

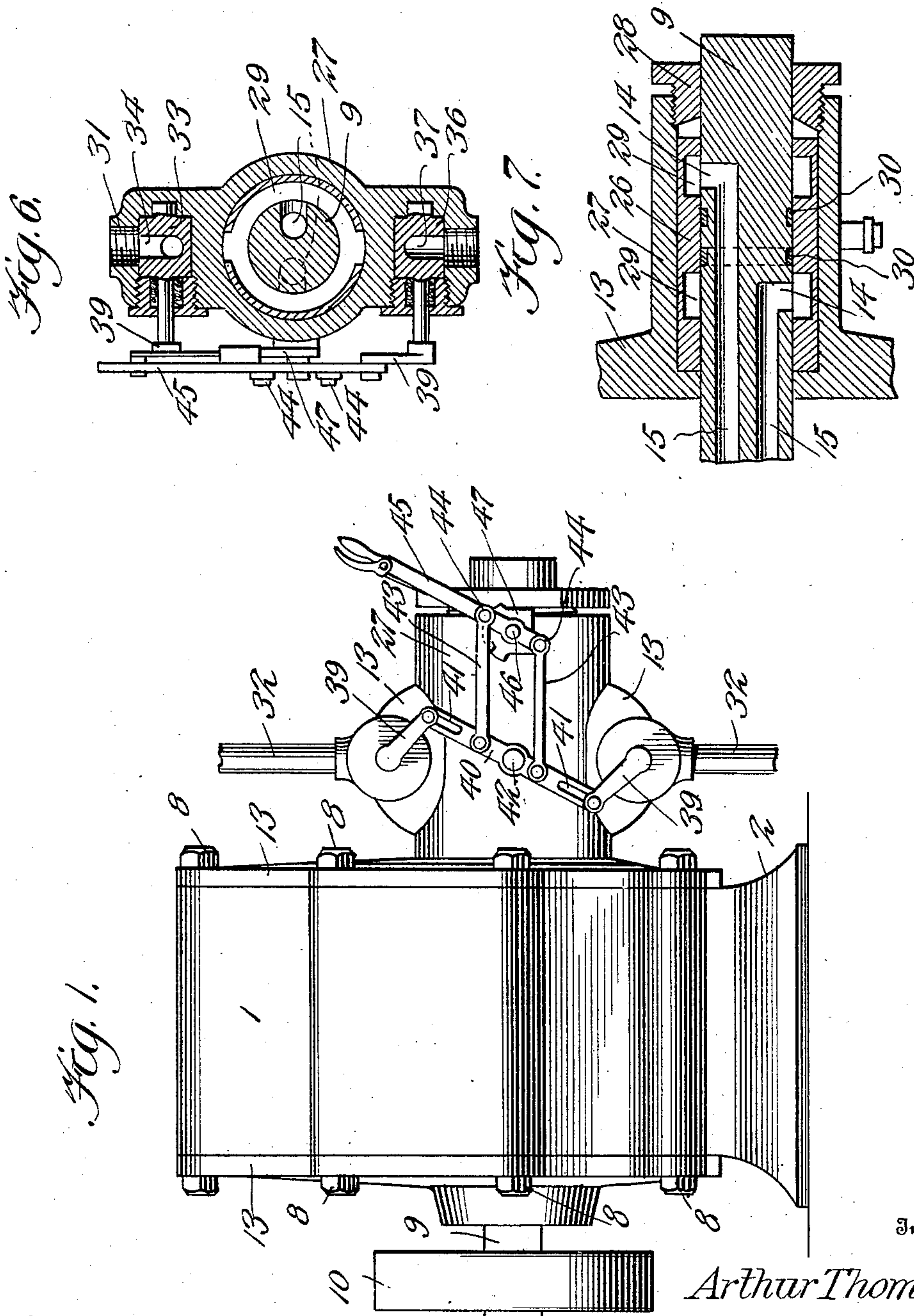
No. 868,374.

PATENTED OCT. 15, 1907.

A. THOMURE.  
ROTARY ENGINE.

APPLICATION FILED JUNE 14, 1907.

3 SHEETS—SHEET 1.



Witnesses  
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3 SHEETS—SHEET 2.

Fig. 5.

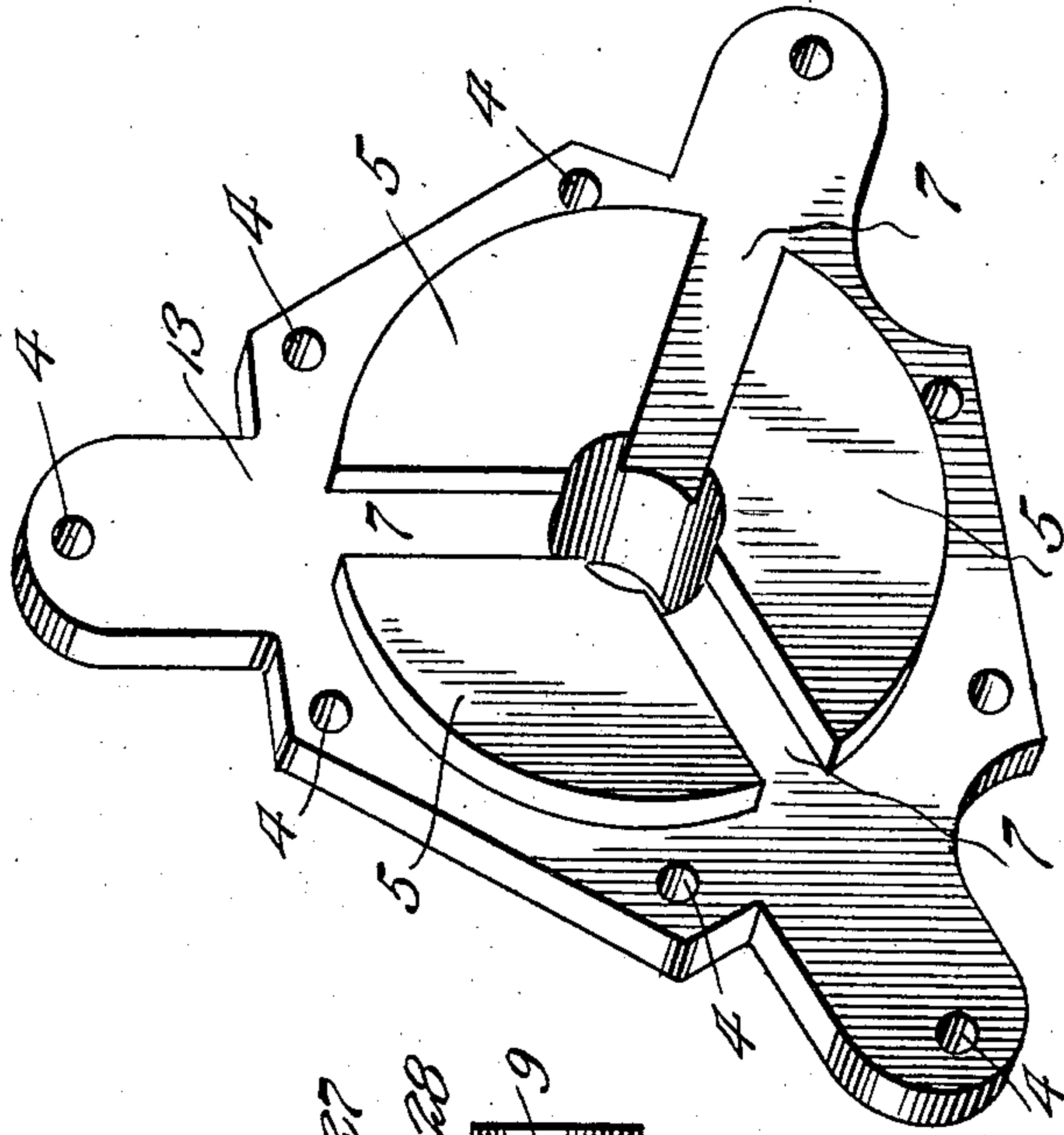
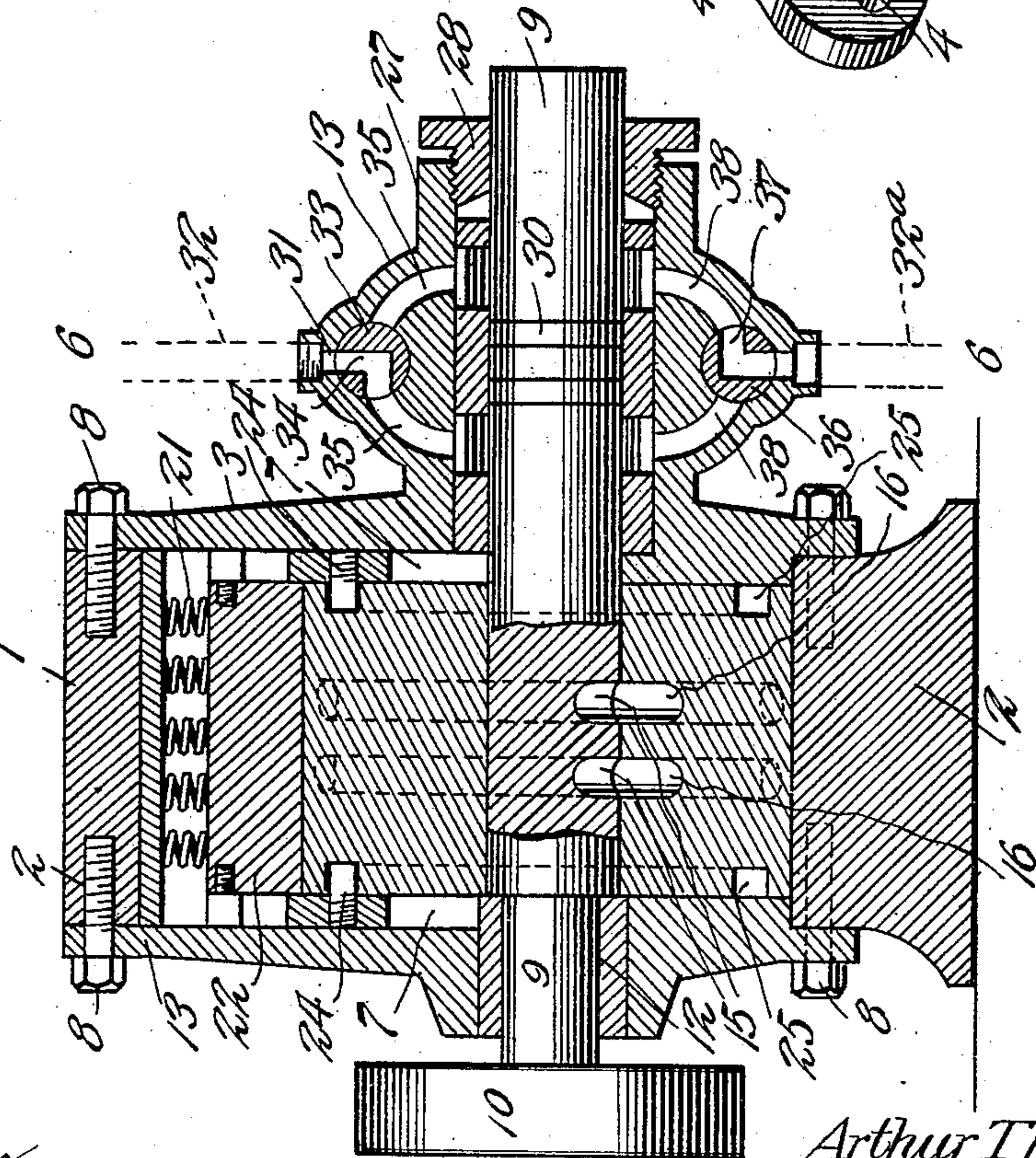


Fig. 2.



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3 SHEETS—SHEET 3.

Fig. 4.

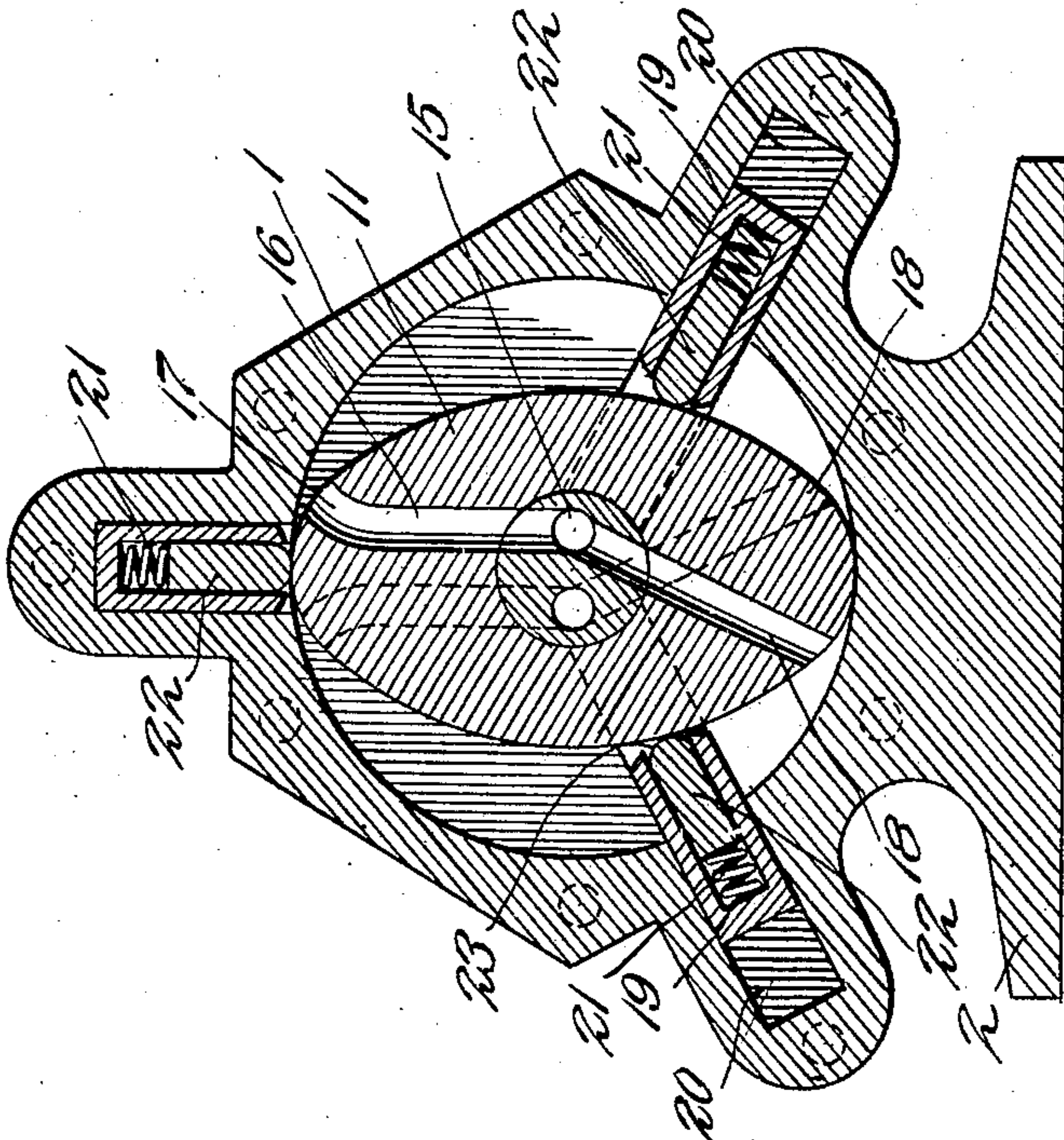
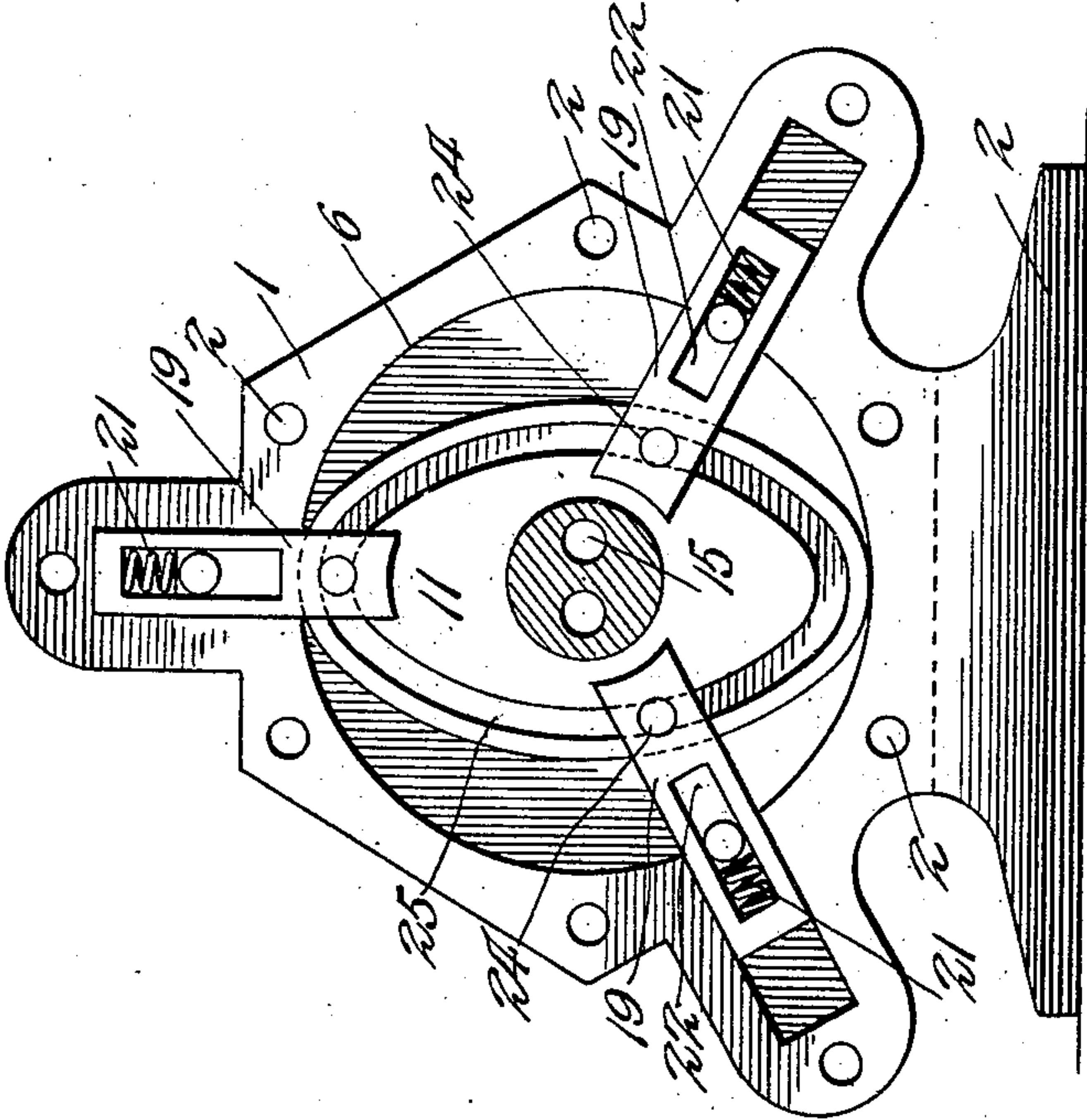


Fig. 3.



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# UNITED STATES PATENT OFFICE.

ARTHUR THOMURE, OF GRANITE CITY, ILLINOIS.

## ROTARY ENGINE.

No. 868,374.

Specification of Letters Patent.

Patented Oct. 15, 1907.

Application filed June 14, 1907. Serial No. 378,982.

*To all whom it may concern:*

Be it known that I, ARTHUR THOMURE, a citizen of the United States of America, residing at Granite City, in the county of Madison and State of Illinois, have invented new and useful Improvements in Rotary Engines, of which the following is a specification.

This invention relates to rotary engines, and one of the principal objects of the same is to provide a rotary engine of simple construction which will operate smoothly and which can be quickly reversed.

Another object of the invention is to simplify the construction and to increase the efficiency of engines of this character.

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 a rotary engine made in accordance with my invention. Fig. 2 is a vertical section on the line of the main shaft, a portion of the latter being broken away to show the inlet openings therein. Fig. 3 is an end elevation looking into the casing with one of the heads of said cylinder or casing removed, and showing the shaft in section. Fig. 4 is a central vertical section of the engine. Fig. 5 is a perspective view of one of the cylinder heads. Fig. 6 is a detail sectional view on the line 6—6, of Fig. 2. Fig. 7 is a detail sectional view of the main shaft at a point near its outer end, and showing the inlet openings for the steam or other motive elements.

Referring to the drawing for a more particular description of my invention, the numeral 1 designates the cylinder or casing provided with a base flange 2 forming a support for the cylinder, and said casing having a series of bolt openings 2. The cylinder heads 3 are provided with bolt openings 4, said heads having segmental projections 5 which fit within the inner wall 6 of the cylinder and radially disposed recesses 7 separate the segmental enlargements 5. The cylinder heads are secured to the cylinder by means of bolts 8 passing through the cylinder heads and into the casing 1, as shown more particularly in Fig. 2.

A shaft 9 passes through the cylinder heads and is provided upon one end with a belt pulley 10. Secured to the shaft 9 is a rotary piston 11, said piston being of ovoid form in plan, and the ends of the major axis of said piston bearing upon the inner wall 6 of the cylinder. The shaft 9 passes through packing rings 12 fitted in the cylinder heads and one end of shaft 9 extends through a valve casing 13 formed upon one of the heads 3.

The shaft 9 is provided with steam inlet openings 14, and steam passages 15 extend through the shaft and communicate with openings or ports 16 in the piston 11. Said ports 16 extend through the piston 11 in line with

the major axis thereof, said ports having curved outer ends 17, as shown more particularly in Fig. 4, said ends being curved to form ports upon opposite sides of the abutments to be hereinafter described. Communicating with the steam passages 15 in the piston 11 are ports 18, and said ports 17 and 18 serve as inlet or exhaust ports, depending upon the direction in which the engine is running.

Sliding abutments 19 are mounted in recesses 20 in the casing 1, the opposite edges of said abutments being disposed in the recesses 7 in the heads 3. The abutments 19 are recessed and provided with a series of spiral springs 21 which bear at one end within the abutment and at the opposite end against a sliding block 22 having its inner edge rounded, as at 23 to bear against the periphery of the piston 11 and form a steam tight joint between the piston and said sliding block. The inner ends of the abutments 19 at the opposite sides thereof, are provided with arms each having a threaded pin 24 connected thereto, said pins engaging a groove 25 in the opposite ends of the piston 11, as shown more particularly in Fig. 3. The valve casing 13 is provided with a sleeve 26 fitted in the tubular end 27 of the casing, and a stuffing box 28 is connected to the outer end of the tubular end 27, and the shaft 9 extends through said stuffing box. The sleeve 26 is provided with two annular interior recesses 29 which communicate with the two inlet openings 14 in the shaft 9, and between said recesses 29 packing rings 30 surround the shaft 9.

A valve casing 13 is provided with a steam inlet opening 31 to which a steam inlet pipe 32 is fitted, and a rotary valve 33 provided with an angular passage 34 is seated in the valve casing, said valve 33 being mounted to rotate to bring the passage 34 into communication with either of the branch passages 35 which communicate with the recesses 29 in the sleeve 26. Upon the lower side of the valve casing is an exhaust valve 36 which is identical in construction with the valve 33, and is provided with an angular passage 37 which communicates through the passages 38 with the recesses 29 in the sleeve 26. The valves 33 and 36 are each provided with a crank 39 and connected to the crank 39 is a pivoted bar 40 provided with slots 41 for the wrist pins on the ends of the crank 39, said bar 40 being pivoted at 42 to the side of the sleeve 27. Connecting bars 43 are connected to the pivoted bar 40 upon opposite sides of the pivotal point 42 and said connecting bars are pivotally connected at 44 to a lever 45 pivoted at 46 to a rack 47 provided with two notches so that the lever can be set to shift the valves 33 and 36 to permit the steam to enter through the pipe 32 and exhaust through the pipe 32<sup>a</sup>, or to permit the steam to enter the pipe 32<sup>a</sup> and exhaust through the pipe 32 whenever it is desired to reverse the engine.

The operation of my engine will be readily understood from the foregoing description. The engine is simple in construction, is composed of few parts, will operate smoothly, and can be readily reversed when-  
5 ever required.

Having thus described the invention, what I claim is:

1. In a rotary engine, the combination of a cylinder, an oval piston therein, sliding abutments connected to said piston, springs mounted in said abutments, said springs  
10 bearing against sliding blocks, a shaft having steam passageways, and a valve gearing.

2. In a rotary engine, the combination of a cylinder, an oval piston therein, said piston having an oval groove therein, sliding abutments connected to said piston by  
15 means of a pin connected to said abutments and engaging

said groove, springs mounted in said abutments, sliding blocks against which said springs bear, a shaft provided with steam passage ways, and a valve gearing.

3. In a rotary engine, the combination of a cylinder, an oval piston mounted in said cylinder, said piston having  
20 inlet and exhaust ports, a shaft to which said piston is connected, said shaft having steam passage ways, valves for controlling the admission and exhaust of steam, abutments connected to said piston, springs mounted in said  
25 abutments, and sliding blocks against which said springs bear.

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

ARTHUR THOMURE.

Witnesses:

JOHN H. WEDIG,  
H. C. EARLY.