

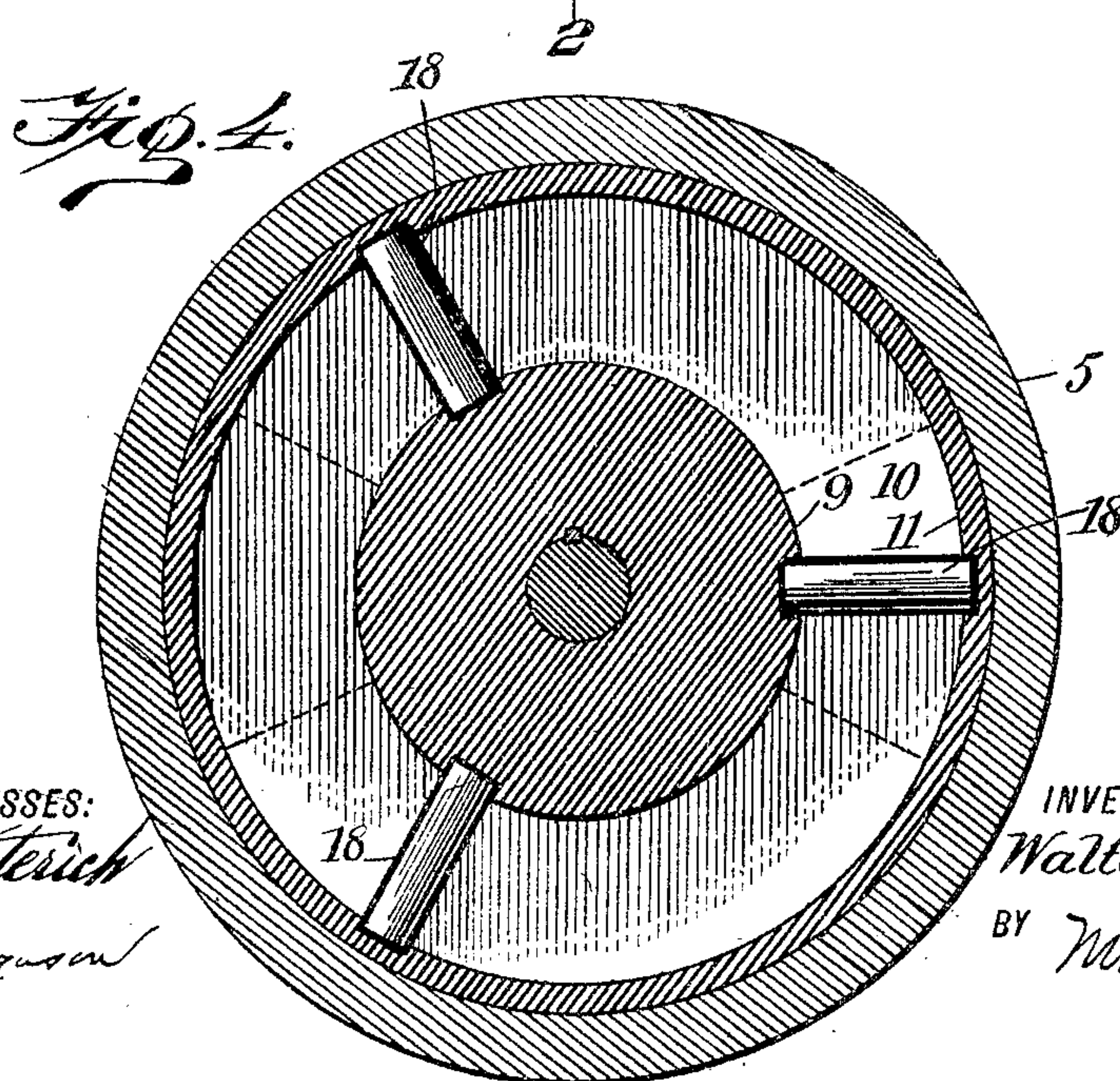
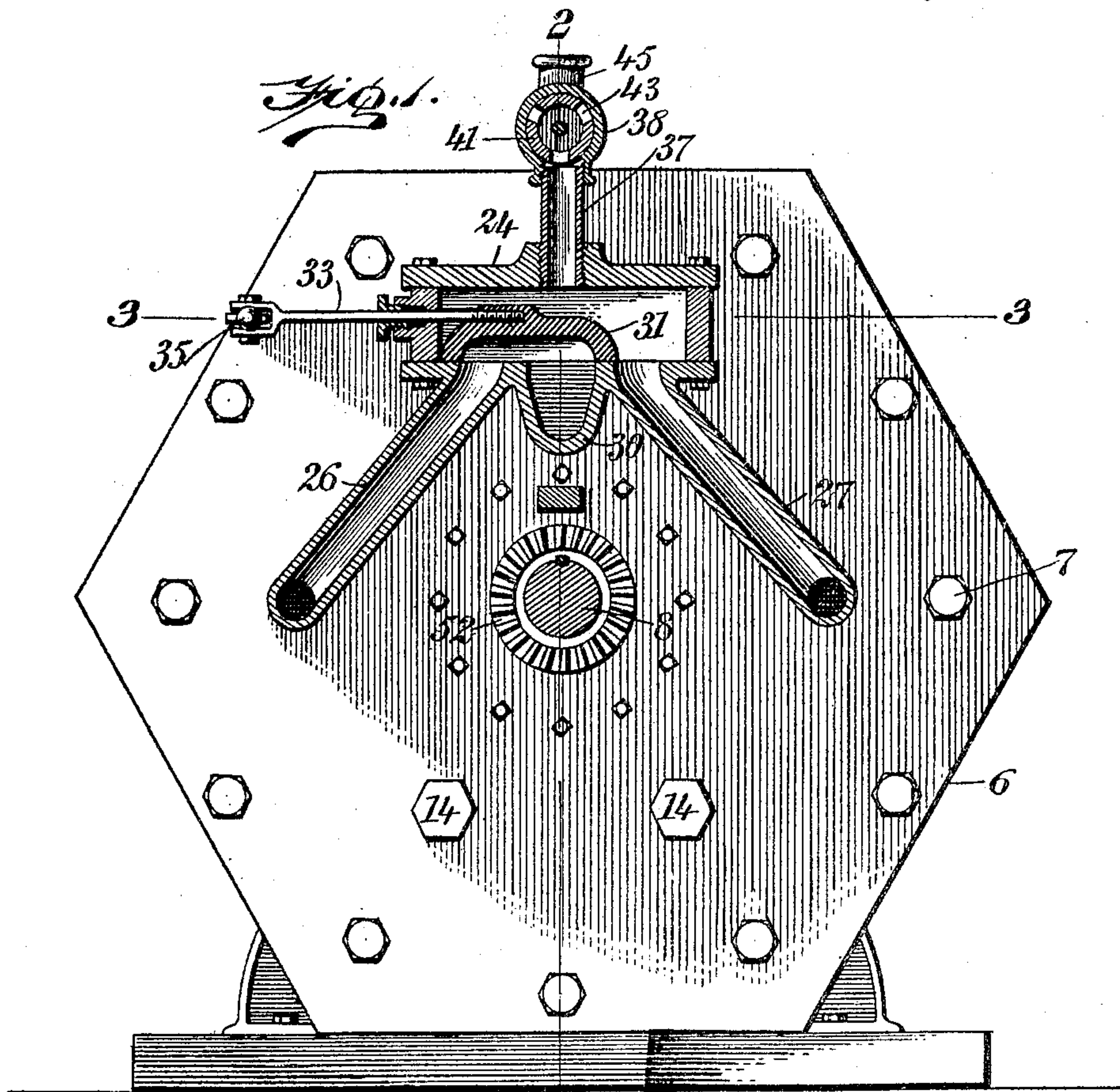
No. 797,869.

PATENTED AUG. 22, 1905.

W. SCOTT.
ROTARY ENGINE.

APPLICATION FILED MAY 10, 1905.

3 SHEETS—SHEET 1.



WITNESSES:
H. G. Dieterich
C. R. Ferguson

INVENTOR
Walter Scott
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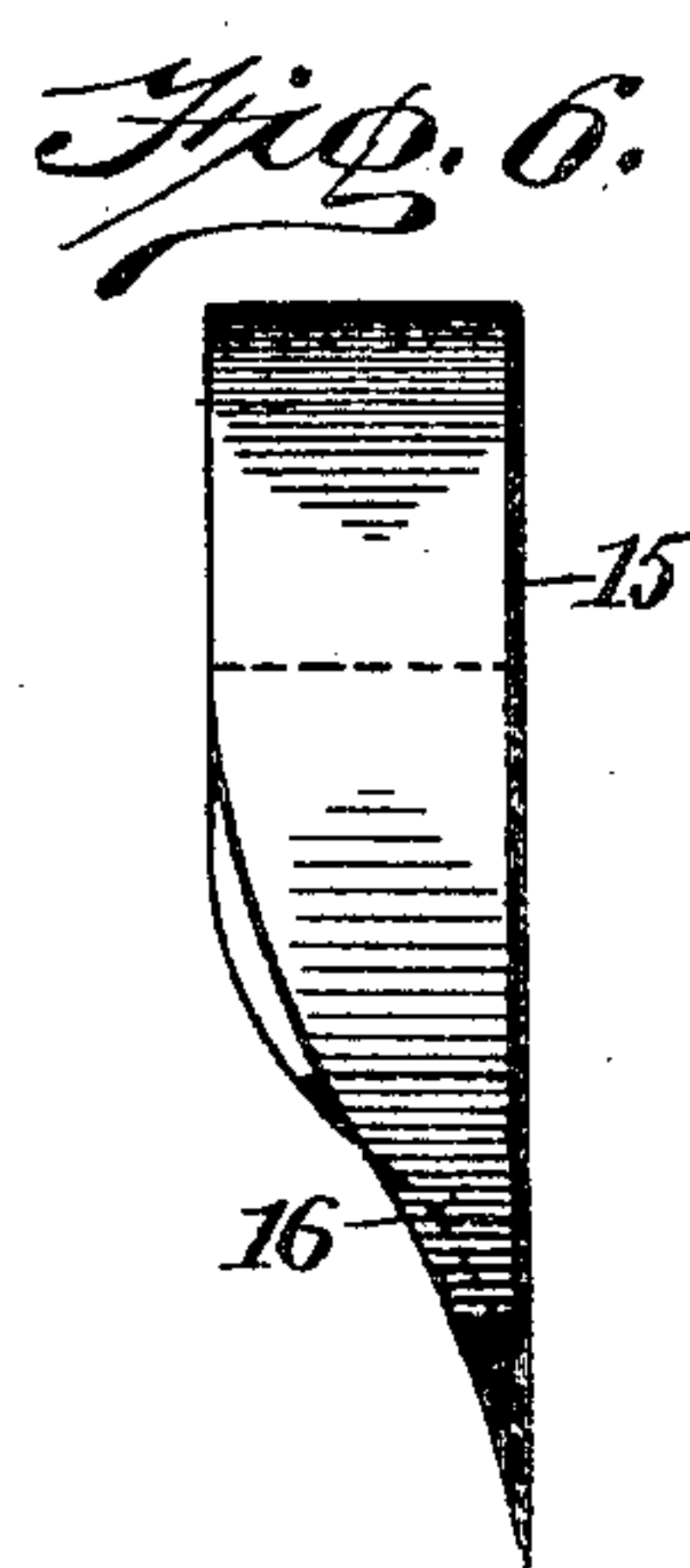
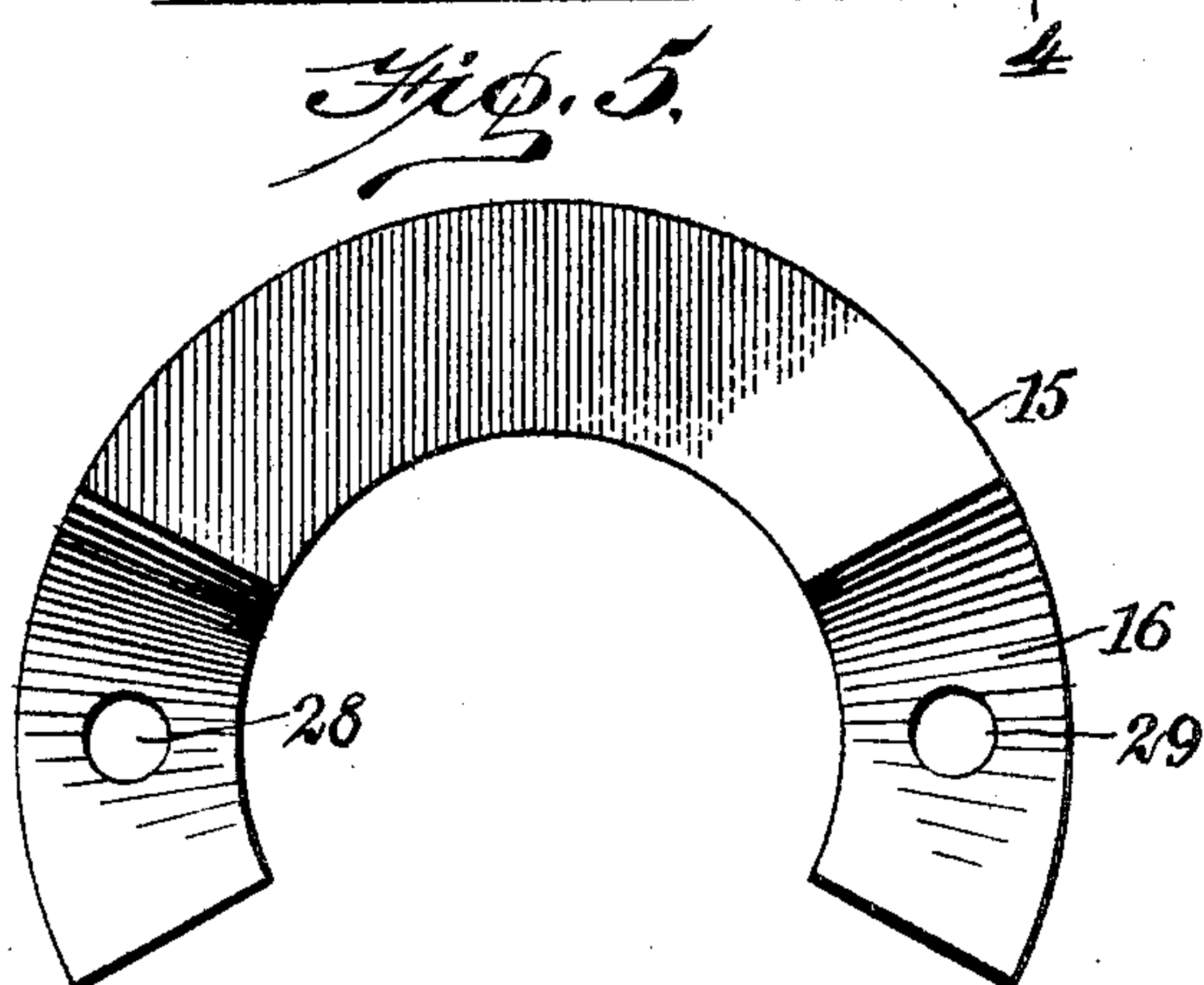
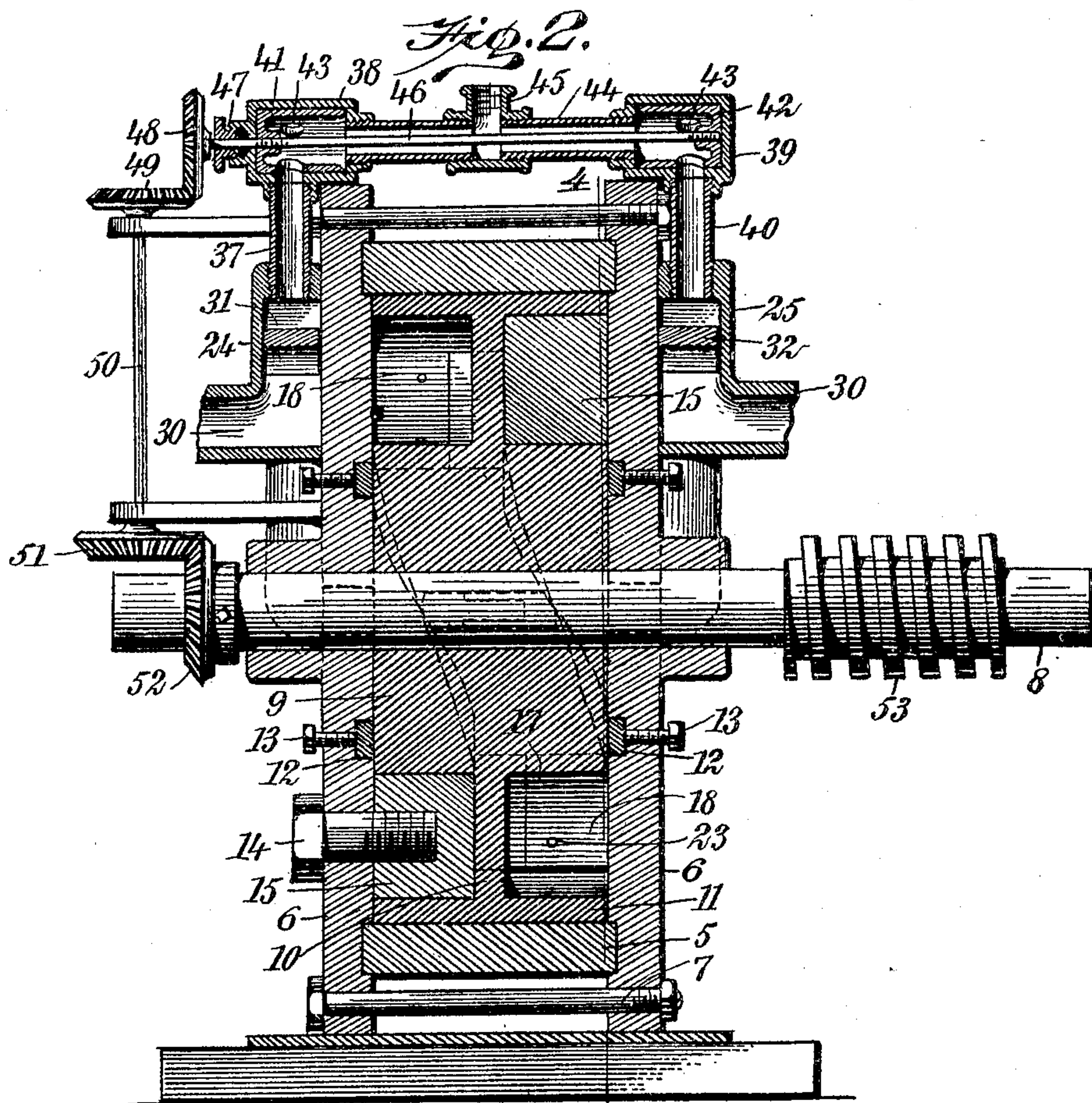
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3 SHEETS—SHEET 2.



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3 SHEETS—SHEET 3.

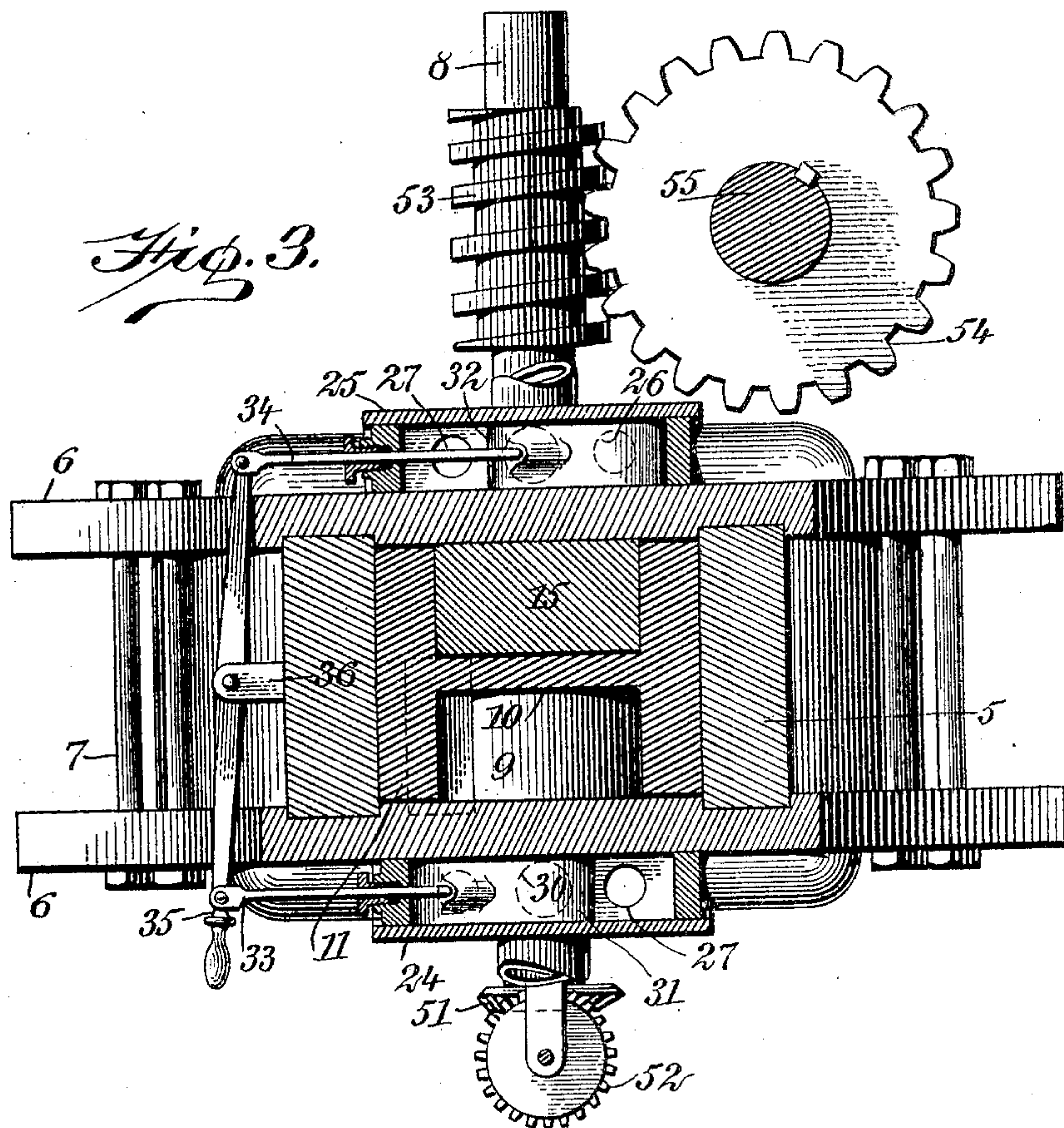


Fig. 7.

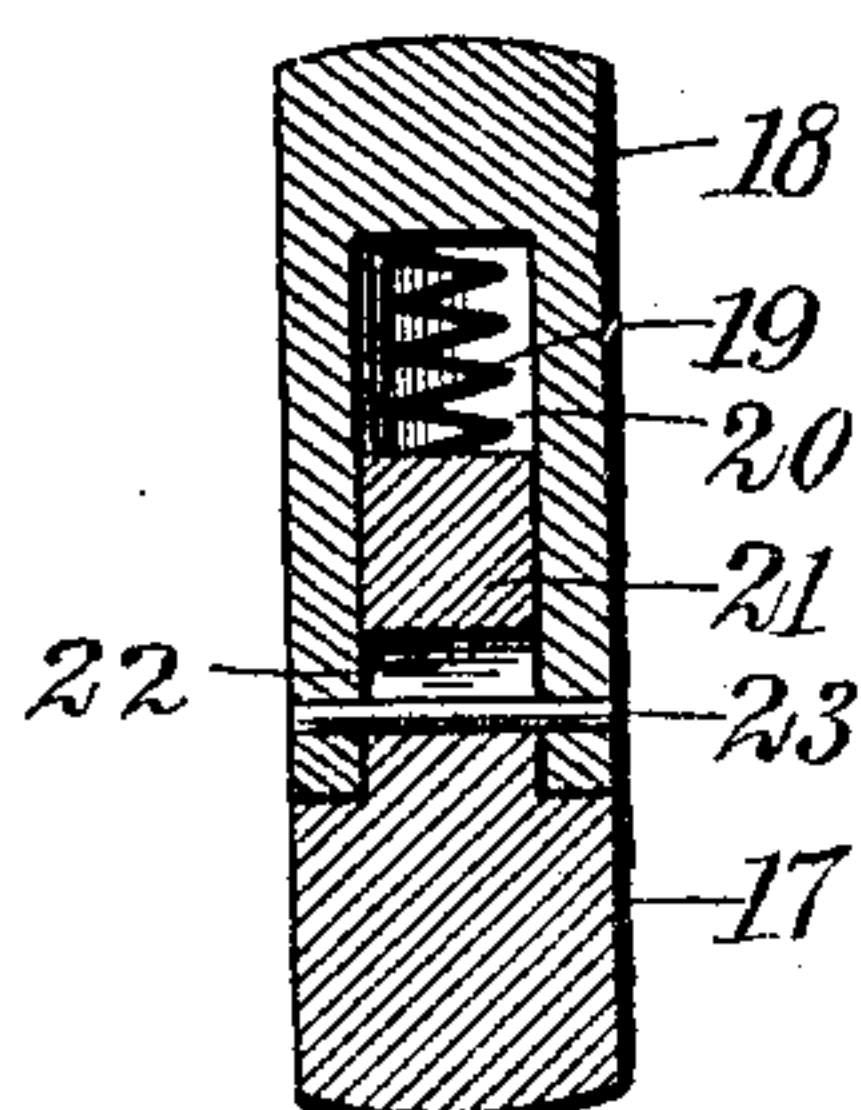
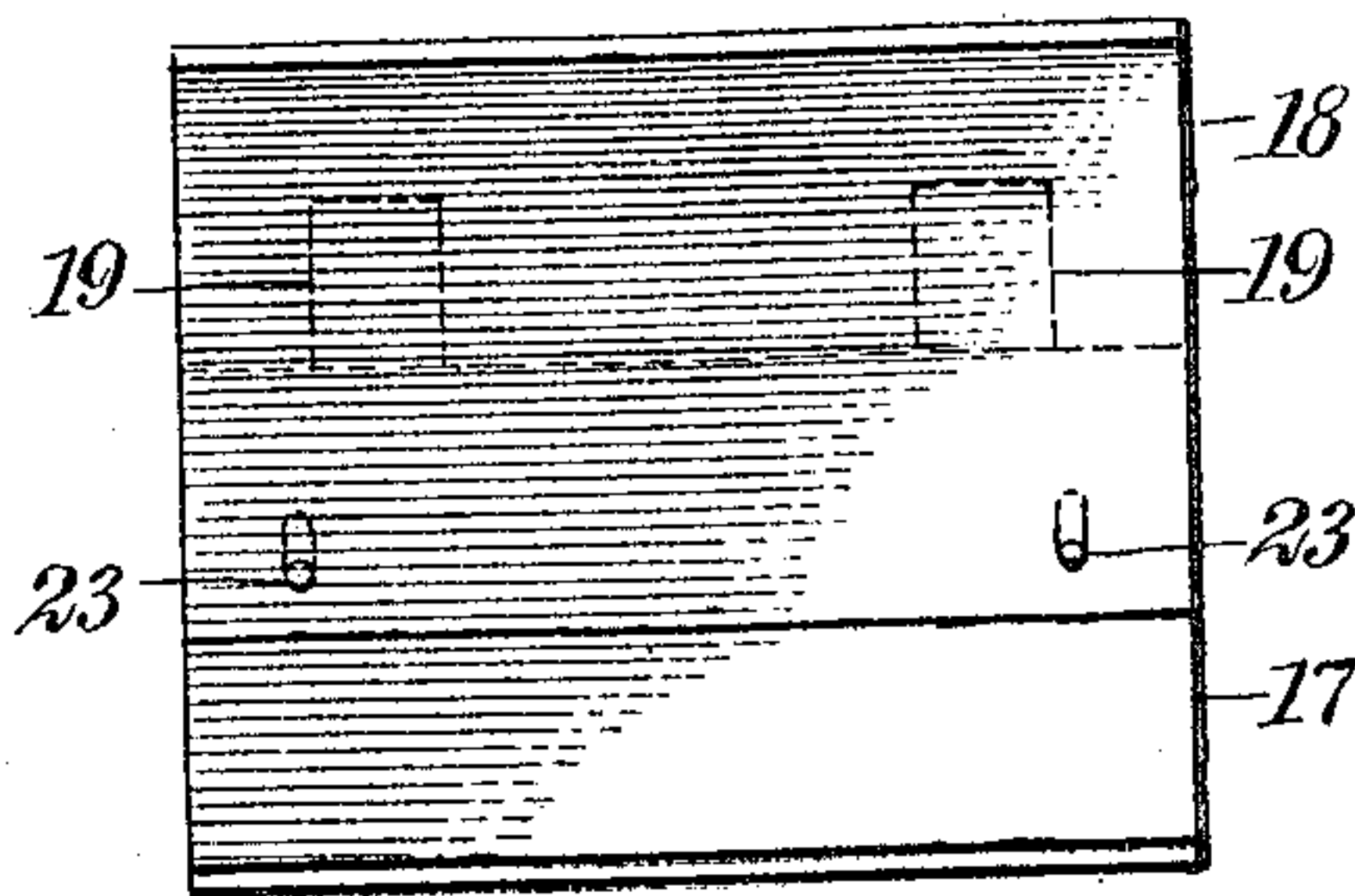


Fig. 8.



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UNITED STATES PATENT OFFICE.

WALTER SCOTT, OF SHERIDAN, WYOMING.

ROTARY ENGINE.

No. 797,869.

Specification of Letters Patent.

Patented Aug. 22, 1905.

Application filed May 10, 1905. Serial No. 259,698.

To all whom it may concern:

Be it known that I, WALTER SCOTT, a citizen of the United States, and a resident of Sheridan, in the county of Sheridan and State of Wyoming, have invented a new and Improved Rotary Engine, of which the following is a full, clear, and exact description.

This invention relates to improvements in double-cylinder rotary engines using steam, air, or gas as a motive agent, the object being to provide a rotary engine of novel and simple construction in which there will be an economical use of steam or other motive agent.

Another object is to provide an engine with speed-reducing mechanism, thus adapting it for use in drilling or boring.

Other objects of the invention will appear in the general description.

I will describe a rotary engine embodying my invention and then point out the novel features in the appended claims.

Reference is to be had to the accompanying drawings, forming a part of this specification, in which similar characters of reference indicate corresponding parts in all the figures.

Figure 1 is a side elevation, partly in section, of a rotary engine embodying my invention. Fig. 2 is a sectional elevation thereof on the line 2 2 of Fig. 1. Fig. 3 is a section on the line 3 3 of Fig. 1. Fig. 4 is a section substantially on the line 4 4 of Fig. 2. Fig. 5 is a face view of one of the cam-segments employed. Fig. 6 is an edge view thereof. Fig. 7 is a cross-section of one of the piston-blades employed, and Fig. 8 is a face view thereof.

Referring to the drawings, 5 indicates the engine-cylinder, and 6 the heads, secured thereto, as here shown, by means of bolts 7, engaging with outwardly-extended flange portions of the heads. A shaft 8 extends through the cylinder, and mounted on the shaft within the cylinder is a rotary part comprising a hub 9, having a peripheral web portion 10, the outer edge of which connects with an arm 11. The hub, flange, and rim may of course be made in one casting. To prevent the escape of motive agent around the hub, the heads are provided with annular channels in which packing-rings 12 are seated to engage against the sides of the hub 9, and they are adjusted with relation to the hub by means of set-bolts 13. Arranged within the cylinder and secured by means of bolts 14 are opposite segmental plates 15, having cam-shaped or curved inner surfaces 16 at the ends, the cam-sur-

faces of one plate overlapping the cam-surfaces of the other plate, and therefore by means of these plates a spirally-disposed motive-agent chamber is provided, as indicated in Fig. 2. Arranged at suitable intervals on the rotary part and adapted to slide transversely thereof and through openings in the web 10 are piston-blades, each consisting of two sections 17 18. The hub 9 is provided with suitable channels in which the blades may slide, and the parts 18 of the blades are held yieldingly against the inner surfaces of the cam-plates 15 by means of springs 19, engaging with the end walls of chambers 20, formed in the sections 18, and also engaging with tongue portions 21, formed on the sections 17, and which pass into the chambers 20. The tongue portions 21 are provided with slots 22, through which pins 23, connected to the sections 18 of the piston-blades, pass, thus permitting movement of the sections 18 relatively to the sections 17.

On opposite sides of the engine are steam-chests 24 25, and each steam-chest has ports 26 27 leading through the head at its side of the engine and communicating with ports 28 29, formed in the cam portions of the segments 15, and through which the motive agent is designed to pass to the interior of the cylinder or the motive-agent chamber. Each steam-chest is also provided between the ports 26 27 with an exhaust-port 30.

In the steam-chest 24 is a reversing-valve 31 and in the steam-chest 25 is a reversing-valve 32. These valves 31 and 32 are here shown in the form of slide-valves, and the said valves are provided with outwardly-extended stems 33 34, which are connected to a reversing-lever 35, mounted to swing on a stud 36, extended outward from the cylinder. By shifting this lever the valves will be moved so as to direct the motive agent into the cylinder to drive the engine in either direction desired.

The steam-chest 24 communicates, through a pipe 37, with a valve-casing 38, and the steam-chest 25 communicates with a valve-casing 39 through a pipe 40. Arranged in the casings 38 and 39 are hollow or cup-shaped rotary valves 41 42, each provided with a series of ports 43, through which the motive agent passes to the pipes, and the slotted portions of the valves between the ports when covering the said pipes will serve as abutments for the steam acting against the piston-blades at the opposite side. It may be

here stated that the steam simultaneously enters opposite sides of the cylinder, and therefore a double cylinder is practically formed in a small space. Steam passes into the rotary valves through a pipe 44, connecting the valve-casings and having an inlet 45. The two rotary valves are connected by a rod 46, which passes out through a stuffing-box 47 on the end of the valve-casing 38, and on the outer end of this rod is a bevel-pinion 48, meshing with a bevel-pinion 49 on a vertical shaft 50, the lower end of which is provided with a bevel gear-wheel 51, meshing with a bevel gear-wheel 52, attached to the engine-shaft 8. By this arrangement it is obvious that the shaft 8 will impart rotary motion to the inlet-controlling valves.

When a slow motion of a part to be operated is desired—such, for instance, as the operation of a drilling or boring tool—I provide a speed-reducer consisting of a worm 53, arranged on the shaft 8 and engaging with a worm-wheel 54 on a driving-shaft 55.

In the operation when the valves are in the position indicated in Fig. 3 the motive agent will pass through the ports 27 to opposite sides of the cylinder and have full pressure of steam or motive agent upon the blades passing along said sides, and the exhaust will be through the ports 26 and 30. As before stated, when it is desired to rotate the engine in the opposite direction the position of the sliding valves will be reversed.

While I have shown three piston-blades, it is to be understood that the number may be varied to meet conditions of work to be performed.

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

1. In a rotary engine, a cylinder having a spirally-disposed motive-agent chamber, a part mounted to rotate in the cylinder, piston-blades mounted to slide transversely on said rotary part whereby they may follow the trend of said chamber, and valves for controlling the inlet of motive agent simultaneously to opposite sides of the cylinder, the said valves also serving as abutments.

2. In a rotary engine, a cylinder having a spirally-disposed motive-agent chamber, a part mounted to rotate in the cylinder, piston-blades mounted to slide transversely on said rotary part whereby they may follow the trend of said chamber, rotary valves for controlling the inlet of motive agent and also serving as abutments, and driving connections between said valves and the engine-shaft.

3. A rotary engine comprising a cylinder having a spirally-disposed motive-agent chamber, a rotary part arranged in the cylinder and having a spirally-disposed motive-agent chamber, piston-blades mounted to slide trans-

versely on said rotary part and to follow the trend of said chamber, steam-chests at opposite sides of the cylinder and having inlet and exhaust port communication with the interior of the cylinder, reversing-valves arranged in said steam-chests, a reversing-lever having connection with said valves, and rotatably-driven valves for controlling the admission of motive agent to said chests.

4. A rotary engine comprising a cylinder having a spirally-disposed motive-agent chamber, a shaft extended through the cylinder, a rotary part mounted on said shaft, piston-blades slidable transversely on said rotary part and adapted to follow the trend of said chamber, steam-chests on opposite sides of the cylinder and having inlet and exhaust port communication with the interior of the cylinder, valve-casings having pipe communication with said chests, controlling-valves mounted to rotate in the casings, a rod connecting the valves, gear connections between said rod and the engine-shaft, and reversing-valves in the steam-chests.

5. A rotary engine comprising a cylinder, segmental plates secured in said cylinder at opposite sides, the said plates having inclined or cam-shaped portions at the ends, the said segment-plates forming the opposite walls of a motive-agent chamber, a shaft extended through the cylinder, a rotary part attached to the shaft and consisting of a hub, a central web extended outward from said hub, a rim on said web, said web being provided at intervals with openings, piston-blades mounted to slide transversely on the rotary part and through said openings, means for directing steam into opposite sides of the cylinder simultaneously, and means for controlling the inlet of motive agent.

6. A rotary engine comprising a cylinder, a rotary part therein, the said cylinder having a spirally-disposed chamber for motive agent, blades mounted to slide on said rotary part to pass through said chamber, steam-chests at opposite sides of the cylinder and having inlet and exhaust port communication with the interior of the cylinder, reversing-valves in said chests, valve-casings having pipe communication with said chests, valves mounted to rotate in said casings, each valve being provided with a plurality of ports, the said valves being connected, and means for operating said valves from the engine-shaft.

In testimony whereof I have signed my name to this specification in the presence of two subscribing witnesses.

WALTER SCOTT.

Witnesses:

JACOB F. HOOP,
E. B. ALLAN.