

July 31, 1923.

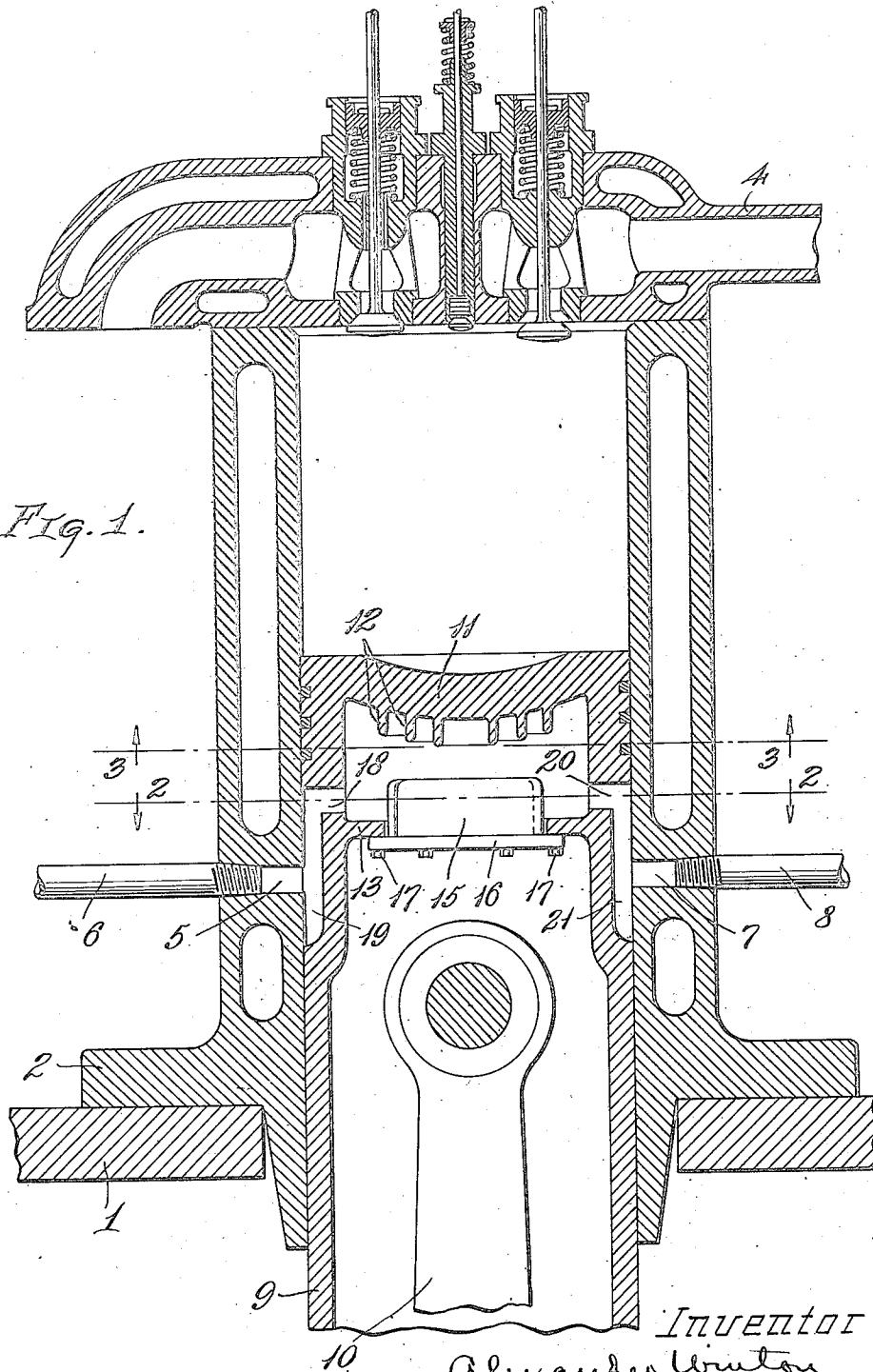
1,463,644

A. WINTON

PISTON FOR INTERNAL COMBUSTION ENGINES

Filed April 25, 1919

2 Sheets-Sheet 1



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2 Sheets-Sheet 2

Fig. 2.

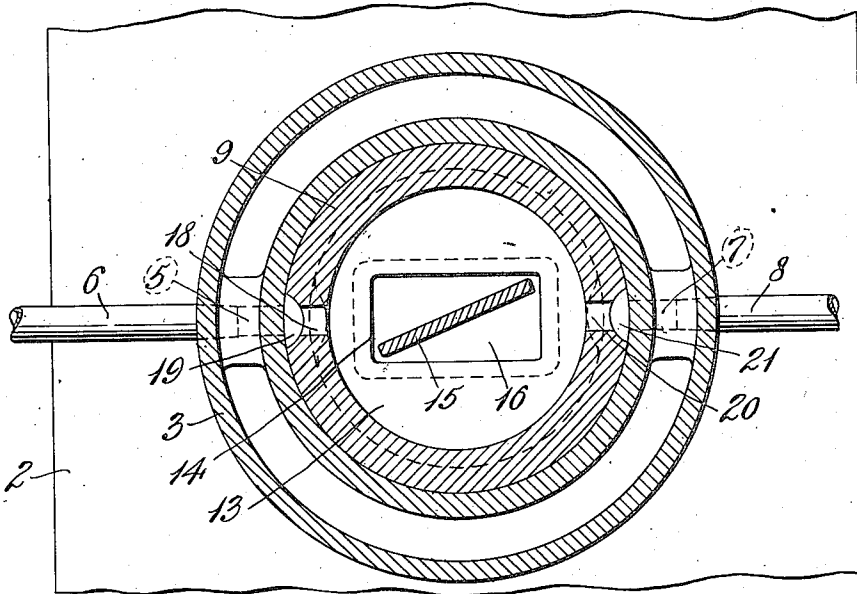
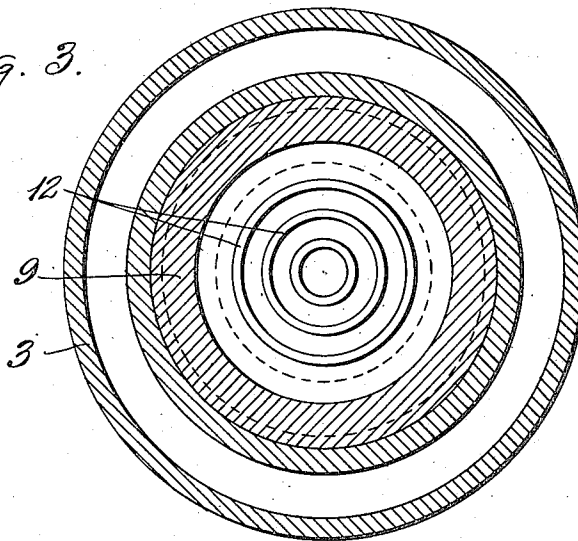


Fig. 3.



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UNITED STATES PATENT OFFICE.

ALEXANDER WINTON, OF LAKEWOOD, OHIO.

PISTON FOR INTERNAL-COMBUSTION ENGINES.

Application filed April 25, 1919. Serial No. 292,686.

To all whom it may concern:

Be it known that I, ALEXANDER WINTON, a citizen of the United States, residing at Lakewood, in the county of Cuyahoga and State of Ohio, have invented certain new and useful Improvements in Pistons for Internal-Combustion Engines, of which the following is a specification.

This invention relates to internal combustion motors and particularly to means for cooling the head of the piston.

The heat generated in the explosion chamber of internal combustion motors is so intense that it often affects the head of the piston to an extent such that it weakens and breaks, or is bulged downward with obvious disastrous results. The present invention is designed to avoid this result by projecting cool air against the inner surface of the piston and against radiating fins provided on the inner side of its head. In supplying the cooling air to the piston, it is provided adjacent to its head with a cooling chamber in communication with an inlet port and a discharge port which are adapted to register with inlet and discharge ports in the cylinder wall, such cylinder ports being located such that the registry thereof with the piston ports is established only when the piston is at the outer end of its strokes. In this way there is a circulation of air through the piston. A baffle is provided in the piston and in the path of the air to produce the proper circulation.

The invention may be further briefly summarized as consisting in the construction and combination of parts hereinafter set forth in the following description, drawings, and claims.

Referring to drawings, Fig. 1 is a vertical section of a cylinder with piston therein, showing the arrangement for supplying a cooling medium to the latter. Fig. 2 is a section upon line 2—2 of Fig. 1, and Fig. 3 is a section upon line 3—3 of Fig. 1.

In the drawings, 1 represents a suitable support which is preferably part of the frame or crank case. Engaging this support is a flange 2, forming a part of a cylinder 3. The cylinder supports a head 4; provided with suitable valve mechanism illustrated but not described, since it forms no special part of the invention.

The cylinder 1, near its lower end is provided with an inlet port 5 for receiving a pipe 6 adapted to supply a cooling me-

dium, such as air. On the opposite side of the cylinder and in alignment with port 5, is another port 7, receiving a discharge pipe 8.

Within the cylinder 3, is piston 9, provided with the usual connecting rod 10. The piston 9 is provided with a head 11, having inwardly extending radiating flanges or ribs 12, which are circular and are arranged concentric with respect to each other. Below these flanges 12, is a horizontal diaphragm or wall 13, having a rectangular opening 14 therein, as shown in Fig. 2. Extending upward through the opening 14 and arranged diagonally in said opening, is a baffle plate 15, forming a part of a plate 16, which latter is secured against the under side of the diaphragm or wall 13 in any suitable manner,—as by suitable screws 17 extending through the plate 16 and threaded into the diaphragm or wall 13. The cooling chamber formed between the diaphragm or wall 13 and the cylinder head, communicates by an opening 18 with a longitudinal recess 19, formed in the outer wall of the piston. This recess 19 is arranged so that when this piston is at the lower end of its stroke the recess 19 will register with the port 5 and permit the passage of the cooling medium from this port through this opening 18 into the cooling chamber within the piston. Opposed to the opening 18, is a discharge port 20, in like manner communicating with a longitudinal discharge recess 21, which is adapted, when the piston is at the lower end of its stroke, to register with the port 7, and permit the discharge of the cooling medium from the cooling chamber in the piston to the discharge pipe 8. The plate 16 and baffle 15 are removable by unscrewing the screws 17 to clean out the cooling chamber in the piston and remove any deposits of foreign matter therein, such as baked or coked lubricant, carbon or the like.

It will be seen from the foregoing description that as the piston reaches the lower end of its stroke, the cooling medium, which is preferably under pressure, is free to pass through the cooling chamber and is baffled by the baffle plate 15 and thereby circulates about the radiating flanges or ribs 12. In this way the head of the piston is kept cool and is prevented from becoming so heated that it will be deformed by the extreme pressure within the cylinder.

The cooling medium usually employed is air, which is preferably under pressure so that it will pass through cool and perform its function quickly.

5 Having described my invention, I claim:

1. In an internal combustion engine, a cylinder provided with inlet and discharge ports near one end, a piston within said cylinder, a wall in said piston forming a cooling chamber adjacent to the piston head, said piston having ports communicating with said chamber and adapted to register with said inlet and discharge ports, means for supplying cooling medium under pressure to the inlet port of said cylinder, means communicating with said discharge port for conducting the heated cooling medium to the atmosphere, and a baffle plate in said cooling chamber lying in a plane at an angle to a line connecting the piston ports.

2. In an internal combustion engine, a cylinder provided with inlet and discharge ports near one end, a piston within said cylinder, a wall in said piston forming a cooling chamber adjacent to the piston head, said piston having ports communicating with said chamber and adapted to register with said inlet and discharge ports, means for supplying cooling medium under pressure to the inlet port of said cylinder, means communicating with said discharge port for conducting the heated cooling medium to the atmosphere, said piston wall having a relatively large opening, and a removable plate closing said opening and carrying a baffle member in said chamber.

In testimony whereof I affix my signature.

ALEXANDER WINTON.