

No. 750,488.

PATENTED JAN. 26, 1904.

B. H. POMEROY.
VAPOR ENGINE.

APPLICATION FILED JULY 3, 1903.

NO MODEL.

2 SHEETS—SHEET 1.

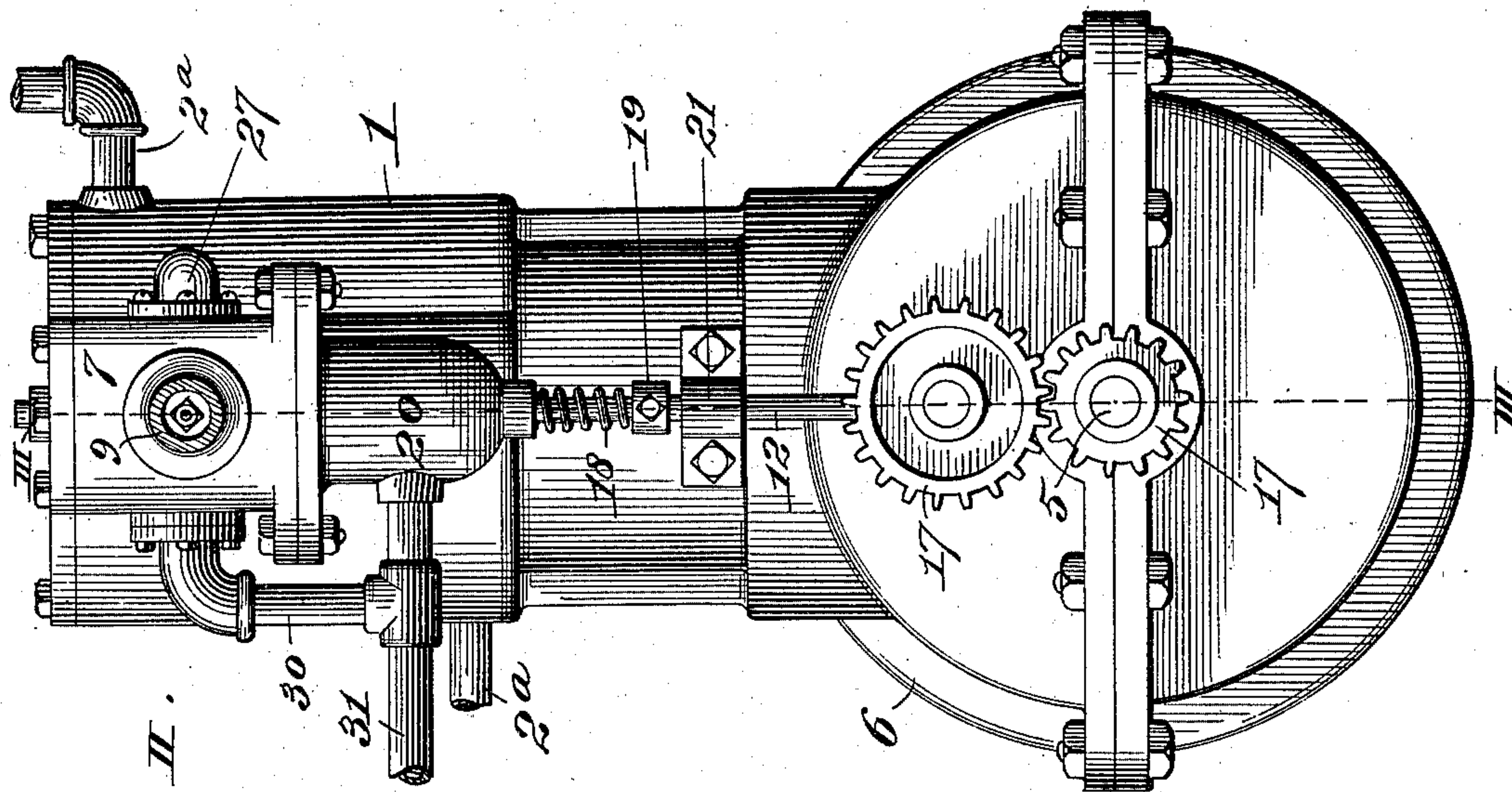


Fig. II.

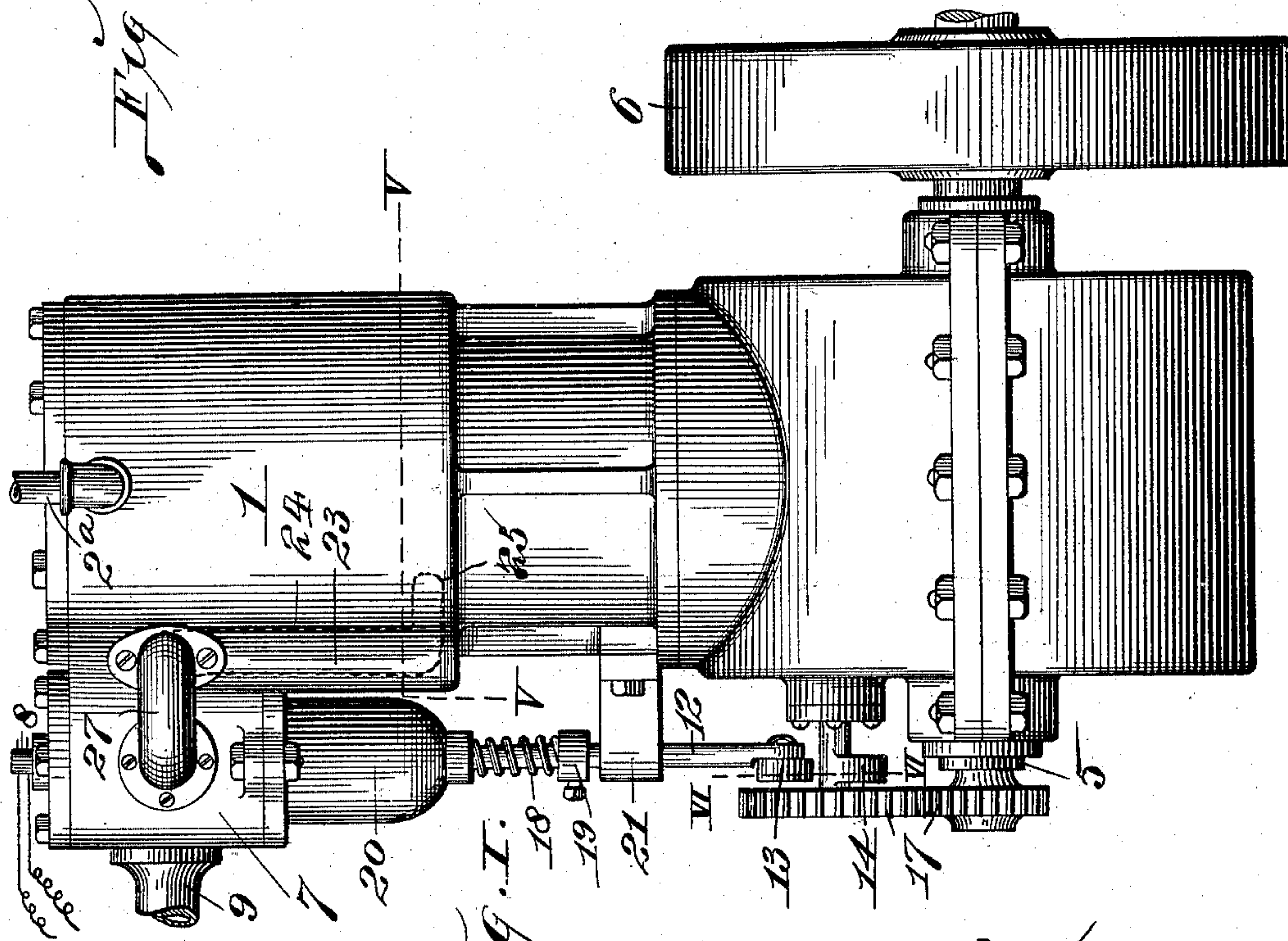


Fig. I.

attest:
W. Smith,
J. S. Knight

Inventor: —
Bernard H. Pomeroy.
By Wright, Port
Atty's.

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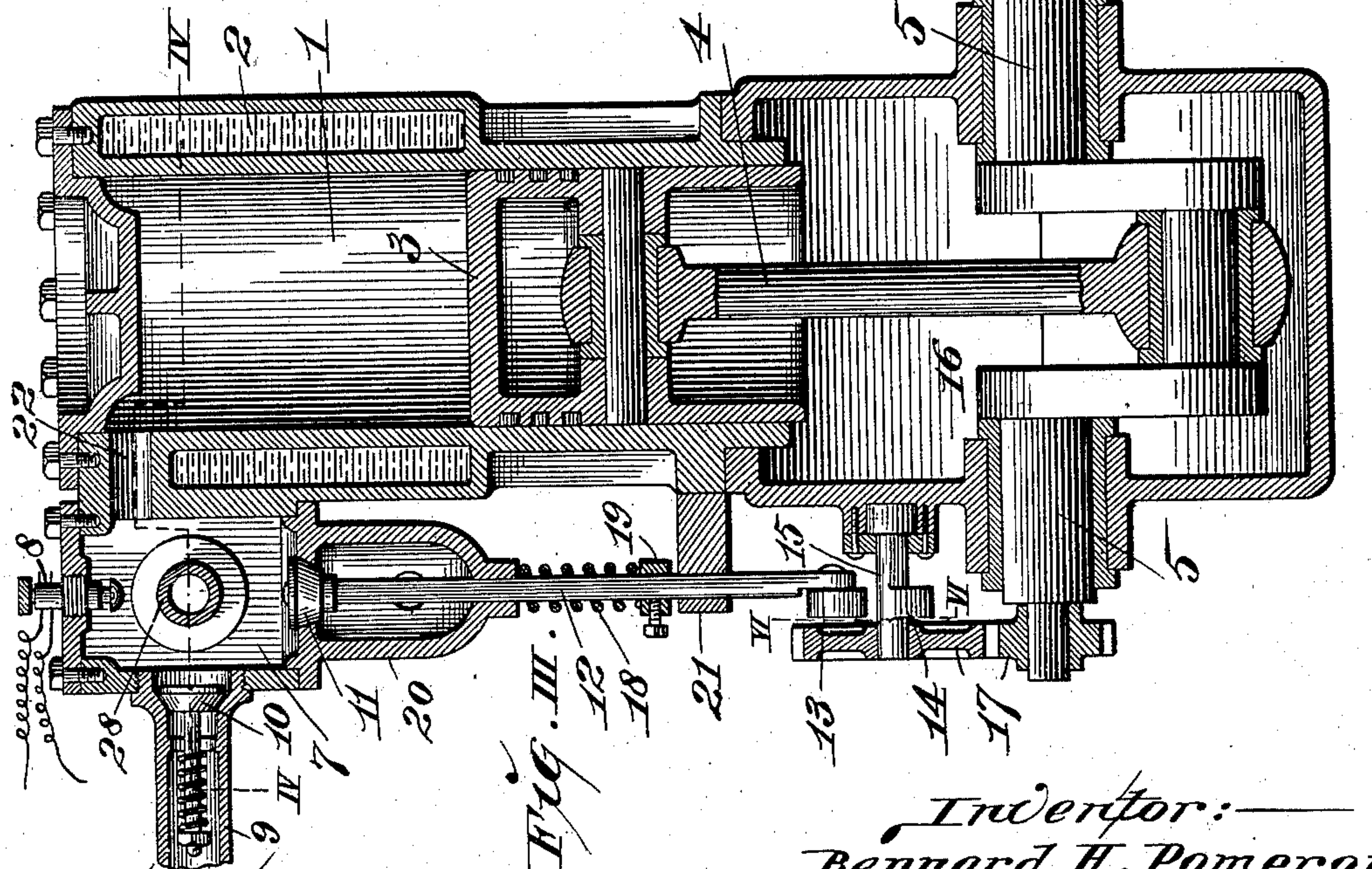
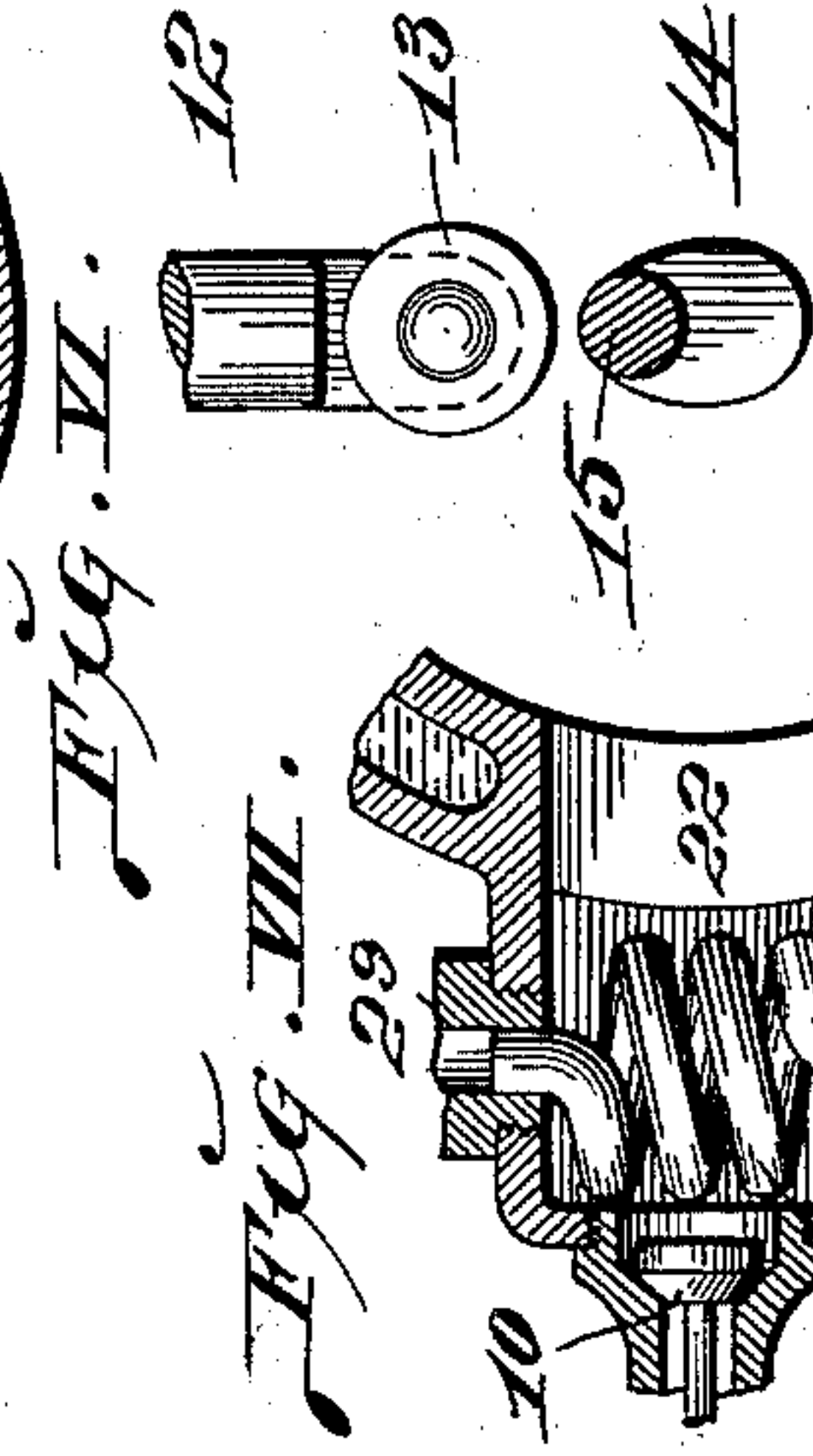
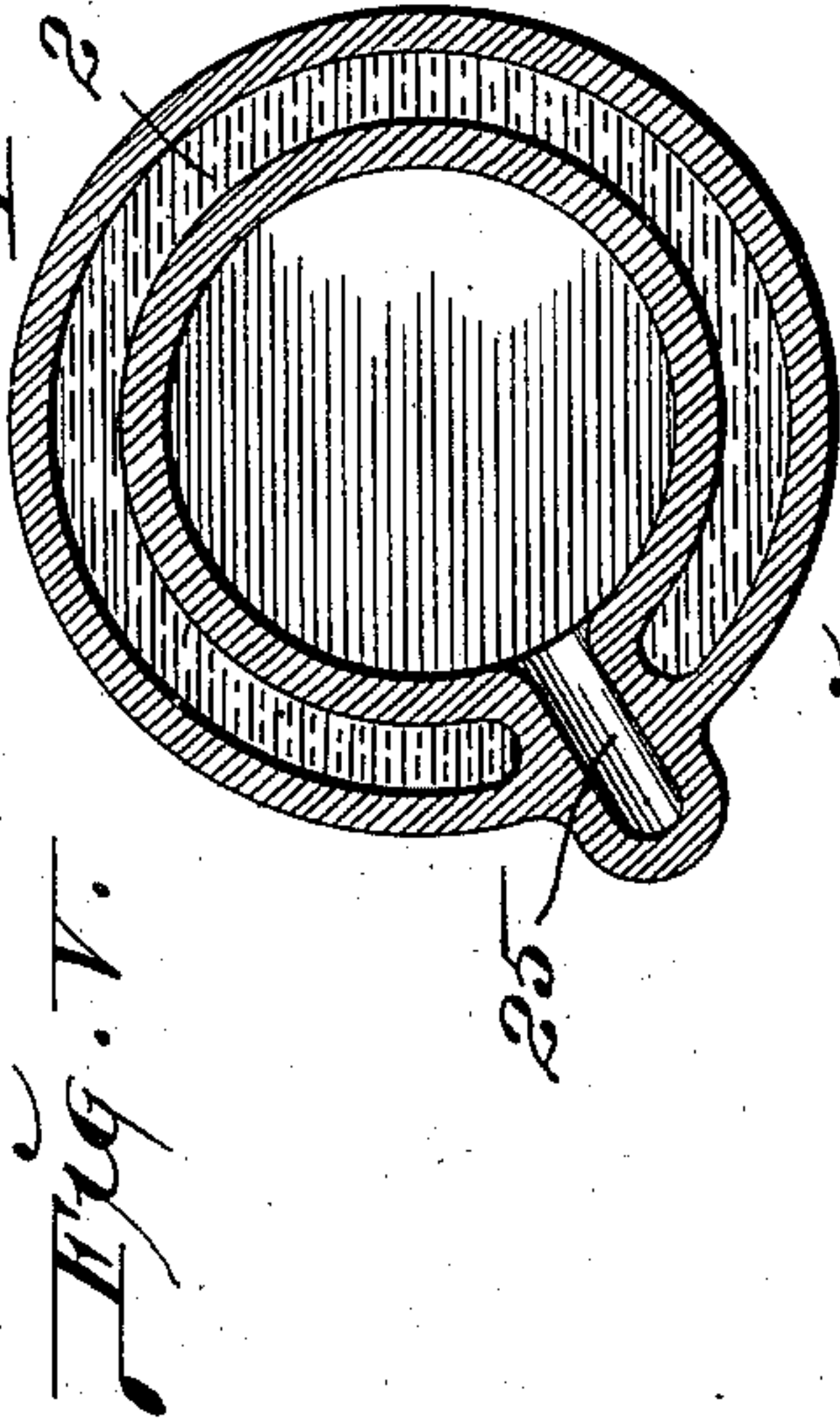
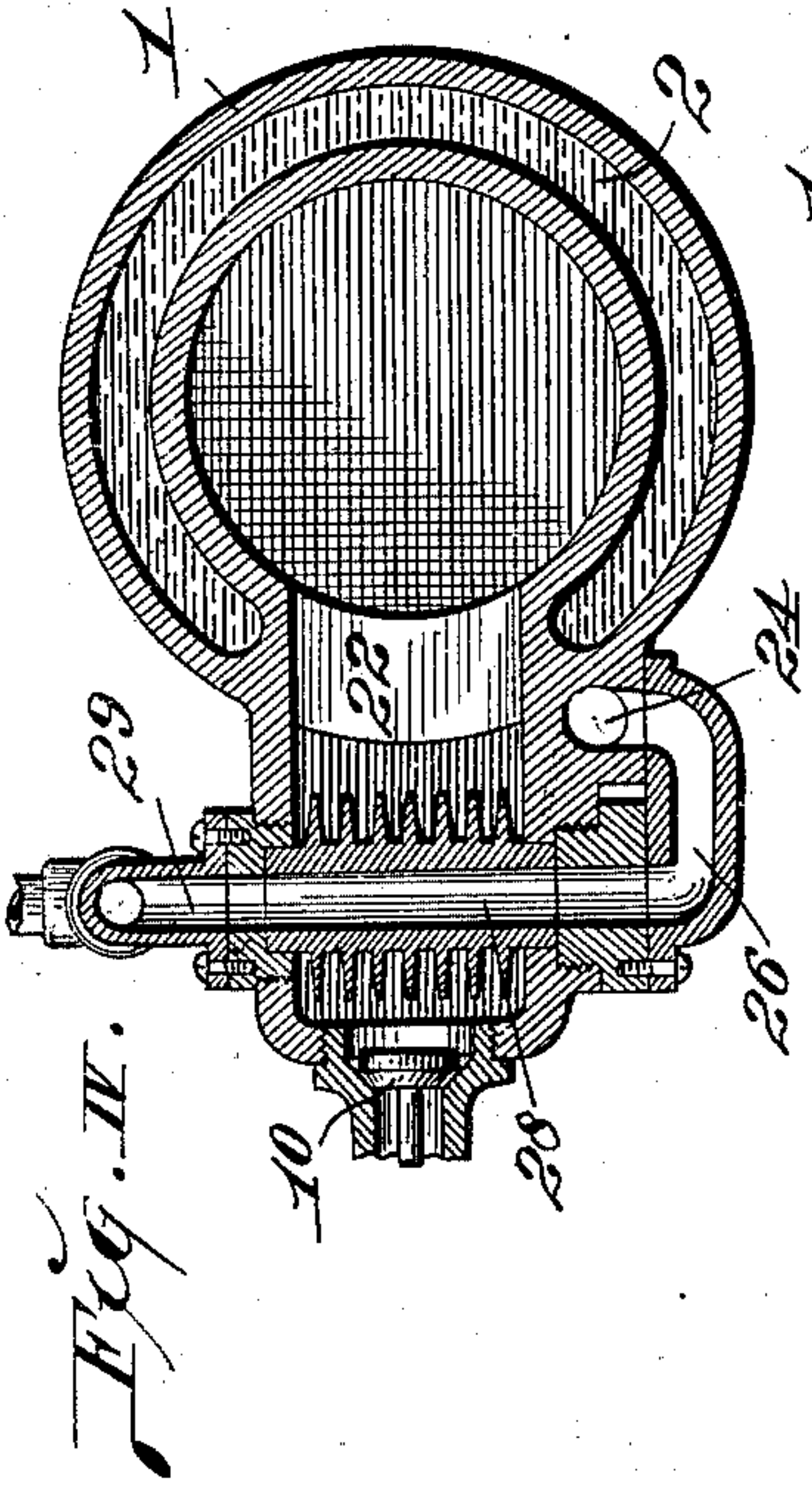
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2 SHEETS—SHEET 2.



Attest:
W. R. Smith,
E. J. Knight

Inventor:
Bennard H. Pomeroy.
By Wright, Bro.
Atty's.

UNITED STATES PATENT OFFICE.

BENNARD H POMEROY, OF ST. LOUIS, MISSOURI, ASSIGNOR TO WILLIAM E. JOHNSTON, OF EAST ST. LOUIS, ILLINOIS.

VAPOR-ENGINE.

SPECIFICATION forming part of Letters Patent No. 750,488, dated January 26, 1904.

Application filed July 3, 1903. Serial No. 164,170. (No model.)

To all whom it may concern:

Be it known that I, BENNARD H. POMEROY, a citizen of the United States, residing in the city of St. Louis, in the State of Missouri, have
 5 invented certain new and useful Improvements in Vapor-Engines, of which the following is a full, clear, and exact description, reference being had to the accompanying drawings, forming part of this specification.

10 My invention relates to an engine designed to use kerosene as a fuel; and the object of my invention is to make an engine of this character of improved efficiency, this being accomplished by the heating of the vapor before it
 15 is ignited just prior to entering the cylinder of the machine.

My invention consists in features of novelty hereinafter fully described, and pointed out in the claims.

20 Figure I is an elevation of my improved engine. Fig. II is a side view. Fig. III is a vertical section taken on line III III, Fig. II. Fig. IV is a transverse section taken on line IV IV, Fig. III. Fig. V is a transverse section taken on line V V, Fig. I. Fig. VI is an
 25 enlarged detail view taken on line VI VI, Fig. I. Fig. VII is a modification of the radiator.

Referring to the drawings, 1 represents a cylinder that is preferably provided with a
 30 water-jacket 2, through which water is circulated by means of pipe connection 2^a. Within the cylinder is located a piston 3. The piston is connected by a rod or pitman 4 to the main crank-shaft 5, which is provided with a driv-
 35 ing-pulley 6. Located on one side of the cylinder 1 is an igniting-chamber 7, provided with an electrical connection 8 for producing sparks within the chamber.

9 is a vapor-supply pipe provided with a
 40 spring-actuated valve 10, the spring acting to close the valve which opens in an inwardly direction.

11 is a valve located in the bottom of the chamber 7 and which opens upwardly. The
 45 lower end of the stem 12 of this valve is provided with a friction-roller 13, adapted to be engaged by a cam 14 on a shaft 15. The shaft 15 is journaled in the base 16 of the engine,

and its outer end is geared to the shaft 5 by means of pinions 17.

18 is a spring that acts to hold the valve 11
 50 to its seat, except when the roller 13 is struck by the cam 14. The spring is located between a collar 19 on the stem 21 and the lower end of a chamber 20, located beneath the chamber 7.
 55 The stem 12 is guided in its movement by passing through the lower end of the chamber 20 and through a perforation formed in a bracket 21, secured to the engine.

22 is a port or passage leading from the
 60 chamber 7 to the interior of the cylinder 1 and through which the ignited gases pass from the chamber 7 into the cylinder above the piston 3. Located on the outside of the cylinder is an enlargement 23, within which is
 65 formed a port or passage 24, (see Fig. IV,) that communicates at its lower end with the interior of the cylinder through a passage or port 25 (see Fig. V) and which communicates
 70 at its upper end with a port or passage 26, formed in an elbow 27. (See Fig. IV.) The passage 26 forms a communication between the passage 24 and a hollow radiator 28, lo-
 75 cated horizontally within the chamber 7. The radiator consists of a tube provided with flanges or rings, as seen in Fig. IV. The radiator communicates with a pipe 30 through a passage 29. The pipe 30 is connected to the exhaust-pipe 31 of the engine, the pipe 31 be-
 80 ing connected to the chamber 20.

The operation is as follows: The suction caused by the downward movement of the piston 3 opens the valve 10 and admits a fresh supply of vapor. On every other downward
 85 stroke of the piston the port 25 is opened, and hot gas passes through the radiator 28, thereby heating the radiator and causing a fresh supply of vapor to be highly heated as it enters the chamber 7 and before it is ignited
 90 by the electric sparks, this heating of the vapor adding materially to its expanding efficiency. As the piston 3 rises it closes the port or passage 25, and during its upward
 95 movement the cam 14 strikes the friction-roller 13 and opens the valve 11, thus allowing the exhaust to take place through the

passage 22, through the open valve 11 into the chamber 20, and out through the pipe 31.

I have discovered that by heating the vapor before it is ignited its expansion qualities are
5 largely augmented or increased, adding very much to the efficiency of the machine, and by constructing an engine in the manner that I have shown and described it effectually performs its functions, and there is little danger
10 of its getting out of order.

While I have described the machine as being in the form of an upright engine, it is apparent that it will work equally well if arranged in a horizontal position.

15 In Fig. VII, I have shown a modification of the radiator which consists of a coiled pipe 40 that forms a communication between the ports or passages 26 and 29.

I claim as my invention—

20 1. In a vapor-engine, the combination of a cylinder and piston, an igniting-chamber, and a radiator located in the igniting-chamber;

said radiator communicating with the lower part of said cylinder whereby when the piston reaches its downward movement hot gas will
25 pass to said radiator for heating the vapor before it is ignited, substantially as set forth.

2. In a vapor-engine, the combination of a cylinder and piston, an igniting-chamber communicating with the interior of the cylinder,
30 a hollow radiator located in the igniting-chamber, a valve for admitting vapor to said chamber and which is adapted to be opened by the suction of said piston, a valve for permitting
35 the exhaust from said chamber, and a cam for moving the last-mentioned valve; said radiator having a communication with the interior of said cylinder which is opened when the piston reaches the lowest part of its movement, substantially as set forth.

BENNARD H. POMEROY.

In presence of—

E. S. KNIGHT,
M. P. SMITH.