No. 847,203. PATENTED MAR. 12, 1907.

H. G. REIST.

CENTRIFUGAL OILING DEVICE.

APPLICATION FILED AUG. 7, 1905.

2 SHEETS—SHEET 1.

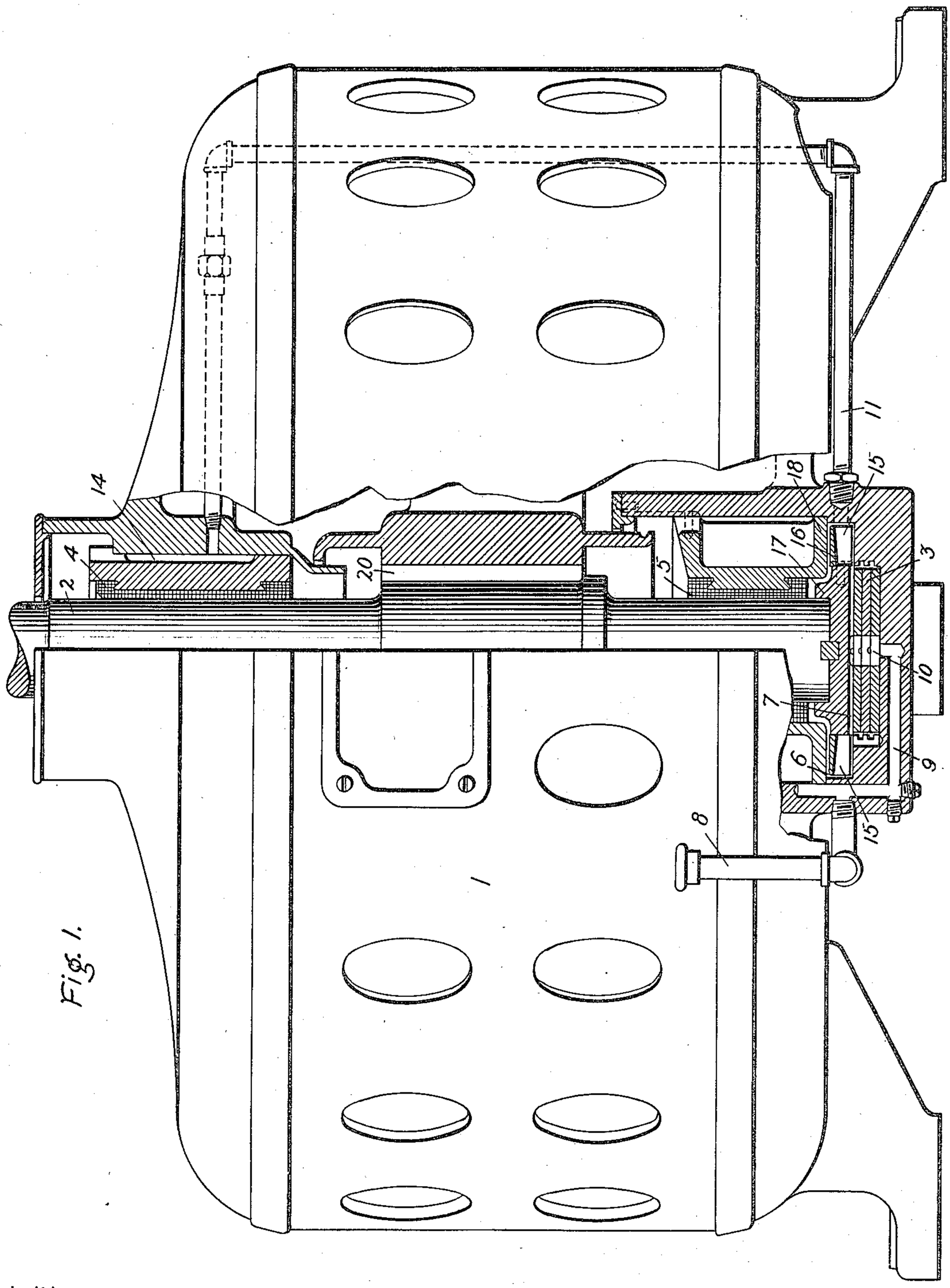

Fig. 1.

Witnesses:
Harry A Tilden
B. B. Newman

Inventor:
Henry G. Reist.
by Albert G. Davis
Att'y.

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2 SHEETS—SHEET 2.

Fig. 2.

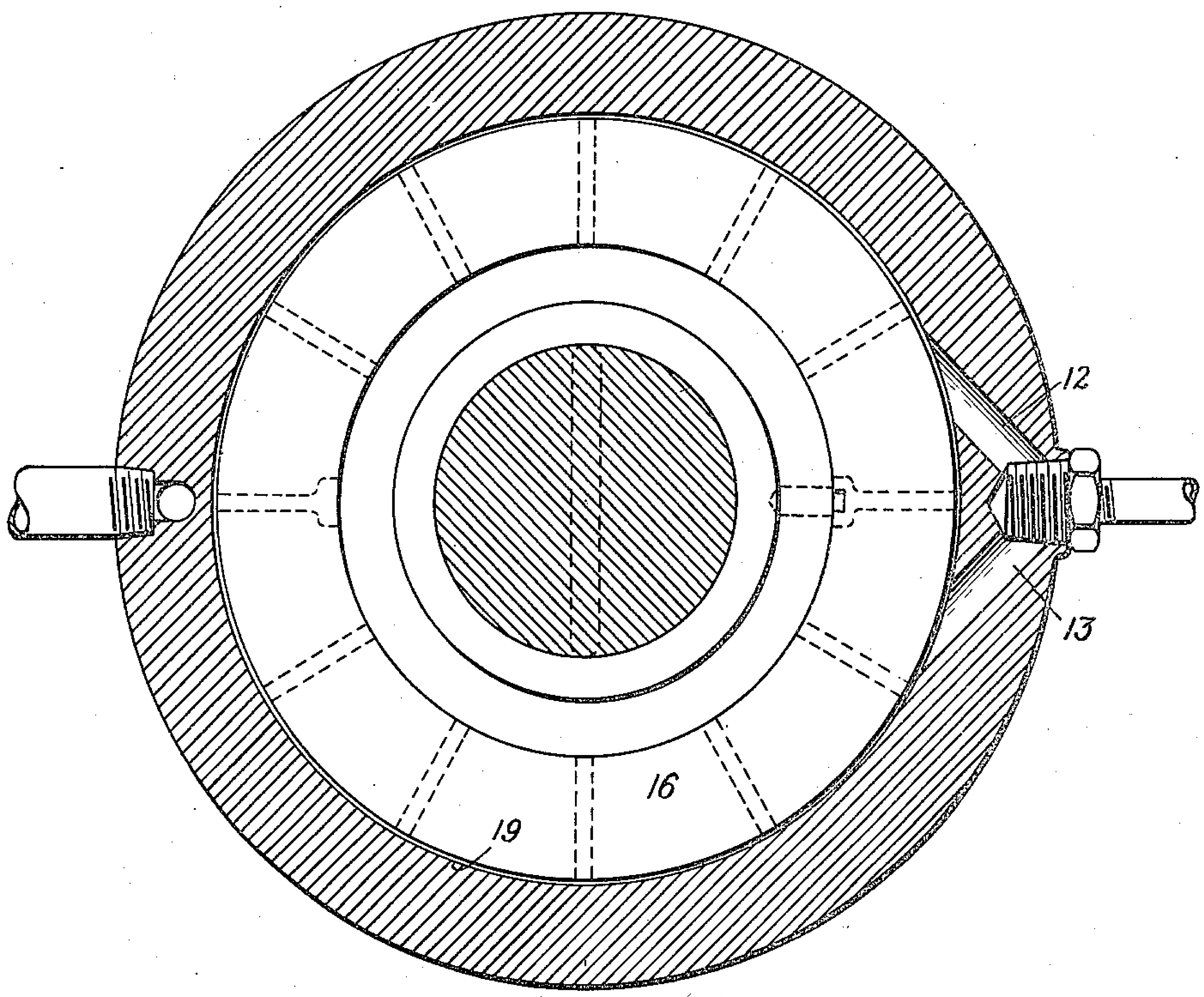
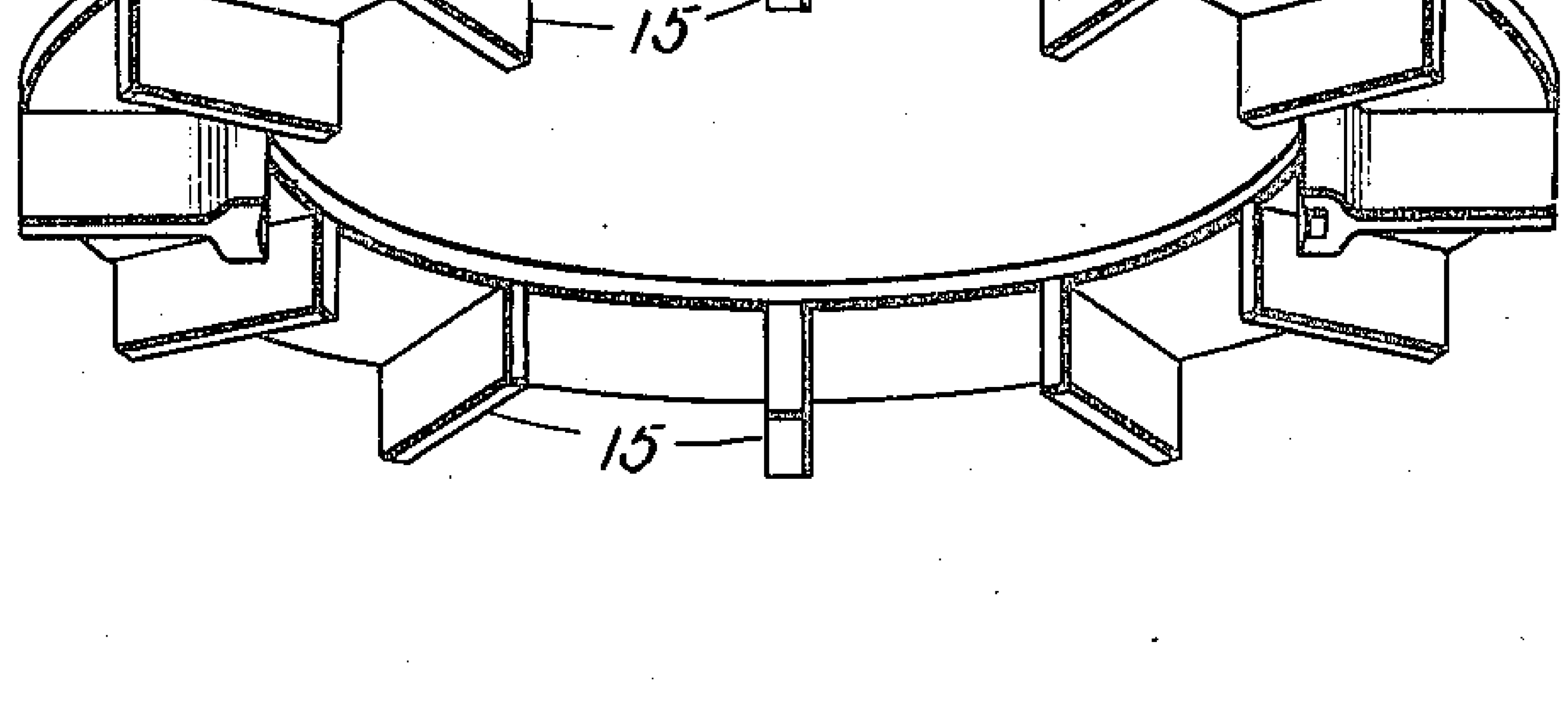


Fig. 3.



Witnesses:
Harry A. Tilden
Benjamin B. Hull

Inventor:
Henry G. Reist.
by Albert G. Davis
Att'y.

UNITED STATES PATENT OFFICE.

HENRY G. REIST, OF SCHENECTADY, NEW YORK, ASSIGNOR TO GENERAL ELECTRIC COMPANY, A CORPORATION OF NEW YORK.

CENTRIFUGAL OILING DEVICE.

No. 847,203. Specification of Letters Patent. Patented March 12, 1907.

Application filed August 7, 1905. Serial No. 273,003.

To all whom it may concern:

Be it known that I, HENRY G. REIST, a citizen of the United States, residing at Schenectady, county of Schenectady, State of New York, have invented certain new and useful Improvements in Centrifugal Oiling Devices, of which the following is a specification.

The present invention relates to means for producing a circulation of oil through the bearings of a machine by centrifugal action, and relates particularly to improvements in the device illustrated in my Patent No. 708,170. In said patent a vertical-shaft dynamo-electric machine is provided with a rotating oil-receptacle beneath the lower bearing and a pipe leading from this receptacle to the upper bearings. As the receptacle revolves oil is forced into and through the pipe.

The object of the present invention is to provide a centrifugal oil-distributer in a machine having a revoluble part, which distributer shall be positive and effective in its action, simple in construction, requiring but little alteration in the machine to which it is applied, and which shall embody no movable parts without the frame of the machine. To the above ends I have made the main oil-receptacle stationary and provided one or more vanes secured to the shaft and projecting into the receptacle. As the shaft revolves the vanes set the oil in motion and positively force it into the discharge-pipe leading to the point to which the lubricant is to be transferred. The oil-receptacle may thus consist simply of a chamber located in the main frame of the machine.

My present invention will be more fully understood in connection with the following detailed description thereof as embodied in a preferred form.

In the accompanying drawings, Figure 1 shows a dynamo-electric machine, partly in side elevation and partly in cross-section, to which my invention is applied. Fig. 2 is a cross-section through the main oil-chamber, and Fig. 3 is a detail view of the ring carrying the rotating vanes.

Reference being had to the drawings, 1 indicates a dynamo-electric machine having a vertical shaft 2, supported at its lower end upon a thrust-bearing 3 and held in vertical alinement by means of upper and lower side bearings 4 and 5, respectively. Surrounding and concentric with the thrust-bearing or a portion thereof is a chamber 6, preferably formed in the main frame, as shown. This forms the main oil-chamber, to which oil is supplied first through transverse passages 7 in the thrust-bearing and afterward from bearings 4 and 5 as the oil passes down through these latter bearings. Oil is originally supplied to the bearings, and the supply is maintained through a small stand-pipe 8, which communicates with a central opening 10 in the plates of the thrust-bearing through passage 9. The pipe 11 connects a pair of passages 12 and 13, formed in the wall surrounding the chamber 6, with the oil-chamber 14 associated with the upper bearing 4. The movable part of the pump or oil-distributer consists of a series of vanes 15, radially arranged on the under side of a ring 16. The ring 16 is rigidly secured to the shaft of the machine either directly or, as shown, by being mounted upon the revoluble member 17 of the thrust-bearing. A clearance is maintained between the member 18, which forms the upper wall of the chamber 6, and the top of the ring 16, and a clearance is also maintained between the outer wall 19 of the chamber and the outer edges of the ring and vanes, so that oil may pass from the bearing 5 back into the oil-chamber and beneath the ring 16.

When the chamber is filled with oil and the shaft is set in rotation, each of the vanes carries a portion of the oil before it, and as the speed of the machine increases the centrifugal force exerted upon these portions of oil is sufficient to carry them outwardly as they approach the entrances to the passages 12 or 13 and cause a stream of oil to flow through the pipe 11 to the upper bearing. The oil then after passing down through the upper bearing proceeds through the passage 20 to the lower side bearing 5 and thence back again to the main oil-chamber.

Two passage-ways 12 and 13 are provided in order that the lubricating device may operate equally well for either direction of rotation of the machine. The axes of these passage-ways preferably diverge from each other, so as to be substantially tangent to the inner wall of the chamber 6 at two separated points, thereby providing a path which the rotating oil tends to follow when the direc-

tion of rotation is clockwise and a second path when the direction of rotation is counter-clockwise.

It will be seen that by the present arrangement the oil is positively forced ahead of the vanes into the discharge-openings, whereby a certainty of action is obtained. Furthermore, because but a single element in addition to the parts already present in the machine is required an extremely simple and cheap oil-distributing device is produced, and by reason of the inclosure of the rotating part within the main structure all danger of injury thereto by contact with external objects is obviated.

While I have illustrated and described the present invention in the best form now known to me, I do not desire to be limited to the particular form shown except to the extent indicated in the accompanying claims, since in its broader aspects the present invention may be embodied in various other forms.

What I claim as new, and desire to secure by Letters Patent of the United States, is—

1. In a machine having a rotating shaft and a bearing for said shaft, a centrifugal oil-distributer comprising an oil-receptacle substantially concentric with said bearing and receiving oil therefrom, a discharge-pipe leading to a part to be lubricated and connected to a passage-way in the wall of said receptacle, and a vane secured to said shaft and extending into said receptacle for forcing oil into said passage-way, said vane having its face arranged transversely to the direction of motion.

2. In a machine having a rotating shaft and a bearing for said shaft, a centrifugal oil-distributer comprising an oil-receptacle surrounding said bearing and receiving oil therefrom, a radial vane secured to said shaft and projecting into said receptacle, said vane having its face arranged transversely to the direction of motion, and a discharge-pipe leading to a part to be lubricated and connected to a passage-way located in the wall of said receptacle and arranged in the plane of rotation of said vane.

3. In a machine having a rotating shaft and a bearing for said shaft, a centrifugal oil-distributer comprising an oil-receptacle surrounding said bearing and receiving oil therefrom, a radial vane secured to said shaft and projecting across said receptacle, said vane having its face arranged transversely to the direction of motion, and a discharge-pipe leading to a part to be lubricated and connected to a passage-way located in the wall of said receptacle and arranged in the plane of rotation of said vane and at an angle to the radius passing from the axis of said shaft to the passage-way.

4. In a machine having a rotating shaft and a bearing for said shaft, a centrifugal oil-distributer comprising a receptacle concentric with said bearing and receiving oil therefrom, a discharge-pipe leading from a passage-way in the wall of said receptacle to a part to be lubricated, and a plurality of vanes secured to said shaft and extending across said receptacle, said vanes being arranged with their faces transverse to the direction of motion.

5. In a machine having a rotating shaft and a thrust and a side bearing for said shaft, a centrifugal oil-distributer comprising an oil-receptacle arranged at one end of said side bearing and surrounding said thrust-bearing, a discharge-pipe leading from a passage-way in said receptacle to a point above said side bearing, and a vane secured to said shaft and extending across said receptacle.

6. In a machine having a vertical rotary shaft with upper and lower bearings including a lower side bearing and a lower thrust-bearing, a centrifugal oil-distributer comprising an oil-receptacle arranged at the lower end of said lower side bearing and concentric with said thrust-bearing, a discharge-pipe leading from a passage-way in the wall of said receptacle to said upper bearing, and a vane or vanes secured to said shaft and extending across said receptacle.

7. In a machine having a shaft revoluble in either direction and a bearing for said shaft, a centrifugal oil-distributer comprising an oil-receptacle concentric with said bearing and in communication therewith, a vane secured to said shaft and extending across said receptacle, and a discharge-pipe leading to a point above said bearing and connected to a pair of passage-ways located in the wall of said receptacle in the plane of rotation of said vane and arranged at an angle to each other and to the radius extending therefrom to the axis of said shaft.

In witness whereof I have hereunto set my hand this 5th day of August, 1905.

HENRY G. REIST.

Witnesses:
BENJAMIN B. HULL,
GENEVIEVE HAYNES.