No. 745,611. PATENTED DEC. 1, 1903.

L. HIRT.

BEARING FOR FREELY OSCILLATING CENTRIFUGAL MACHINES.

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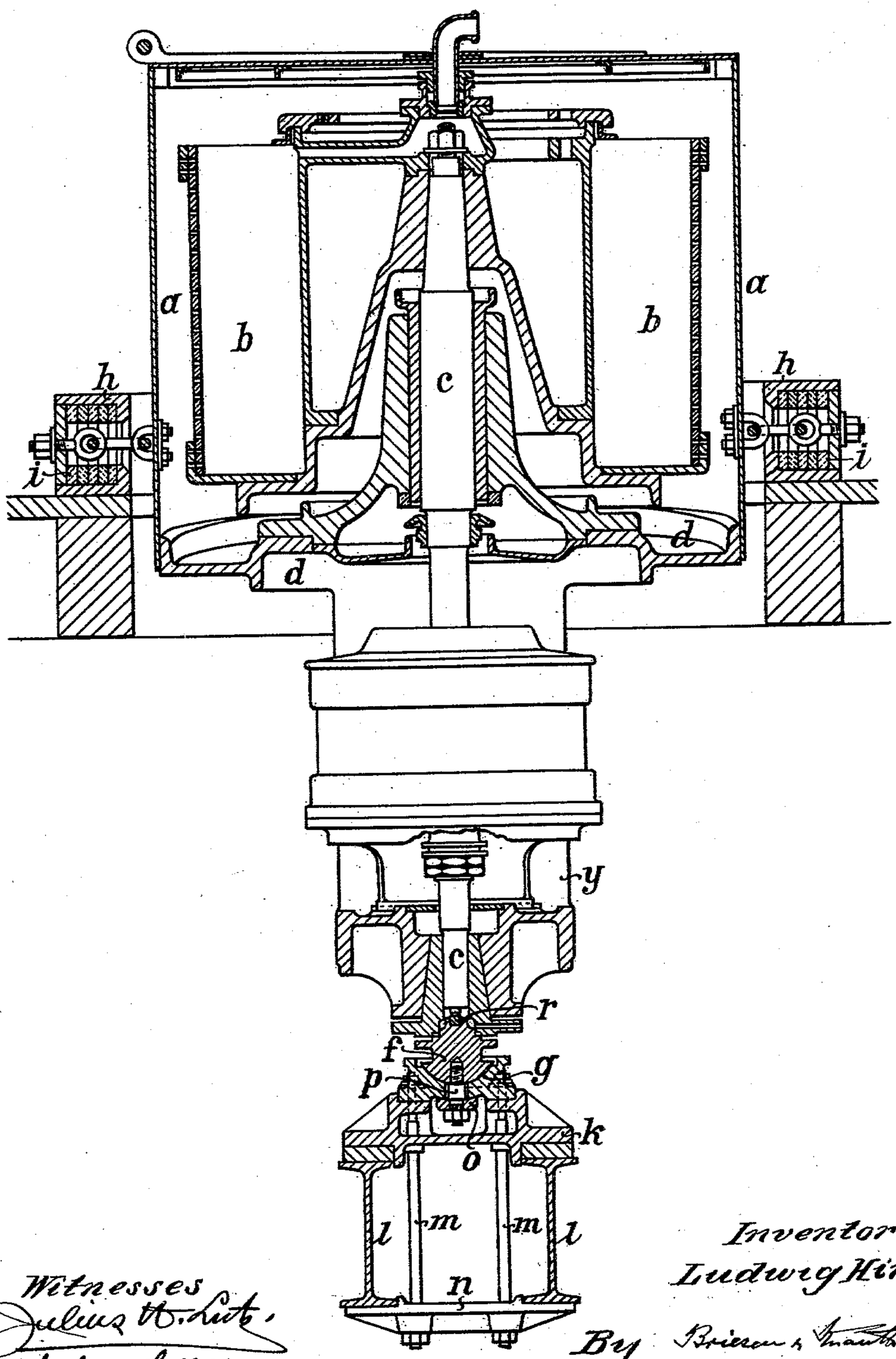
NO MODEL.



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No. 745,611. Patented December 1, 1903.

UNITED STATES PATENT OFFICE.

LUDWIG HIRT, OF GREVENBROICH, GERMANY.

BEARING FOR FREELY-OSCILLATING CENTRIFUGAL MACHINES.

SPECIFICATION forming part of Letters Patent No. 745,611, dated December 1, 1903.

Original application filed January 23, 1902, Serial No. 90,848. Divided and this application filed June 9, 1903. Serial No. 160,734. (No model.)

To all whom it may concern:

Be it known that I, LUDWIG HIRT, a subject of the King of Prussia, German Emperor, and a resident of Grevenbroich, Kingdom of Prussia, German Empire, have invented certain new and useful Improvements in Bearings for Freely-Oscillating Centrifugal Machines, of which the following is a specification.

This invention refers to a construction of the bearing of centrifugal machines in which the protecting-casing, the frame, and the rotating shaft, together with its drum, rest within a step-bearing or a socket by means of a pivot or universal joint and oscillate in it round the center of such pivot. Such a construction of a centrifugal machine is represented in the application for a United States patent filed by me on January 23, 1902, Serial No. 90,848, of which the present application is a division. The particular way of supporting this centrifugal machine in a socket and the arrangement of such a socket in the stories of the building of a factory form the object of the present application.

This invention consists especially in mounting the socket mentioned above on a slide which is connected by screw-bolts and counter-plates with the bottom or the iron girders of the building to obtain an easy access to the hemispherical socket, the universal joint of the frame of the centrifugal machine, and the secondary parts of the lower bearing of such machine without the necessity of its being taken apart. After removal of the screw-bolts the slide may be moved sidewise for the purpose indicated.

In the drawing annexed to the description a centrifugal machine is represented in side view, partly in section, provided with the constructive parts according to the present invention.

a is the protecting-casing surrounding the drum *b*, mounted on the shaft *c*. *d y* represent the frame of the centrifugal machine, in which all parts are mounted or fixed. The buffers *i* within the frame *h* are loosely connected with the casing or mantle *a* for holding the entire machine in equilibrium. The hemispherical pivot *f* is fixed in any suitable manner to the lower part of the frame *d y*. All these parts mentioned above rest, with the exception of the buffer-frame, with the hemispherical pivot *f* in a hemispherical recess of the socket *g*, formed in correspondence with the hemispherical part *f*, so that the socket *g* supports the entire machine, which oscillates in such recess round the center line of the hemisphere *f*. This socket *g* rests on the slide *k*, supported on the beams or girders *l*, which may form a part of the building. The socket, slide, and its supporting part are rigidly connected together by the bolts *m*, their nuts, and the counter-plate *n*.

The lower surface of the socket *g* is formed in correspondence with its spherical interior surface in which the hemisphere *g* rests. A plate *o*, formed correspondingly, rests against this surface. The plate and socket are provided with a recess or hole for the screw-bolt *p*, screwed in the hemisphere *f* and connected with the plate *o* by a nut, the hole in the socket being of a greater diameter than that of the bolt *p*. Therefore all oscillating movements of the machine and its hemispherical pivot *f* are transmitted to the plate *o*, the main purpose of which consists in counteracting any tendency of the machine to move upward.

In this construction the lower part of the centrifugal machine—as, for instance, the step-bearing of the shaft, its bearing in the lower part of the frame, the hemispherical pivot, and the socket—can easily and within a little time be removed and inspected or replaced without the necessity of taking apart the centrifugal machine. After supporting the frame of the centrifugal machine the nuts of the bolts *m* are loosened and these bolts are removed in a downward direction with the counter-plate *n*. Hereafter the slide *k* may be moved sidewise. After loosening the nuts of the bolt *p* the counter-plate *o*, the socket *g*, and hereafter the hemispherical pivot *f*, connected with the frame of the centrifugal machine and carrying the step-bearing *r* for the shaft, may be removed. In the same manner the lining of the shaft-bearing in the lower part of the frame may be removed. These parts may then be inspected, repaired, or replaced with new parts.

What I claim is—

1. In a bearing for freely-oscillating centrifugal machines, the combination with the frame, of a pivot for supporting said frame, a hemispherical socket engaged by said pivot and provided with a hole in its center, and with a convex outer surface concentric with its inner surface, a hollow plate in contact with such outer surface, and means for detachably connecting said plate with said pivot.

2. A bearing for a centrifugal machine, comprising a convex pivot, a concave socket engaged by said pivot and provided with a central opening, the outer surface of said socket being curved concentrically with its inner surface, a concave plate engaging said outer surface, means for detachably connecting said plate with the pivot, and a slide for supporting said socket.

3. A bearing for a centrifugal machine, comprising a convex pivot, a concave socket provided with a central opening and having its outer surface curved concentrically with its inner surface, a concave plate engaging said outer surface, means for detachably connecting said plate with the pivot, a slide for supporting said socket, a stationary support for said slide, a counter-plate engaging said stationary support and bolts for detachably connecting said counter-plate and slide with the stationary support.

4. An end bearing for spindles, comprising a spherically-rounded member at the end of the spindle, a centrally-perforated hemispherical socket adapted to receive said end member, the outer surface of said socket being curved concentrically with its inner surface, a concave plate engaging said outer surface and slidable thereon, and means extending through the perforation of the socket, for connecting said concave plate with said end member.

5. An end bearing for spindles, comprising a spherically-rounded member at the end of the spindle, a centrally-perforated hemispherical socket adapted to receive said end member, the outer surface of said socket being curved concentrically with its inner surface, a concave plate engaging said outer surface and slidable thereon, means extending through the perforation of the socket, for connecting said concave plate with said end member, and a movable support for said socket.

6. An end bearing for spindles, comprising a spherically-rounded member at the end of the spindle, a perforated socket adapted to receive said end member, the outer surface of said socket being curved concentrically with its inner surface, a concave plate engaging said outer surface and slidable thereon, means extending through the perforation of the socket for connecting said concave plate with said end member, a laterally-movable slide which supports said socket, and means for normally holding said slide stationary.

In testimony that I claim the foregoing as my invention I have signed my name, in presence of two witnesses, this 7th day of May, 1903.

LUDWIG HIRT.

Witnesses:
PETER LIEBER,
WILLIAM ESSENWEIN.