

April 13, 1926.

C. B. KING

1,581,065

ENGINE

Filed May 6, 1925

2 Sheets-Sheet 1

Fig. 2.

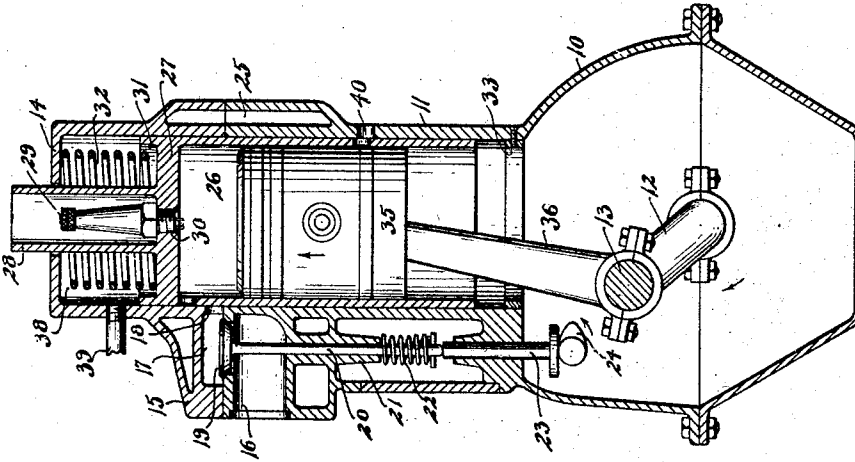
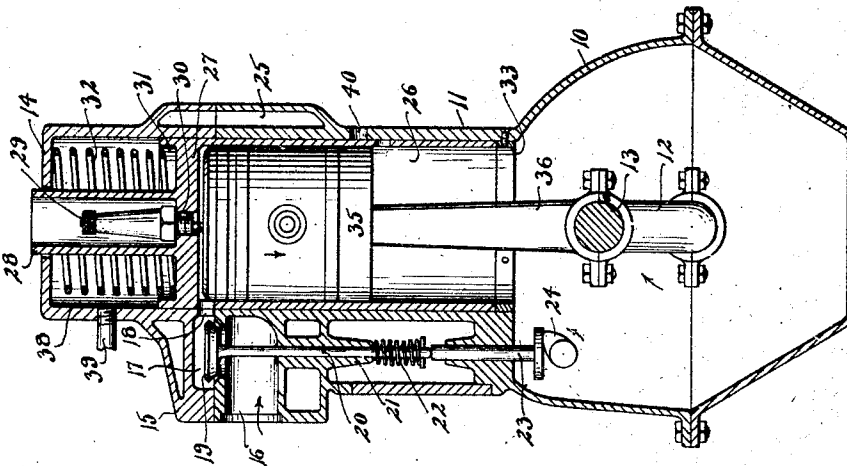


Fig. 1.



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WITNESS:

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INVENTOR

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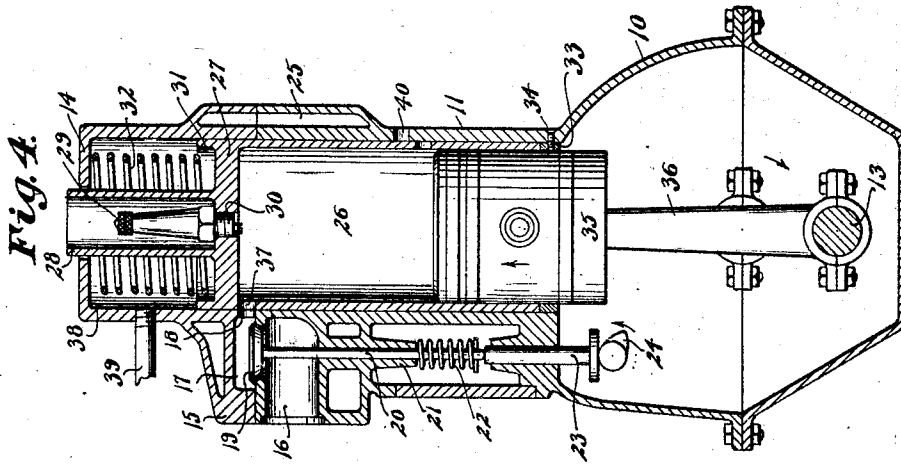
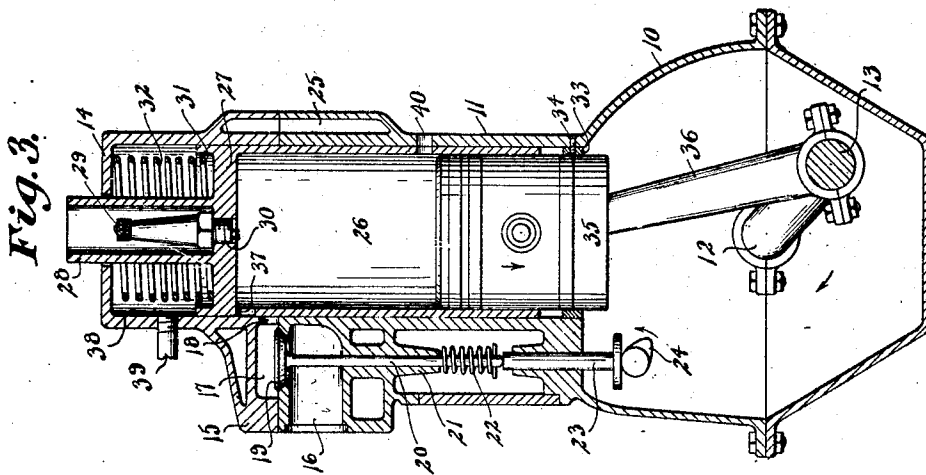
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UNITED STATES PATENT OFFICE.

CARL B. KING, OF SHOEMAKER, NEW MEXICO.

ENGINE.

Application filed May 6, 1925. Serial No. 28,431.

To all whom it may concern:

Be it known that I, CARL B. KING, a citizen of the United States, residing at Shoemaker, in the county of Mora and State of New Mexico, have invented new and useful Improvements in Engines, of which the following is a specification.

This invention relates to internal combustion engines, particularly to the cylinder construction thereof, and has for its object the provision of a novel engine or engine cylinder embodying a spring pressed sleeve arranged in surrounding relation to the usual piston and acting automatically to give the proper space for combustion regardless of whether on a full or partial charge of gas or explosive mixture.

An important object is the provision of an engine of this character so constructed and arranged as to insure a more complete exhaust, a better mixture for firing, a quicker expansion of the gas, better cooling conditions, the relieving of the strain on the bearings especially at the time of firing, the above mentioned advantages or conditions naturally resulting in the production of greater power with less fuel consumption.

A more specific object is the provision of an engine in which the cylinder is equipped with the sleeve which is spring pressed toward the crank shaft, the sleeve being more over heated and containing the ignition device, commonly a spark plug.

An additional object is the provision of an engine of this character which will be comparative simple and inexpensive in manufacture, highly efficient and durable in use and a general improvement in the art.

With the above and other objects and advantages in view, the invention consists in the details of construction to be hereinafter more fully described and claimed and illustrated in the accompanying drawings in which:

Figure 1 is a transverse vertical section taken through an engine constructed in accordance to my invention, the parts being shown in one position, and

Figures 2, 3 and 4 are similar views with the various parts shown in different positions or at different points in the stroke of the piston.

Referring more particularly to the drawings, the numeral 10 designates the usual

crank case upon which is mounted the cylinder casting or block 11, while 12 represents the crank shaft which is provided with the usual crank portions 13.

The upper end of the cylinder 11 is partially closed by means of a wall 14, and at one side of the cylinder is an extension 15 having a fuel inlet 16 and a chamber 17 adapted to communicate with the interior of the cylinder through a port 18. Passage of fuel mixture from the inlet 16 to the chamber 17 is controlled by a valve 19 here disclosed as being of the tappet or poppet type, which valve has the usual stem 20 slidable through a guide 21 and held, by a spring 22, in engagement with a push rod 23 actuated by means of the usual cam device 24. The exact mechanism for operating the cam devices is not shown as it forms no part of the present invention. It should also be stated that it is preferable to provide the usual water jacket 25 for the purpose of effecting cooling of the engine cylinder. While cylinder is referred to it should be understood that of course there may be any desired number of cylinders, all of which would be constructed in the same manner.

The essential feature of the invention lies in the provision of a sleeve 26 which is of the elongated cylindrical form and which fits slidably within the cylinder 11. This sleeve has its bottom or end toward the crank case open and its other end provided with a head 27 at the center of which is an upstanding tubular projection 28 slidable through the opening in the top wall 14 of the casting or cylinder block. The spark plug 29 of any ordinary or preferred type is located within the tubular extension 28 and is threaded through a suitable hole 30 in the head 27. On the upper surface or top of the head 27 is a peripheral upstanding flange 31 which forms retaining means for a coil spring 32 which abuts against the underside of the top wall 14 and which normally acts to urge the sleeve 26 downwardly. Downward movement of the sleeve is limited by means of a stop ring 33 which is located at the lower end of the cylinder and secured in any desired manner as for example by means of a screw 34 or any desired number of screws. The usual piston 35 is of course slidably mounted within the sleeve 26 and has connected therewith the usual connecting rod 36 which is in turn

connected with the crank portion of the crank shaft. In one side the sleeve 26 is formed with a port 37 designed to be brought into registration with the inlet port 18. Quite naturally, the exhaust valve structure is identically the same though this detail is not illustrated.

In the operation, it will, of course be apparent that the sleeve is held down by the spring 32 until the piston 35 starts upwardly on the compression stroke, whereupon owing to the frictional contact of the sleeve with the piston the sleeve likewise moves upwardly until the firing point is reached. At this point the spring takes up the balance of the expansion and relieves the motor from extreme pressure at firing point and early part of power stroke and the spring further acts to bring the power of the explosion farther down on the stroke instead of wasting power, under extreme pressure, past the rings and valves.

In order to keep the top of the cylinder sleeve 26 cool and to facilitate vaporization of the incoming charge so that customary combustibility will be increased, it is preferable that the chamber 38 containing the spring 32 be connected by a pipe 39 or the like with the air intake of the carburetor so that the air drawn through the pipe 39 and furnished to the carburetor will be warm. Obviously, no fuel mixture can enter the sleeve through the port 18 until the sleeve is in such position that the ports 37 and 18 register and in this way it is apparent that the device will act automatically to maintain the proper balance at all times and insure proper and efficient operation of the engine. If desired it may provide an auxiliary exhaust port 40 in the cylinder for the purpose of decreasing pressure in case of an excessive charge of gas.

While I have shown and described the preferred embodiment of the invention, it should be understood that I reserve the right to make such changes in the form, construction and arrangement of parts as will not depart from the spirit of the invention or the scope of the subjoined claims.

Having thus described the invention, I claim:

1. In an engine including a crank case, a crank shaft journaled therein and having crank portions, the engine further having a valve controlled fuel inlet port communicat-

ing with the cylinder, a sleeve slidably mounted within the cylinder and having its bottom open and its top closed by a head, a spark plug carried by the head, a spring located above the head normally urging the sleeve downwardly, a piston slidably mounted within the sleeve and having a connecting rod connected with the crank portion of the crank shaft, said sleeve being formed in its wall with a port adapted to register with said inlet port, the sleeve being in frictional engagement with the piston and moved thereby in one direction.

2. In an engine including a crank case, a crank shaft journaled therein and having crank portions, the engine further having a valve controlled fuel inlet port communicating with the cylinder, a sleeve slidably mounted within the cylinder and having its bottom open and its top closed by a head, a spark plug carried by the head, a spring located above the head normally urging the sleeve downwardly, a piston slidably mounted within the sleeve and having a connecting rod connected with the crank portion of the crank shaft, said sleeve being formed in its wall with a port adapted to register with said inlet port, the cylinder having a top wall with a central opening, and said head having a tubular extension slidable through said opening and forming an enclosure for the spark plug.

3. In an engine including a crank case, a crank shaft journaled therein and having crank portions, the engine further having a valve controlled fuel inlet port communicating with the cylinder, a sleeve slidably mounted within the cylinder and having its bottom open and its top closed by a head, a spark plug carried by the head, a spring located above the head normally urging the sleeve downwardly, a piston slidably mounted within the sleeve and a connecting rod connected with the crank portion of the crank shaft, said sleeve being formed in its wall with a port adapted to register with said inlet port, the cylinder having a top wall with a central opening, said head having a tubular extension slidable through said opening and forming an enclosure for the spark plug, the top wall serving as one abutment for the spring and the head serving as the other abutment therefor.

In testimony whereof I affix my signature.

CARL B. KING.