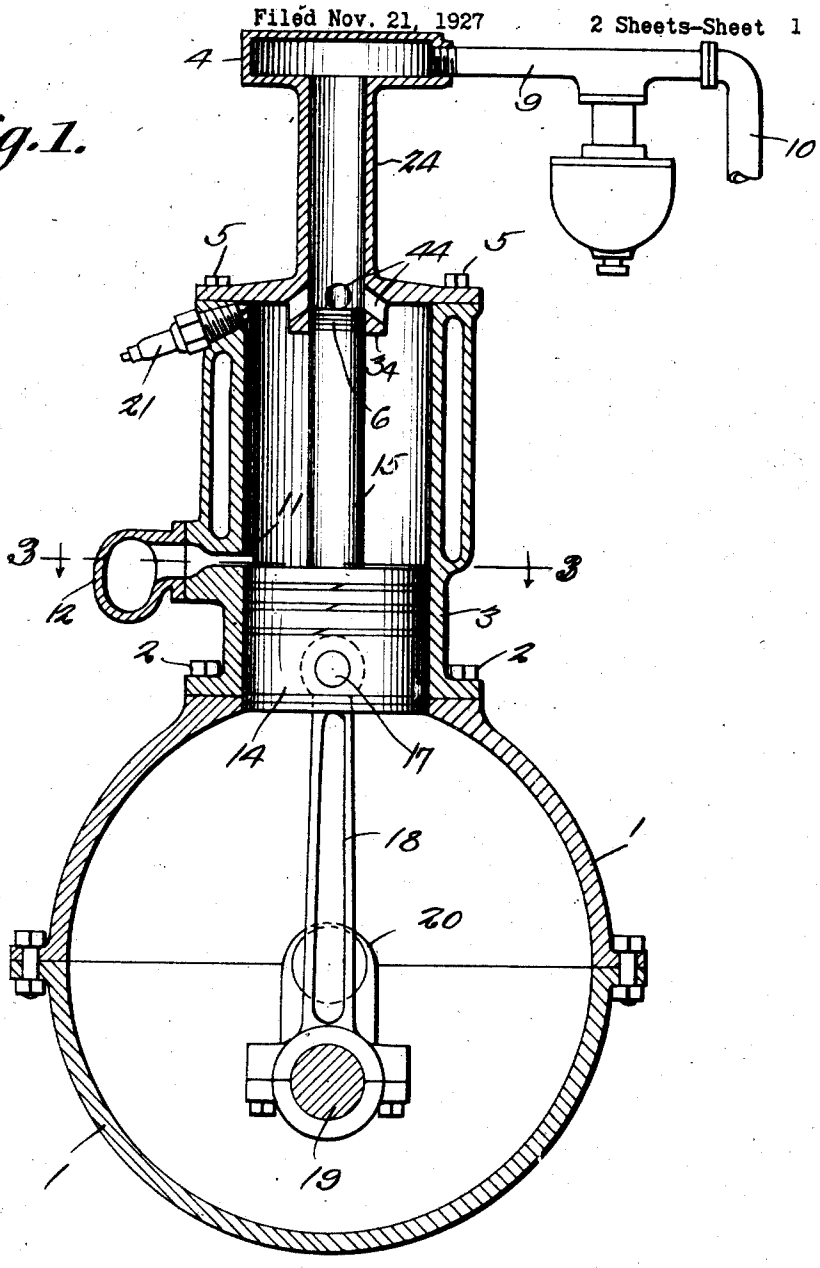
Jan. 15, 1929. 1,699,171

J. H. WATTERS

INTERNAL COMBUSTION ENGINE

Filed Nov. 21, 1927 2 Sheets-Sheet 1

Fig. 1.



Inventor

J. H. Watters

By C. A. Snow & Co.

Attorneys.

Jan. 15, 1929. 1,699,171

J. H. WATTERS

INTERNAL COMBUSTION ENGINE

Filed Nov. 21, 1927 2 Sheets-Sheet 2

Fig. 2.

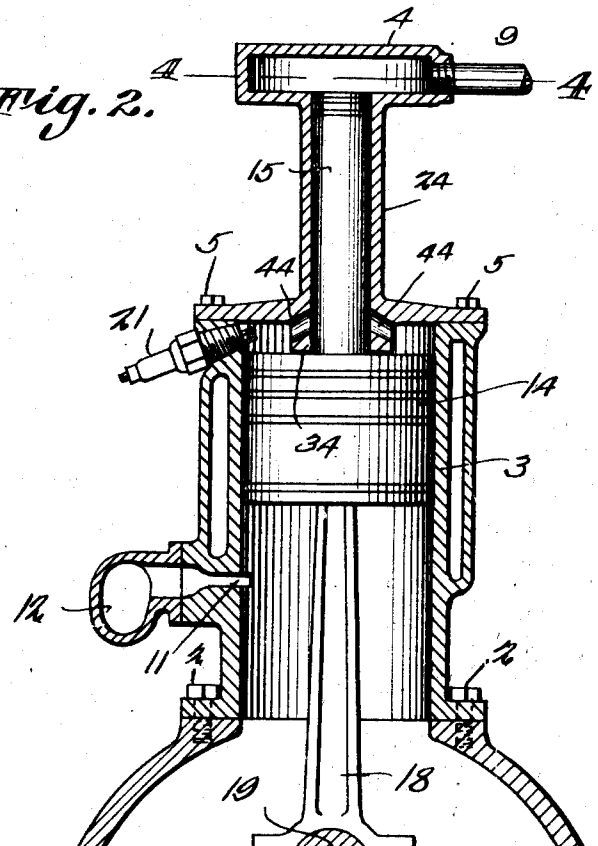


Fig. 3.

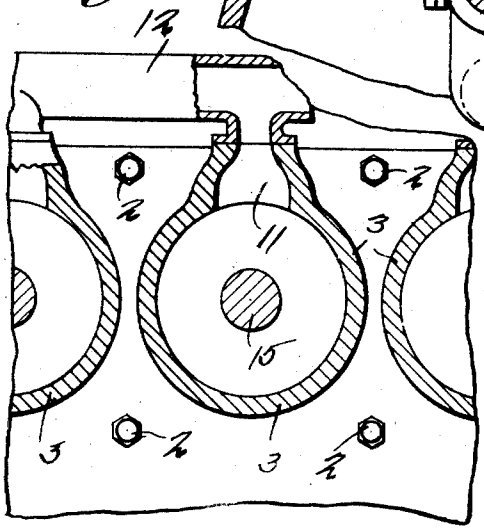
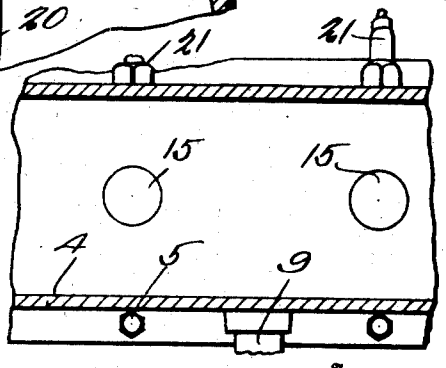


Fig. 4.



Inventor

J. H. Watters

By C. A. Snow & Co.

Attorneys

Patented Jan. 15, 1929. 1,699,171

UNITED STATES PATENT OFFICE.

JOHN HENRY WATTERS, OF ANNISTON, ALABAMA.

INTERNAL-COMBUSTION ENGINE.

Application filed November 21, 1927. Serial No. 234,741.

This invention aims to provide a simple engine of the internal combustion type which will operate effectively without valves, there being few parts in the engine, and there being little likelihood that it will get out of order.

It is within the province of the disclosure to improve generally and to enhance the utility of devices of that type to which the invention appertains.

With the above and other objects in view which will appear as the description proceeds, the invention resides in the combination and arrangement of parts and in the details of construction hereinafter described and claimed, it being understood that changes in the precise embodiment of the invention herein disclosed, may be made within the scope of what is claimed, without departing from the spirit of the invention.

In the drawings:—

Figure 1 shows in longitudinal section, a device constructed in accordance with the invention, the piston being at the end of the power stroke;

Figure 2 is a similar view, wherein the piston is shown at the end of the compression stroke;

Figure 3 is a fragmental transverse section on the line 3—3 of Figure 1;

Figure 4 is a section on the line 4—4 of Figure 2.

The device forming the subject matter of this application includes a crank case 1 connected at 2 to any desired number of cylinders 3. A fuel chamber 4 is located in spaced relation to the cylinder heads but is joined thereto by reduced tubular guides 24 which serve, also, as a means whereby the fuel finds its way from the fuel chamber 4 into the cylinders 3. The cylinder heads are secured in place in the usual way, as indicated at 5. The guide 24 has a short extension 34 which projects into the cylinder 3, there being ports 44 in the extension 34, the ports communicating with the combustion space of the cylinder 3.

A conduit 9 opens into the fuel chamber 4 and is connected with any suitable means 10 whereby a charge of fuel under pressure may be forced into the fuel chamber through the conduit 9. The cylinders 3 are provided near to their butt ends with exhaust ports 11 that communicate with an exhaust manifold 12.

In each cylinder 3, a piston 14 is mounted for reciprocation. The piston 14 has a reduced stem 15 of such diameter as to fit closely but slidably in the guide 24. The piston 14 carries a wrist pin 17 connected to a pitman 18 pivoted on a crank 19 located in an engine shaft 20 which is journaled in the crank case 1. The charge in each of the cylinders 3 is fired by any suitable means, for instance, by a spark plug 21 located near to the cylinder head.

When the piston 14 is in the position shown in Figure 2, the stem 15 closes the ports 44, and the charge is under extreme compression. At this time, the charge is fired by means of the plug 21 or any equivalent mechanism, and the piston 14 performs its power stroke, the piston being shown at the limit of its power stroke travel in Figure 1. When the parts are arranged relatively to each other as shown in Figure 1, the stem 15 has cleared the ports 44, and the piston 14 has cleared the exhaust port 11. The fresh charge can now move into the cylinder 3 from the fuel chamber 4, by way of the guide 24 which has now become a passage for the fuel, the fuel flowing through the ports 44 into the cylinder 3. The incoming charge aids in scouring out the exhaust through the port 11 into the manifold 12. Owing to the fact that the extension 34 is provided, the piston stem 15 never is quite withdrawn, and the stem, therefore, may carry packing rings 6, if desired.

The device is very simple in construction and calls for no valves, the stem 15 on the piston 14 taking the place of a valve. The engine is so made that it will withstand hard and long continued use and still remain operative.

What is claimed is:—

An internal combustion engine comprising a cylinder having an exhaust port in its side, a transversely enlarged fuel chamber, a guide of less diameter than the chamber, and of less diameter than the cylinder, the guide forming a connection between the chamber and the cylinder and having an extension which projects into the cylinder, the extension being supplied with an inlet port communicating with the cylinder, a piston slidable in the cylinder and constituting means for opening and closing the exhaust port, the piston having a reduced solid stem

slidable in the guide and in the extension to such a position that the extreme end surface of the stem will clear the intake port and establish communication between the chamber and the cylinder by way of the inlet port when the piston is in open position with respect to the exhaust port, the stem having a bearing in the extension when the piston is at the limit of its stroke to open the exhaust port.

In testimony that I claim the foregoing as my own, I have hereto affixed my signature.

JOHN HENRY WATTERS.