

No. 657,451.

Patented Sept. 4, 1900.

S. W. REA.

COOLING MEANS FOR EXPLOSIVE ENGINES.

(Application filed Apr. 14, 1900.)

(No Model.)

Fig. 1.

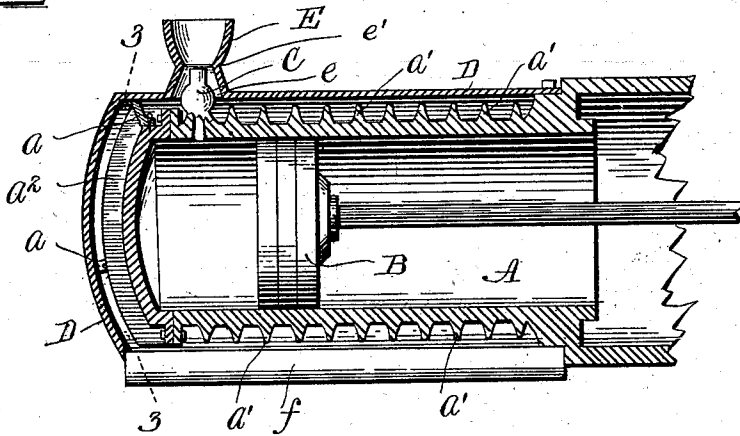
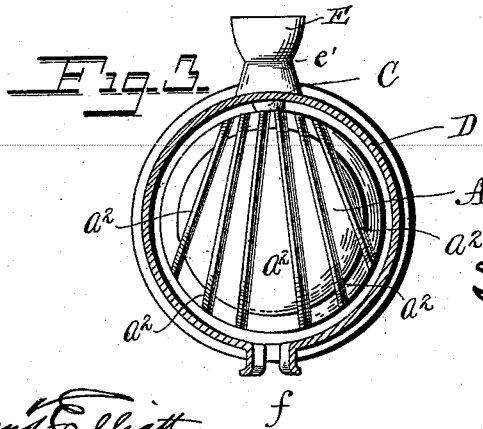
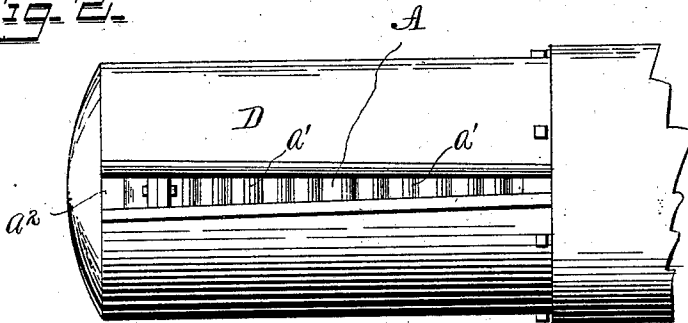


Fig. 2.



Samuel W. Rea,
Inventor

Witnesses

Wm. C. Elliott
W. D. Duvall,

John B. Thomas & Co.,
Attorneys

UNITED STATES PATENT OFFICE.

SAMUEL W. REA, OF RUSHVILLE, INDIANA.

COOLING MEANS FOR EXPLOSIVE-ENGINES.

SPECIFICATION forming part of Letters Patent No. 657,451, dated September 4, 1900.

Application filed April 14, 1900. Serial No. 12,910. (No model.)

To all whom it may concern:

Be it known that I, SAMUEL W. REA, a citizen of the United States of America, residing at Rushville, in the county of Rush and State of Indiana, have invented new and useful Improvements in Explosive-Engines, of which the following is a specification.

This invention is an improvement in explosive-engines; and the object of the invention is to provide for cooling the cylinder by circulating air around the same within a jacket which envelops said cylinder.

In the operation of gas-engines and other explosive-engines the cylinder, or more especially the head thereof, forming the combustion-chamber becomes greatly heated by the combustion of the gases therein, and in order to overcome this heat such engines are usually provided with jackets surrounding the cylinder and forming passages for the circulation of water or other cooling medium. The circulation of water around the cylinder forms an effective means for cooling the parts; but in some instances it is not desirable nor convenient to use water for this purpose, more especially in connection with portable engines and engines used in the propulsion of vehicles, and a circulation of air is therefore preferable. I have therefore devised a simple, cheap, and effective means for keeping up a circulation of cool air around the cylinder by utilizing the exhaust from the engine to pump air into the inclosing jacket at one side and expel it out at the opposite side, to thereby provide a continuous current of cool air around the cylinder during the operation of the engine.

In the following specification I have entered into a detail description of my invention, reference being had to the accompanying drawings and to letters thereon which designate the different parts, and what I claim as new, and desire to protect by Letters Patent, is more specifically set forth in the appended claim.

In the drawings forming a part hereof, Figure 1 is a sectional view of an explosive-engine, illustrating only so much thereof as will show the application of my invention. Fig. 2 is a view looking at the under side of the inclosing jacket. Fig. 3 is a sectional view on the line 3 3 of Fig. 1.

Referring to said drawings, A designates

the cylinder of the engine, B the piston, and C the exhaust-valve, these parts being of the construction usually employed in connection with gas-engines or other explosive-engines, and as my invention relates solely to the cooling of the cylinder I have not shown any igniting devices or valve-operating devices, but merely so much as to show the application of my invention.

In carrying out my invention the cylinder A is inclosed by a sheet-iron jacket D, which is of such a size with respect to the cylinder as to leave a space between said cylinder and jacket. The jacket is supported from the cylinder by suitable brace-arms *a*, and as said jacket is intended to only form passages for currents of air it may be made of comparatively-thin sheet metal. An outlet-opening *e* is provided at one side of the jacket, said opening leading into a nozzle E, having a contracted portion *e'*, and into this nozzle projects the discharge end of the exhaust-valve C of the engine, a space being left around the exhaust-valve, as shown, in order to permit a free passage of air. At the opposite side of the jacket from the nozzle E the said jacket is provided with an air-inlet opening *f*, formed by slitting the jacket longitudinally and bending the edges in opposite directions. This opening is wider at the outer end or head of the cylinder in order that a greater quantity of air will be supplied to that part of the cylinder which forms the combustion-chamber for the gases. The cylinder is provided with the usual webs *a'*, extending around its circumference, while the outer end or head is formed with webs *a''*, extending across the same. These webs increase the area of surface against which the currents of air act and facilitate the cooling of the cylinder.

During the operation of the engine the exhaust or jet from the valve C passing through the nozzle E will cause a suction through said nozzle which will expel the air from the passages surrounding the cylinder, while cool air will be drawn into the jacket through the longitudinal opening *f*. As the engine exhausts in quick succession, there will be an almost continuous current of air through the opening *f*, around the head and sides of the cylinder, and out through the nozzle, and

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this current of air will be sufficient to prevent overheating of the cylinder. It will therefore be seen that I provide a very effective means for cooling the cylinder of an explosive-engine and utilize the exhaust from the engine to keep up a constant circulation or current of air around the parts which are liable to become overheated.

In case the engine is located in a building an air-supply pipe may be connected to the inlet-opening *f* in order to supply the jacket with air from without the building.

Having thus described my invention, what I claim as new is—

15 In a cooling device for explosive-engines, the combination with the cylinder having webs around the same and across the end or head, and an exhaust-valve *C* projecting

from one side of said cylinder; of a jacket *D* inclosing the cylinder and having a tapered inlet-opening *f* extending longitudinally at one side thereof and formed by slitting the jacket and bending the edges back, the wider part of the inlet-opening being at the head of the cylinder; and a nozzle *E* projecting from the other side of said jacket over the exhaust-nozzle, and through which said exhaust-nozzle discharges, substantially as shown and described. 20 25

In testimony whereof I affix my signature in presence of two witnesses. 30

SAMUEL W. REA.

Witnesses:

ANDREW C. BROWN,
JOHN J. VOSHELL.