

(No Model.)

N. BERSIN.

AXLE AND SHAFT BEARING.

No. 470,330.

Patented Mar. 8, 1892.

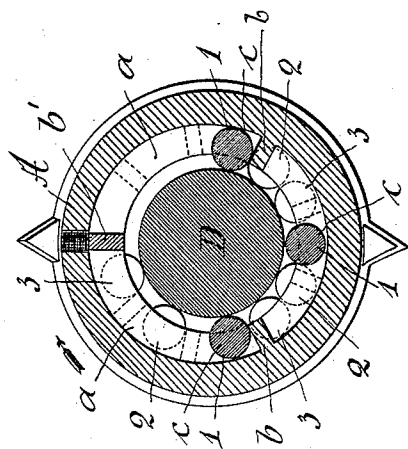


Fig. 2.

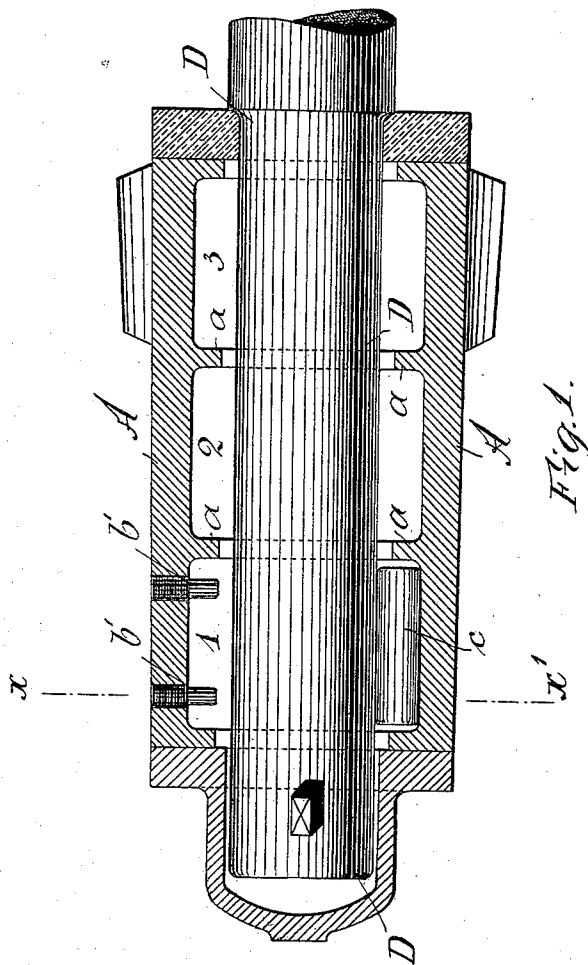


Fig. 1.

Witnesses:

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UNITED STATES PATENT OFFICE.

NICOLAUS BERSIN, OF DUSSELDORF, GERMANY.

AXLE AND SHAFT BEARING.

SPECIFICATION forming part of Letters Patent No. 470,330, dated March 8, 1892.

Application filed April 9, 1891. Serial No. 388,320. (No model.) Patented in Germany December 14, 1888, No. 48,255, and in Austria-Hungary June 21, 1890, No. 6,929 and No. 25,745.

To all whom it may concern:

Be it known that I, NICOLAUS BERSIN, a subject of the King of Prussia, German Emperor, residing at Dusseldorf, in the Kingdom of Prussia, Germany, have invented certain new and useful Improvements in Axle and Shaft Bearings, (for which I have obtained patents in Germany, No. 48,255, dated December 14, 1888, and in Austria-Hungary, No. 6,929 and No. 25,745, dated June 21, 1890,) of which the following is an exact specification.

My invention relates to improvements in bearings for axles and shafts; and the object of my improvement is to reduce all frictional resistance to a minimum by avoiding the sliding friction in the said bearings and completely changing it into rolling friction. I attain this object by the disposition shown in the accompanying drawings, of which—

Figure 1, Sheet 1, is a longitudinal section of an axle-bearing. Fig. 2 is a cross-section of the same drawn on the line $x x'$ of Fig. 1.

Similar letters and figures refer to similar parts throughout both the views.

The casing A, wherein the axle D is journaled, is made of any suitable material, preferably of cast-iron. Two inner circular cross-ribs a divide the same into three chambers, each of which is again divided into three equal chambers by parallel longitudinal ribs $b b$. These ribs are cast in one with the casing; but when it is intended to have the latter bored studs $b' b'$, screwed into the casing, may be substituted for them, as will be seen in Fig. 1. The position of the longitudinal ribs $b b$ or of the studs $b' b'$, situated in two adjoining chambers formed by the circular ribs a , is such that their center lines, meeting in the axis of the casing, form angles of forty degrees. In each of the nine chambers separated by the cross-ribs a and the longitudinal ribs or the studs $b' b'$ there is placed a roller c .

In Figs. 2 and 4 the rollers placed in one of the three chambers formed by the circular ribs a are indicated by the same number, so as to show three rollers 1, three rollers 2, and three rollers 3. The axle-box, while rotating in the direction indicated by the arrow in Fig. 2, will impart to the rollers c a double revolving motion, first round their own axis and second with the casing round the axle D. As

will be seen by the drawing Fig. 2, the axle-journal is therefore carried by six rollers at a time. In every position the journal is supported in its whole length. The principle of my axle-bearing is therefore the supporting of the axle-journal by anti-frictional rollers c , revolving in the said chambers under the pressure exerted by the axle D. Each roller c is in action during two-thirds of a revolution of the wheel or casing while running itself through one-third of its course. When the supporting action of a roller c ceases, the latter is pushed forward and brought round by an internal projection, which may be either longitudinal ribs b or studs b' , until it reaches the top of the shaft D. From here it falls by its own weight on the ribs or the studs in front of it, and there begins a new revolution. The play that is necessary between the roller c in its highest position and the casing A, in order to allow for the dropping of the former, may be about a sixteenth of an inch. The wheel or casing A may revolve in either direction and also be reversed while in motion.

Having thus fully described the nature of my said invention, what I desire to secure by Letters Patent is—

1. A bearing for shafts and axles, comprising a rotatable casing having a series of chambers formed by ribs projecting inwardly therefrom, separate studs arranged longitudinally thereof, and rollers confined in and driven by said chambers, the chambers being arranged out of line with each other in annular series, substantially as set forth.

2. A bearing for shafts and axles, comprising a rotatable casing having a series of chambers formed by circular ribs projecting inwardly therefrom, other ribs arranged longitudinally thereof, and rollers confined in and driven by said chambers, the chambers being arranged out of line with each other in annular series, substantially as set forth.

In testimony whereof I have signed this specification in the presence of two subscribing witnesses.

NICOLAUS BERSIN.

Witnesses:

D. J. PARTELLO,
W. OTTO.