itself, the whirl, and the spindle.

It is the main object of my invention to reduce the friction between the whirl, by which the spindle is driven and carried, and the bolster, which serves as a support for the spindle and whirl. To this end I form two ball-bearing surfaces in the whirl and complementary ball-bearing surfaces upon the bolster and a detachable cap or plate connected to one end of the bolster, the whirl being maintained upon the bolster and maintained in its proper position by said cap or plate. By providing the bolster and whirl with two ball-bearings the parts are steadied. Furthermore, by means of this construction and arrangement the power required for running a series of spindles is greatly diminished.

The bolster *a* is provided with the aperture *a'*, in which is mounted the spindle *d'*. The whirl is provided at its lower part with the usual screw-threads *a''*, by which it

may be united with the bolster-case. (Not shown.) The spindle is connected to and driven by the whirl *b* by means of the sleeve *d*, fast upon the spindle, the sleeve *d* resting upon the whirl when in position and being provided with slots *f''*, in which pins *b''* on the whirl project when the parts are assembled, any movement of the whirl thus being communicated to the spindle. Near its upper portion the bolster is formed with the flange *a''*, provided with the groove *a''* near its periphery. An inclined bearing *a''* connects this flange with the main part of the bolster and is suitably formed to serve as a part of one of two ball-bearings. The bolster terminates in a screw-threaded portion *a''*.

The whirl *b* is provided on its interior with suitable grooves or depressions *b'*, constructed to form each a part of the two ball-bearings, the said grooves being separated by a flange *b''*, as shown, in order to separate the two bearings and maintain the two sets of balls in their proper position. In these grooves *b'* are arranged balls *b''*, that bear against the whirl and also the bearing *a''* of the bolster, and a similar bearing *d''*, formed on the plate *d''*, screw-threaded, as at *d''*, to engage the screw-threads *a''*.

From the foregoing it will be seen that there are two sets of ball-bearings, in each of which is arranged a set of balls separated by a flange *b''*. In assembling the parts the balls are placed in position, as shown, and the plate *d''* arranged upon the bolster to retain the whirl in place and form a part of the upper bearing, as shown.

Instead of the construction shown in Fig. 1, I may form the bolster in two parts *x x'*. By this means the ball-bearing whirl and part *x* of the bolster can be sold as separate articles and manipulated without disturbing the balls.

I claim—

In combination, a bolster comprising a flange and a screw-thread portion *a''*, said flange being formed with a ball bearing part *a''*, surface, *a''*, a whirl mounted upon said bolster, and formed with two interior ball bearing depressions *b'*, separated by a flange,

b^2 , a plate, d^3 , arranged upon the part, a^5 , and
formed with a bearing; d^4 , the balls arranged
in the spaces formed by the bearings, a^5 , d^4 ,
and the complemental ball bearing depres-
5 sions, b' , on the whirl, substantially as and
for the purpose set forth.

In testimony whereof I have signed my

name to this specification, in the presence of
two subscribing witnesses, this 16th day of
April A. D. 1895.

HERBERT H. HAM.

Witnesses:

A. D. HARRISON,

ROLLIN ABELL.