

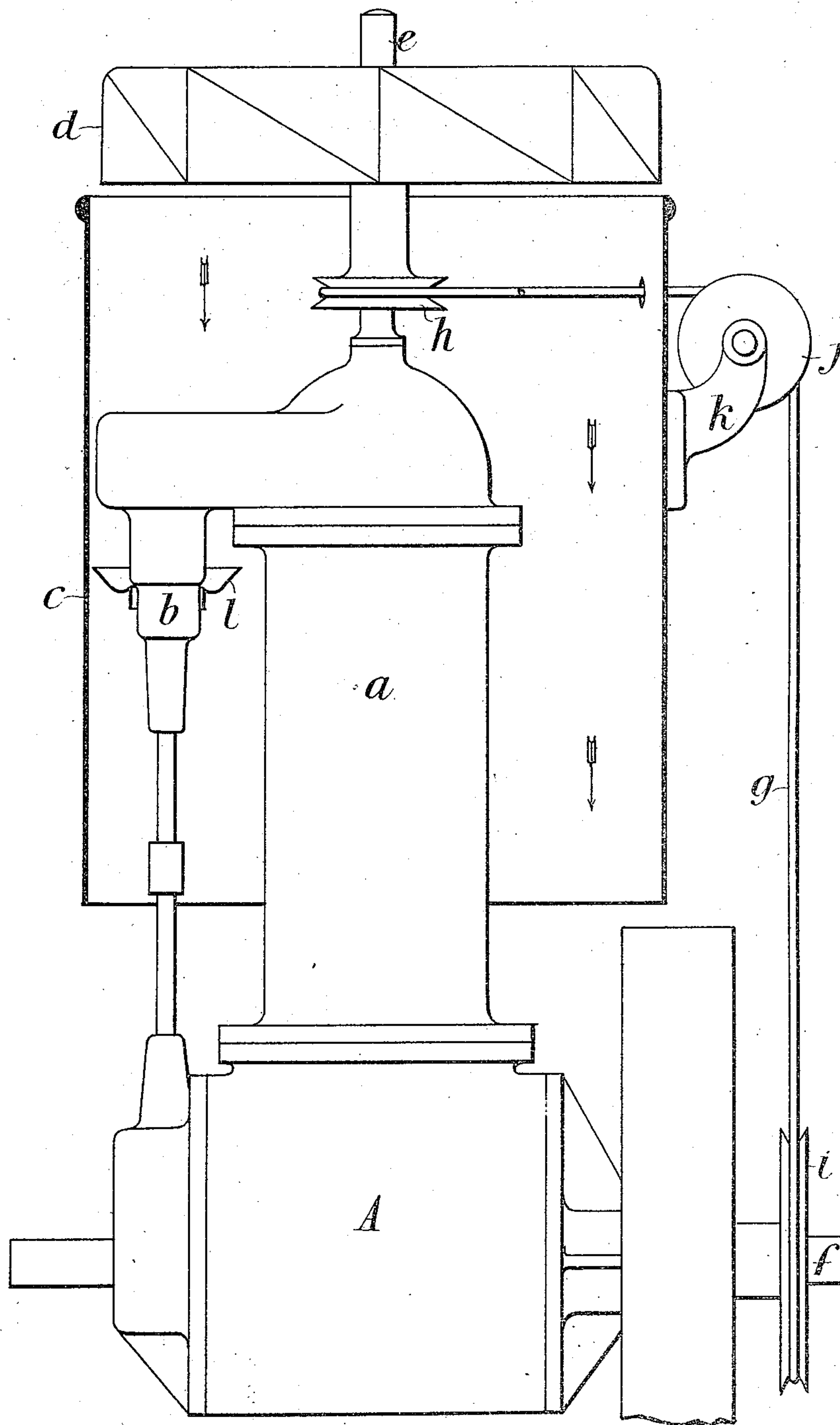
No. 617,660.

Patented Jan. 10, 1899.

F. R. SIMMS.  
EXPLOSION ENGINE OR MOTOR.

(Application filed Dec. 13, 1897.)

(No Model.)



Witnesses

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# UNITED STATES PATENT OFFICE.

FREDERICK RICHARD SIMMS, OF LONDON, ENGLAND.

## EXPLOSION ENGINE OR MOTOR.

SPECIFICATION forming part of Letters Patent No. 617,660, dated January 10, 1899.

Application filed December 13, 1897. Serial No. 661,684. (No model.)

*To all whom it may concern:*

Be it known that I, FREDERICK RICHARD SIMMS, a subject of the Queen of Great Britain, residing at London, England, have invented new and useful Improvements in Explosion Engines or Motors, of which the following is a specification.

This invention relates to explosion-engines; and it consists in the novel features hereinafter described, reference being had to the accompanying drawing, which illustrates one form in which I have contemplated embodying my invention, and said invention is fully disclosed in the following description and claim.

Referring to the said drawing, the figure is a sectional elevation of an explosion engine or motor embodying my invention and having a fan for cooling the cylinder and the exhaust-passage thereof.

The cylinder may be provided with ribs of a suitable heat-conducting material, such as copper, the said ribs being preferably arranged longitudinally upon the cylinder, and in some cases in combination with the ribs I provide a water-jacket around the cylinder, or means for spraying water into the air-current or onto the vanes of the fan can be employed. The water-spray can be used in conjunction with the water-jacket or not, as desired. In combination with the fan I also arrange a dynamo for igniting the explosive mixture for driving the engine, the said dynamo preferably having its armature mounted upon the rotating fan-spindle and its field-magnets secured to a fixed part of the engine, although, if desired, the reverse arrangement can be made use of.

In the accompanying drawings, Figure 1 is a sectional elevation of an explosion engine or motor having a fan for cooling the cylinder and the exhaust-passage thereof. Fig. 2 is a similar view of an explosion-engine having a fan for cooling and regulating the same, the cylinder being shown provided with longitudinal ribs. Fig. 3 is a sectional elevation of an explosion-engine having a fan for cooling the cylinder thereof, which is provided with a water-jacket and longitudinal ribs. Fig. 4 is a view similar to Fig. 2 of an explosion-engine having a fan for cooling the cylinder thereof and means for spraying water onto the cylinder or fan. Fig. 5 is a sectional elevation of an explosion-engine having a fan for cooling the cylinder thereof and a dynamo

in connection with the fan for igniting the explosive charge.

A is the explosion engine or motor, *a* the cylinder, and *b* the exhaust thereof.

*c* is an outer sheet-metal jacket or casing inclosing the cylinder *a* and exhaust *b*, the said jacket or casing having for its object to direct the cooling-current of air, as hereinafter described.

*d* is the fan, the said fan being mounted upon a spindle *e*, arranged at the outer end of the cylinder *a*, the said fan being rotated from the crank-shaft *f* of the engine by means of a belt or cord *g*, which passes over pulleys *h* and *i* upon the spindle *e* and crank-shaft *f*, respectively.

*j* is one of a pair of guide-pulleys for the belt *g*, the said pulleys being carried in a bracket *k*, fixed to the jacket *c*.

*l* is a jacket arranged around the exhaust-passage *b*, the said jacket being formed flaring at its upper end and having for its object to cause a current of air to flow along and in contact with the said exhaust-passage.

With this construction when the engine is running the fan, which is keyed upon the spindle *e*, is rotated and drives a current of air in the direction of the arrows (indicated in Fig. 1) inside the jacket *c* and into contact with the walls of the cylinder *a* of the engine, so as to efficiently cool it, the flaring jacket *l* also directing air against the walls of the exhaust-passage *b*, as above mentioned.

Having now particularly described and ascertained the nature of my said invention and in what manner the same is to be performed, I declare that what I claim is—

In an explosive-engine, the combination with the cylinder provided with an exhaust-port, of a cylindrical main casing surrounding the cylinder and exhaust, a rotary fan mounted on the cylinder and adjacent to one end of said casing, a casing surrounding the exhaust, and having its axis disposed parallel to the axis of the main casing, and provided at the end adjacent to the fan, with a flaring collar, whereby the air from the fan will be deflected inwardly around the exhaust-port, substantially as described.

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