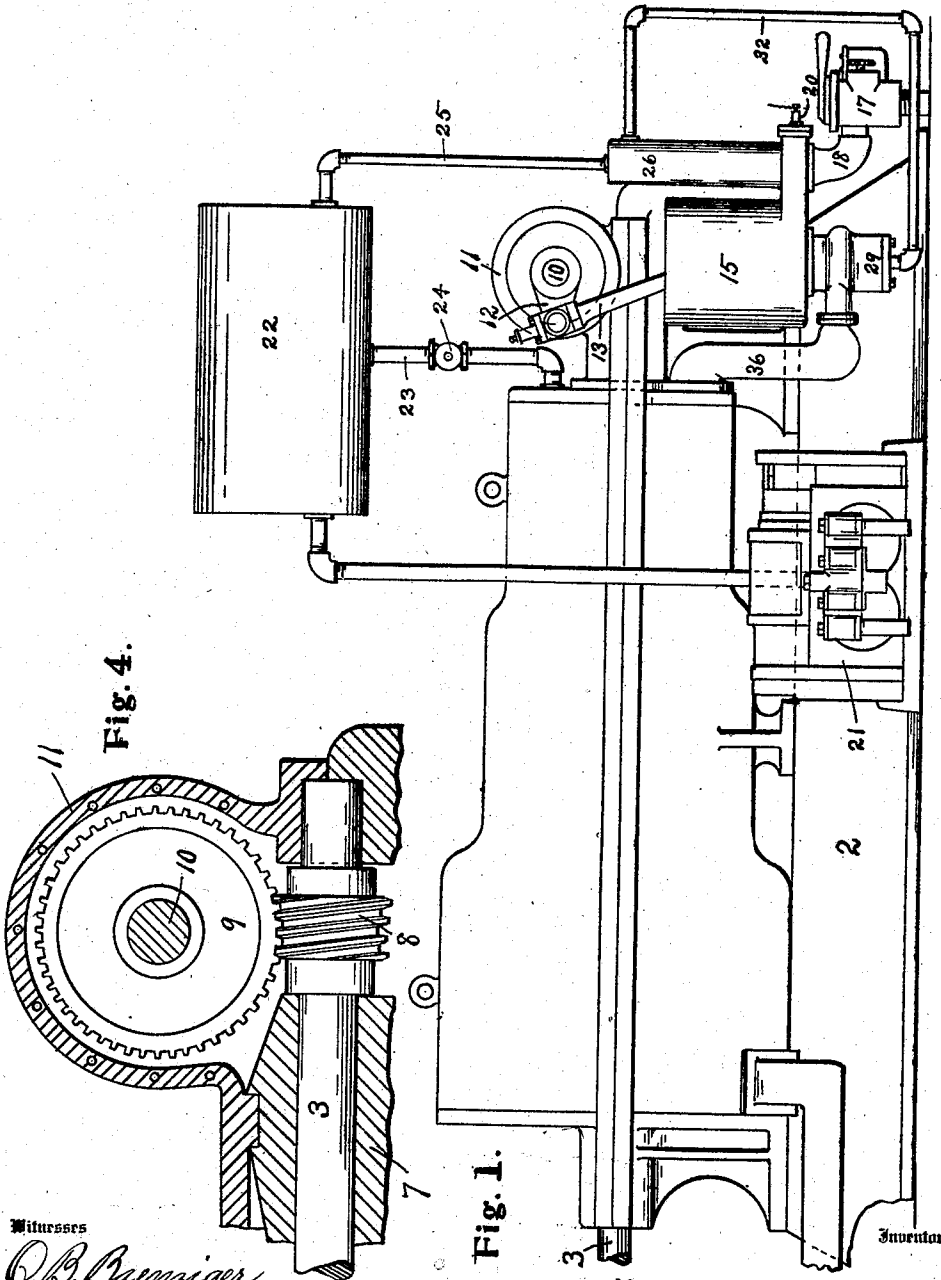


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INTERNAL COMBUSTION TURBINE.
APPLICATION FILED FEB. 15, 1909.

933,353.

Patented Sept. 7, 1909.
2 SHEETS—SHEET 1.



Witnesses
O. B. Baumziger.
E. M. Brown.

Fig. 1.

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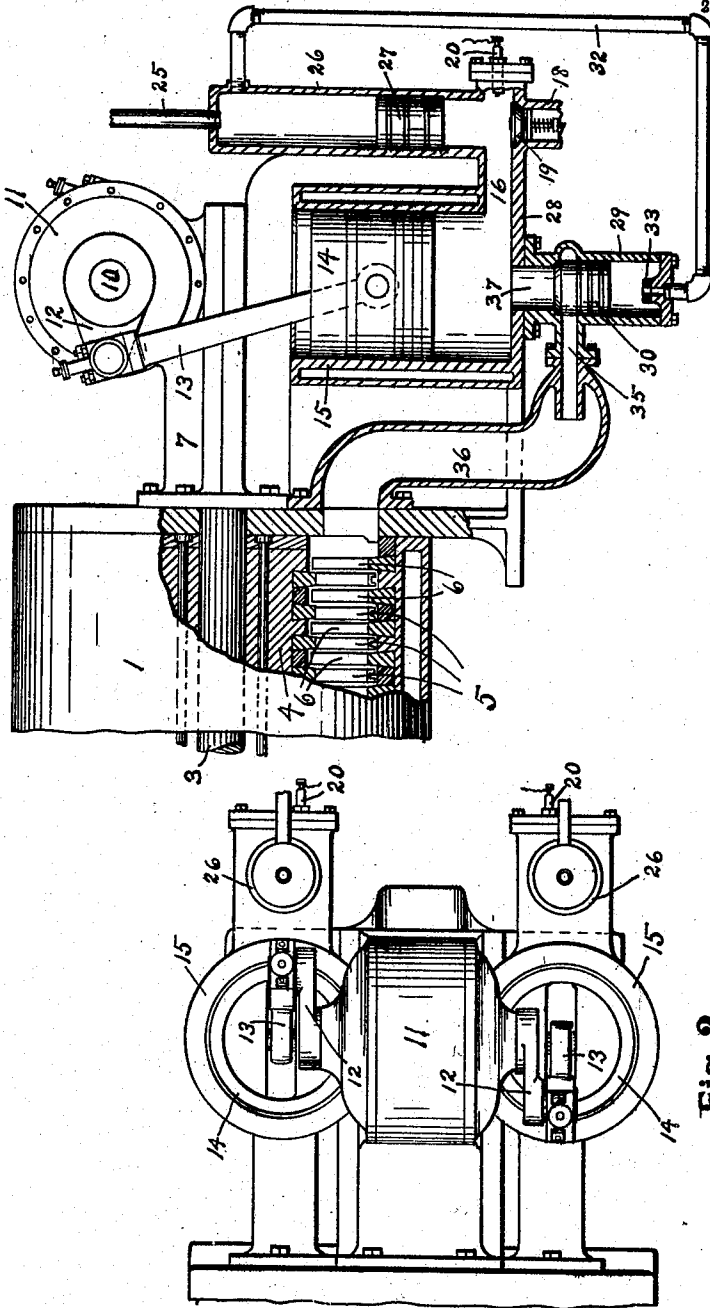


Fig. 3.

Fig. 2.

Witnesses

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INTERNAL-COMBUSTION TURBINE.

933,353.

Specification of Letters Patent.

Patented Sept. 7, 1909.

Application filed February 15, 1909. Serial No. 477,922.

To all whom it may concern:

Be it known that I, MOFFAT ST. CLAIR, a subject of the King of Great Britain, and a resident of Thorndale, in the county of Middlesex and Province of Ontario, Canada, have invented a new and useful Internal-Combustion Turbine, of which the following is a specification.

My invention relates to means for utilizing the pressure of gases caused by the combustion of explosive hydro-carbon vapors for the generation of power by means of rotary engines, preferably of the turbine type, and its object is to provide simple and positive mechanism for producing large quantities of gases for such purposes.

In the accompanying drawings, Figure 1 is an elevation of a horizontal turbine with my improved compressor connected thereto. Fig. 2 is a plan of the compressor. Fig. 3 is a cross section of a compressor and adjacent parts. Fig. 4 is a vertical, central cross section of the driving mechanism for the compressor.

Similar reference characters refer to like parts throughout the several views.

In the drawings, 1 is a turbine engine resting on the bed 2 and provided with a shaft 3, to which shaft is secured any desirable piston 4 having vanes 5. Rings of stationary vanes 6 are secured to the shell of the engine. The front end of the shaft is journaled in a frame 7 and has a worm 8 secured to it, which worm engages the worm wheel 9 on the shaft 10. This worm wheel and shaft are mounted in the casing 11. On the shaft 10, at right angles to each other, are the cranks 12, to each of which is connected a connecting rod 13, the lower end of each of which connects to a piston 14 of a compression cylinder 15. The inlet port 16 of the cylinder communicates with a carbureter 17 by means of a connection 18, at the upper end of which is a valve 19. A spark plug 20 of any desirable type connects to any source of electric energy.

An air compressor 21 of any desirable type, preferably electrically driven, supplies compressed air to a tank 22, from which tank a pipe 23 connects to the inlet end of the turbine so that the compressed air in the tank 22 may be used for starting the engine, a valve 24 cutting off the compressed air as soon as the engine is in operation. Extending

from the tank 22 is a pipe 25 which connects to the upper end of an upright cylinder 26, in which is movable a piston 27. The lower end of the cylinder 26 connects to the passage 16.

Connecting to the bottom head 28 of the cylinder 15 is a chamber 29 for the valve 30. A pipe 32 connects to the bottom end of this valve chamber and to the spaces above the piston 27 in the cylinder 26. A resilient cushion 33 of rubber or other material receives the valve 30 when it is forced down. A passage 35 connects the pipe 36 with the passage 37 whenever the valve permits.

The operation of this mechanism is as follows: After the engine has been put in operation by means of compressed air in the tank 22, an upward stroke of the piston 14 will draw an explosive mixture from the carbureter 17 into the cylinder 15. The pressure of the air in the tank 22 will be communicated through the pipes 25 and 32 to the lower side of the valve 30 and hold it in place. The down stroke of the piston 14 will compress the charge which is exploded by means of the spark plug 20 as soon as compressed. The force of the explosion will drive down the valve 30 permitting the burned gases to rush down the passage 37, through the passage 35 and up the passage 36 into the engine, driving the same. At the same time a part of the gas will push up the piston 27 against the pressure in the tank. The valve 30 being off its seat so long as the pressure in the cylinder 15 exceeds that in the tank, the gases in the cylinder 26 will flow back through the passage 16 and down the passage 37 as soon as the pressure in the cylinder 15 diminishes. When the pressure of the burned gases on the upper side of the valve 30, plus the weight of this valve, is less than the pressure on the lower side of this valve, the valve will be forced to its seat.

It will be noticed that this compressor will have an explosion whenever the piston reaches the bottom of its stroke. With two compression cylinders and pistons, there will be two explosions at each revolution of the shaft 10.

Any desirable valve may be substituted for that between the compressor and engine, and the carbureter employed will depend upon the selection of the constructing engineer.

Many of the details may be varied without departing from the spirit of my invention.

Having now explained my improvements, what I claim as my invention and desire to secure by Letters Patent is:—

1. In an explosion engine, the combination of a motor and the shaft thereof, a crank shaft actuated by the motor shaft, compressors driven by said crank shaft, a discharge valve for each compressor, a pipe leading from each valve to said motor, a source of supply of explosive vapor, and a pressure equalizing device for said compressor comprising a chamber and a resiliently held piston therein.

2. In an explosion engine, the combination of a turbine engine having a shaft, a worm on said shaft, a crank shaft, a worm wheel mounted thereon to engage the worm on the turbine shaft, a crank on each end of the crank shaft, two compression cylinders and pistons therefor, a connecting rod between each piston and its crank, an equalizing cylinder connected to each compression cylinder, a piston in each cylinder, and means to maintain a pressure on one side of said piston in the equalizing cylinders.

3. In an explosion engine, the combination of an explosion motor, a compressor for explosive vapors, means to drive said compressor by said motor, an equalizing cylinder connected to said compressor, a piston therein adapted to be moved by the pressure of the fluids within the compressor, and a separate air compressor to supply force to return the piston in the equalizing cylinder.

4. In an explosion engine, the combination of an explosion motor, a compressor for fuel vapors, mechanism for driving said compressor by the motor, an equalizing chamber connected at its lower end to the compressor, a piston in said chamber, an air compressor,

and a pipe connecting the upper end of said equalizing chamber and said air compressor.

5. In an explosion engine, the combination of a turbine, a compressor driven thereby, a discharge valve for said compressor comprising a cylinder and a piston therein, an air compressor, and a pipe connecting the air compressor and valve cylinder so the compressed air will normally hold the valve on its seat.

6. In an explosion engine, the combination of a turbine, a fuel compressor driven thereby, an equalizing chamber connected at its lower end to the compressor, a piston in said equalizing chamber, an air compressor, a pipe connecting the upper end of the equalizing chamber and the air compressor, a discharge valve between the fuel compressor and the turbine, and a pipe connecting the air compressor to the valve chamber.

7. The combination of an engine having a shaft, fuel compression cylinders adjacent thereto, compressing pistons in said cylinders driven by said shaft, means to supply explosive vapors to said cylinders, an air compressor and a receiver, a piston discharge valve at the bottom of each cylinder, a pipe extending from each valve to the engine, means for supplying explosive vapor to the compression chambers, an air compressor and pipes connecting the air compressor and the discharge valve to convey air under pressure whereby the valves are normally held on their seats.

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

MOFFAT ST. CLAIR.

Witnesses:

D. A. McDONALD,
J. D. McMULLEN.