

No. 737,048.

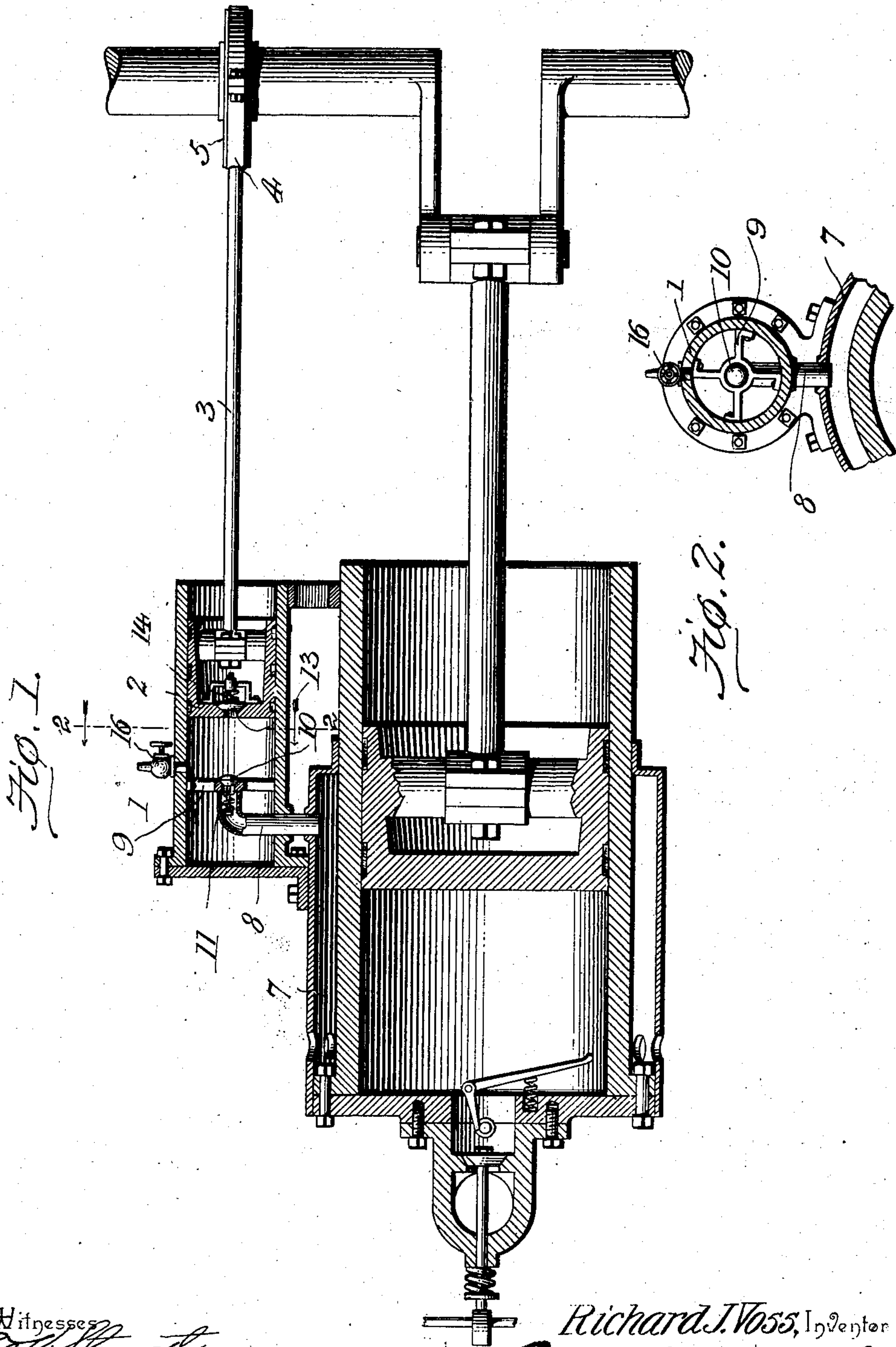
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R. J. VOSS.

COOLING DEVICE FOR EXPLOSIVE ENGINES.

APPLICATION FILED APR. 6, 1903.

NO MODEL.



Witnesses
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UNITED STATES PATENT OFFICE.

RICHARD J. VOSS, OF DAVENPORT, IOWA.

COOLING DEVICE FOR EXPLOSIVE-ENGINES.

SPECIFICATION forming part of Letters Patent No. 737,048, dated August 25, 1903.

Application filed April 6, 1903. Serial No. 151,380. (No model.)

To all whom it may concern:

Be it known that I, RICHARD J. VOSS, a citizen of the United States, residing at Davenport, in the county of Scott and State of Iowa, have invented a new and useful Cooling Device for Explosive-Engines, of which the following is a specification.

This invention relates to certain improvements in engines of that general class in which an explosive compound is used for motive power, and has for its principal object to provide an improved mechanism for cooling the same.

A further object of the invention is to provide a device of simple and inexpensive construction to be operated by the explosive-engine and by means of which a continuous current of cool air may be caused to travel through the jacket of the engine-cylinder, and thereby maintain the same at the desired temperature.

With these and other objects in view the invention consists in the novel construction and arrangement of parts hereinafter fully described, illustrated in the accompanying drawings, and particularly pointed out in the appended claim, it being understood that various changes in the form, proportions, and minor details of construction may be made without departing from the spirit or sacrificing any of the advantages of the invention.

In the drawings, Figure 1 is a longitudinal sectional elevation of a cylinder-cooling device constructed and arranged in accordance with the invention. Fig. 2 is a transverse sectional elevation of the same on line 2 2 of Fig. 1.

Similar numerals of reference designate corresponding parts in both figures of the drawings.

1 indicates a cylinder formed of any suitable material and which may be cast integral with the cylinder of the gas-engine or secured thereto in any suitable manner. The cylinder contains a piston 2 of the trunk type that is connected by a rod 3 to an eccentric-strap 4, surrounding an eccentric 5, which may be operated by the main shaft of the engine or driven from an auxiliary source of power.

The jacket 7, which surrounds the cylinder of the gas-engine, may be of the useful construction employed in maintaining the circ-

ulation of water; but there is provided at a point adjacent to the sparking-terminals a plurality of openings through which air is drawn by the movement of the piston 2, the heated air being drawn from the jacket into the cylinder 1 immediately after each explosion and being thence forced from said cylinder or allowed to escape in any desired manner. The air-entrance openings of the jacket of the gas-engine are disposed near one end thereof, and from a point near the opposite end thereof leads a pipe 8, extending into the closed end of the cylinder 1 and supported in position therein by a spider or partition 9. At the end of pipe 8 is a valve-seat for the reception of a valve 10, the stem of which is surrounded by a helical compression-spring 11, normally tending to maintain the valve in closed position, but opening under the partial vacuum created on the outward movement of the piston 2 in order to allow the air from the cylinder-jacket to enter said cylinder 1. The piston 2 is provided with an air-passage 12, at the inner end of which is a valve-seat for the reception of a valve 13, the stem of which is surrounded by a helical compression-spring 14, normally tending to maintain the valve in closed position; but during the inward movement of the piston against the pressure of air within the cylinder its valve is open and the air in the cylinder escapes through the passage 12 in the piston.

In the operation of the device the piston is reciprocated by the mechanism described and at each outstroke creates a partial vacuum within the cylinder, causing the passage of a current of air through the jacket of the gas-engine and effectually cooling the same, the heated air entering the cylinder 1 until the piston has completed its outward movement. On the instroke of the piston the valve 10 is immediately closed, while the valve 13 is opened and the heated air in the cylinder is allowed to escape.

In some cases it may not be desired to allow the flow of air to the full capacity of the cylinder 1, especially in very cold weather or where the gas-engine is outdoors or otherwise is subjected to comparatively low temperature. To regulate a quantity of air passing through the jacket, I employ a valved nipple 16, secured to one side of the cylinder 1 and

so arranged that it may be turned to allow a greater or less quantity of atmospheric air to flow into the cylinder and mingle with the heated air from the jacket.

5 Having described the invention, what is claimed is—

10 The combination with a gas-engine, of a cylinder having valved communication with the jacket of the engine, a valved piston in said cylinder, means for operating the piston, and a governing-valve carried by the cylinder for

admitting thereinto a quantity of air, thereby to diminish the quantity of cooling-air flowing through the cylinder-jacket.

In testimony that I claim the foregoing as 15 my own I have hereto affixed my signature in the presence of two witnesses.

RICHARD J. VOSS.

Witnesses:

JOHN HEINZ,
HENRY J. VOSS.