

(No Model.)

2 Sheets—Sheet 1.

C. A. WESTERVELT & J. P. WALTERS.
CENTRIFUGAL AND CENTRIPETAL LUBRICATOR.

No. 532,616.

Patented Jan. 15, 1895.

Fig. 1.

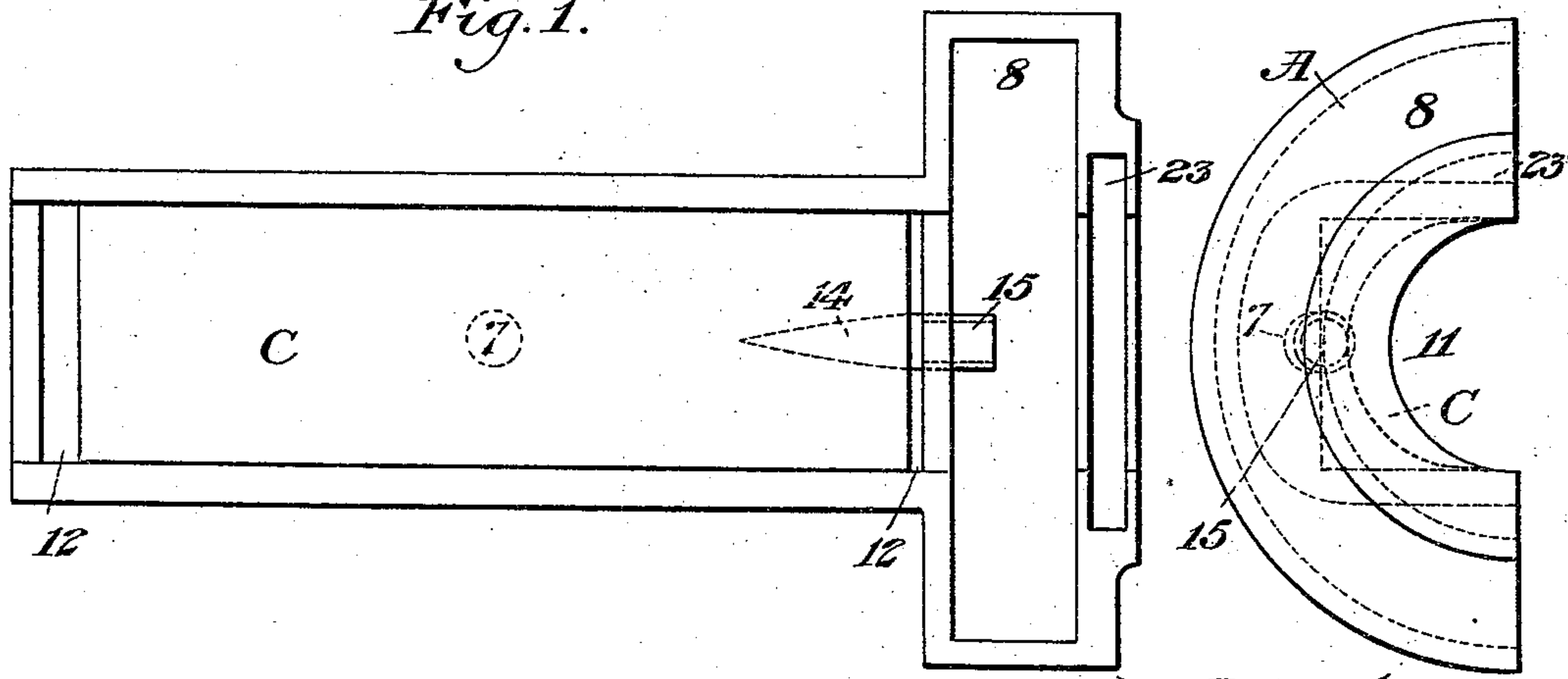


Fig. 2.

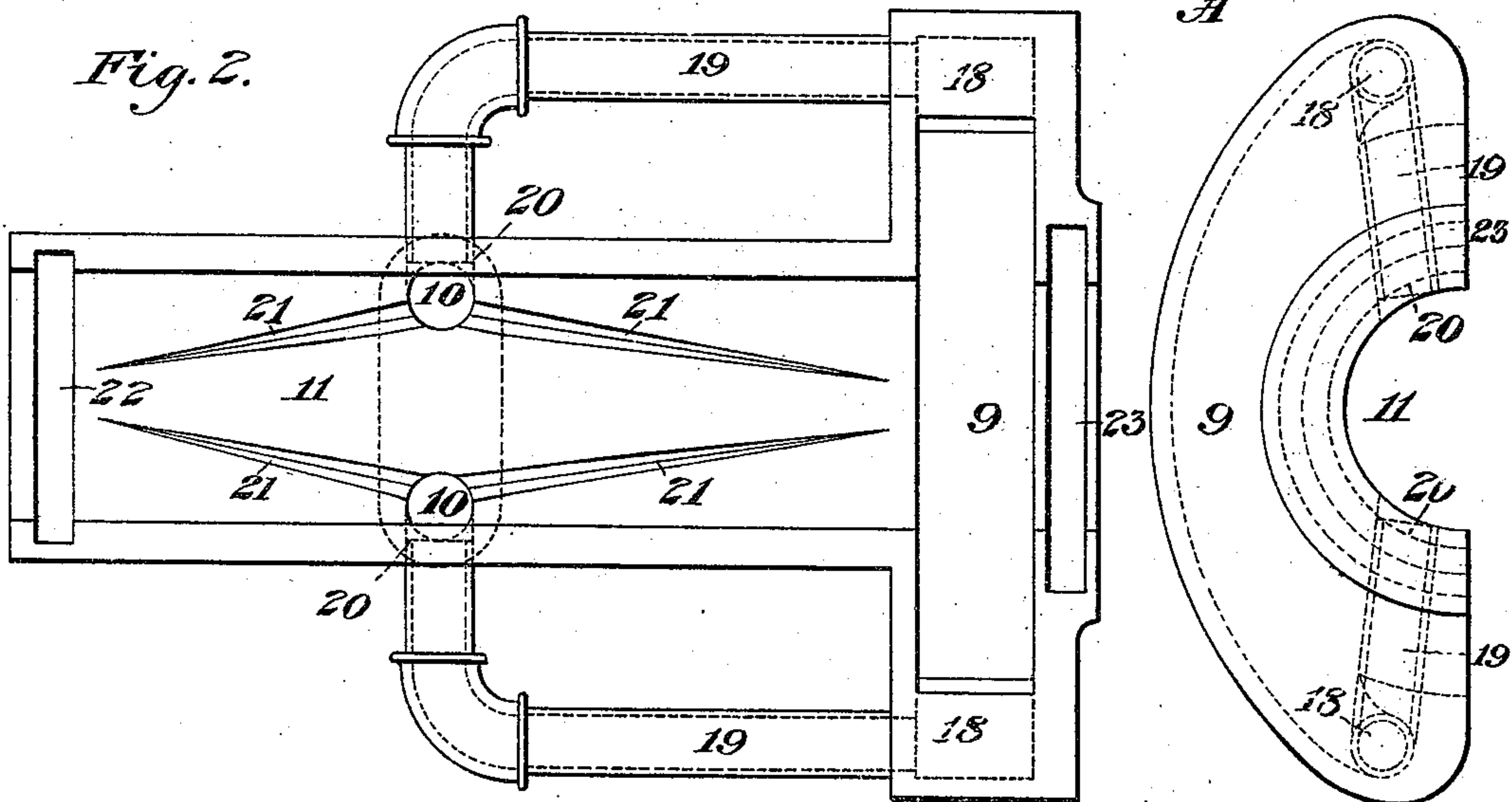
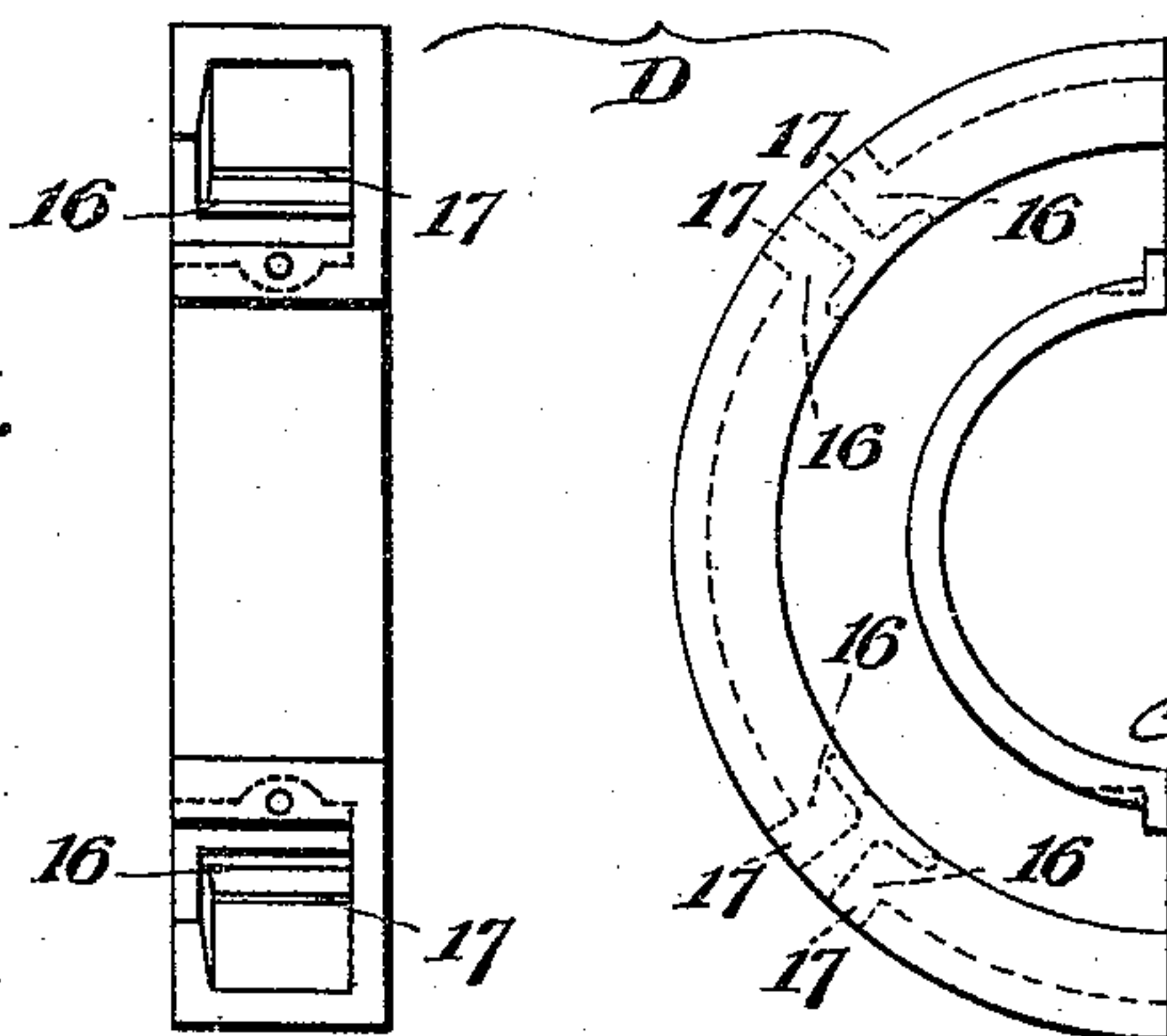


Fig. 3.



Witnesses

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2 Sheets—Sheet 2.

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Fig. 4.

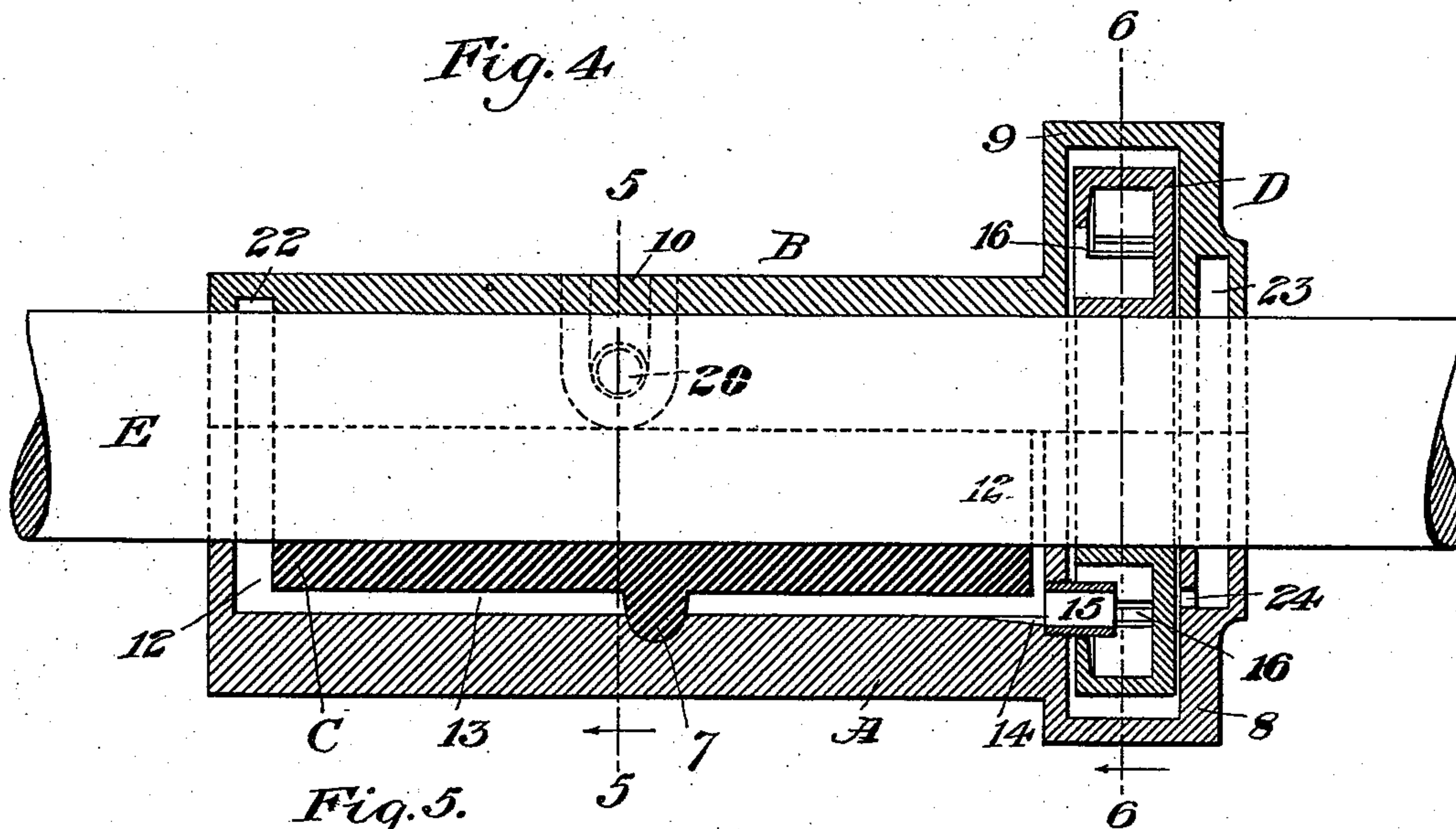


Fig. 5.

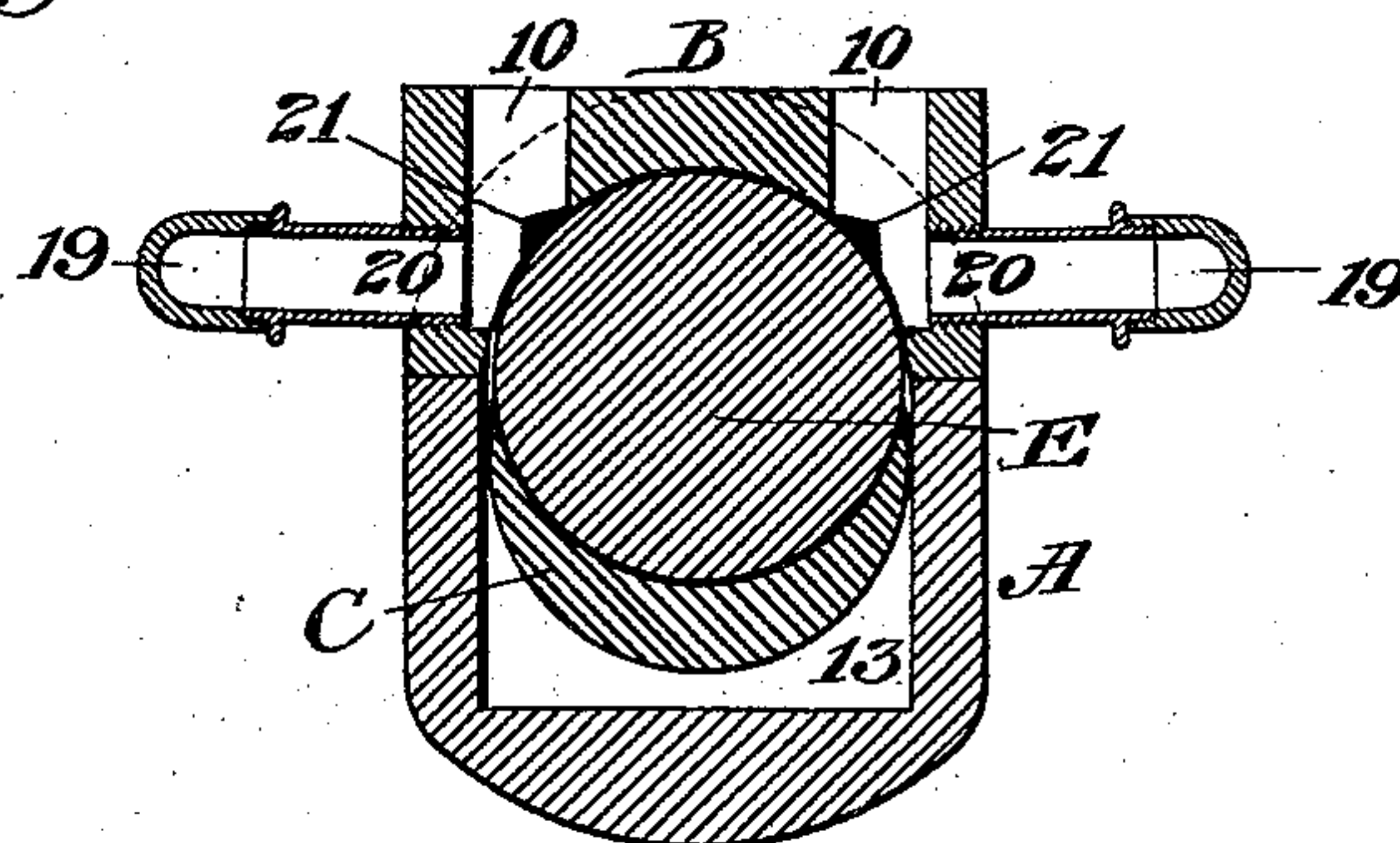
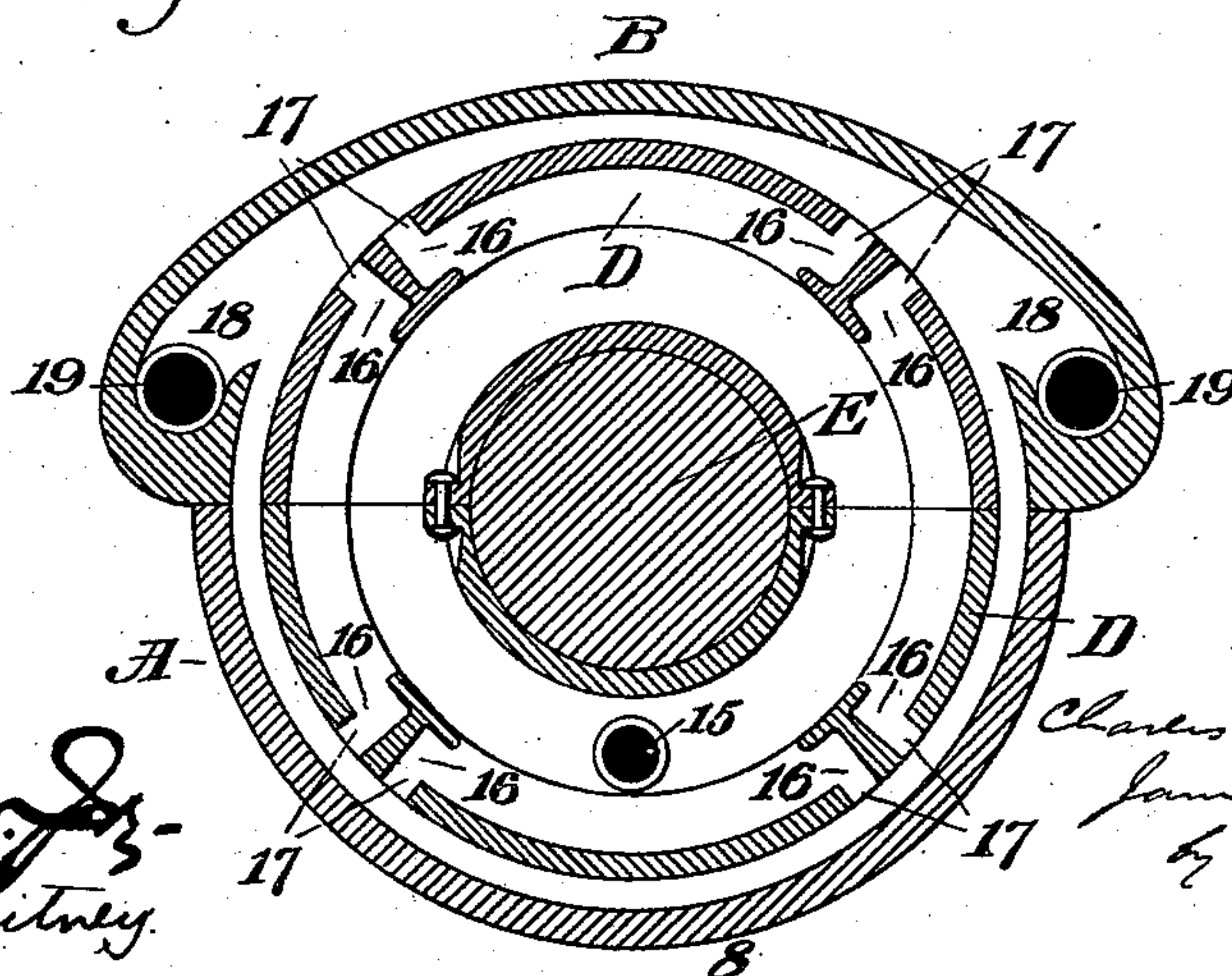


Fig. 6.



Witnesses

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UNITED STATES PATENT OFFICE

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CENTRIFUGAL AND CENTRIPETAL LUBRICATOR.

SPECIFICATION forming part of Letters Patent No. 532,616, dated January 15, 1895.

Application filed April 4, 1894. Serial No. 506,339. (No model.)

To all whom it may concern:

Be it known that we, CHARLES A. WESTERVELT and JAMES P. WALTERS, citizens of the United States of America, and residents of Uhrichsville, Tuscarawas county, in the State of Ohio, have invented a new and useful Improvement in Centrifugal and Centripetal Lubricators, of which the following is a specification.

10 This invention relates to means for "automatically" and economically lubricating horizontal shafting, rotary axles, and the like.

The improved bearing may be supported by a post, a bracket, or a hanger; or it may be in the form of a pillow-block or any other known form of journal-bearing or box. Furnished simply with a limited supply of oil, it distributes and economizes the same by utilizing centrifugal and centripetal forces; and it is at the same time adapted to work efficiently at low speeds as well as at ordinary and high speeds.

25 The present invention consists in certain features of improved construction, and certain novel combinations of parts, as hereinafter set forth and claimed.

30 The distinctive objects of the respective parts of this invention are, first, to provide for the centripetal return of the oil to the journal at midlength of the brass, and its effective distribution thence to all parts of the journal; secondly, to provide for the employment in connection with the oil-circulating devices of sight-feed lubricators or the like; thirdly, to provide for the reception of the oil within a hollow centrifugal wheel and its discharge therefrom through peripheral openings so that the least quantity of oil remaining in the bearing may be utilized for the effective lubrication of the journal; and, fourthly, to facilitate the construction of a specific bearing for line-shafting embodying the invention as a whole.

45 Two sheets of drawings accompany this specification as part thereof.

On Sheet 1, Figure 1 comprises face and end views of the lower part of a horizontally bisected journal-bearing embodying this invention; Fig. 2, like views of the upper part of the improved bearing, and Fig. 3 edge and face views of one of the halves of a hollow centrifugal wheel. On Sheet 2, Fig. 4 repre-

sents a vertical longitudinal section through the improved bearing as applied to line-shafting. Fig. 5 represents a cross-section on the line 5—5 Fig. 4, and Fig. 6 represents a cross-section on the line 6—6 Fig. 4.

Like letters and numbers refer to like parts in all the figures.

60 The shell of the improved bearing is composed of suitably recessed upper and lower parts A B, shown respectively in detail by Figs. 1 and 2, and it is furnished internally with a brass C, Figs. 1, 4 and 5, of a suitable alloy, and a revolving oil elevator in the form of a hollow centrifugal wheel D, Figs. 3, 4 and 6, which is shown as made in two parts.

70 The shell-parts A and B and those of the wheel D may be castings of iron or other suitable metal, and clamped together in any approved way; and the wheel may be keyed fast on the horizontal line-shafting, rotary axle or the like, hereinafter termed the shaft, and represented at E, Figs. 4, 5 and 6, or otherwise fastened thereon by any suitable means.

75 When the parts are united, as in Figs. 4, 5 and 6, the brass C is supported by a central ball-pivot 7, beneath the shaft E, within said shell-part A; and the centrifugal wheel D is inclosed by end-enlargements 8 and 9 formed on the respective shell-parts. A pair of oil-inlets 10, which may be provided with sight-feed lubricators or may be plugged after the introduction of a supply of oil for a given period, are located within a boss on the top of the shell-part B at mid-length, and communicate directly with the main bore 11, which is loosely fitted to the shaft E. Spaces 12 at the ends of the brass C permit the oil to flow freely downward into a well 13 beneath the brass, from which it is directed by a channel 14 and a nipple 15 into the interior of the wheel D at bottom. See Figs. 4 and 6. For the admission of the nipple 15 the wheel D has an annular opening in what may be termed its face, while its back, shown at the right in Fig. 4, is solid or imperforate. The oil is carried upward by internal pockets 16, formed within the wheel D as in Figs. 3 and 6, and escapes outward by centrifugal force through openings 17 in the periphery of the wheel; each of these openings being located opposite one of the pockets 16, which are duplicated so as to work equally well with the wheel re-

volving in either direction. As discharged centrifugally by the wheel D, sufficient of the oil is thrown directly into open-topped side-pockets 18 which are formed within said enlargement 9 of the shell-part B at the sides of the wheel D on a level with the shaft E; and from these side-pockets the oil flows centripetally through substantially horizontal passages formed by pipes 19 to ports 20 which are located in the sides of the shell-part B at midlength and low down at the sides as compared with above the shaft which has heretofore been attempted; said ports 20 intersecting said oil-inlets 10. From these intersections, distributing channels 21, Figs. 2 and 5, extend in both directions lengthwise of the bore, and from these channels and from said intersections the oil is carried by the shaft itself into contact with all parts of the bore and of the bearing surface of the brass, so as to keep the bearing thoroughly well lubricated; the surplus finding its way back through the end-spaces 12, well 13, channel 14, and nipple 15, into the wheel D; and thence, by way of the pockets 16 and openings 17, into the pockets 18, from which it flows again to the shaft.

Internal grooves 22 and 23, with or without guards of leather or the like in the latter, serve to prevent the escape of oil at the respective ends of the bearing; and a small hole 24, Fig. 4, leads inward from said groove 23 at bottom to prevent any accumulation of oil therein.

The pivoted brass C, in addition to the ordinary functions of a brass, facilitates casting the shell-part A with its oil-well, channel, &c., and at the same time accommodates the bearing to the shaft with all requisite nicety.

The particular bearing represented by the drawings is intended to be clamped within a hanger or the like. The respective shell-parts may be provided instead with lugs to coact with clamping bolts. The external shape of the bearing may be varied to suit different makers. The centrifugal wheel may for some bearings be cast in one piece; and other like modifications will suggest themselves to those skilled in the art.

We do not claim herein, broadly, in combination with an oil-elevator revolving with the shaft, a housing for said oil-elevator having open-topped oil-pockets within it at its sides on a level with the shaft into which the oil is thrown centrifugally by said oil-elevator, and horizontal or substantially horizontal passages leading from such side-pockets through which the oil flows centripetally to the shaft, as this combination is claimed in our specification forming part of another application for patent filed the 20th day of July, 1894, Serial No. 518,143, which sets forth a preferred embodiment of the same.

Having thus described the said improvement, we claim as our invention and desire to patent under this specification—

1. In a self-lubricating journal-bearing, the combination with the shaft, and with a re-

volving oil-elevator which is carried by the shaft and discharges the oil centrifugally, of a shell having a housing which incloses said oil-elevator, and provided with side-pockets located within said housing at its sides on a level with the shaft, into which the oil is directly thrown by said oil-elevator, and with substantially horizontal oil-passages, leading from said side-pockets to ports in the sides of the shell at midlength of the bearing, and channels, extending from said ports lengthwise of the bore, for returning the oil centripetally and distributing the same; substantially as hereinbefore specified.

2. In a self-lubricating journal-bearing, the combination with the shaft and with a revolving oil-elevator which is carried by the shaft and discharges the oil centrifugally, of a shell having a housing which incloses said oil-elevator, and provided with side-pockets located within said housing at its sides on a level with the shaft, into which the oil is directly thrown by said oil-elevator, substantially horizontal oil-passages, leading from said side-pockets to ports in the sides of the shell at midlength of the bearing, and channels, extending from said ports lengthwise of the bore, for returning the oil centripetally and distributing the same, and oil-inlets extending downward and intersecting said ports; substantially as hereinbefore specified.

3. In a self-lubricating journal-bearing, the combination with the shaft of a shell provided with internal side-pockets and with passages through which the oil flows centripetally from said side-pockets to the shaft, an oil-well, and a channel and nipple leading from said oil-well, and a hollow centrifugal wheel, into which said nipple discharges, provided with internal oil-elevating pockets and with peripheral openings through which the oil escapes into said side-pockets by centrifugal force, substantially as hereinbefore specified.

4. An improved self-lubricating journal-bearing, for line-shafting, composed of upper and lower shell-parts having an enlargement at one end common to both, provided internally with side-pockets on a level with the shaft, vertical oil-inlets at midlength, oil-passages leading from said side-pockets to ports intersecting said oil-inlets, and channels extending from such intersections lengthwise of the bore, said lower shell-part being further provided with a brass forming an oil-well beneath it and a channel and nipple leading from said oil-well, and a hollow centrifugal wheel fast upon the shaft and having an annular nipple-admitting opening internal oil-elevating pockets and peripheral oil-escape openings, substantially as hereinbefore specified.

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