

No. 847,541.

PATENTED MAR. 19, 1907.

J. F. AYERS.  
SHAFT BEARING.  
APPLICATION FILED NOV. 2, 1906.

Fig. 1.

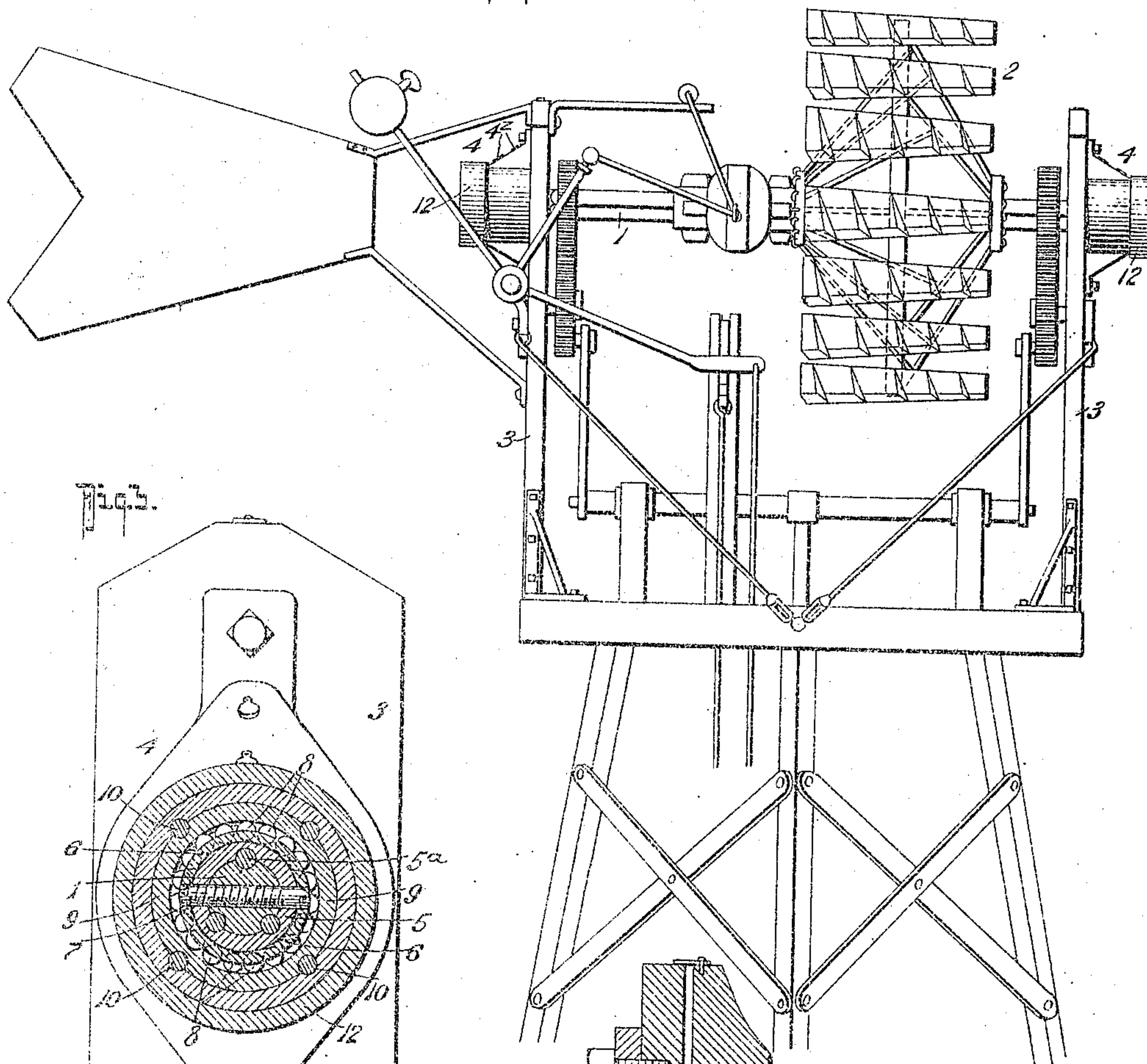


Fig. 3.

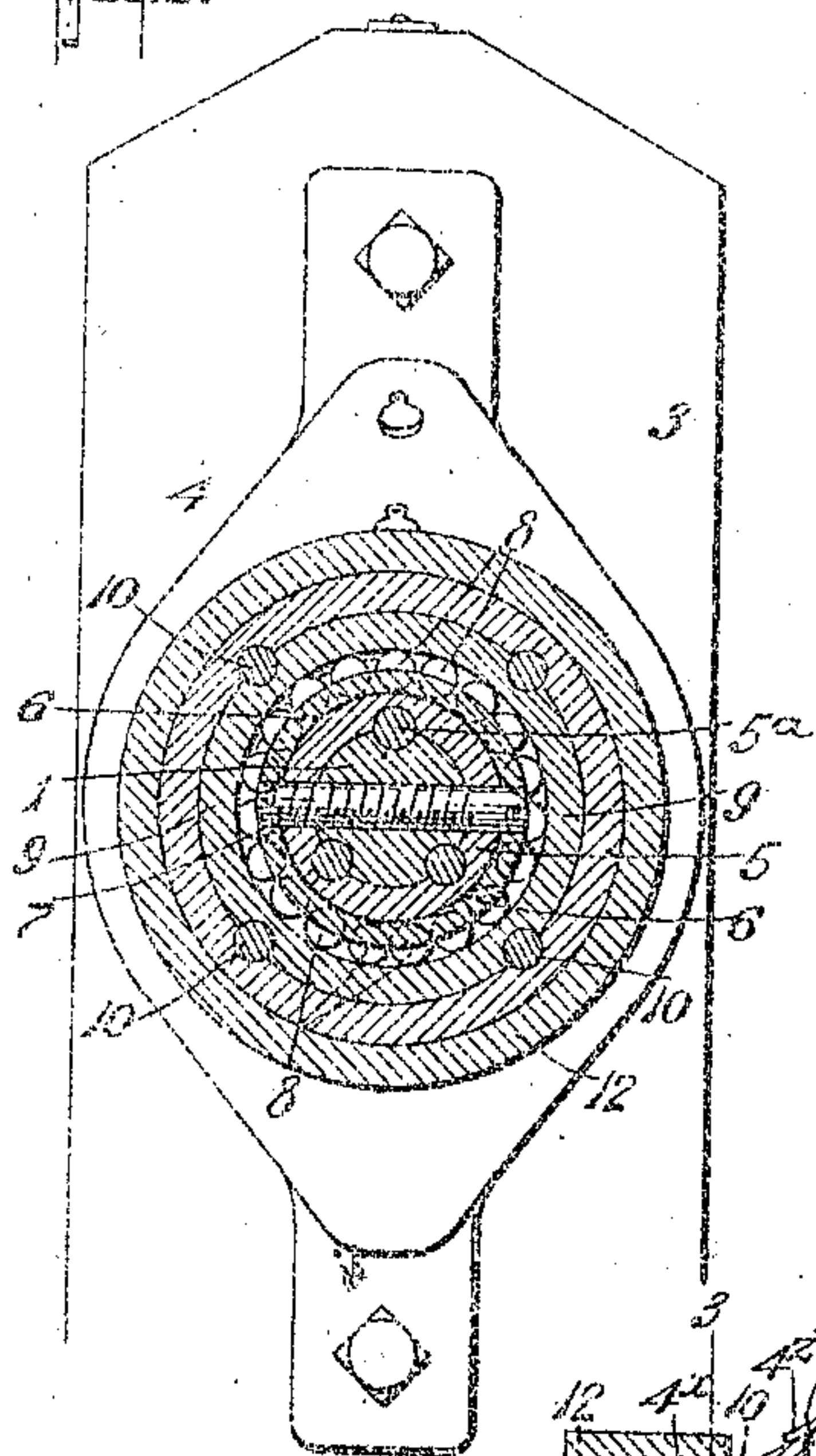
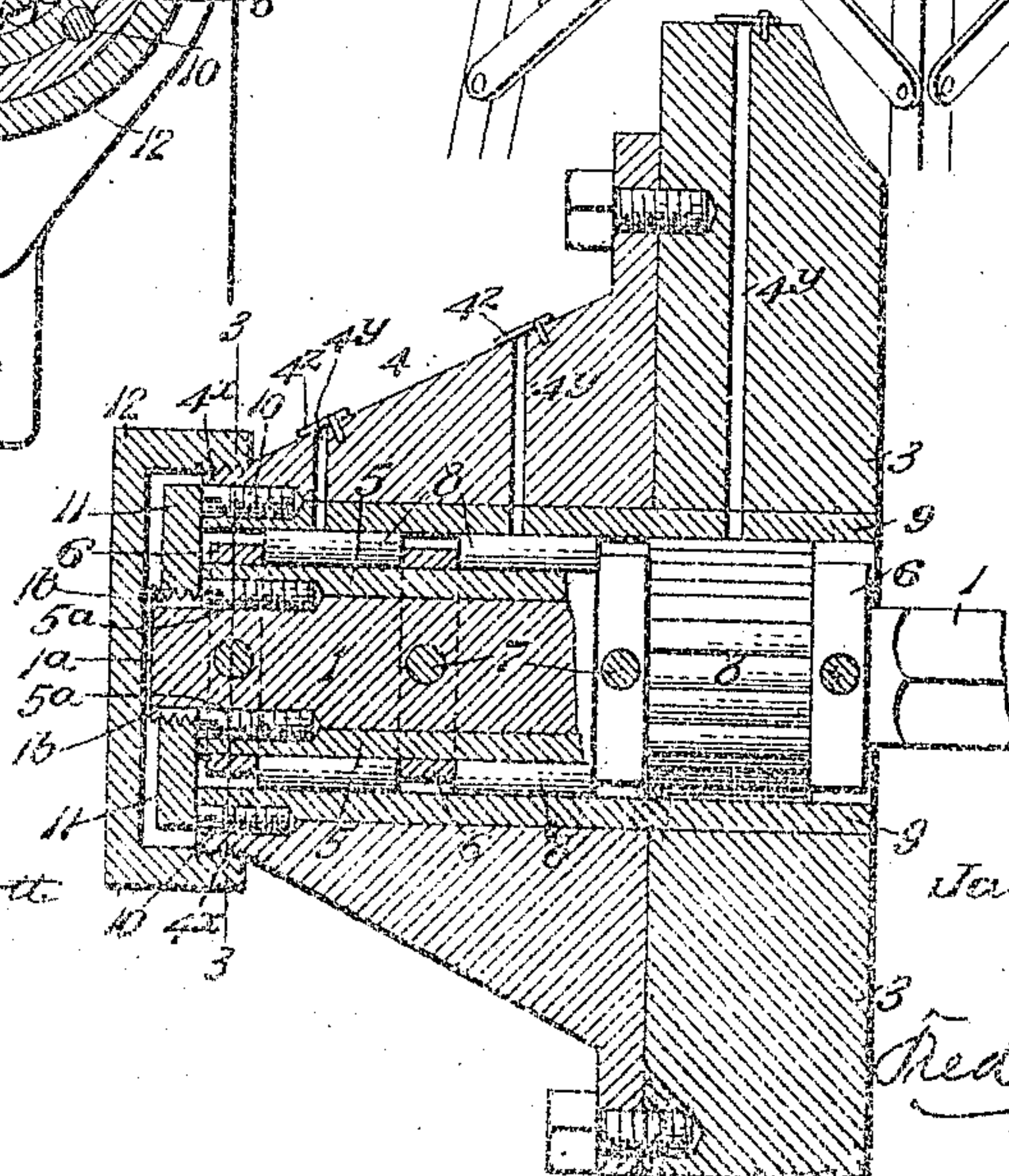


Fig. 2.



WITNESSES:

John T. Schrott  
F. L. Gibbons

INVENTOR

Jacob F. Ayers.

BY

Fred G. Schrott & Co.  
ATTORNEYS.



# UNITED STATES PATENT OFFICE.

JACOB F. AYERS, OF KALKASKA, MICHIGAN.

## SHAFT-BEARING.

No. 847,541.

Specification of Letters Patent.

Patented March 19, 1907.

Application filed November 2, 1906. Serial No. 341,800.

*To all whom it may concern:*

Be it known that I, JACOB F. AYERS, residing at Kalkaska, in the county of Kalkaska and State of Michigan, have invented certain new and useful Improvements in Shaft-Bearings, of which the following is a specification.

My invention relates to certain new and useful improvements in shaft-bearings; and it more particularly relates to that class of bearings known as "antifriction-bearings," and is more specially designed for use in connection with wind-wheel shafts—such, for instance, as that disclosed in my copending application filed June 1, 1906, Serial No. 319,784.

Generically, my invention comprises a removable sleeve for the shaft end upon which suitable spacing-rings are held and between which rings bearing-rollers rest and a removable sleeve-lining for the bearing-box, together with means for retaining the shaft in its bearing and means for conducting lubricating-oil to the bearing-rollers.

In its more detail construction my invention comprises certain novel construction, combination, and arrangement of parts, all of which will be first described in detail and then be specifically pointed out in the appended claims, reference being had to the accompanying drawings, in which—

Figure 1 is a side elevation of a windmill embodying my invention. Fig. 2 is an enlarged central vertical longitudinal section of a bearing. Fig. 3 is a cross-section on the line 3-3 of Fig. 2.

Referring now to the accompanying drawings, in which like numerals and letters of reference indicate like parts in all of the figures, 1 designates the wind-wheel shaft, which carries a wind-wheel 2 and is mounted in the bearing-hubs 4 on the supports 3. The bearings of the support 3 and their coöperative connection with the wind-wheel shaft form my present invention, while the remaining parts of the windmill may be of any approved construction—such, for instance, as shown in my copending application hereinbefore referred to—since the remaining parts *per se* form no portion of my present invention.

By reference more particularly to Figs. 2 and 3 it will be seen that in my improved construction of bearing the windmill-shaft 1 at its ends is provided with a metallic sleeve 5, running the full length of the bearing-box

4 and secured in place by a series of screw keys 5<sup>a</sup>, preferably three in number.

Surrounding the sleeve 5 and spaced at suitable intervals apart are a series of collars 6, which are held in place by screw-bolts 7, which pass through the sleeves 5 and the ends of the shaft 1. Surrounding the sleeve 5 and between the collars 6 the bearing-rollers 8 are held within the bearing-box.

The hub portion 4<sup>o</sup> of the bearing is secured to the supports 3 by bolts or otherwise, as may be found desirable, and its bearing-face is lined with a sleeve 9, that is secured to the hub 4 by a series of screw-keys 10, as indicated, the screw-keys 10 being preferably four in number and arranged as clearly shown in Figs. 2 and 3.

It should be noticed that the collars 6 are of a lesser outside diameter than the internal diameter of the hub-sleeve 9, so as to be spaced slightly therefrom.

The shaft 1 has its end 1<sup>a</sup> threaded, as at 1<sup>b</sup>, to receive a bur 11, which is adapted to lie close up against the end face of the hub 4. Inclosing the end of the hub 4 and the bur 11 is a cap 12, which screws onto the threaded portion 4<sup>x</sup> of the hub 4. The hub 4 is provided with a plurality of oil-ducts 4<sup>y</sup>, which communicate with respective sets of bearing-rollers 8, and these ducts 4<sup>y</sup> may be closed by caps 4<sup>z</sup>, if desired.

Thus it will be seen that I have provided a very simple and effective antifriction-bearing in which the bearing-sleeves 5 and 9, upon which the wear of the bearing comes, can be readily replaced whenever it can be found desirable to do so by simply unscrewing the screw-keys that hold the respective sleeves in place, it being understood, of course, that the rings 6 are first removed before the sleeve 5 is taken off the shaft end.

While I have shown and described my invention as used with windmill-shafts, yet I desire it understood that this bearing structure can be used wherever it may be found desirable to do so.

From the foregoing description, taken in connection with the accompanying drawings, it is thought the complete construction, operation, and numerous advantages of my invention will be readily understood by those skilled in the art to which it appertains.

What I claim is—

1. The combination with a rotatable shaft, of a sleeve mounted thereon, screw-keys for



locking said sleeve and shaft together, spaced rings mounted on said sleeve, bearing-rollers mounted between said rings, a fixed member having a bearing-aperture, a sleeve lining said bearing-aperture, and screw-keys connecting said last-named sleeve to said bearing member, and said bearing-rollers being held between said sleeves, substantially as shown and described.

2. The combination with a rotatable shaft, of a sleeve mounted thereon, screw-keys for locking said sleeve and shaft together, spaced rings mounted on said sleeve, bearing-rollers mounted between said rings, a fixed member having a bearing-aperture, a sleeve lining said bearing-aperture, and screw-keys connecting said last-named sleeve to said bearing-aperture, said bearing-rollers being held between said sleeve, said fixed bearing and said sleeve therefor have oil-apertures passing therethrough and communicating with the bearing-aperture substantially as shown and described.

3. The combination with a rotatable shaft, of a sleeve mounted thereon, spaced rings removably mounted on the sleeve, bearing-rollers mounted between the spaced rings, a fixed member having a bearing-aperture, and a sleeve lining said bearing-aperture, said bearing-rollers held between said sleeves, substantially as shown and described.

4. The combination with a rotatable shaft, of a bearing-sleeve removably secured thereto, spaced rings removably mounted on the sleeve, bearing-rollers mounted between said rings, a fixed member having a bearing-aperture, and a bearing-sleeve lining said aperture and removably held therein, said bearing-rollers being held between said sleeves, substantially as shown and described.

5. The combination with a rotatable shaft, of a sleeve mounted thereon, spaced rings mounted on the sleeve, bearing-rollers mounted between the spaced rings, a fixed member having a bearing-aperture, and a sleeve lining said bearing-aperture, said bearing-rollers held between said sleeves, and said fixed member and said lining-sleeve having oiling-passages communicating with the bearing-rollers substantially as shown and described.

6. The combination with a rotatable shaft,

of a bearing-sleeve removably secured thereto, spaced rings removably mounted on the sleeve, bearing-rollers mounted between said rings, a fixed member having a bearing-aperture, and a bearing-sleeve lining said aperture, and removably held therein, said bearing-rollers being held between said sleeves, and said fixed member having oiling-passages communicating with the bearing-rollers, substantially as shown and described.

7. The combination with a rotatable shaft, of a sleeve mounted thereon, a series of spaced rings removably mounted on the sleeve, bearing-rollers mounted between the spaced rings, a fixed member having a bearing-aperture, a sleeve lining said bearing-aperture, said bearing-rollers held between said sleeves, and means mounted on the end of the rotatable shaft for retaining the shaft in its bearing, substantially as shown and described.

8. The combination with a rotatable shaft, of a sleeve mounted thereon, screw-keys for locking said sleeve and shaft together, spaced rings mounted on said sleeve, bearing-rollers mounted between said rings, a fixed member having a bearing-aperture, a sleeve lining said bearing-aperture, screw-keys connecting said last-named sleeve to said bearing member, said bearing-rollers being held between said sleeves, said shaft having a threaded end portion and a bur held on said threaded portion, substantially as shown and described.

9. The combination with a rotatable shaft, of a sleeve mounted thereon, screw-keys for locking said sleeve and shaft together, spaced rings mounted on said sleeve, bearing-rollers mounted between said rings, a fixed member having a bearing-aperture, a sleeve lining said bearing-aperture, screw-keys connecting said last-named sleeve to said bearing member, said bearing-rollers being held between said sleeves, said shaft having a threaded end portion and a bur held on said threaded portion, and a closure-cap on the end of the fixed member inclosing said bur, substantially as shown and described.

JACOB F. AYERS.

Witnesses:

LULAH E. DAVIS,  
LAURA L. AYERS.