

No. 659,782.

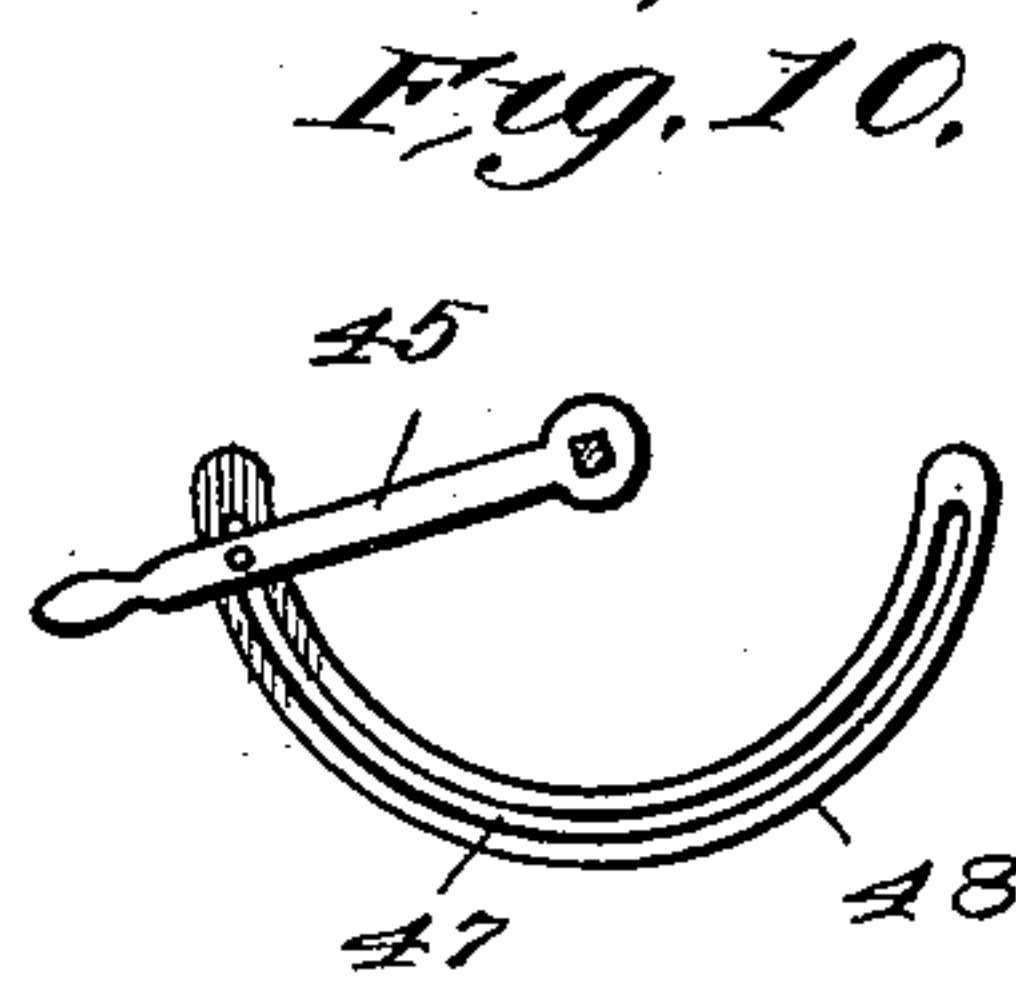
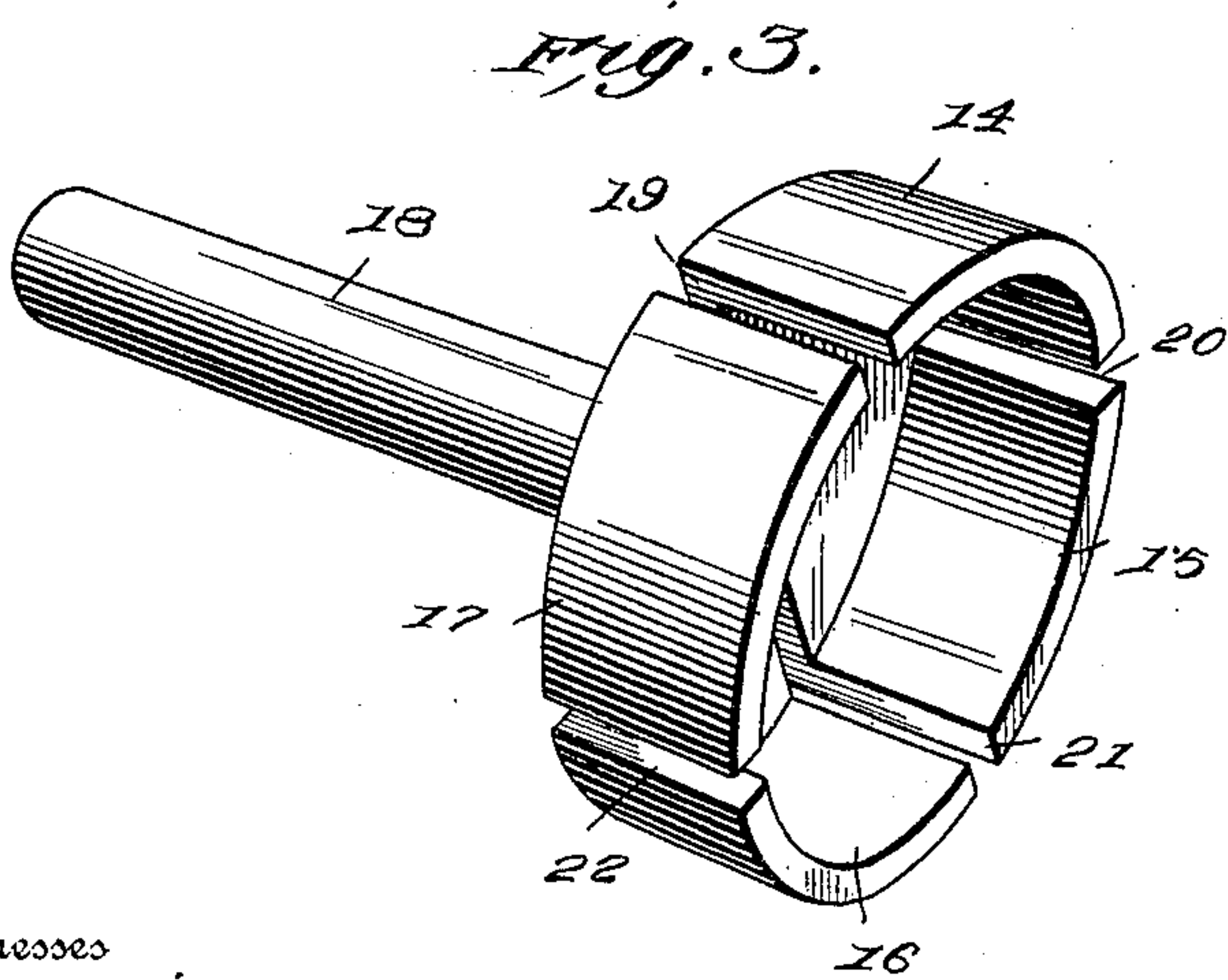
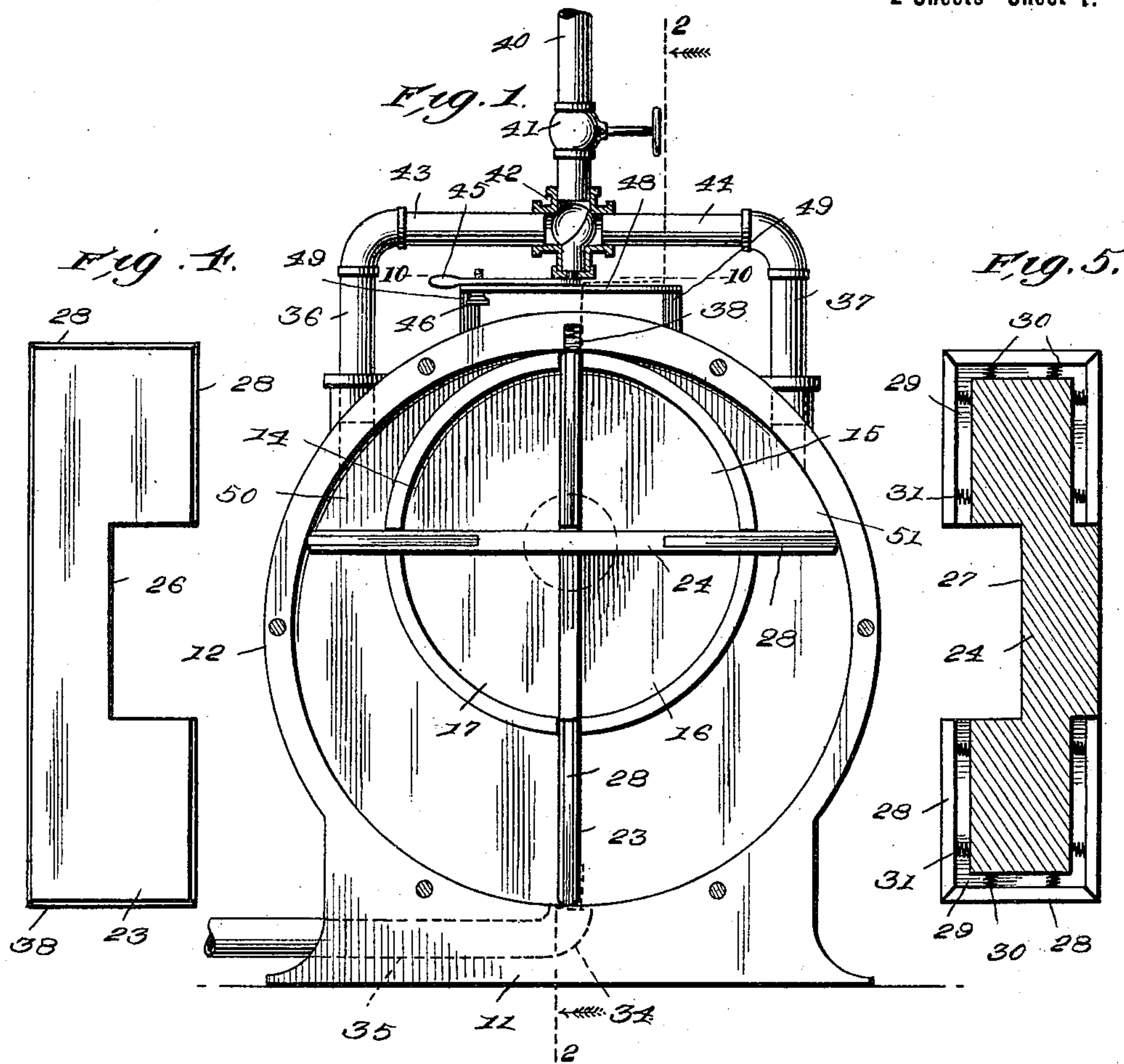
Patented Oct. 16, 1900.

J. P. BAXTER.
ROTARY ENGINE.

(Application filed Oct. 28, 1899.)

(No Model.)

2 Sheets—Sheet 1.



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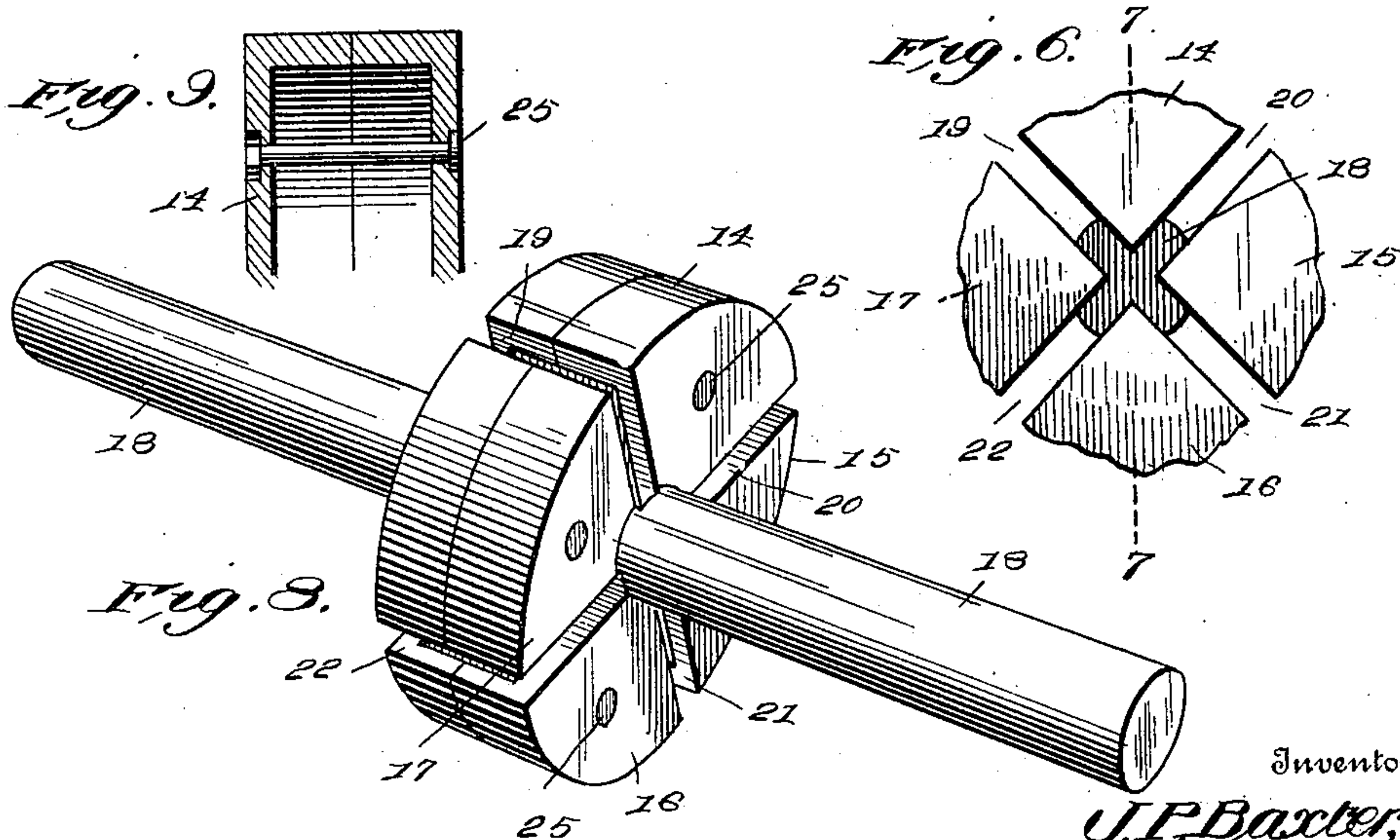
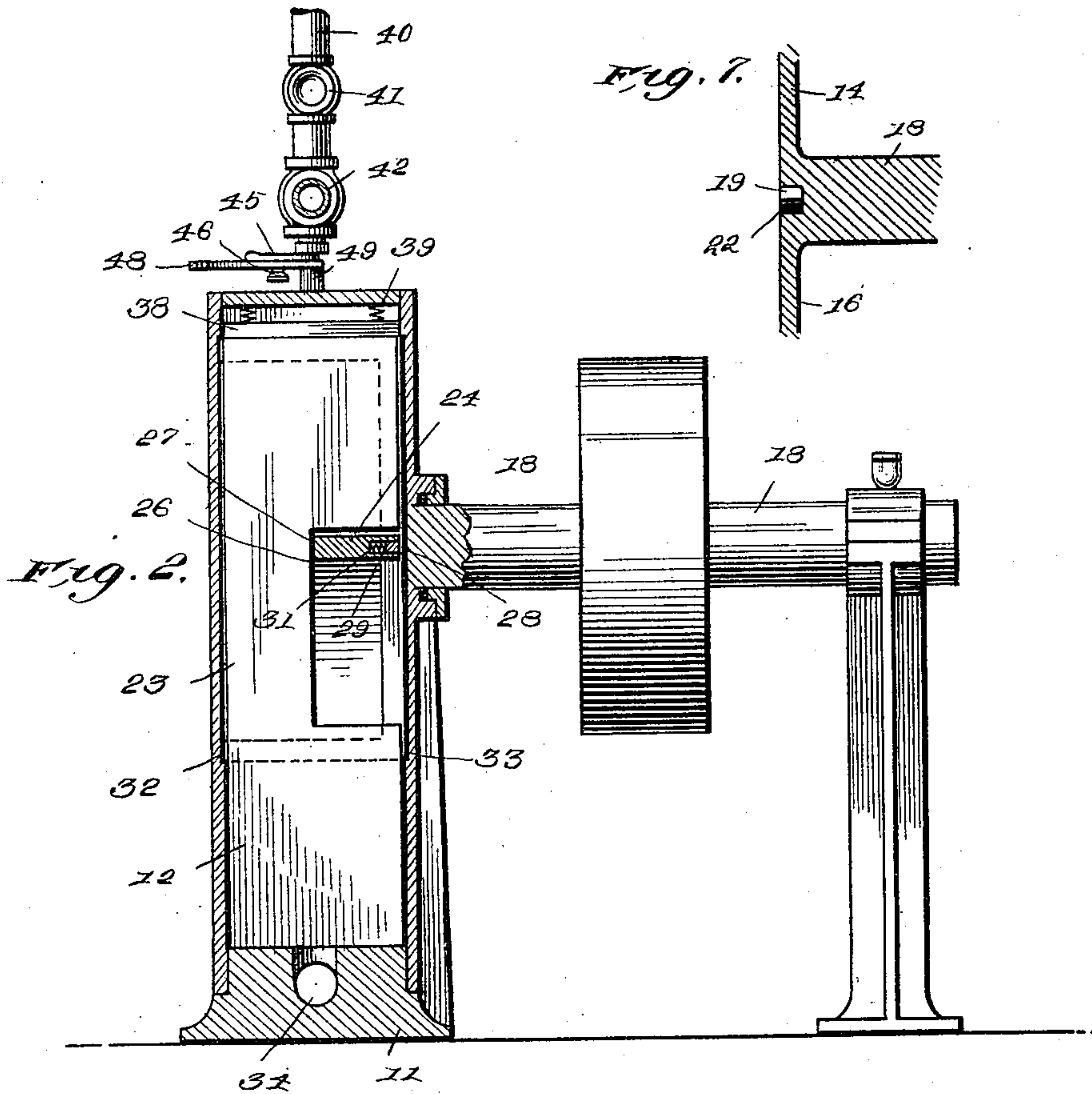
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2 Sheets—Sheet 2.



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UNITED STATES PATENT OFFICE.

JAMES P. BAXTER, OF MILLSAP, TEXAS, ASSIGNOR OF ONE-HALF TO HARVEY
H. DICK, OF SAME PLACE.

ROTARY ENGINE.

SPECIFICATION forming part of Letters Patent No. 659,782, dated October 16, 1900.

Application filed October 28, 1899. Serial No. 735,057. (No model.)

To all whom it may concern:

Be it known that I, JAMES P. BAXTER, a citizen of the United States, residing at Millsap, in the county of Parker and State of Texas, have invented a new and useful Rotary Engine, of which the following is a specification.

This invention relates to rotary engines or motors to be driven by steam, gas, or fluid-pressure of any suitable kind, the object of the invention being to generally improve and simplify the construction and operation of engines of this class.

With this object in view the invention consists in improvements in the details of construction and combination and arrangement of parts, as will be fully described hereinafter and afterward specifically pointed out in the appended claims.

In order that others skilled in the art to which my invention most nearly appertains may be enabled to make and use the same, I will now proceed to describe its construction and operation, reference being had to the accompanying drawings, forming part hereof, in which—

Figure 1 is a view in end elevation of an engine constructed in accordance with my invention, the cylinder-head being removed to expose the interior construction. Fig. 2 is a vertical sectional view on the planes indicated by the broken lines 2-2 of Fig. 1 looking in the direction of the arrows. Fig. 3 is a detail perspective view of the rotary piston and shaft as constructed when the shaft projects from the piston on one side only. Fig. 4 is a view in elevation of one of the blades detached. Fig. 5 is a sectional view of the other blade. Fig. 6 is a partial end elevation of the rotary piston, the outer portions being broken away. Fig. 7 is a detail sectional view of the same on the plane indicated by the broken lines 7-7 of Fig. 6. Fig. 8 is a detail perspective view of the rotary piston and shafts when constructed with the shafts projecting on both sides of the piston. Fig. 9 is a detail sectional view on a plane cutting radially into the rotary piston. Fig. 10 is a top plan view of the reversing-valve lever and its guide-bar.

Like numerals of reference mark the same

parts wherever they appear in the several figures of the drawings.

Referring to the drawings by numerals, 11 indicates the base upon which the cylinder 12 is formed and supported, said cylinder being slightly elliptical, with the shortest diameter vertical and its longest horizontal.

13 indicates the rotary piston, which is formed in four sector-shaped sections 14, 15, 16, and 17, secured to a shaft 18 at proper distances apart to leave slideways 19, 20, 21, and 22 to receive piston-blades 23 and 24, said slideways extending diametrically through the piston at right angles to each other. When the piston-head has its shaft (which is journaled in the cylinder-heads) projecting on one side only, said piston is constructed, as best shown in Fig. 3, of a single set of such sections 14, 15, 16, and 17; but when the shaft is to project in both directions the piston is formed of two sets of such sector-shaped sections, the second set facing the first, as shown best in Fig. 8, the open ends facing each other, and the opposite sections secured together, as seen in Figs. 8 and 9, by countersunk bolts or rivets 25. The blades 23 and 24 cross each other, and to permit of this and of their sliding one upon the other they are oppositely recessed at 26 and 27.

The piston and shaft are eccentrically journaled in the cylinder in the line of the vertical or shortest diameter of the cylinder and above its mid-length and the blades 23 and 24, which are of the length of the vertical diameter of the cylinder and are provided with packing-strips 28 in grooves 29, the strips being held normally in steam-tight contact with the inner periphery of the cylinder by springs 30 and in similar contact with the cylinder-heads by springs 31. The piston ends are seated in recesses formed in the cylinder-heads, as shown at 32 and 33 in Fig. 2.

34 indicates the exhaust-port at the bottom of the cylinder, from which a channel leads outward through the base. There are two steam-inlet ports 36 37, one to the left and the other to the right of the center of the top of the cylinder. A steam-tight joint is made between the cylinder and the upper face of the piston by means of a packing-strip 38, located in a groove in the cylinder-

shell and normally held outward in said groove by springs 39.

40 indicates the steam-pipe, provided with a throttle-valve 41 and leading to a three-way valve 42 at the junction with branch pipes 43 and 44, leading, respectively, to the inlet-ports 36 and 37. The valve 42 is provided with an operating-lever 45, which may be held at any adjustment by a clamp-screw 46, passing through a curved slot 47 in a curved bar 48, secured by standards 49 to the top of the cylinder. By turning the valve 42 steam may be admitted to either of the inlet-ports, according to the direction the engine is to be driven. The steam enters either of the spaces 50 or 51 in the cylinder above the blade, which may be in advance of the ports and forces that blade around until its forward end reaches the exhaust-port, when the steam will be exhausted. Before this takes place the other blade has passed the inlet-port and is being forced around. As the blades rotate they slide in the rotary piston, both ends of the blades always contacting with the cylinder on account of the elliptic shape. The steam-receiving chambers are continually expanding in size until the exhaust takes place, thus offering the least possible resistance to the movement of the blades.

The engine is non-reacting, reversible, and smooth-running.

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

1. In a rotary engine, the combination, with

a cylinder, the head of which is perforated above the center and recessed upon its inner face, concentrically to said perforation, of a shaft projecting through said perforation and provided upon its inner end with a series of sector-shaped sections forming a substantially cup-shaped piston, the sections being at a distance apart and the inner end of the shaft being provided with intersecting grooves to register with the spaces between the sections, reciprocating blades between the sections and in said grooves, and inlet and exhaust ports in the cylinder.

2. In a rotary engine, the combination, with a cylinder, each head of which is perforated above the center and is recessed upon its inner face concentrically with said perforation, a shaft projecting through each perforation, and provided upon its inner end with a series of sector-shaped sections forming a substantially cup-shaped piston, the sections being at a distance from each other and the inner end of the shaft being provided with intersecting grooves to register with the spaces between the sections, and the sections upon the two shafts being located opposite to each other, bolts through the opposite sections, reciprocating blades in the spaces between the sections, and inlet and exhaust ports in the cylinder.

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