No. 706,120. Patented Aug. 5, 1902.

S. H. SHORT.

ENGINE.

(Application filed Nov. 15, 1901.)

(No Model.)

Fig. 1.

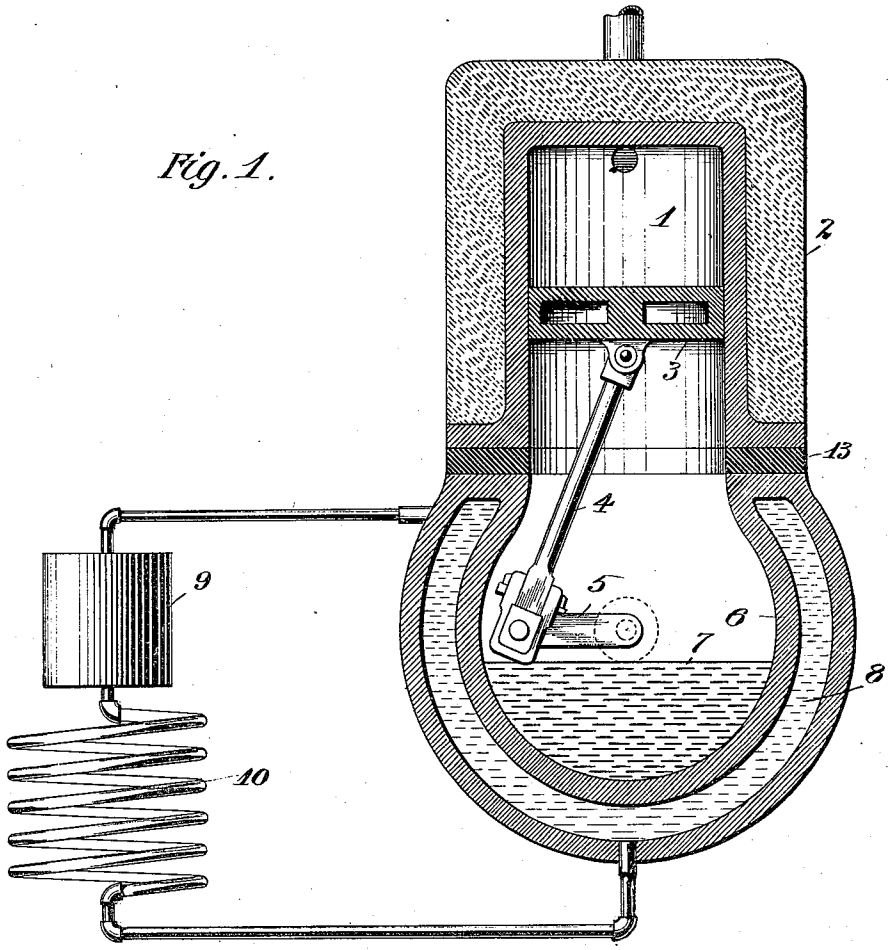
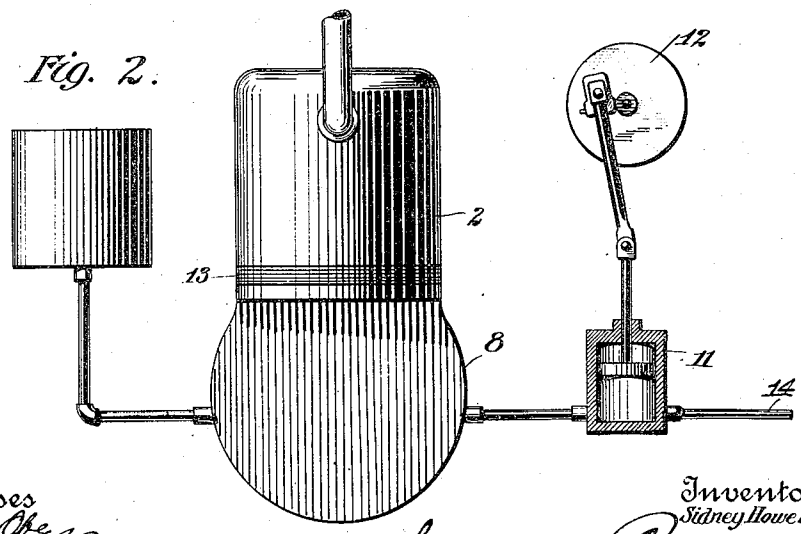


Fig. 2.



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SIDNEY HOWE SHORT, OF LONDON, ENGLAND.

ENGINE.

SPECIFICATION forming part of Letters Patent No. 706,120, dated August 5, 1902.

Application filed November 15, 1901. Serial No. 82,465. (No model.)

To all whom it may concern:

Be it known that I, SIDNEY HOWE SHORT, a citizen of the United States, residing at London, England, have invented certain new and useful Improvements in Engines, of which the following is a full, clear, and exact description.

My invention relates to improvements in engines, particularly of the type driven by superheated steam.

The object of my invention is to provide a means for preserving the proper lubrication of the cylinder and a more efficient working of the engine.

As is well known, in engines employing superheated steam it is only with great difficulty that the proper oiling of the cylinder may be effected, because of the very high degree of temperature to which said cylinders are subjected. Many means have been devised having in mind the effective lubrication of the cylinder; but none of them has been entirely satisfactory. By my invention effective lubrication is attained and the successful operation of the engine accomplished.

In the drawings, Figure 1 is a sectional view of a simple form of engine of the single-acting type embodying my improvements. Fig. 2 is an elevation of a modification.

In the drawings, 1 is a cylinder, and 2 is a jacket of asbestos or other suitable non-heat-conducting material.

3 is a piston, preferably hollow.

4 is a connecting-rod from the piston to the crank 5.

6 is a crank-casing forming an inclosed chamber.

7 illustrates a quantity of oil within the crank-chamber 6 and within the range of action of the crank 5.

8 is a water-jacket around the crank-casing.

9 is a water-tank.

10 is a pipe or radiator affording a large surface exposed to the air for cooling purposes. The water may circulate in the usual way, as through a hot-water heating system. The heat of the cylinder of course raises the temperature of the parts associated therewith to some degree, and this heats the water within the jacket 8. The natural tendency of the warmer water is to flow upwardly and through a suitable connection into the tank 9, from whence it flows through the radiator 10 and is cooled, from whence it flows on into the lower part of the jacket 8. In Fig. 2 the cooling-water flows from the supply-pipe through the crank-chamber jacket to the pipe 14, through which it is forced to the boiler-supply by the pump 11, driven from a source of power 12. In this it will be seen that the action of the feed-water heater is performed. Although not shown in Fig. 2, it is obvious a coil similar to the coil 10 or any other suitable water-cooling apparatus may be employed, so that cold water will be delivered to the jacket 8. In operation the jacket 8, being always filled with cold water, keeps down the temperature of the crank-casing 6, and therefore the temperature of the oil 7. This cool oil is splashed by the action of the crank up into the cylinder 1, where by the action of the piston 3 it is spread in a suitable film over the surface thereof, affording proper lubrication for the said piston. It is preferred to lag the cylinder 1 with asbestos or like non-conducting material in order that it may be retained at its most efficient temperature. If desirable, an insulation 13 may be provided between the cylinder 1 and the jacket 8 in order that the temperature of the cylinder may not be communicated to the crank-casing. The hollow piston also aids in insulating the crank-chamber from the heat of the working cylinder.

Manifestly the accompanying drawings are illustrative rather than definitive, and no attempt is made to show such details of construction as would be apparent to any mechanic conversant with the art, the general idea being sufficient to teach one so skilled the scope and usefulness of the invention.

Obviously an adaptation of the invention herein might be applied to gas-engines, wherein even greater difficulty than in the type of engines above described is had in securing proper lubrication, due to the fact that the fire of the exploding charges burns or chars the thin film of oil upon the inner wall of the cylinder necessary for the effective lubrication thereof.

In this invention cold oil within the crank-casing tends to keep down the temperature of

the cylinder and obviously cannot be charred or burned as readily as hot oil. In the ordinary use of gas-engines, wherein oil in the crank-casing is relied upon to supply the cylinder, this oil becomes heated in a very short space of time, and consequently is more liable and may be more readily charred or burned when applied in a thin film and brought directly into contact with the flame.

What I claim is—

1. In an engine, a water-jacketed crank-casing adapted to contain a body of oil, a non-water-jacketed cylinder, and a thermal insulation between said cylinder and said crank-casing.

2. In an engine, a water-jacketed crank-casing, a cylinder insulated therefrom and covered with a non-conducting substance, said crank-casing being adapted to hold a considerable body of oil, a water-supply, means for conducting cooling-water from said water-supply through said water-jacket.

3. A steam-engine having a lagged steam-cylinder, an inclosed crank-chamber insulated therefrom, said crank-chamber adapted to contain a body of oil, a water-jacket about said crank-chamber, and a water-circulating system for said water-jacket leading to a boiler-supply.

4. A high-pressure steam-engine having a steam-cylinder, an inclosed crank-chamber adapted to contain a considerable body of oil in such a position that the movement of the engine parts shall splash oil contained therein upon the parts, a water-jacket about the said crank-chamber, and a water-circulating system for said water-jacket adapted to prevent overheating of oil in said crank-chamber.

5. A high-pressure steam-engine having a steam-cylinder, an inclosed crank-chamber adapted to contain a considerable body of oil in such a position that the movement of the engine parts shall splash oil contained therein upon the parts, a water-jacket about the said crank-chamber, and a water-circulating system for said water-jacket adapted to prevent overheating of oil in said crank-chamber, the said water-circulating system leading to a boiler-supply.

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