

W. M. UPCHURCH.
CYLINDER AND PISTON CONSTRUCTION FOR INTERNAL COMBUSTION ENGINES.
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1,038,238.

Patented Sept. 10, 1912.

FIG. 1

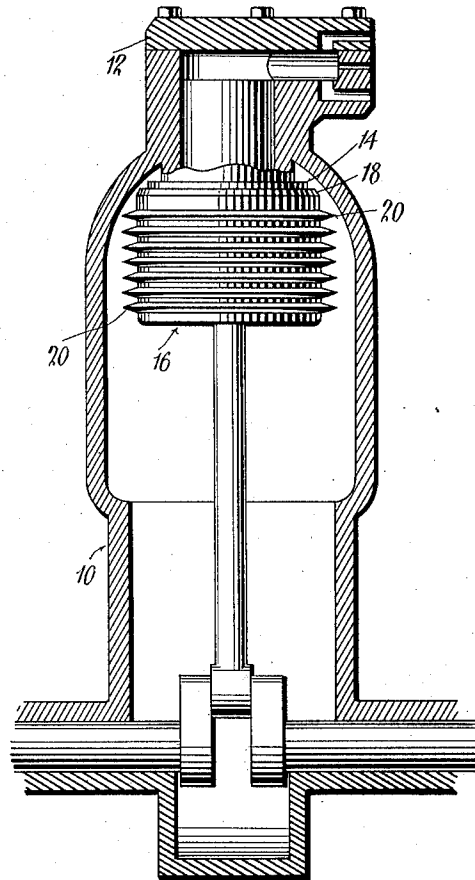
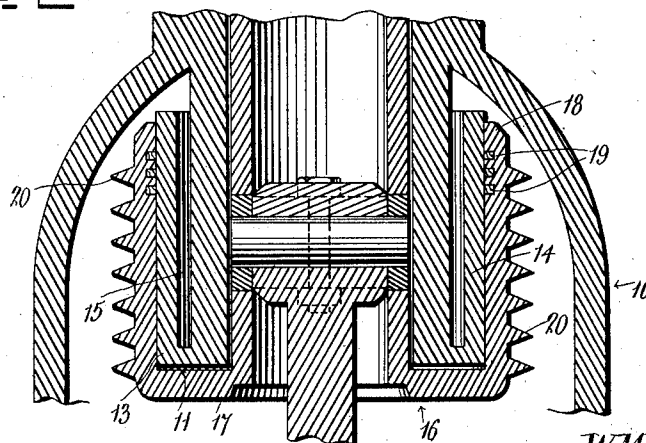


FIG. 2



Witnesses

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UNITED STATES PATENT OFFICE.

WALTER M. UPCHURCH, OF HURLEY, NEW MEXICO.

CYLINDER AND PISTON CONSTRUCTION FOR INTERNAL-COMBUSTION ENGINES.

1,038,238.

Specification of Letters Patent.

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To all whom it may concern:

Be it known that I, WALTER M. UPCHURCH, a citizen of the United States, residing at Hurley, in the county of Grant, State of New Mexico, have invented certain new and useful Improvements in Cylinder and Piston Constructions for Internal-Combustion Engines; and I do hereby declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it appertains to make and use the same.

My invention relates to new and useful improvements in internal combustion engines of the air cooled type and more especially to the cylinder and piston construction thereof and the object of my invention is to improve the construction and increase the efficiency of devices of the above described character.

A further object of my invention is to so construct the cylinder and piston as to remove the sliding parts of the piston from the inside or hottest part of the cylinder to the outside or coolest part. Heretofore one of the chief difficulties met with in air cooled internal combustion engines has been that of keeping the cylinders sufficiently cooled to permit the sliding of the piston without the burning of the lubricating oil and the consequent sticking of the piston rings.

A further object of my invention is therefore to so construct the cylinder and the piston that that part of the cylinder against which the piston rings bear is at no time directly exposed to the gases of the cylinder and in such a manner that during each stroke of the piston said cylinder surface is directly exposed to the air.

With these and other objects in view, my invention will be more fully described, illustrated in the accompanying drawings, and then specifically pointed out in the claim which is attached to and forms a part of this application.

In the accompanying drawings, Figure 1 is a fragmentary side elevation partially in section of my improved cylinder and piston. Fig. 2 is an enlarged view, in section, of a portion of the same.

Referring more specifically to the drawings, in which similar reference numerals

designate corresponding parts throughout, 10 designates in general the crank case of the engine and 11 the cylinder which as shown is open at one end and provided at its opposite end with a head 12. As shown the open end of this cylinder is provided with an integrally formed flange 13 which extends outwardly and then back over the outer face of the cylinder to form the spaced annular jacket 14 the outer face of which is finished to form a bearing for the bearing face of the piston. By this means an annular air space 15 is provided which has direct communication with the air within the crank case.

The piston, which as a whole is designated by the numeral 16, is provided at its outward end with a circumferentially extending flange 17 and formed integrally with this flange and therefore with the piston is a sleeve 18 which extends in parallel spaced relation to the piston proper and the inner face of which is machined to bear against the outer face of the jacket member 14, said inner face being grooved to receive the customary packing rings 19. As shown, the body portion proper of this piston is so proportioned as to slide loosely within the bore of the cylinder while the sleeve 18 slides closely over the jacket 14 and with its packing rings forms a gas proof joint. The entire friction between the cylinder and piston occurs between the jacket 14 and the sleeve 18 neither of which, is at any time directly exposed to the cylinder gases. Moreover because of the annular air space or chamber 15 one side of the jacket 14 is at all times exposed to the air, while as will be readily seen the opposite side of this jacket is also exposed to the air upon the outstroke of the piston.

By this means the parts are kept much cooler than would be otherwise possible and to assist in this cooling action the outer face of the sleeve 18 is preferably ribbed as shown at 20, these ribs not only serving to radiate the heat but also to agitate the air within the crank case and so to cause a constant change of air in the air space 15.

It will of course be understood that minor changes in details of construction may be made if desired, without in the slightest degree departing from the spirit of my invention, such for instance as the changing

of the packing of the rings 19 from the inner face of the piston sleeve to the outer face of the cylinder jacket.

What I claim is:—

- 5 In an internal combustion engine, the combination with a cylinder open at one end and having a surrounding sleeve spaced from the body of the cylinder and formed integrally with said open end, of a piston
10 movable in said cylinder and having one end extending beyond the same, said extend-

ed end of the piston being provided with an integrally formed sleeve surrounding the cylinder sleeve with its inner face bearing against the outer face of the cylinder 15 sleeve.

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

WALTER M. UPCHURCH.

Witnesses:

EDWARD R. BURCH,
D. W. BOISE.

Copies of this patent may be obtained for five cents each, by addressing the "Commissioner of Patents, Washington, D. C."
