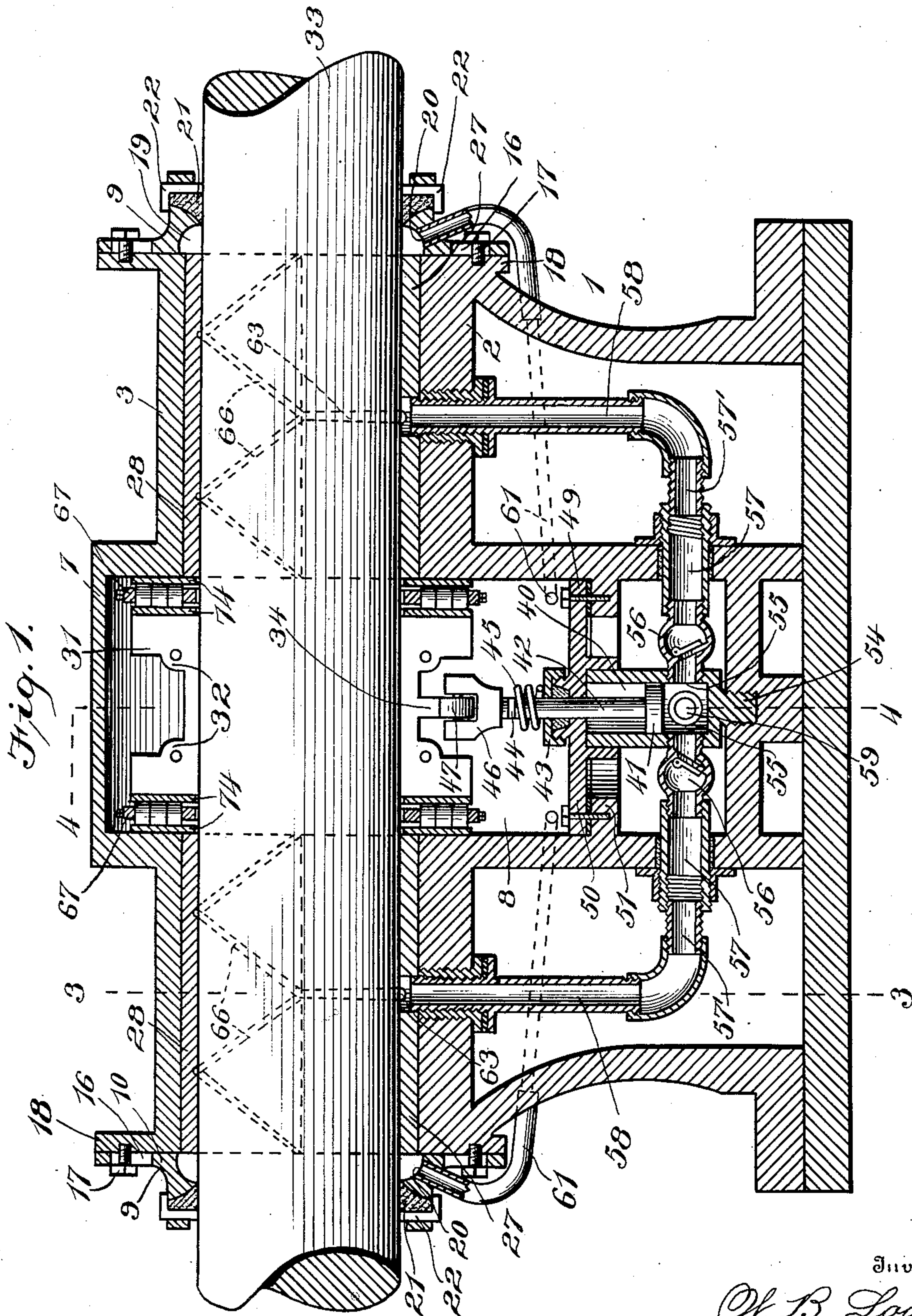


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PATENTED JUNE 26, 1906.

W. B. LOWE.  
LUBRICATING DEVICE.  
APPLICATION FILED DEC. 19, 1904.

5 SHEETS—SHEET 1.



Witnesses

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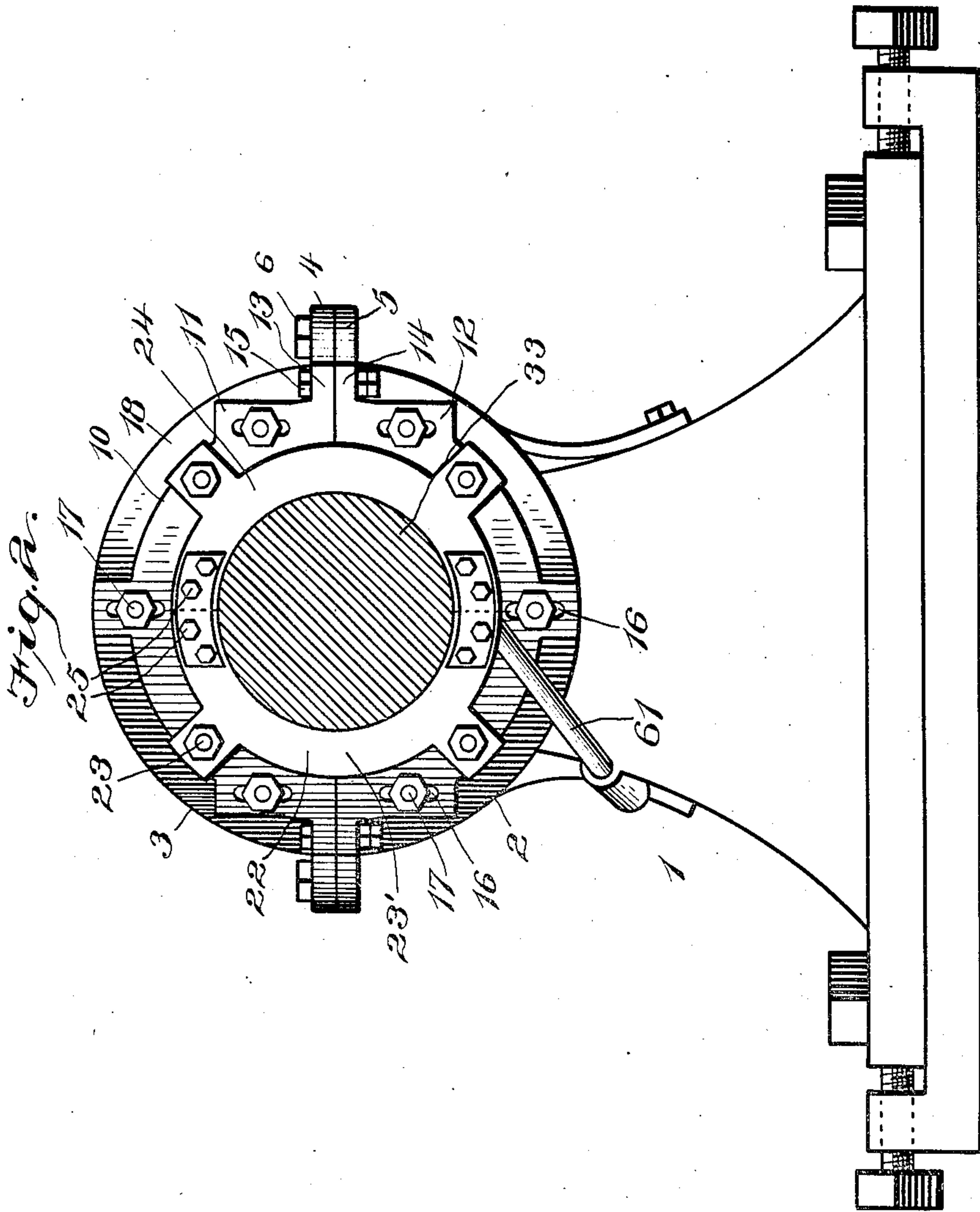
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5 SHEETS—SHEET 2.



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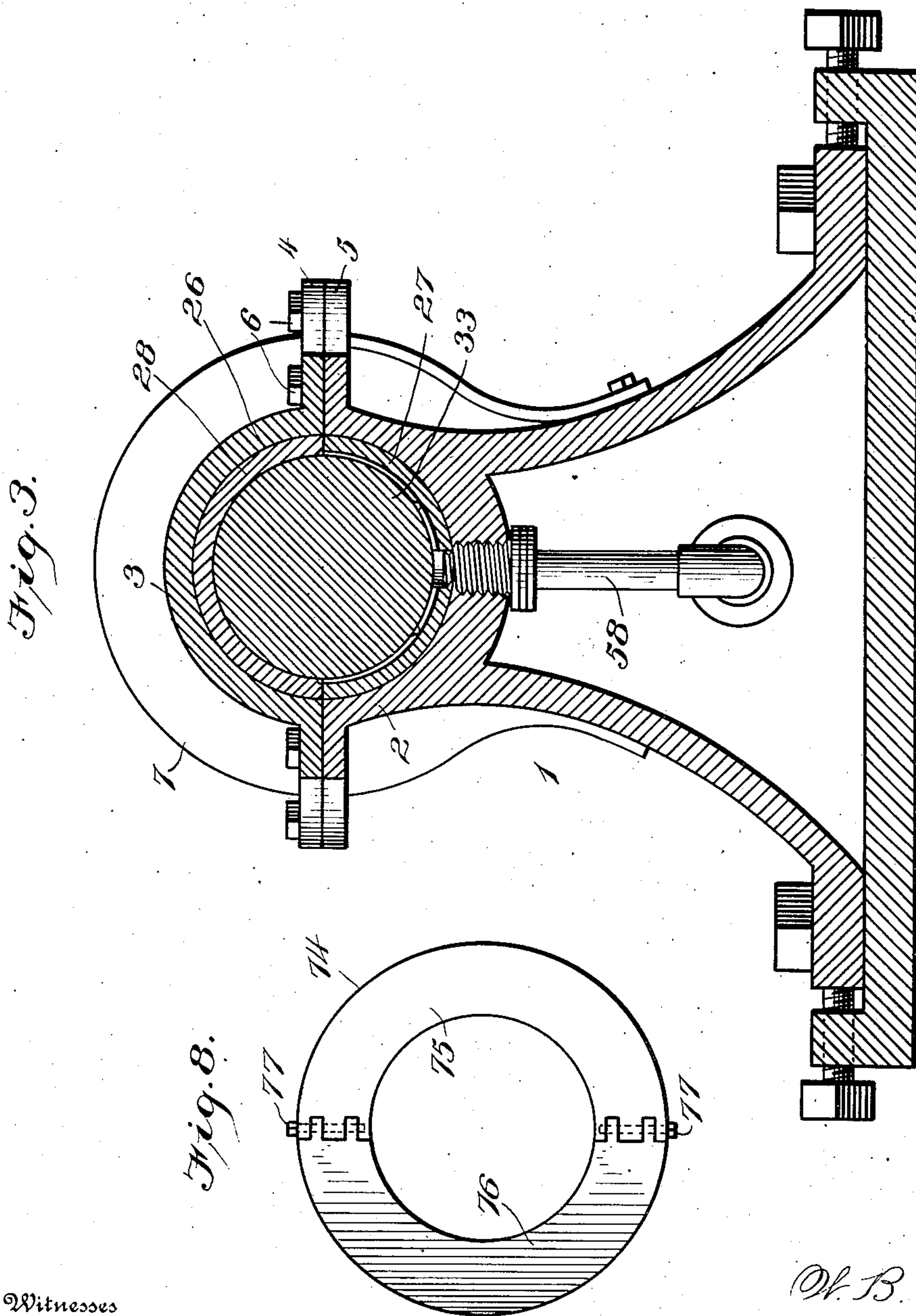


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5 SHEETS—SHEET 3.



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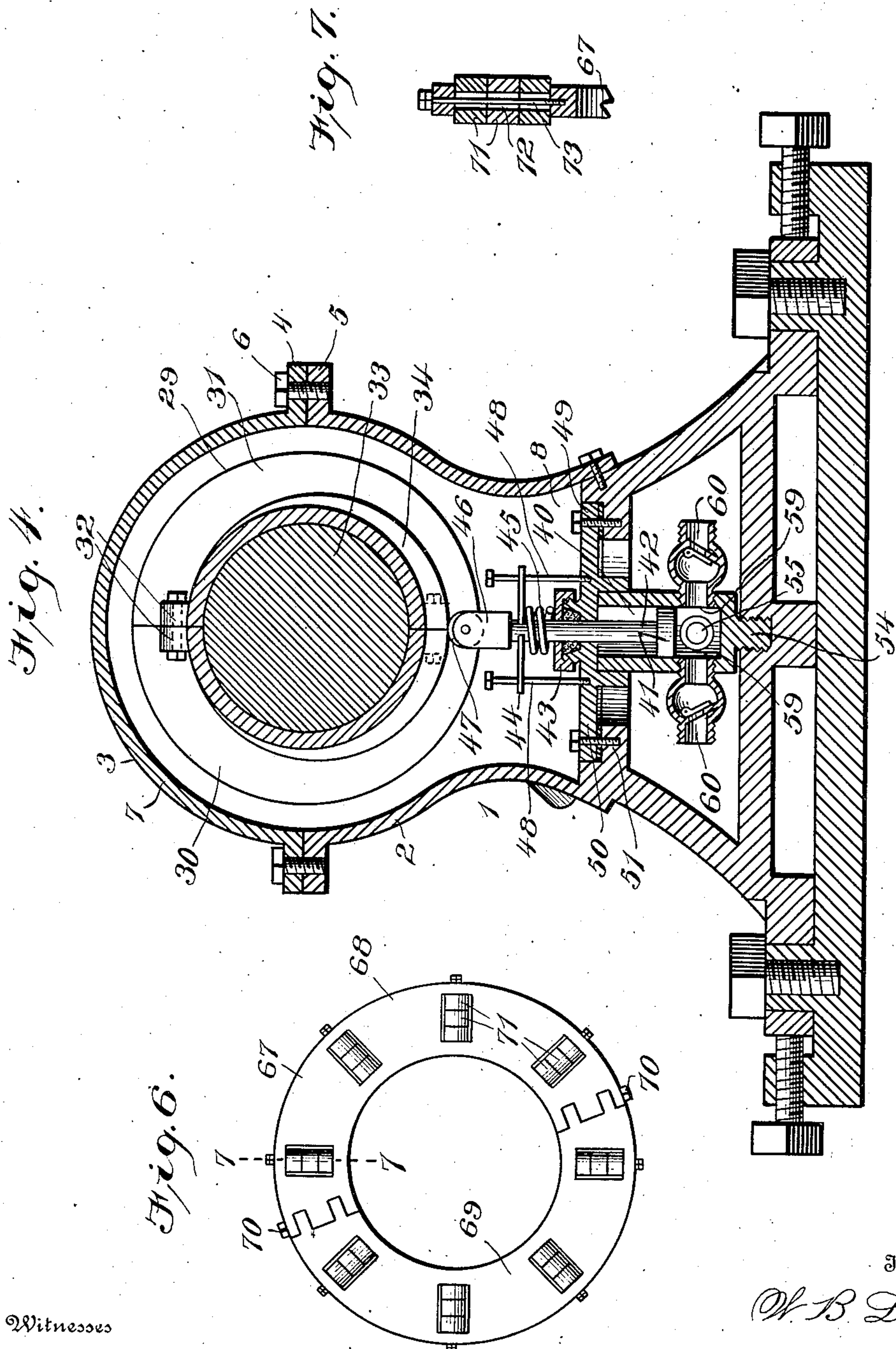
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5 SHEETS—SHEET 4.



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5 SHEETS—SHEET 5.

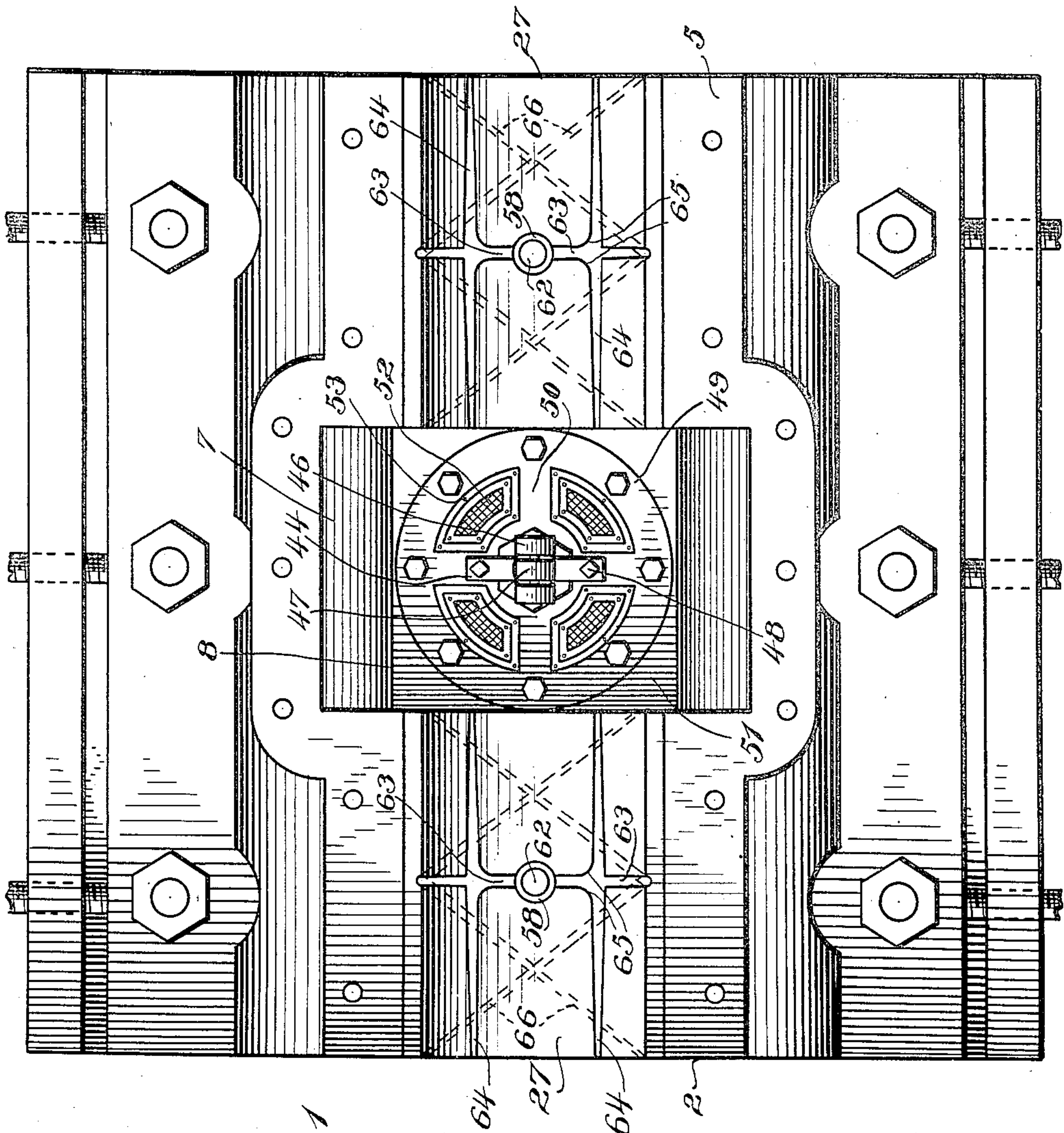


Fig. 5.

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# UNITED STATES PATENT OFFICE.

WILLIAM BELL LOWE, OF MARIETTA, GEORGIA.

## LUBRICATING DEVICE.

No. 824,187.

Specification of Letters Patent.

Patented June 26, 1906.

Application filed December 19, 1904. Serial No. 237,519.

*To all whom it may concern:*

Be it known that I, WILLIAM BELL LOWE, a citizen of the United States, residing at Marietta, in the county of Cobb and State of Georgia, have invented certain new and useful Improvements in Lubricating Devices; and I do declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it appertains to make and use the same, reference being had to the accompanying drawings, and to the figures of reference marked thereon, which form a part of this specification.

My invention relates to lubricating devices, but more particularly to a force-feed lubricator for journal-boxes, and my invention has for its object to provide a device of this class which will effectually lubricate the shaft and journal-box with a minimum amount of oil and with practically no waste of the same.

A further object of my invention is to provide a lubricating device which filters the oil after passing from the journal-box and shaft before again being forced into the journal-box.

A further object of my invention is to provide a continuous lubricating device, as will be hereinafter more fully described.

With these objects in view my invention consists in the novel construction of the force-feed.

My invention further consists in the novel construction for leading the oil to the journal-box and for returning the oil therefrom.

My invention further consists in the novel construction of the Babbitt-metal lining for the journal-box.

My invention further consists in certain other novel features of construction and in combinations of parts, which will be first fully described and afterward specifically pointed out in the appended claims.

Referring to the accompanying drawings, Figure 1 is a vertical sectional view taken through a journal-box constructed in accordance with my invention. Fig. 2 is an end elevation of the same. Fig. 3 is a vertical transverse sectional view taken on line 3 3 of Fig. 1. Fig. 4 is a vertical transverse sectional view taken on line 4 4 of Fig. 1. Fig. 5 is a plan view of the lower section of the journal-box, showing babbitt lining and oil lubricator. Fig. 6 is an elevation of one of the roller-disks. Fig. 7 is a fragmentary sectional

view taken on line 7 7 of Fig. 6. Fig. 8 is an elevation of one of the idler-disks.

Like numerals of reference indicate the same parts throughout the several figures, in which—

1 indicates the journal-box, which is composed of the lower section 2 and an upper section 3, said sections 2 and 3 being provided with flanges 4 and 5, through which flanges bolts 6 pass to fasten the said two sections together, as shown in Fig. 3. Preferably located at the central point of the journal-box is an enlarged casing 7, as shown in Figs. 1 and 3. A chamber 8 is formed in the lower section 2 of the journal-box.

9 indicates the stuffing-box, which is composed of the ring 10, formed in two sections 11 and 12, said sections being provided with flanges 13 and 14 and bolted together with bolts 15, said ring 10 being provided with vertical slots 16, through which bolts 17 are adapted to pass to secure said ring to the flanges 18 at each end of the journal-box. The said ring 10 is provided with an annular concavity 19, as shown in Fig. 1, and a port 20, located at the center of the lower section 12 of the ring 10, leads from said annular concavity 19, as shown in Fig. 1.

Suitable packing material 21 is held in position by means of a ring 22, bolted to the said ring 10 by bolts 23, as shown in Fig. 2, said ring 22 being constructed in two sections 23' and 24, said sections being secured together by bolts 25, which are bolted to the said sections 23 and 24. This construction is duplicated at each end of the stuffing-box, as shown in Fig. 1.

26 indicates the Babbitt-metal lining, which is composed of an upper section 27 and a lower section 28, said babbitt extending from the ends of the journal-box to the central casing 7 and chamber 8, as clearly shown in Fig. 1.

29 indicates the cam force-feed-operating device, which is constructed in two sections 30 and 31, said sections being secured together by any suitable means—as, for instance, by flanges 32, bolted together, Fig. 4.

Referring to Fig. 1 in connection with this cam, it will be seen that the same is provided with a centrally-located eccentric-rib. Said member 29 being secured around the shaft 33 revolves therewith, as is obvious.

Referring to the chamber 8, (shown in Figs. 1 and 4,) it will be seen that the mem-



ber 29 extends within said chamber and revolves within the enlarged covering 7.

Located within the chamber 8 is a cylinder 40, within which the piston 41 operates.

42 indicates the piston-rod, which passes through a suitable box 43, and a cross-head 44 passes through said piston-rod near the outer end thereof. A coil-spring 45 is located between the cap of the stuffing-box 43 and the said cross-head 44. Formed on the outer end of the said piston-rod or connected thereto is a fork 46, designed to hold a single roller 47, said roller being located directly under the eccentric-rib 34 and designed to be in contact therewith.

Referring to Fig. 4, it will be seen that two vertical posts 48 are arranged to guide the cross-head 44 and piston-rod to obviate any lateral movement thereof.

49 indicates a casting which forms the end of the cylinder 40 and also forms the partitions 50, as shown in Figs. 1 and 5. A flange 51, formed on the walls of the chamber 8, receives the outer portion of the partitions 50, said casting 49 being bolted to said flange 51, as shown in Figs. 1 and 4.

Referring particularly to Fig. 5, 52 indicates filter-screens, which are composed of a series of layers of screens of different meshes, said layers being bolted together by bolts 53 and said screens being located, as shown, between the partitions 50 of the casting 49.

Referring again to Fig. 1, it will be seen that the cylinder 40 is provided with a lug 54, which is threaded into the bottom of the chamber 8, and extending into the said cylinder 40 at the lowest point thereof are ports 55, said ports carrying a valve 56, and said ports are coupled by means of a coupling-sleeve 57 to a nipple 57' at the bottom of the feed oil-pipe 58.

Located in the cylinder 40, as shown in Figs. 1 and 4, are ports 59, which are provided with valves 60, said ports entering the chamber 8, as clearly shown in Fig. 4.

Entering chamber 8 above the filtering-screens 52 are the return oilways 61, said oilways leading from the concavity 19 in the ring 10 of the stuffing-box 9, as clearly shown in Fig. 1.

Referring to the Babbitt-metal lining 27, and in this connection referring to Fig. 5, it will be seen that the feed-oilways 58 enter the said babbitt lining at 62, and leading from the point 62 transversely are two grooves 63, said grooves gradually tapering, as shown. Intersecting said transverse grooves 63 are two longitudinal grooves 64, the said grooves 63 being widened and the corner in the babbitt formed by the intersection of said grooves being rounded at 65, as shown.

Referring now to Fig. 1, it will be seen that the tapered grooves 63 (shown in dotted lines in Fig. 1) connect with oblique grooves 66,

(shown also in dotted lines) in the upper section of the babbitt lining, said grooves 66 leading to the concavity 19 in the ring 10 of the stuffing-box 9 and also leading to the chamber 8 in the center of the journal-box, as shown in Fig. 5.

Referring to Fig. 6, which shows one of the roller-disks 67, it will be seen that the same is composed of two sections 68 and 69, secured together by bolts 70. A series of groups of rollers 71 are carried in the disk 67, said rollers being provided with large bores 72 and held in the disk by means of pins 73, as shown in Fig. 7, said rollers extending beyond the face of the disk, as shown.

Referring to Fig. 8, which illustrates one of the idler-disks 74, it will be seen that said disk is composed of two sections 75 and 76, secured together by bolts 77. As shown in Fig. 1, a roller-disk 67 is interposed between two idler-disks 74 on each side of the cam 29, said disks acting as a thrust-bearing and reducing friction to a minimum.

Having thus described the several parts of my invention, its operation is as follows: The cam member 29 being secured around the shaft 33 revolves therewith, and the roller 47, carried by the piston-rod 42, is held in contact with the eccentric-rib 34 by means of the coil-spring 45. As said shaft revolves the eccentric-rib 34 forces the piston down into the cylinder 40, oil having first been poured into the chamber 8. On the upstroke of the piston 41 the intaking-valves 60, Fig. 4, are opened and the oil is drawn from the chamber 8 into the cylinder 40. On the downstroke of the piston said intaking-valves are closed and the outlet or feed valves 56, Fig. 1, are opened and the oil is forced from the cylinder into the feed-oilways 58 and up into the babbitt lining, said oil passing into said lining at 62, Fig. 5. The shaft 33, revolving within the babbitt lining takes up the oil, and the force of the piston distributes the oil within the transverse groove 63, from whence it is forced into the longitudinal groove 64, the rounded corners 65 of the grooves 63 being for the purpose of facilitating the flow of the oil from the grooves 63 into the longitudinal grooves 64. As shown, the oil-grooves taper in depth and width toward the ends thereof, so that a less quantity of oil is required to fill the grooves near the ends than is required where the oil enters the grooves, thereby insuring an even distribution of the oil along the babbitt lining. A portion of the oil, however, is forced transversely along the grooves 63 to the point 80, which point connects with the oblique grooves 66 in the upper section of the babbitt lining. Thus the shaft 33 is lubricated the entire length of the journal-box, the longitudinal grooves 64 extending the length of the journal-box and terminating in the concavity 19 in the ring 10 of the stuffing-box 9, the inner ends of said



grooves 64 entering the oil-chamber 8. The oblique grooves in the upper section of the babbitt lining also terminate in the concavity 19 in the ring 10 of the stuffing-box 9 and also in the chamber 8. As the oil is taken up by the shaft 33 only a sufficient quantity is held thereby to properly lubricate the same, and the continuous influx of the oil into the babbitt lining forces the superfluous oil into the concavity 19 in the ring 10 of the stuffing-box 9 and also into the oil-chamber 8. The oil entering the said concavity 19 passes out through the port 20 into the return-oilway 61, where it is again led into the chamber 8 above the filtering-screens 53. The oil passing from the babbitt lining directly into the oil-chamber passes down between the cam member 29, a sufficient quantity thereof being taken up by the disks to properly lubricate the same, the excess of oil passing into the oil-chamber 8 and into the filtering-screens 53, where it is deprived of all dust and impurities which it may have taken up during its passage along the babbitt lining, and after passing through the filtering-screens it is again drawn into the cylinder 40 and forced into the feed-oilways 58, again passing up to the shaft 33, where it is again used for lubricating. Thus it is seen that absolutely none of the oil is wasted and only a sufficient quantity of the oil is consumed to properly lubricate the shaft and babbitt.

Having thus described my invention, I do not wish to be understood as limiting myself to the exact construction herein set forth, as various slight changes may be made therein which would fall within the limit and scope of my invention, and I consider myself clearly entitled to all such changes and modifications.

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

1. In a lubricating device, the combination with a journal-box provided with an oil-chamber, of an eccentric element secured to the shaft in said journal-box, and constructed to take up the thrust on said shaft a cylinder and piston within said oil-chamber in said journal-box, said piston being arranged so as to be actuated by said eccentric element on said shaft, feed-oilways associated with said piston and arranged to lead oil from said cylinder to the lining of said journal-box, said lining being provided with oil-grooves arranged to receive oil from said feed-oilways, a stuffing-box provided with means for receiving the oil from said oil-grooves and return-oilways leading from said stuffing-box to said oil-chamber, substantially as described.

2. In a lubricating device, the combination with a journal-box provided with an oil-chamber, of a cylinder and piston located in said oil-chamber, means on the shaft in said

journal-box arranged to actuate said piston, and to take up the thrust on the shaft, feed-oilways associated with said piston and arranged to lead oil from said cylinder to the lining of said journal-box, said lining being provided with oil-grooves arranged to receive oil from said feed-oilways, a stuffing-box on said journal-box provided with means for receiving the oil from said oil-grooves, return-oilways leading from said stuffing-box to said oil-chamber, and a filter arranged in said oil-chamber and disposed intermediate the entrance of the oil into said oil-chamber and the entrance of the oil into said cylinder, substantially as set forth.

3. In a lubricating device, the combination with a journal-box provided with an oil-chamber, of feed-oilways leading from said oil-chamber to the lining of said journal-box, means actuated by the shaft in said journal-box for forcing the oil from said oil-chamber into said feed-oilways, said feed-oilways entering said lining of the journal-box at a point under the shaft, said lining being provided with oil-grooves arranged to receive the oil from said feed-oilways and to lead the oil parallel to the axis of the shaft and to the upper portion of said lining above the shaft, and means for returning the oil from said lining to the said oil-chamber, substantially as set forth.

4. In a lubricating device, the combination with a journal-box provided with a lining, of means for forcing oil to said lining at a point below the shaft in said journal-box, said lining being provided with oil-grooves parallel to the axis of the shaft to receive the oil entering said lining, and provided with an oil-groove at right angles to the axis of the shaft, and provided with oblique oil-grooves, substantially as described.

5. In a lubricating device, the combination with a journal-box, of an oil-chamber located centrally in said box, a cylinder and piston arranged to force oil from said oil-chamber to the lining of said journal-box, an element secured to shaft constructed to actuate said piston and to take up the thrust on said shaft, substantially as described.

6. In a lubricating device, the combination with a journal-box, of an oil-chamber located within the journal-box and between the ends thereof, a cylinder and piston within said oil-chamber, means on said shaft for actuating said piston and means leading from said oil-chamber for leading the oil to the lining of said journal-box on each side of the said oil-chamber, substantially as described.

In testimony whereof I affix my signature in presence of two witnesses.

WILLIAM BELL LOWE.

Witnesses:

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C. W. DU RIE.