No. 795,695. PATENTED JULY 25, 1905.

# I. DEUTSCH.

## SELF ALINING BEARING.

APPLICATION FILED MAR. 14, 1904.

3 SHEETS—SHEET 1.

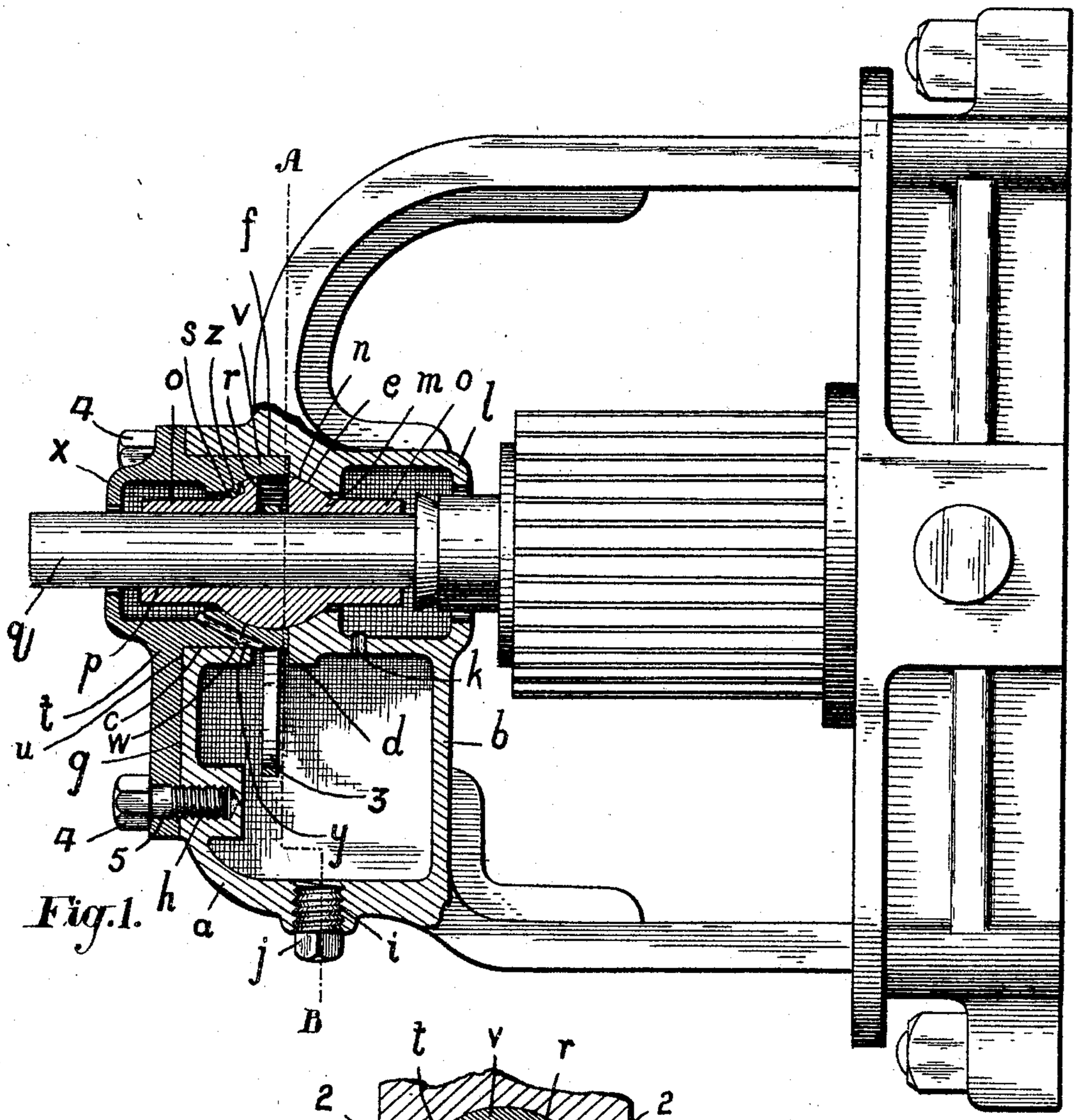


Fig. 1.

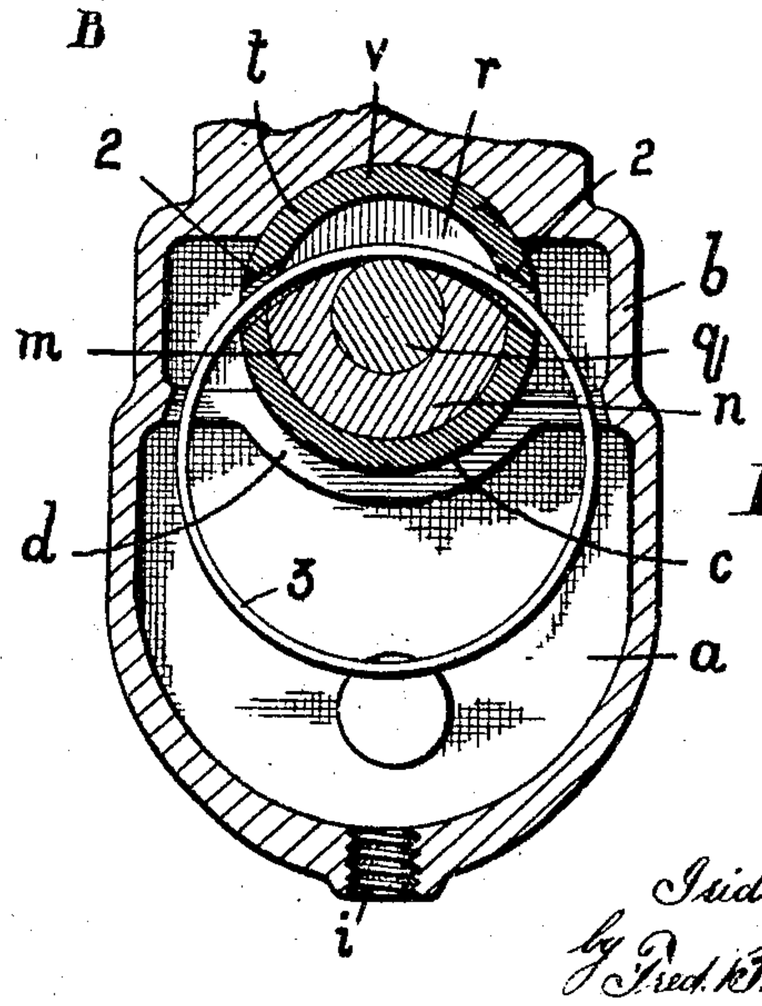


Fig. 2.

Witnesses.

J. E. L. Blackemore

R. J. Trotter

Inventor.

Isidor Deutsch

by Fred. K. Fetherstonhaugh

Atty.

No. 795,695.

PATENTED JULY 25, 1905.

I. DEUTSCH.

SELF ALINING BEARING.

APPLICATION FILED MAR. 14, 1904.

3 SHEETS—SHEET 2.

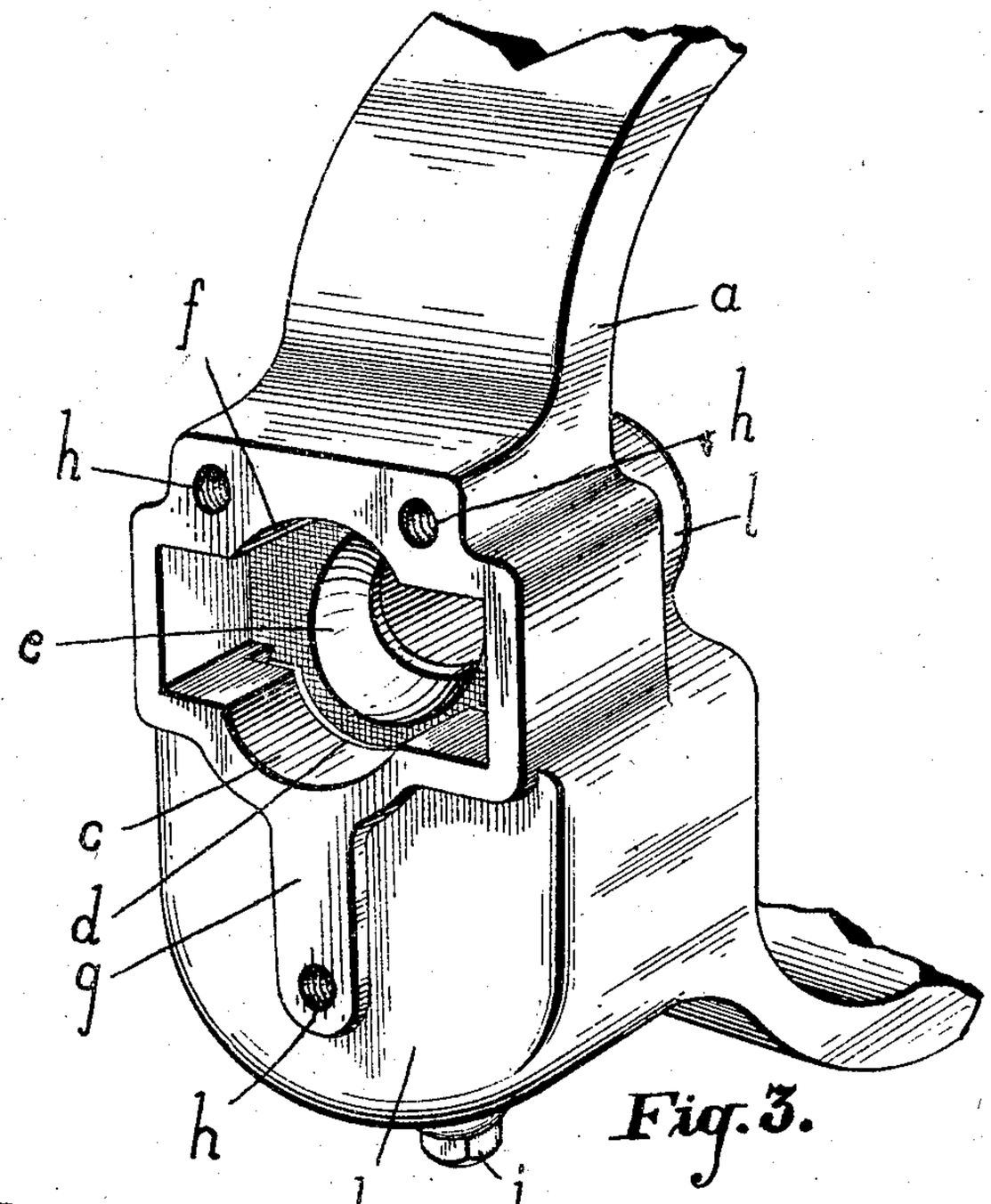


Fig. 3.

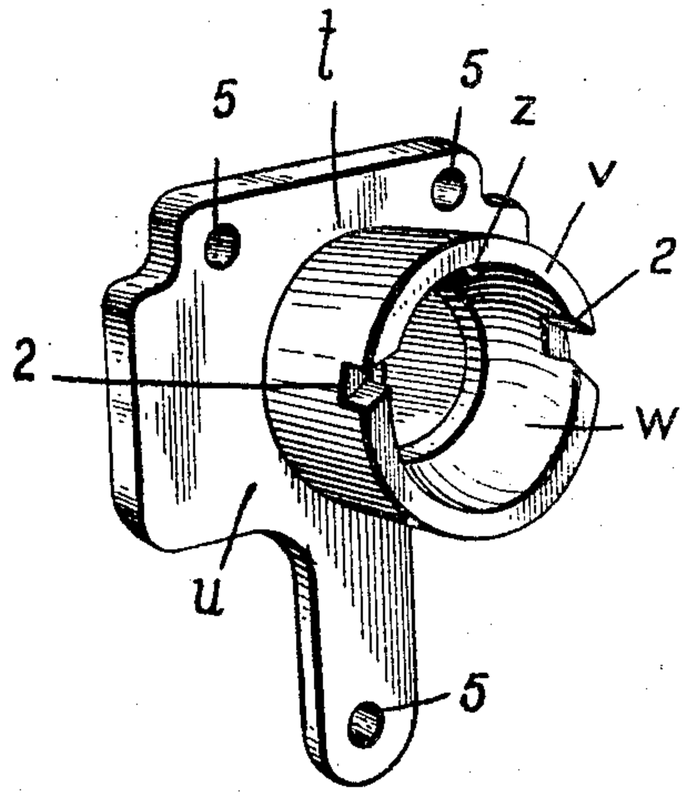


Fig. 4.

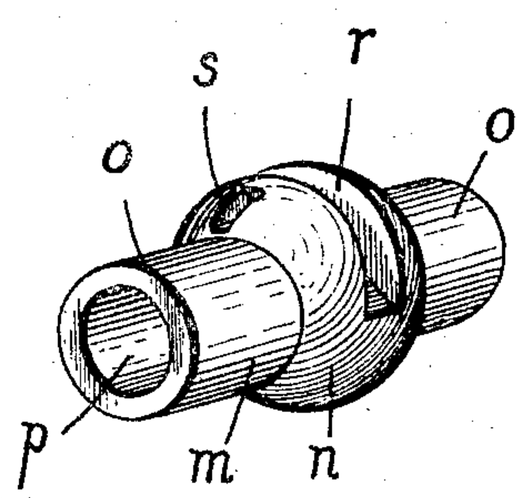


Fig. 5.

Witnesses.

J. E. L. Blackmore

R. T. Trotter

Inventor.

Isidor Deutsch

by Fred. B. Fetherstonhaugh

Atty.

No. 795,695. PATENTED JULY 25, 1905.

I. DEUTSCH.

SELF ALINING BEARING.

APPLICATION FILED MAR. 14, 1904.

3 SHEETS—SHEET 3.

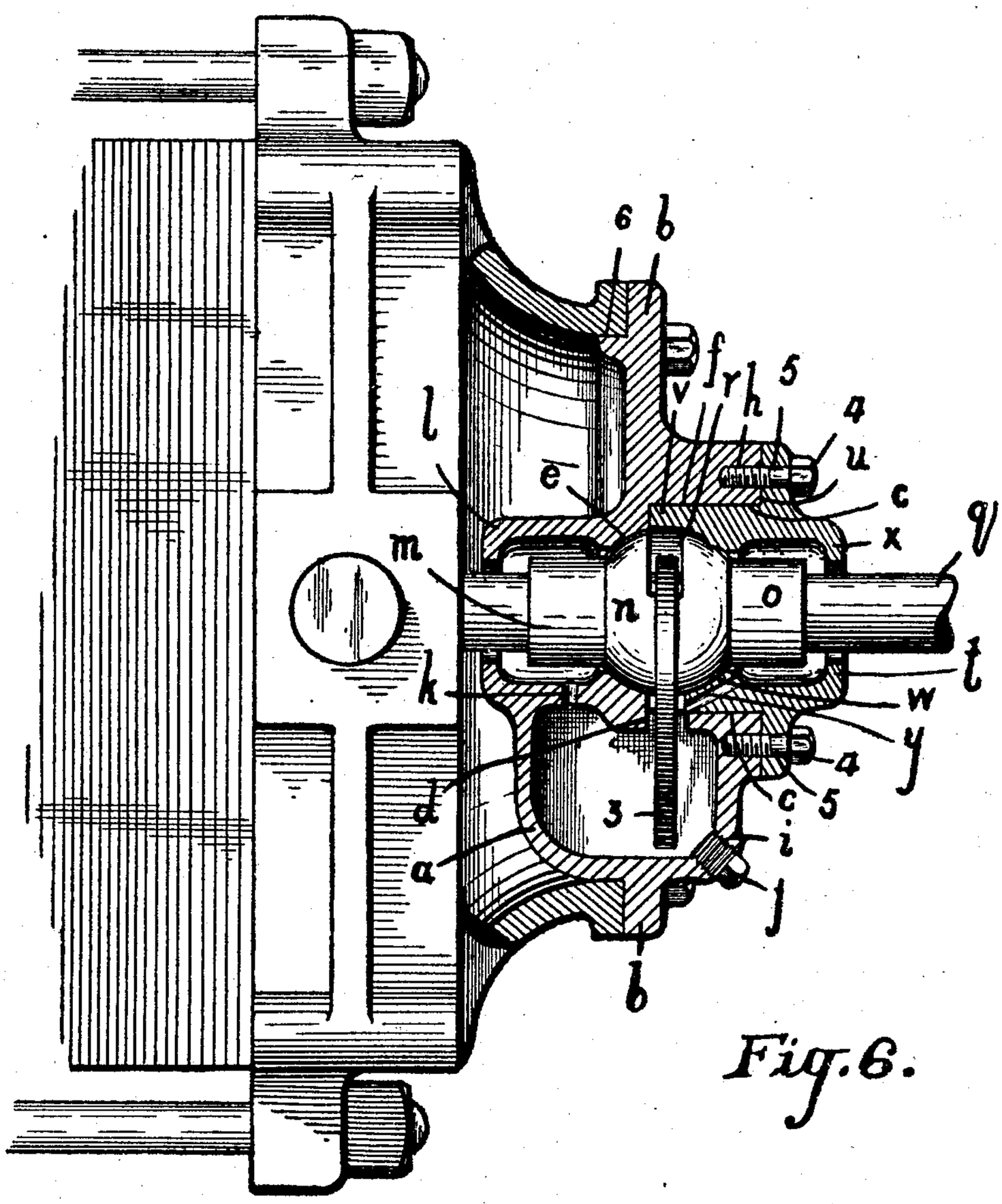


Fig. 6.

Witnesses.

J. E. L. Blackmore

R. J. Grotter

Inventor.

Isidor Deutsch

by Fred B. Fetherstonhaugh Atty.

# UNITED STATES PATENT OFFICE.

ISIDOR DEUTSCH, OF MONTREAL, CANADA, ASSIGNOR TO ELECTRIC AND TRAIN LIGHTING SYNDICATE, LIMITED, OF MONTREAL, CANADA, A COMPANY INCORPORATED UNDER THE LAWS OF CANADA.

## SELF-ALINING BEARING.

No. 795,695. Specification of Letters Patent. Patented July 25, 1905.

Application filed March 14, 1904. Serial No. 198,183.

*To all whom it may concern:*

Be it known that I, ISIDOR DEUTSCH, a citizen of the United States of America, residing at Montreal, in the district of Montreal, in the Province of Quebec, Canada, have invented certain new and useful Improvements in Self-Alining Bearings, of which the following is a specification.

My invention relates to improvements in self-alining bearings; and the object of the invention is to devise an arrangement in which the parts will be associated one with the other so as to lessen the liability to injurious effect commonly incident to machines in severe service; and it consists, essentially, of a bearing composed of two members abutting one another substantially at right angles to the axis of the bearing and inclosing the bushing and means for lubricating associated therewith, the various parts being constructed and arranged in detail, as hereinafter more particularly described.

Figure 1 is a longitudinal sectional view of my bearing as applied to a dynamo at the commutator end. Fig. 2 is a cross-sectional view of my bearing through A B in Fig. 1. Fig. 3 is an enlarged perspective detail of the inner member of the bearing when forming part with the frame. Fig. 4 is an enlarged detail of the outer member of the bearing. Fig. 5 is an enlarged detail of the bushing. Fig. 6 is a longitudinal sectional view of my bearing as applied to a dynamo at the opposite end to the commutator and showing inner member as removable.

Like characters of reference indicate corresponding parts in each figure.

*a* is the casing of the oil-chamber shown in Fig. 1 in the same piece with the inner member *b* and directly beneath the journal-orifice. The upper side of the casing *a* has an exterior arc-shaped recess *c* and the elongated slot *d* at the inner end of the said recess *c*.

*e* is a cup-shaped socket formed in the inner member *b*.

*f* is an arc-shaped recess corresponding to the recess *c* and formed in the upper side of the inner member *b*.

*g* represents surface-finished faces on the inner member *b*, substantially at right angles to the axis of the bearing, and *h* represents threaded orifices in the faces.

*i* is an orifice in the bottom side of the casing *a* to permit egress from the chamber formed by the casing *a*.

*j* is a plug, preferably threaded and designed to close the orifice *i*, which is also correspondingly threaded.

*k* is a passage for the return of the oil to the oil-chamber through the top side of the casing located inwardly of the cup-shaped socket and where the said top side of the casing forms a portion of the sleeve *l*.

*m* is a bushing, spherically formed at *n* for a portion of its length, having the cylindrical ends *o* and the central orifice *p*, in which the shaft *q* turns.

*r* is a slot extending across the spherical portion *n* and through to the orifice *p*.

*s* is a recess in the spherical portion *n* adjacent to the slot *r*.

*t* is the outer member of the bearing, having a surface-finished portion *u*, substantially at right angles with the axis of the bearing, designed to meet the surface-finished portion *g* of the inner member and the inward cylindrical projection *v*, designed to fit correspondingly into the arc-shaped recesses *c* and *f*, and having a cup-shaped interior *w*, converging to the orifice *p*.

*x* is a sleeve extending outwardly from and forming part with the outer member *t* and converging at its outer end toward the shaft *q*. *y* is a passage through the cylindrical inward projection *v* for the return of oil from the chamber formed by said sleeve.

*z* is a teat projecting from the surface of the cup-shaped interior *w*.

2 represents slots reaching inwardly from the inner edge of the cylindrical projection *v* diametrically opposite one to the other and concentrically cut.

3 is an oil-ring surrounding and supported by the shaft *q*, having one part thereof dropping through the elongated slot *d* in the casing *a*.

4 represents cap-screws securing the outer and inner members together through the orifices 5 in the outer member and into the orifices *h*.

In order to more clearly explain this invention, I shall add to the detailed description hereinbefore given an explanation of the assembling of the parts and the utility.

The oil-ring 3 is slipped over the end of the shaft *q* and by suitable slanting the said ring

may be dropped into the elongated slot *d*. The bushing *m* is then slipped over the shaft *q* and through to the inner member *b*, the ring 3 being lifted to allow the bushing to pass therethrough until its spherical portion *n* meets the cup-shaped socket *e*. The slot *r* across the spherical portion *n* of the bushing must be now directly over the elongated slot *d*. The ring 3 is therefore dropped into the slot *r* and will constantly rest on the shaft *q* where the slot *r* reaches through to the orifice *p* in the bushing. A portion of the ring 3 will now reach down into the chamber contained within the casing *a*. This chamber is filled with lubricating matter in which the ring is constantly immersed. The outer member *t* of the bearing is now slid over the shaft *q* and over the bushing *m* until the cup-shaped interior *w* meets the spherical portion *n* of the bushing. The slots 2 are so placed in the projection *v* as to take the ring 3 therein when the outer member of the bearing is in place and will allow the said ring to rest on the shaft *q*, but limit its movement upwardly. The teat *z* will also when the inner bearing is being put in place slip into the recess *s* and prevent the rotation of the bushing *m* with the shaft *q*. The surface-finished portions of the outer and inner members will meet when the members are in position and may be securely held one to the other by suitable cap-screws 4. The sleeves *l* and *x* surrounding the shaft *q* and extending beyond the sockets in the inner and outer members are designed to minimize the effect of dust and grit and facilitate the return of the oil to the oil-chamber through the passages *k* and *y*.

It will be seen from the description herein that this invention particularly refers to the lubrication of a self-alining bearing split in a vertical plane and is designed especially with a view of constructing a bearing which shall have a permanent and certain means of oiling and at the same time provide a compact and exceedingly durable construction capable of withstanding all sorts of jars and jolts, which is desirable where dynamos and such machines are used in railway-work for train-lighting purposes.

The chamber contained within the casing *a* may be filled with lubricating matter through the elongated orifice *d* and may be flushed through the orifice *i* on the removal of the plug *j*.

This description, so far as it has gone, refers more particularly to the commutator end of the dynamo, though it will be equally applicable in many machines. However, what I have provided for the end of the dynamo, through which the armature is removed, is substantially the same, though necessarily slightly modified. For instance, in place of having the oil-chamber as formed in the frame of the machine when the inner member forms part therewith I have the said chamber formed in the removable inner member as removable from the frame, though located beneath the journal-orifices, as at the commutator end—that is to say, I make a portion of the frame representing the inner member removable and at the same time secure a large aperture 6, which is closed in by the said removable inner member securely bolted to the frame. These changes in construction are necessary for the bearings for the different ends of the dynamo and may be made without departing from the spirit of my invention.

In place of using a ring, as shown, I may use a chain ring or any other suitable form of ring.

What I claim as my invention is—

1. In a bearing, the combination with a rotatable shaft and a suitable support to the bearing therefor, of an inner member to said bearing having a suitable recess and a cup-shaped socket therein, surface-finished interior and exterior faces and an oil-chamber formed beneath said bearing having an elongated slot through its casing leading into said recess, an outer member having a cup-shaped socket and corresponding faces meeting the aforesaid faces substantially at right angles to the axis of the bearing, a bushing having a spherical portion cross-slotted and introduced between said members and encircling said shaft, and an oil-conveyer depending from the shaft through said elongated slot into the oil-chamber, as and for the purpose specified.

2. In a bearing, the combination with a rotatable shaft and a suitable support to the bearing therefor, of an inner member to said bearing having a suitable recess and a cup-shaped socket therein, surface-finished interior and exterior faces and an oil-chamber formed beneath said bearing having an elongated slot through its casing leading into said recess, an outer member having a cup-shaped socket in an inwardly-extending portion thereto, and corresponding faces meeting the aforesaid faces substantially at right angles to the axis of the bearing, a bushing having a spherical portion cross-slotted and introduced between said members and encircling said shaft, and an oil-ring depending from the shaft and through the aforesaid slots into the oil-chamber, as and for the purpose specified.

3. In a bearing, the combination with a rotatable shaft and a suitable support to the bearing therefor, of an inner member to said bearing having a suitable recess and a cup-shaped socket therein, surface-finished interior and exterior faces and an oil-chamber formed beneath said bearing having an elongated slot through its casing leading into said recess, a bushing having a spherical portion cross-slotted and encircling said shaft, an oil-ring, and an outer member having corresponding faces meeting the aforesaid faces substantially at right angles to the axis of the bearing and the inwardly-extending portion there-

of containing a cup-shaped socket, said socket having slots in the walls thereof concentrically arranged with the oil-ring and through which the latter travels, as and for the purpose specified.

4. In a device of the class described, in combination, a rotatable shaft and a suitable support to the bearing therefor, a bushing having a spherical portion cross-slotted and encircling said shaft and a cavity to one side of said cross-slot, an inner member to said bearing having a suitable recess and a cup-shaped socket therein, and surface-finished interior and exterior faces, an outer member having corresponding faces meeting the aforesaid faces substantially at right angles to the axis of the bearing, the inwardly-extending portion thereof having a cup-shaped socket and a teat projecting from the wall thereof corresponding to and engaging the bushing in the aforesaid cavity, and means associated with said members and said bushing for lubricating the bearing, as and for the purpose specified.

5. In a device of the class described, in combination, a rotatable shaft and a suitable support to the bearing therefor, a bushing having a spherical portion cross-slotted and encircling the shaft, an inner member to the bearing having a recess formed thereacross and arc-shaped depressions centrally arranged in the upper and lower walls of said recess and leading to a cup-shaped socket, and surface-finished interior and exterior faces extending from the outer edges of the cup-shaped socket and recess respectively, and an oil-chamber beneath the bearing having an elongated slot leading into said recess adjacent to the inner wall thereof, an oil-ring depending through the aforesaid cross-slot in the bushing into the oil-chamber, and an outer member having an inwardly-extending cylindrical portion corresponding to the aforesaid arc-shaped formations and containing a cup-shaped socket, said cup-shaped socket having slots in the walls thereof concentric with said ring and through which the latter travels, and surface-finished faces on the inner and outer portions of said inner member meeting the aforesaid faces substantially at right angles to the axis of the bearing, as and for the purpose specified.

Signed at Montreal, in the district of Montreal, in the Province of Quebec, Canada, this 9th day of March, 1904.

ISIDOR DEUTSCH.

Witnesses:
J. E. L. BLACKMORE,
R. T. TROTTER.