

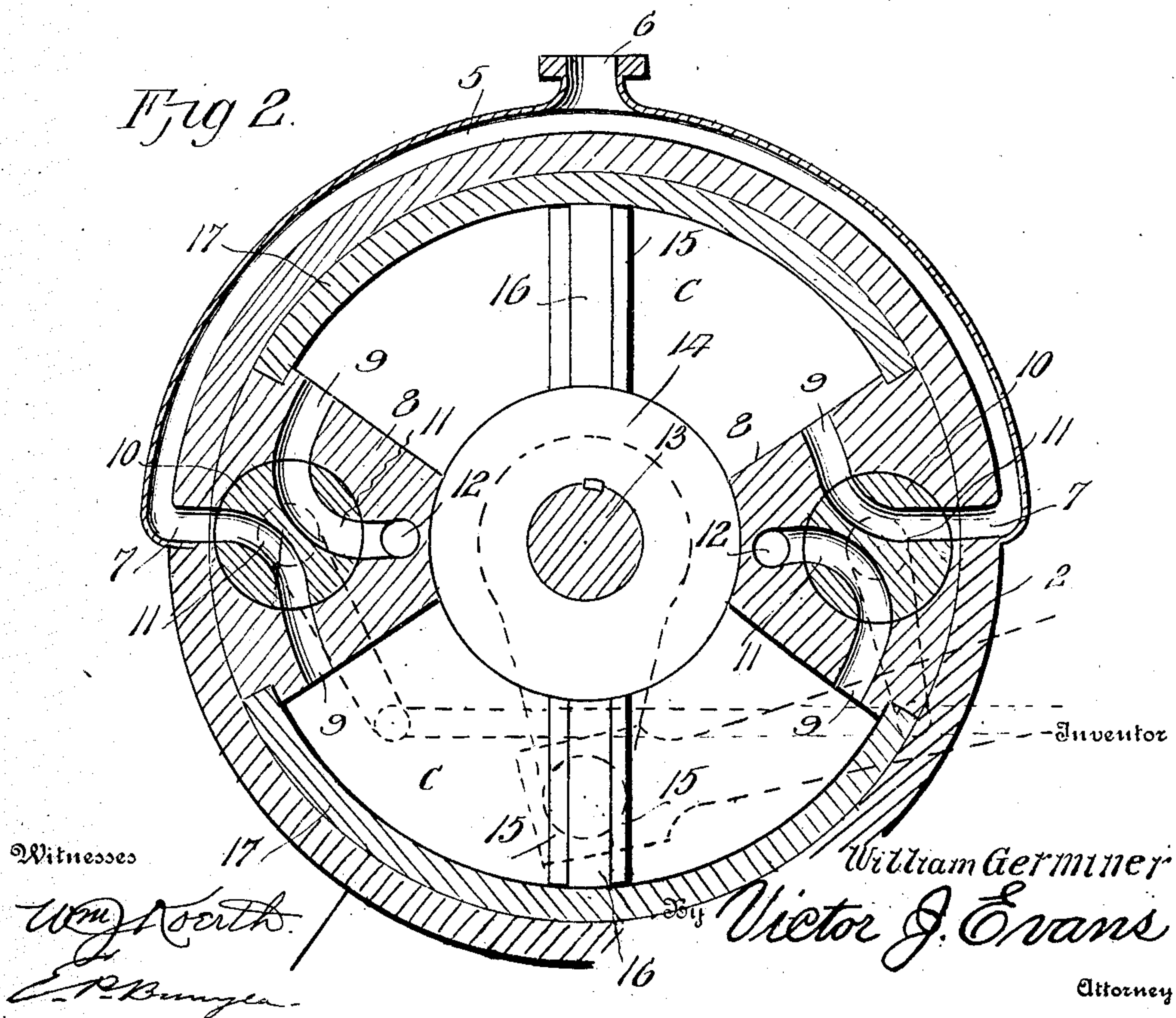
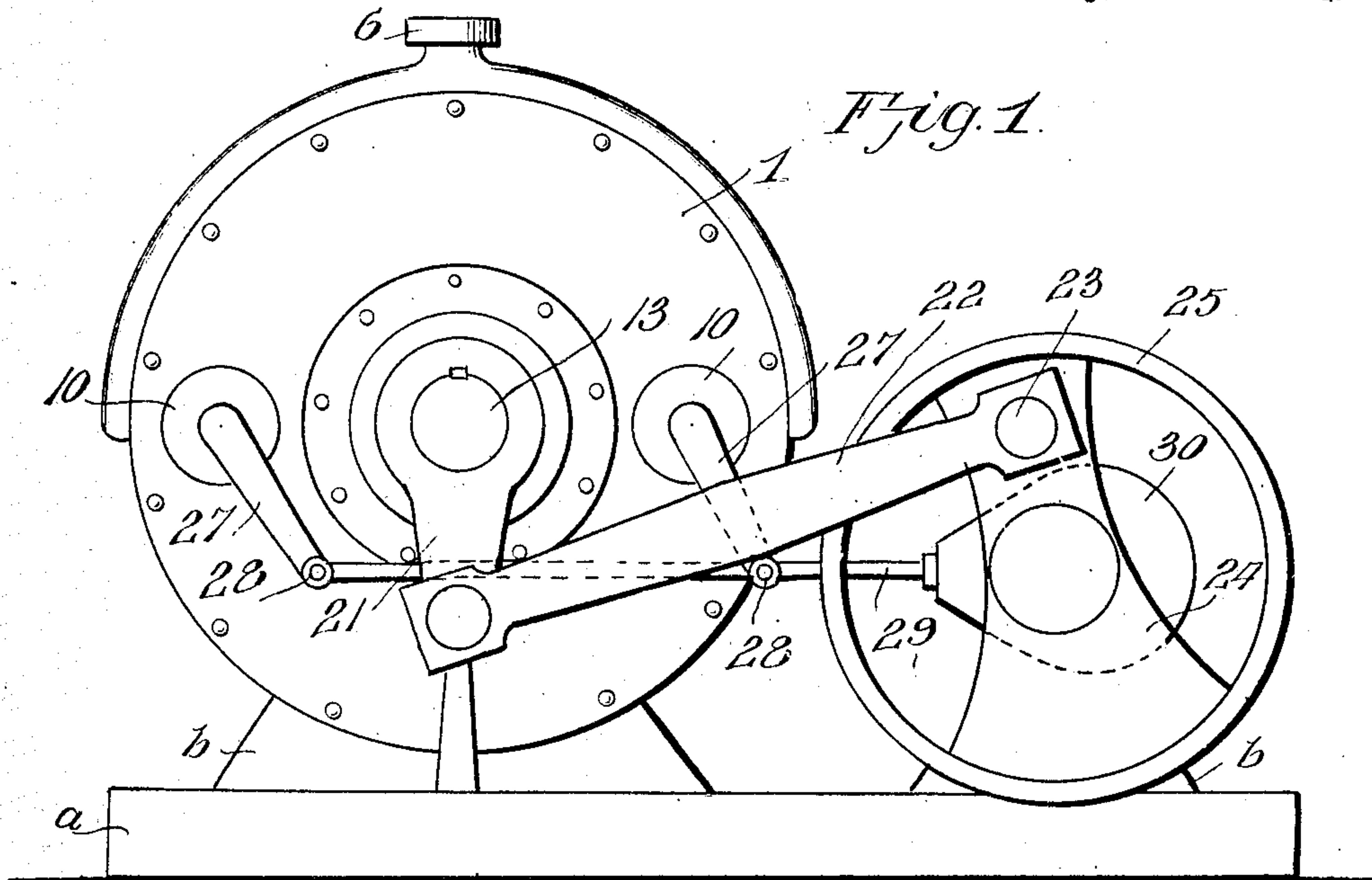
No. 860,461.

PATENTED JULY 16, 1907.

W. GERMINER.
ENGINE.

APPLICATION FILED JAN. 3, 1907.

2 SHEETS—SHEET 1.



Witnesses

Wm. North
E. P. Brunsen

William Germiner

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Attorney

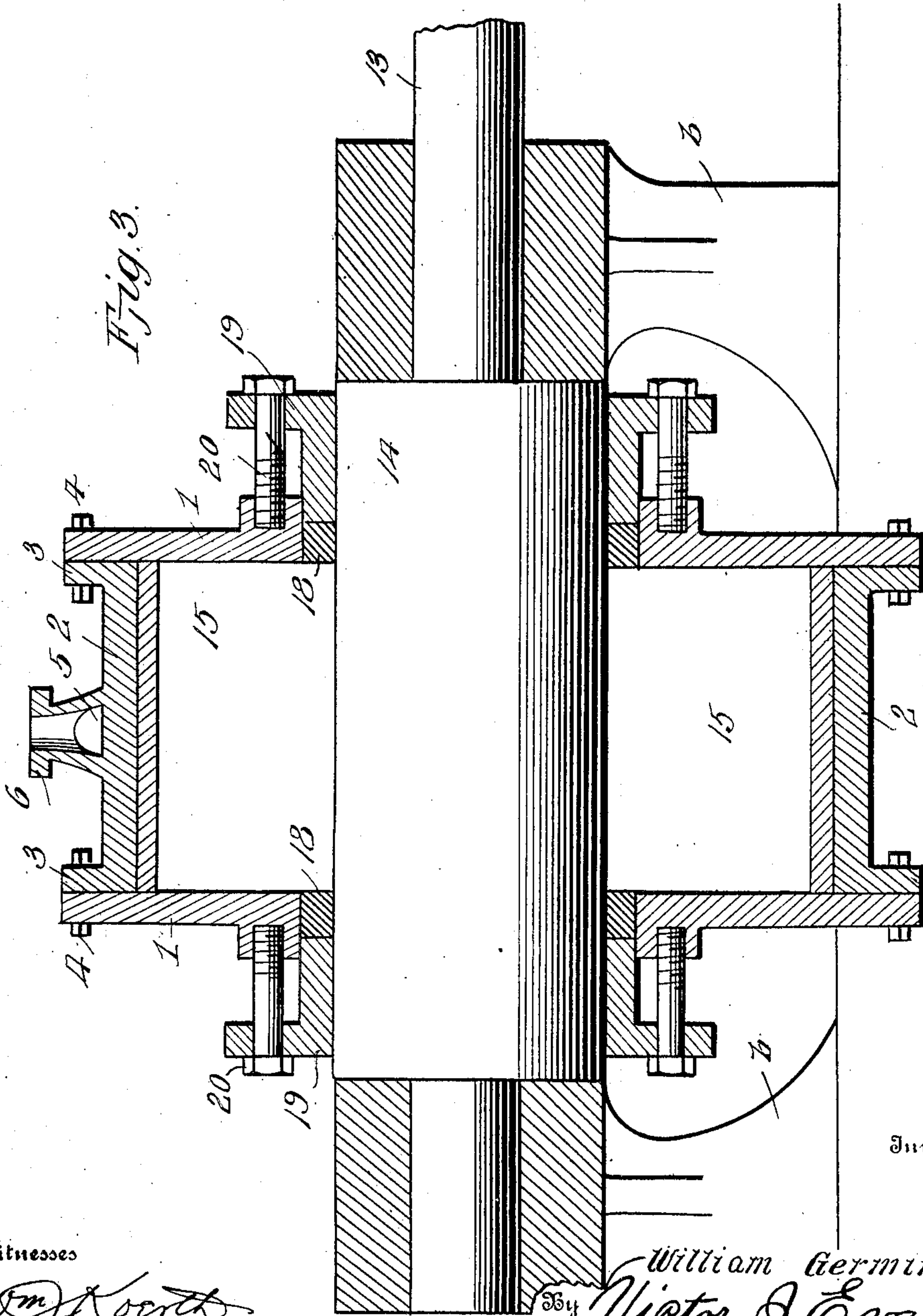
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Witnesses

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UNITED STATES PATENT OFFICE.

WILLIAM GERMINER, OF PUEBLO, COLORADO, ASSIGNOR OF FORTY-NINE ONE-HUNDREDTHS
TO JOHN B. SINCLAIR, OF PUEBLO, COLORADO.

ENGINE.

No. 860,461.

Specification of Letters Patent.

Patented July 16, 1907.

Application filed January 3, 1907. Serial No. 350,557.

To all whom it may concern:

Be it known that I, WILLIAM GERMINER, a citizen of the United States of America, residing at Pueblo, in the county of Pueblo and State of Colorado, have invented new and useful Improvements in Engines, of which the following is a specification.

This invention relates to engines of the oscillating piston type, and one of the principal objects of the same is to provide an engine of this character with means for opening and closing the inlet and exhaust valves automatically.

Another object of the invention is to simplify the construction and render more efficient engines of this type.

These and other objects may be attained by means of the construction illustrated in the accompanying drawings, in which:

Figure 1 is a side elevation of an engine made in accordance with my invention. Fig. 2 is a vertical longitudinal section of the cylinder and the inclosed parts. Fig. 3 is a vertical transverse section of the cylinder.

Referring to the drawing for a more particular description of my invention, the numeral 1 designates the cylinder heads and 2 is the peripheral ring provided with outwardly extending edge flanges 3 secured by bolts 4 to the cylinder heads 1. Formed centrally within the ring 2 is a steam inlet passage 5 which extends around the ring at the upper half thereof, and terminates at the center in a steam inlet nozzle 6. The ring 2 is provided at opposite points with inlet ports 7 at the terminal opposite ends of the passage 5. Within the cylinder is a pair of abutments 8 provided with oppositely disposed ports 9. Mounted to oscillate in the abutment 8 are the valves 10, said valves each having two curved passages 11, said passages adapted to be brought into communication alternately with the passages 9 in the abutments. An exhaust port 12 is provided in each abutment. A central shaft 13 extending through the cylinder is provided with a central enlargement 14 within the cylinder, and connected to said enlargement are the oppositely disposed oscillatory pistons comprising two spaced wings 15, and an intermediate packing 16. The abutments 8 are cast upon one of the cylinder heads 1, and two oppositely disposed curved plates 17 which form the inner wall of the cylinder are held in position by being seated at their ends within said abutments, as shown more particularly in Fig. 2. The cylinder 1 is provided with packing rings 18 and adjustable glands 19 provided with

flanges through which the adjusting bolts 20 pass, said bolts being seated in sockets in the cylinder head 1, as shown more particularly in Fig. 3. Connected to the shaft 13 outside the cylinder is a crank arm 21, and connected to said crank arm is a connecting rod 22, the opposite end of said connecting rod being pivoted to a wrist pin 23 formed upon or connected to the web 24 of wheel or pulley 25 journaled on a shaft 26. The valves 10 are operated by means of crank arms 27, said arms being pivotally connected at 28 to a connecting rod 29 carrying an eccentric 30 mounted upon the shaft 26. The engine rests upon a base *a* provided with standards *b* for supporting the cylinder and the driven shaft.

The operation of my invention may be briefly described as follows: Steam, compressed air, or other motive element, entering the inlet nozzle 6 is forced through the passage 5 and through the ports 7, through the valves 10 and into the chambers *c* forcing the pistons 15, 16 in the direction of the arrow, Fig. 2, until said pistons have approached the faces of the abutments 8 by which time the valves 10 have been turned to operate upon the opposite sides of the pistons and drive them back to the first position, the valves being operated automatically by means of the connecting rod 29 and the eccentric 30. The crank arm 21 oscillates with the piston and the connecting rod 22 rotates the wheel 25 and the shaft 26 which may be provided with a belt pulley leading to the driven element.

From the foregoing it will be obvious that my invention is of comparatively simple construction, will operate smoothly and uniformly without the expenditure of a great amount of steam or other motive element, is not liable to get out of order, and occupies comparatively small space.

Having thus described the invention, what I claim is:

In an engine, a cylinder, a shaft passing through said cylinder, a pair of oscillatory pistons secured to said shaft, oppositely disposed abutments in said cylinder, curved plates seated at their ends in said abutments, said abutments being provided with oppositely extended steam passages, a steam passage-way leading to said abutments, valves mounted to oscillate in said abutments, means to automatically operate said valves, a crank shaft, a connecting rod, and a wheel or pulley adapted to be rotated by said connecting rod, substantially as described.

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

WILLIAM GERMINER.

Witnesses:

ALLEN J. BEAUMONT,
RAYMOND A. HARBAUGH.