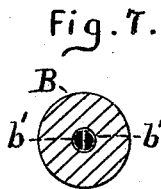
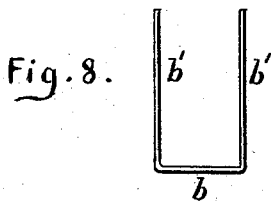
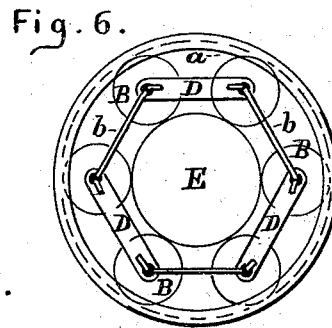
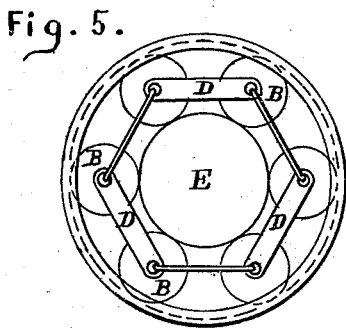
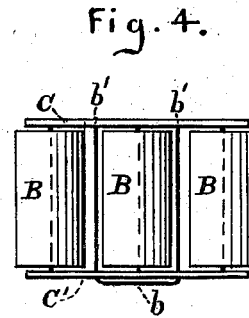
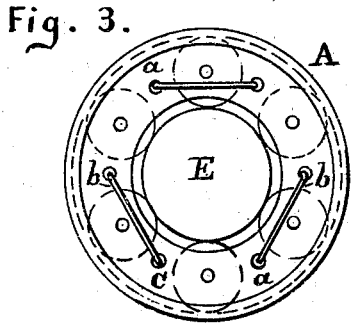
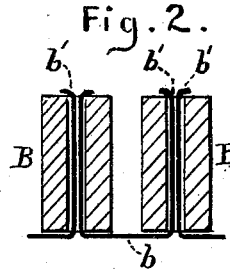
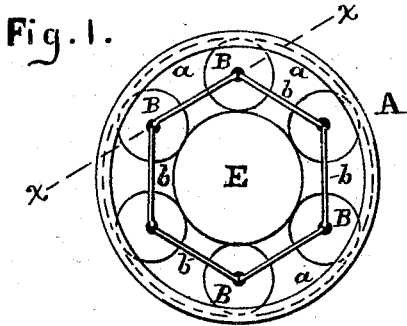


W. H. HAYNES.

ANTI-FRICTION JOURNAL OR AXLE BEARING.

No. 184,242.

Patented Nov. 14, 1876.



Witnesses:  
H. A. Daniels  
James Greenwood Jr.

Inventor:  
Warren H. Haynes  
by W. Burris  
Attorney.

# UNITED STATES PATENT OFFICE.

WARREN H. HAYNES, OF NORTH SUDBURY, MASSACHUSETTS.

## IMPROVEMENT IN ANTI-FRICTION JOURNAL OR AXLE BEARINGS.

Specification forming part of Letters Patent No. 184,242, dated November 14, 1876; application filed October 24, 1876.

*To all whom it may concern:*

Be it known that I, WARREN H. HAYNES, of North Sudbury, in the county of Middlesex and State of Massachusetts, have invented certain new and useful Improvements in Anti-Friction Journal or Axle 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 which it appertains to make and use the same, reference being had to the accompanying drawings, and to letters of reference marked thereon, which form a part of this specification.

Figure 1 is an end view of a series of rollers in a journal-box, held by stay-rods inserted double through the rollers. Fig. 2 is a sectional view of two rollers on line *x x* of Fig. 1. Fig. 3 shows rollers having pivotal bearings in rings, held by stays inserted through the rings, and extended by the sides of the rollers. Fig. 4 is a plan view of the rollers shown in Fig. 3. Fig. 5 shows rollers held by the stay-rods inserted through elongated plates instead of rings. Fig. 6 shows the same plates with the stay-rods inserted double, one-half from each end of the rollers. Fig. 7 is a transverse section of one of the rollers, with the flattened sides of two stay-rods inserted through the roller. Fig. 8 is a detached view of one of the double stays.

My invention relates to anti-friction bearings having anti-friction rollers. The devices employed heretofore in such bearings for holding the rollers allow them to be moved out of their true line, causing them to bind against their bearings and increasing the friction. The object of my invention is to prevent that binding and increased friction, which I accomplish by means of double stay-rods, which securely hold the rollers in their true position, and prevent them from becoming twisted in the journal-box, as hereinafter fully described.

A is a journal-box, provided with flanges *a*, forming the way traversed by the anti-friction rollers. B represents a series of rollers, held in position by stay-rods, bent so as to form the middle brace *b* and parallel sides *b'*, as shown in the drawings.

These stays may be applied and fastened in several different ways.

Figs. 1, 2, 6, and 7 show one side of the two adjoining stays extended through the same roller, having a hole of the proper size through its center; and when the stays are thus applied the sides *b'* are flattened, so that the flat sides of the rods, when inserted in the roller, fit together, forming one round spindle or axle for the roller to revolve upon, as shown in Fig. 7 of the drawings.

In Figs. 3 and 4 the stays are shown inserted through rings C, and extended by the sides of the rollers, which have pivotal bearings on the inner sides of the rings.

In Figs. 5 and 6 the stays are inserted through holes in the ends of elongated plates D, which are used instead of rings for connecting and fastening the stay-rods, and assisting to hold in place the rollers.

The plates and rings are dispensed with when the stays are applied and fastened, as shown in Figs. 1 and 2.

The stay-rods may all be inserted at the same end of the rollers; or a part of them may be inserted at one end, and the balance at the other, and the ends of the rods may be fastened by riveting or by bending over the ends, as shown in the drawings.

It is readily seen that these double stays *b' b'*, connected by the middle brace *b*, formed of one continuous rod, must have more strength than separate or single stays, to resist pressure tending to twist the rollers out of their true line in the journal-box.

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

In combination with a series of anti-friction rollers, B, the double stays *b' b'*, connected by the middle brace *b*, formed of one continuous rod, and applied and fastened substantially as and for the purposes described.

In testimony that I claim the foregoing as my own invention I affix my signature in presence of two witnesses.

WARREN H. HAYNES.

Witnesses:

W. H. FOX,  
G. M. CLANGES.