

No. 822,347.

PATENTED JUNE 5, 1906.

G. P. CLARK.
ROTARY ENGINE.

APPLICATION FILED MAY 13, 1904. RENEWED NOV. 6, 1905.

3 SHEETS—SHEET 1.

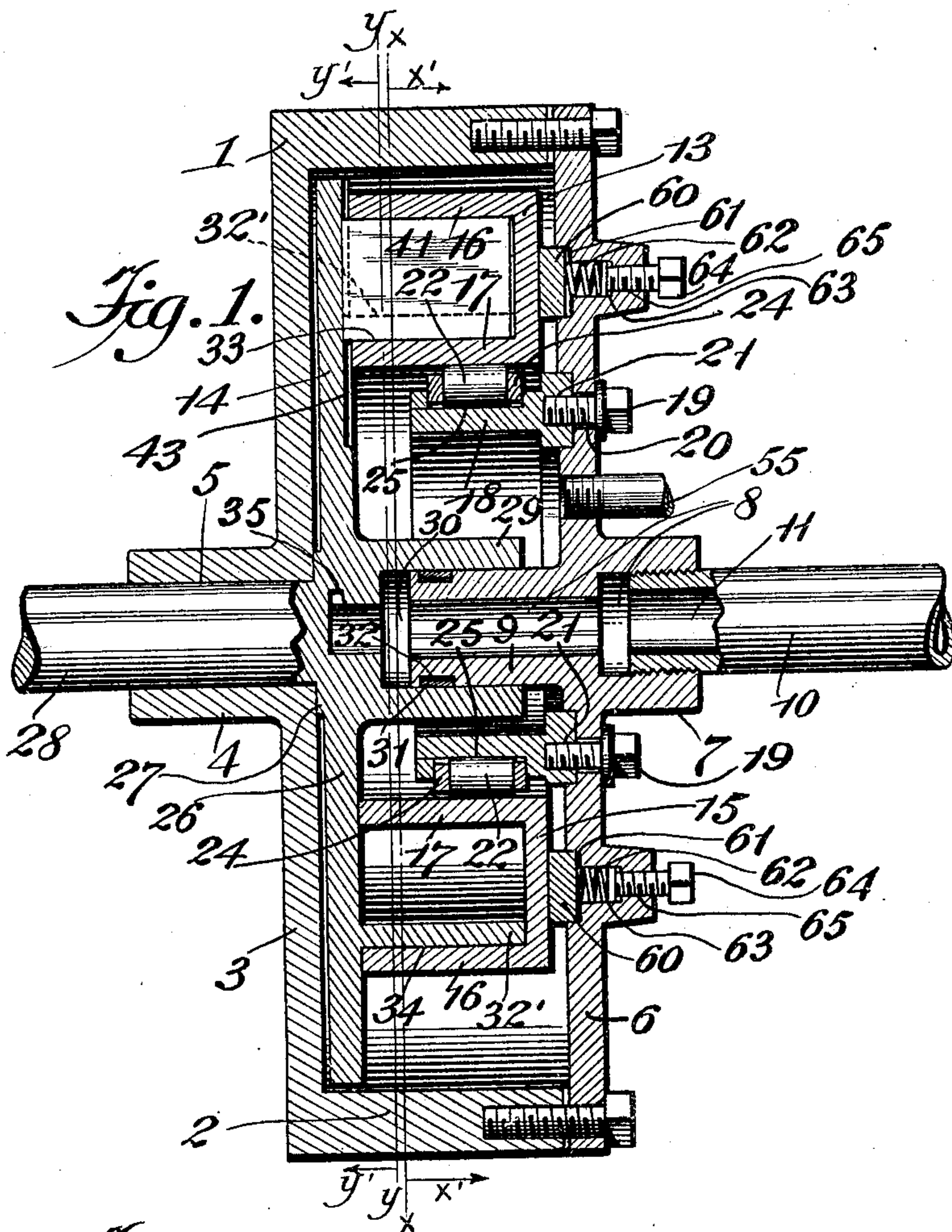


Fig. 8.

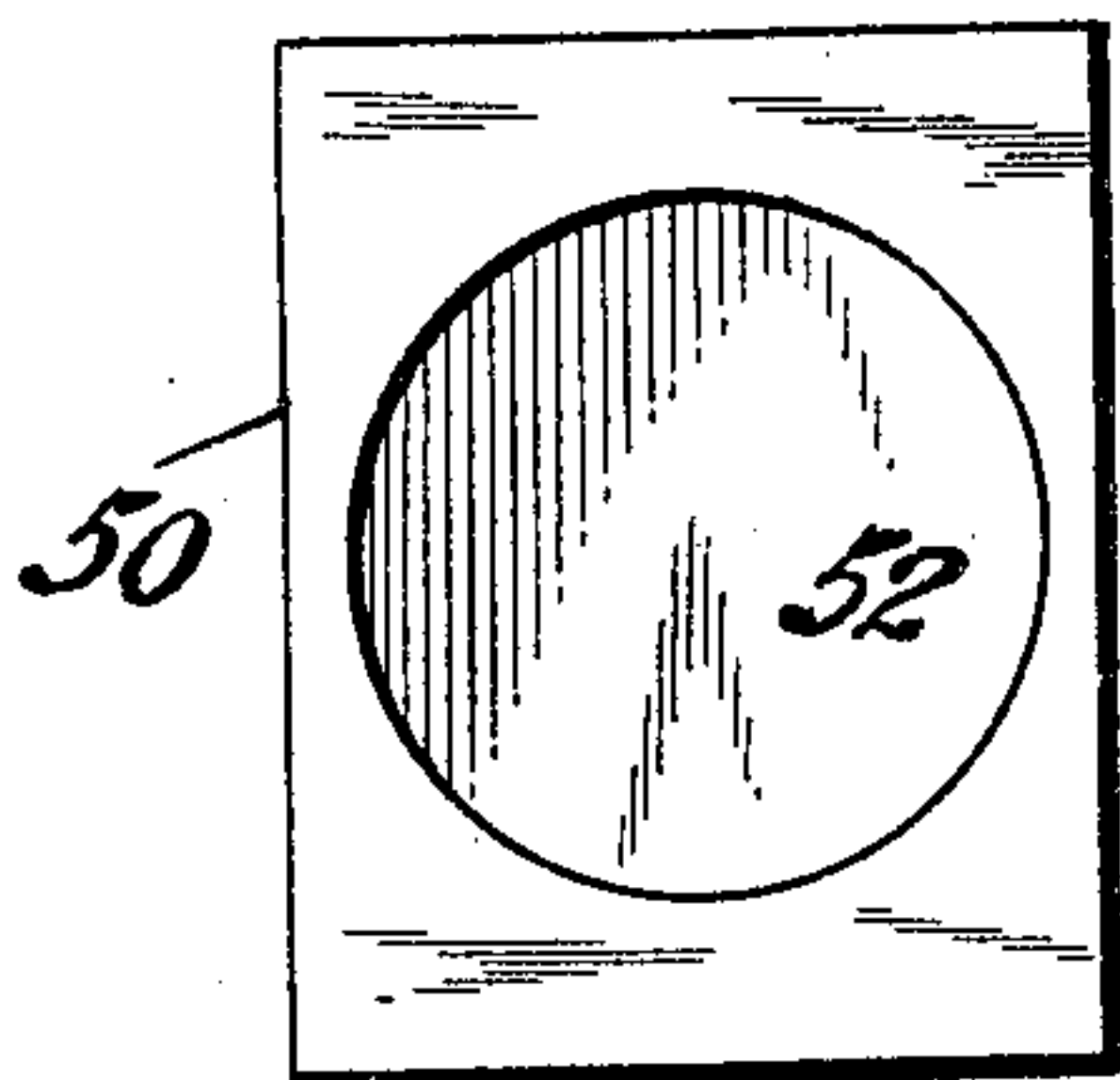


Fig. 10.

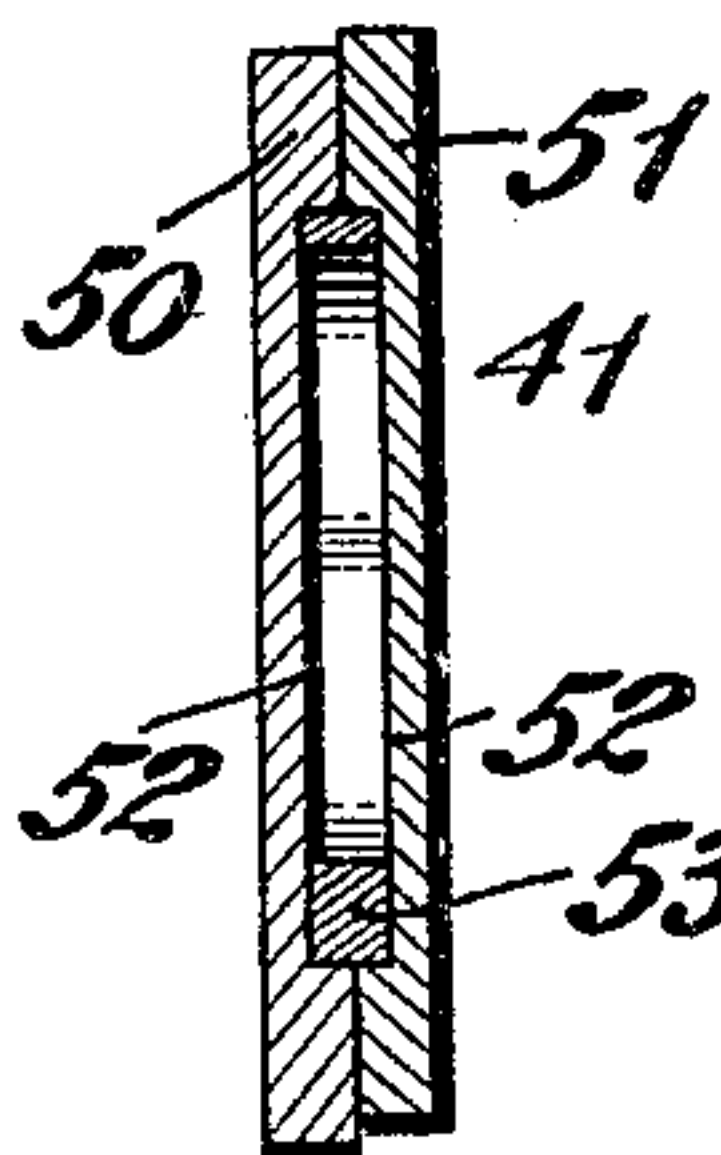
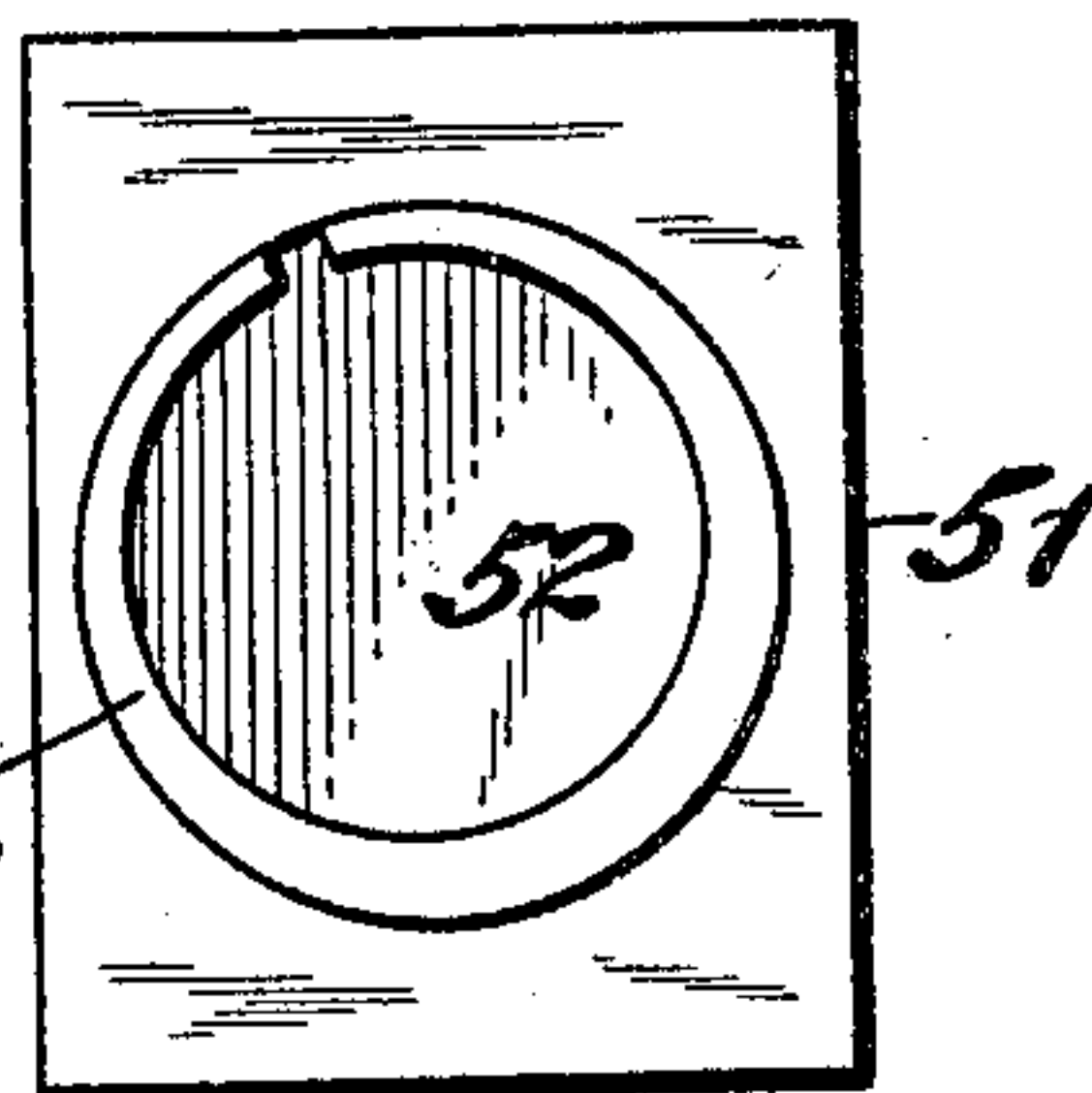


Fig. 9.



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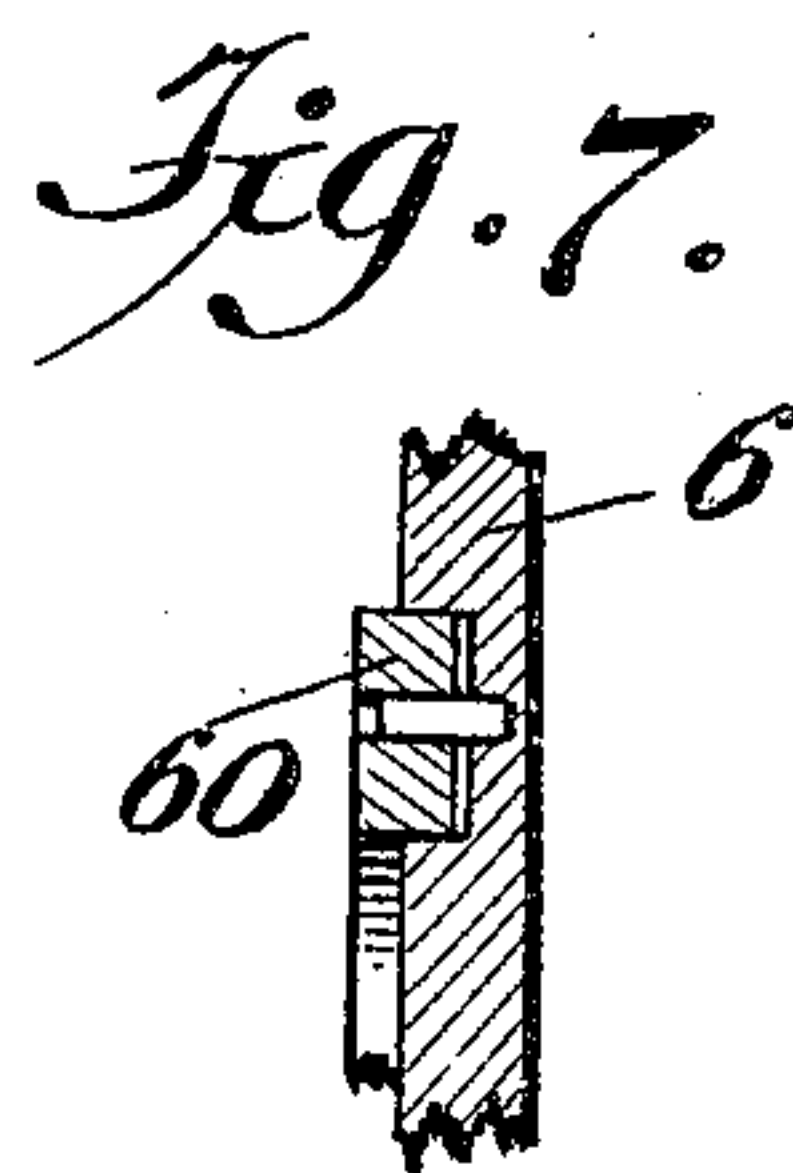
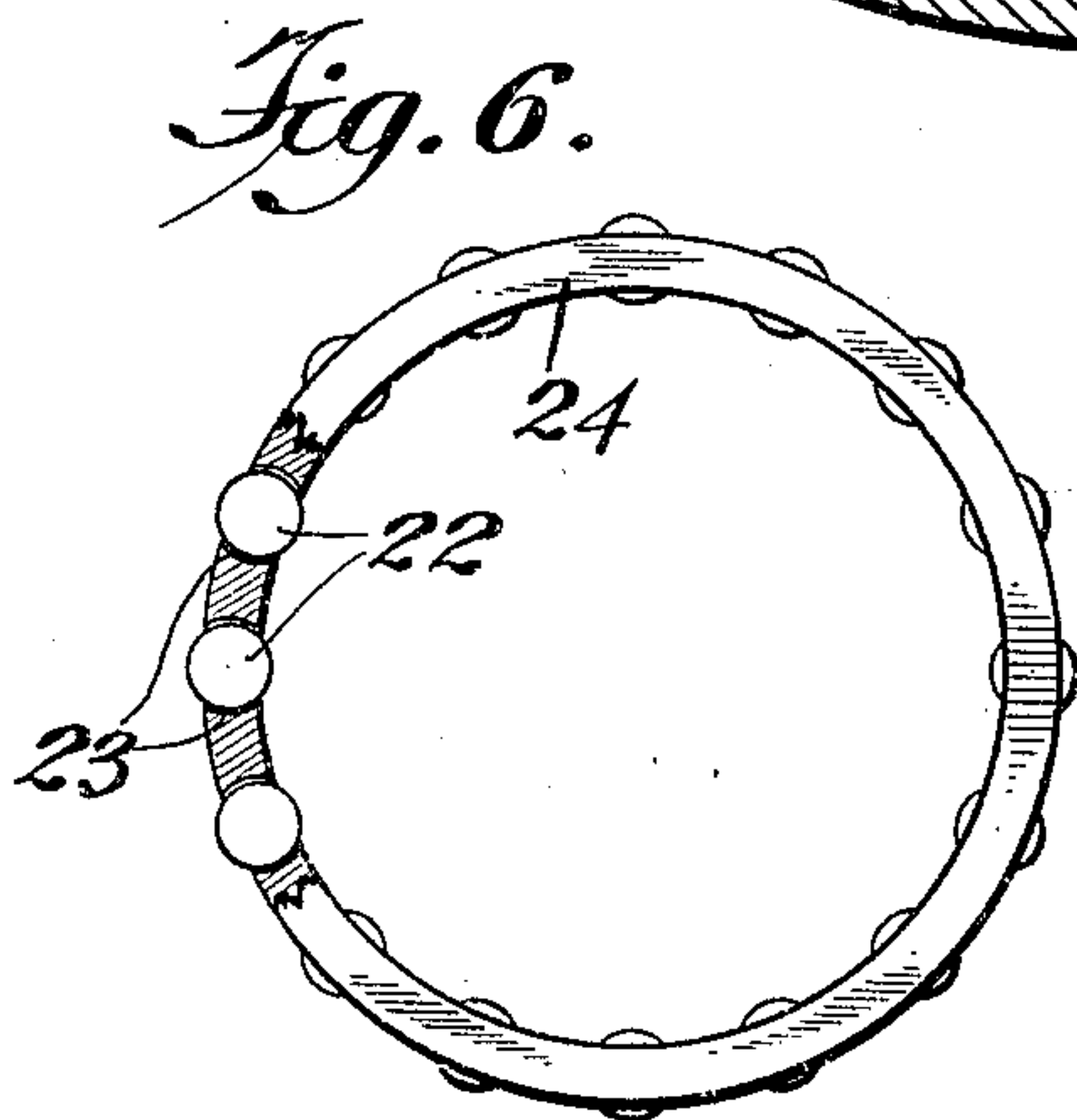
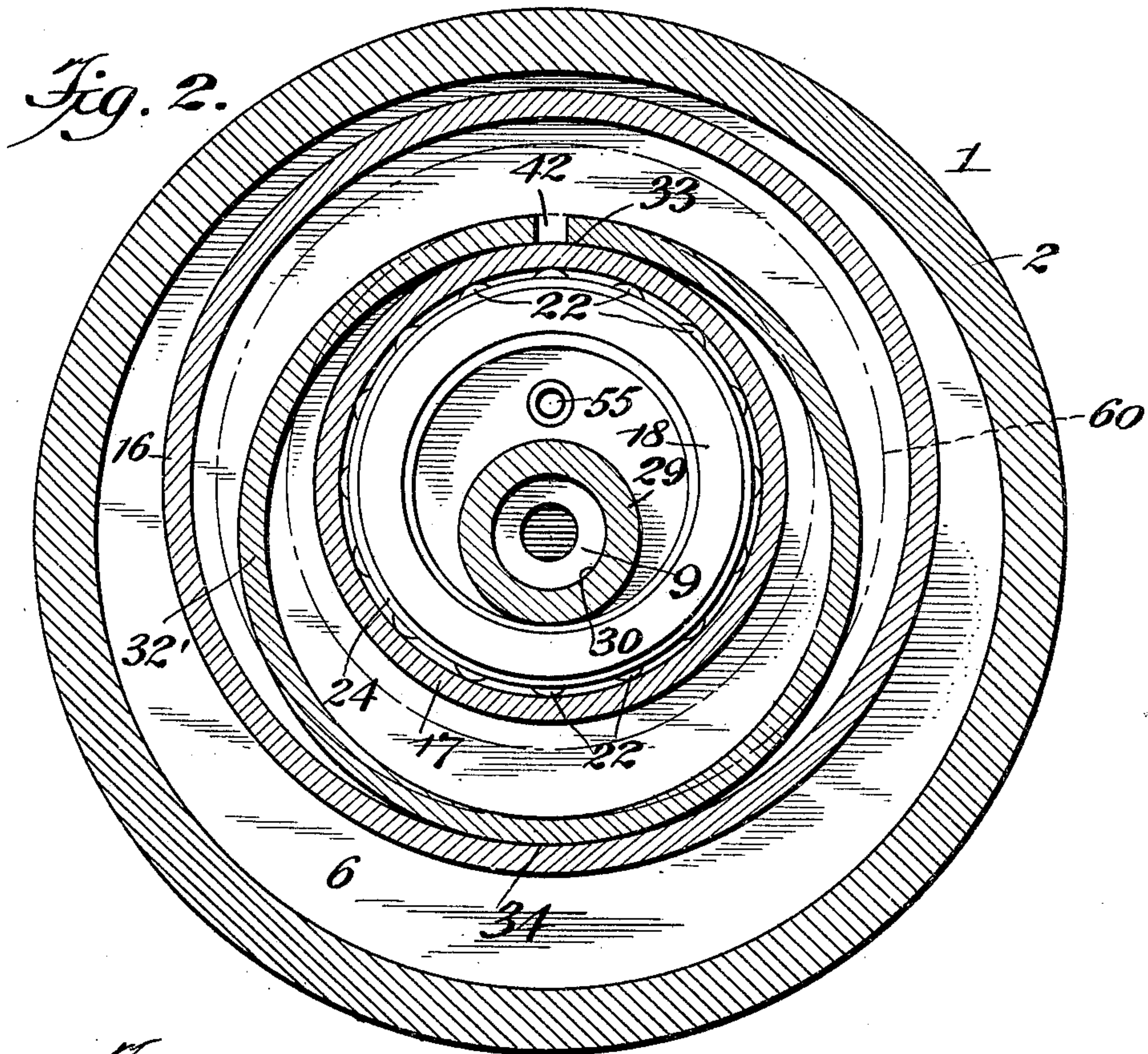
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3 SHEETS—SHEET 2.



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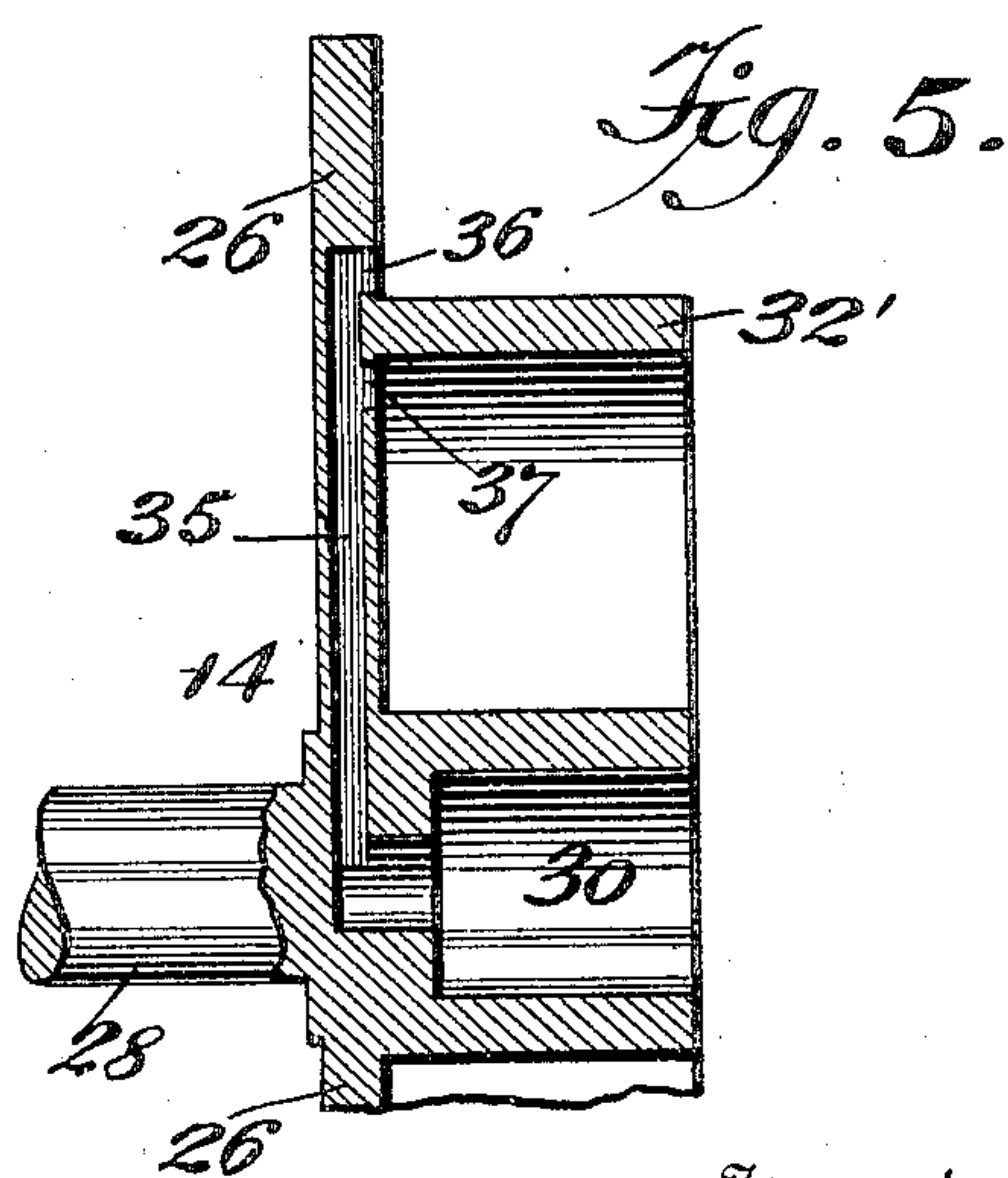
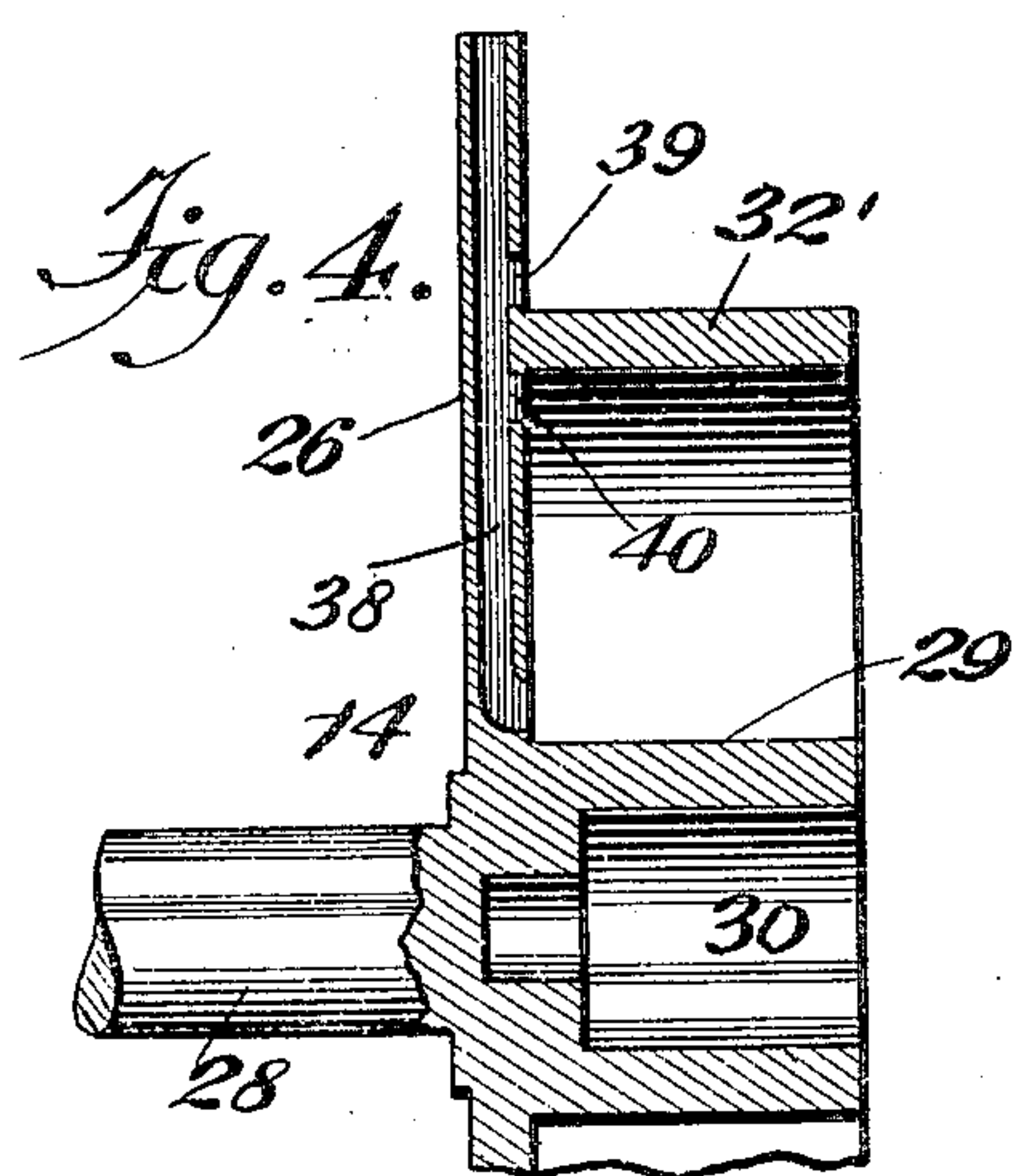
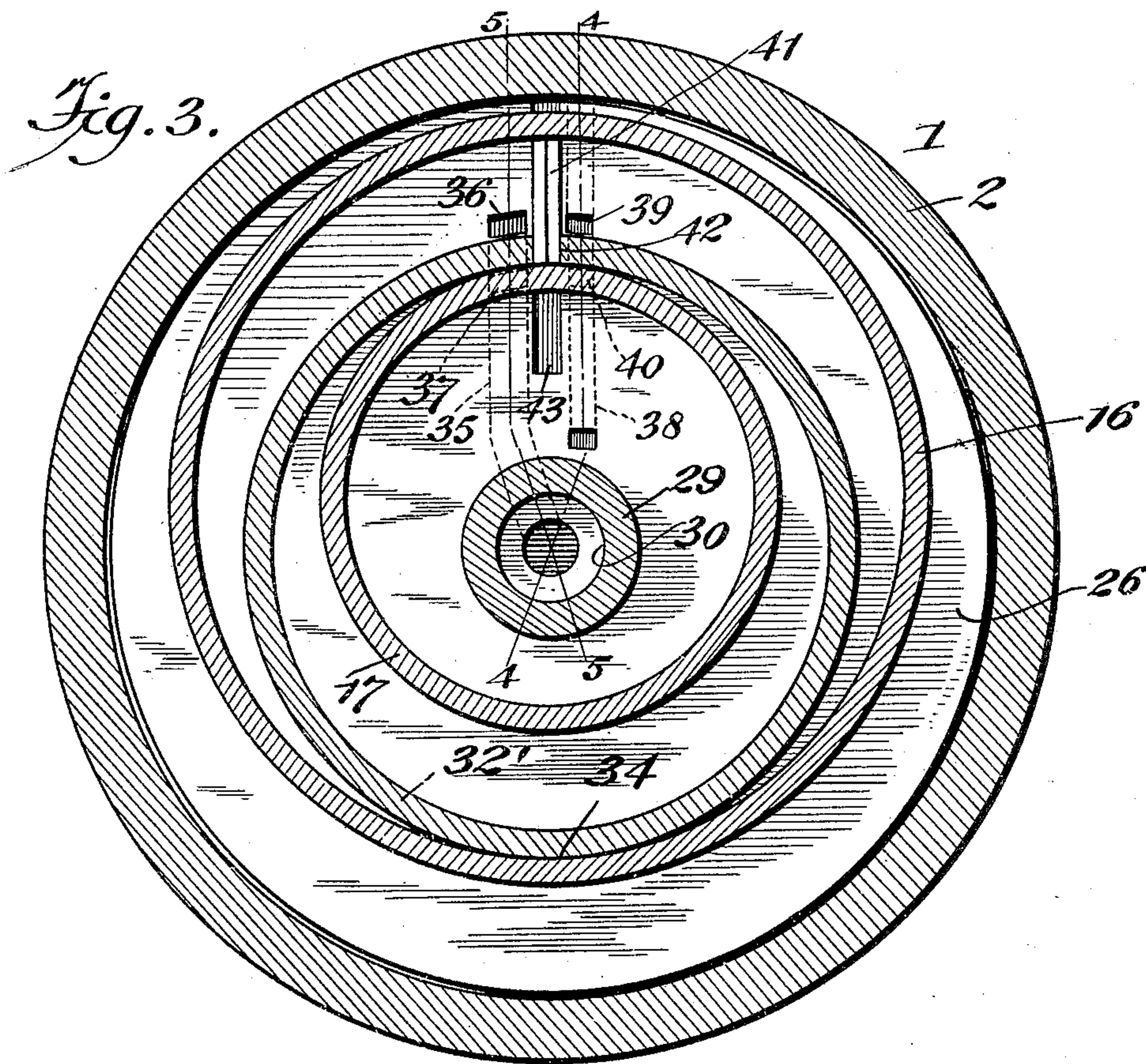
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ROTARY ENGINE.

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3 SHEETS—SHEET 3.



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By his Attorney, *R. L. Little*

UNITED STATES PATENT OFFICE

GEORGE PERRY CLARK, OF NEW YORK, N. Y., ASSIGNOR OF ONE-HALF
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ROTARY ENGINE.

No. 822,347.

Specification of Letters Patent.

Patented June 5, 1906.

Application filed May 13, 1904. Renewed November 6, 1905. Serial No. 286,131.

To all whom it may concern:

Be it known that I, GEORGE PERRY CLARK, a citizen of the United States, and a resident of New York, in the county and State of New York, have invented certain new and useful Improvements in Rotary Engines, of which the following is a specification.

My invention relates to rotary engines.

It has for its object to provide a rotary engine designed to have the minimum amount of friction between its parts, to form steam-tight joints between said parts, and to furnish the maximum amount of power for the amount of steam employed.

It has for a further object to provide an engine of the character described possessing advantages in point of simplicity, strength, inexpensiveness, and general utility.

In the drawings, Figure 1 is a transverse vertical sectional view of my engine; Fig. 2, a longitudinal vertical sectional view taken on the line $x x$, Fig. 1, and looking in the direction of the arrow x' ; Fig. 3, a longitudinal vertical sectional view taken on the line $y y$, Fig. 1, and looking in the direction of the arrow y' ; Fig. 4, a segmentary sectional view of the two-flanged section of the piston, showing the inlet-passage therein; Fig. 5, a segmentary sectional view of the two-flanged section of the piston, showing the outlet-passage therein; Fig. 6, a side view, partly in section, of the bearing for the two-flanged section of the piston; Fig. 7, a sectional segmentary view of the bearing for the two-flanged section of the piston; Fig. 8, an inside face view of one of the plates of the movable abutment; Fig. 9, an inside face view of one of the plates of the movable abutment, showing the spring therein; Fig. 10, a sectional view of the movable abutment.

Corresponding parts in all the figures are denoted by the same reference characters.

Referring to the drawings, 1 designates the steam chest or casing, which is fixed in any suitable way—for instance, to the body of an automobile or to a base—and comprises a cylindrical part 2, permanently closed on one side by an integral wall 3, provided with a central boss 4, having a bore 5 extending into the interior of the casing and closed on the other side by a removable cheek-plate 6, provided with a boss 7 on its outside, having a bore 8 extending therethrough and through

a journal 9 on the inside of the plate 6, the circumference of the bore in the boss 7 being somewhat larger than that in the journal 9 and being threaded so as to receive the threaded end of a pipe 10, having a bore 11 corresponding to the bore in the journal 9, this bore and the bore 8 forming the exhaust-passage from the steam.

Within the casing is mounted the rotatable piston comprising two sections 13 and 14. The section 13 comprises a plate 15, having concentric laterally-projecting circular flanges 16 and 17, and said section is rotatably mounted on a ring 18, adjustably secured to the plate 6 by screws 19, passing through slots 20 therein and engaging holes 21 in said ring, so that it can be adjusted to raise or lower the section 13 into contact with the section 14 to take up any wear between said parts, and antifriction-rolls 22 are mounted in slots 23 in a ring 24, seated in a circular groove 25 in the periphery of the ring 18, these rollers bearing against the interior surface of the flange 17. The section 14 comprises a plate 26, provided on one side with a laterally-projecting boss 27 and power-shaft 28, the boss coming against the interior surface of the wall 3 of the casing and spacing the plate 26 therefrom and the shaft 28 passing through the bore 5 in the boss 4, and said plate is provided on the other side with a boss 29, having a bore 30 to receive the journal 9, on which said section revolves, and to insure a tight contact between such parts a split ring 31 is seated in a circular groove 32 in the periphery of said journal. The inside of the plate 26 is also provided with a laterally-projecting circular flange 32', which is located between the flange 16 and 17 of the plate 15 and contacting with the exterior surface of the flange 17 at the point 33 and with the interior surface of the flange 16 at the point 34 and by such contact consequently revolves the plate 13 with it.

A bore 35 extends through the plate 26, its lower end registering with the bore 8 in the journal 9 and its other end having two holes 36 and 37 through the inside of the plate 26 communicating therewith, whereby the spent steam can be exhausted from the casing and piston. A bore 38 extends through the plate 26 from a point within the flange 32', and its other end has two holes 39 and 40 through

the inside of the plate communicating therewith, whereby live steam is admitted to the space between said flanges.

An abutment 41 is located between the flanges of the plate 15 and in a slot 42 in the flange 32' of the plate 26, one edge engaging a groove 43 in said plate 26, said abutment comprising two contacting plates 50 and 51, each having a circular groove 52 in its inner face, in which is located a spring 53, the relation of said plates being such that two edges of each plate will project beyond two edges of the other plate, whereby the size of the abutment will be automatically regulated to take up any wear and to allow it to always assume a radial position with relation to the axis of the section 26.

To provide for admitting steam into the casing, an inlet-pipe 55 projects through the plate 6.

For the purpose of holding the flanges of the plate 15 tightly against the interior surface of the plate 26 a ring 60 is located between the outer face of the plate 15 and the inner face of the plate 6 and seats in a groove 61 on springs 62, seated in holes 63, and said springs are adjusted to the required tension by screws 64, projecting through threaded holes 65, leading into said holes 63.

The operation is as follows: It will be understood from the construction and arrangement of parts, as herein described, that if live steam be admitted through the inlet-pipe it will distribute itself around all the parts of the piston, and, as the outside surface area of the plate 26 is less than the interior surface area of said plate and the ends of the flanges and boss, the boss 27 on the outside of the plate 14 is forced tightly against the interior surface of the wall 3, and thereby obviates the necessity of a packing-box for the shaft 5; that the steam will pass through the bore 38 and into the open space between the sections 13 and 14, and if the sections be in the position shown by the drawings it will simultaneously fill the space between the flanges 16, 17, and 32, backing up between said flanges at the points 33 and 34, driving the abutment around, and with it the section 14, and by reason of the frictional contact between the flanges of said sections they will be turned, and on account of the relation of said flanges as the sections revolve the space between the abutment and the inside of the flange 32' will be increased and the space between the abutment and the outside of the flange 32 will diminish, this condition continuing until the abutment passes the point 34, when the spent steam will begin to exhaust from the space outside the flange 32' through the holes 36, the bore 35, the bore 8, and the bore in the pipe 10, and when the abutment passes the point 33 spent steam will begin to exhaust from the space inside

the flange through the hole 37, as well as the hole 36, and after this full rotation of the piston there will be a continued simultaneously incoming of live steam and exhaust of spent steam.

I do not desire to be understood as limiting myself to the details of construction and arrangement as herein described and illustrated, as it is manifest that variations and modifications may be made in the features of construction and arrangement in the adaptation of the device to various conditions of use without departing from the spirit and scope of my invention and improvements. I therefore reserve the right to all such variation and modification as properly fall within the scope of my invention and the terms of the following claims.

Having thus described my invention, I claim and desire to secure by Letters Patent—

1. A rotary engine, comprising a fixed casing and a chambered piston having eccentrically-mounted rotatable sections, substantially as described.

2. A rotary engine, comprising a fixed casing and a chambered piston therein having eccentrically-mounted contacting rotatable sections, one section being driven by the other section, substantially as described.

3. A rotary engine, comprising a fixed casing and a chambered piston therein having rotatable sections provided with circular flanges, the flange of one section contacting with the flanges of the other section, substantially as described.

4. A rotary engine, comprising a fixed casing, a chambered piston therein having rotatable sections provided with circular flanges and an abutment carried by one section and movable within the other section, substantially as described.

5. A rotary engine, comprising a fixed casing, a chambered piston therein having rotatable sections provided with circular contacting flanges and an abutment carried by and slidable through the flange of one section and movable around and between the flanges of the other section, substantially as described.

6. A rotary engine, comprising a fixed casing, a chambered piston therein having rotatable eccentrically-mounted sections provided with circular contacting flanges and an abutment carried by and slidable through the flange of one section and movable around and between the flanges of the other section, substantially as described.

7. A rotary engine, comprising a fixed casing, a chambered piston therein having rotatable flanged contacting sections and means for adjusting one of said sections to regulate the contact between the flanges of said sections, substantially as described.

8. A rotary engine, comprising a fixed casing, a chambered piston therein having rotatable sections provided with contacting flanges and an adjustable journal for one of said sections, substantially as described.

9. A rotary engine comprising a fixed casing, a chambered piston therein having a rotatable section provided with contacting flanges and an antifriction-journal for one of said sections, substantially as described.

10. A rotary engine, comprising a fixed casing, a chambered piston therein having rotatable sections provided with contacting flanges and an automatically-adjustable abutment carried by the flange of one of said sections, substantially as described.

11. A rotary engine, comprising a fixed casing, a chambered piston therein having eccentrically-mounted rotatable sections, one section having two concentric flanges and the other section having one flange contacting at two points with the flanges of the other section and an abutment carried by the flange of one section and movable around between the flanges of the other section, substantially as described.

12. A rotary engine, comprising a fixed casing, a chambered piston therein having eccentrically-mounted rotatable sections, one section having two concentric flanges and the other section having one flange contacting at two points with the flanges of the other section and an abutment slidably carried by the flange of one section and movable around

between the flanges of the other section, substantially as described.

13. A rotary engine, comprising a fixed casing, a chambered piston therein having eccentrically-mounted rotatable sections, one section having two concentric flanges and the other section having one flange contacting at two points with the flanges of the other section and an automatically-adjustable abutment slidably carried by the flange of one section and movable around between the flanges of the other section, substantially as described.

14. A rotary engine, comprising a fixed casing a chambered piston therein having rotatable sections, one section provided with two circular flanges and the other section with one circular flange, the flange of one section located between and contacting with the flanges of the other section at two points and an abutment carried by the flange of one section and movable around between the flanges of the other section, said abutment comprising contacting recessed plates having a spring located in the recess of said plates, substantially as described.

In testimony whereof I have signed my name in the presence of the subscribing witnesses.

GEORGE PERRY CLARK.

Witnesses:

FANCHER NICOLL,
B. L. MOLITOR.