Jan. 8, 1924. 1,480,481

R. W. WAKEFIELD

PISTON

Filed Sept. 23, 1921

FIG. 1.

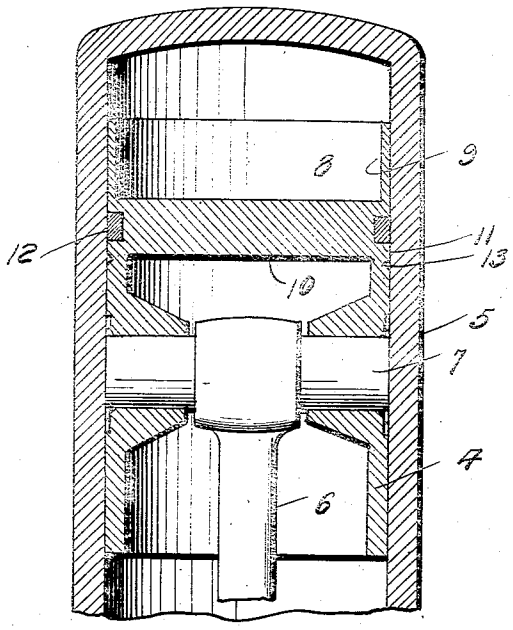


FIG. 2.

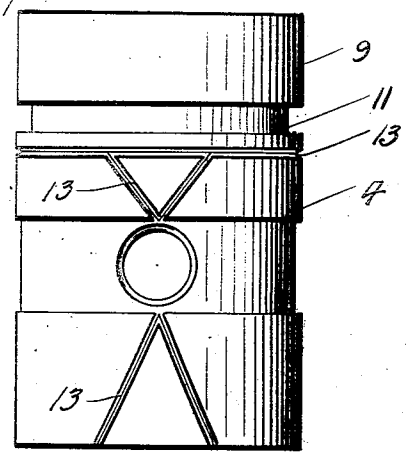
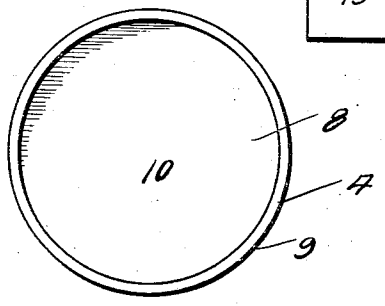


FIG. 3.



Inventor
R. W. Wakefield

By A. Randolph Jr.
Attorney

Patented Jan. 8, 1924. 1,480,481

UNITED STATES PATENT OFFICE.

ROBERT W WAKEFIELD, OF LANGELOTH, PENNSYLVANIA.

PISTON.

Application filed September 23, 1921. Serial No. 502,733.

To all whom it may concern:

Be it known that I, ROBERT W. WAKEFIELD, a citizen of the United States, residing at Langeloth, in the county of Washington and State of Pennsylvania, have invented certain new and useful Improvements in a Piston; 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 made and use the same.

This invention relates to a piston of the type used in firing cylinders of internal combustion engines.

An important object is to provide such a piston with a chamber in which the explosions may directly occur in order that the inner side wall of the cylinders and piston rings will not have to withstand the maximum expansion of fuel incidental to explosions, and whereby the number of piston rings employed may be greatly reduced and entirely eliminated, and whereby the motor may satisfactorily operate with faulty piston rings.

Additional objects and advantages will become apparent from a consideration of the specification hereinafter following with reference to accompanying drawings illustrating one practical embodiment.

In said drawings:—

Figure 1 is a vertical sectional view through a piston construction in accordance with my invention, and shown in connection with a fragment of an internal combustion engine cylinder, and

Figure 2 is a front elevation of the piston alone,

Figure 3 is a plan view of the piston alone.

Referring particularly to the drawings, the improved piston is shown at 4 slidable in the usual manner within a cylinder 5 forming part of a conventional type of internal combustion engine. From the piston a usual connecting rod 6 extends being connected thereto by means of a wrist pin 7.

It will be noted that the piston has a chamber 8 extending inwardly from its upper end surrounded by an annular wall 9. This chamber 8 serves as a firing chamber so that explosion is confined in said chamber. Due to the construction mentioned, the wall 9 prevents the maximum expansion of ignited gases occurring intermediate the inner wall of cylinder 5 and the outer wall of the piston, in order to relieve the usual piston ring of the action thereof.

Below the firing chamber 8 is a relatively thick transverse wall 10 which is peripherally provided with a groove 11 in which a piston ring 12 of any approved type is disposed to contact with the inner wall of the cylinder 5. I preferably provide a single piston ring since I have found that not more than one is usually necessary but at the same time I do not limit myself to the employment of but one since a number may be used if desired. The employment of the single piston ring with satisfactory results is attained by relieving the piston rings of the maximum expansion of ignited gases. I have also found that piston rings in some instances are not at all necessary and that the piston will work satisfactory with piston rings when worn or faulty.

It is clear of course that the operation is the same in an engine equipped with my piston, as in ordinary engines with the exception that the explosion occurs within the firing chamber 8 and against the upper wall of the cylinder 5. Of course in connection with the cylinder 5, the usual inlet and exhaust means as well as spark plugs or other firing means are employed.

In order that lubricant may effectively reach the exterior wall of the piston and inner wall of the cylinder 5, suitable grooves 13 may be provided exteriorly on the piston as shown.

It is to be understood that I have shown merely one embodiment of my invention and that the details and principles thereof may be varied within the spirit and scope of the invention.

Having thus described the invention, what I claim is:—

1. A piston having an annular oil collecting groove immediately below a piston ring groove, said piston having oil grooves intersecting the oil collecting groove and intersecting each other, said last named grooves intersecting at a point to deliver the collected oil, to the wrist pin bearing of the piston.

2. A piston having an annular oil collecting groove above its wrist pin bearing, said piston having oil grooves intersecting the oil collecting groove and said oil grooves

intersecting each other at a point to deliver the collected oil to the wrist pin bearings of the piston at the upper side of the bearings, and said piston having oil grooves intersecting at the lower side of the wrist pin bearings and diverging downwardly therefrom.

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

ROBERT W. WAKEFIELD.

Witnesses:
L. H. WINDERS,
W. E. SHELTON.