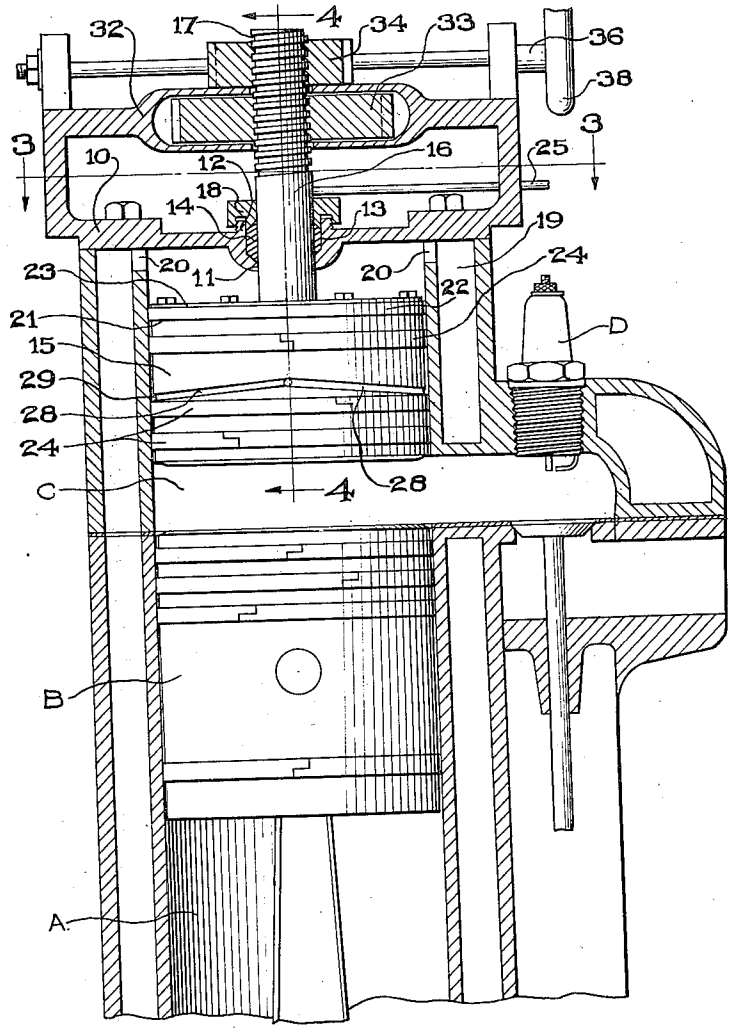
Aug. 5, 1924. 1,504,101

A. H. DAVIDSON

ENGINE

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Fig. 1.



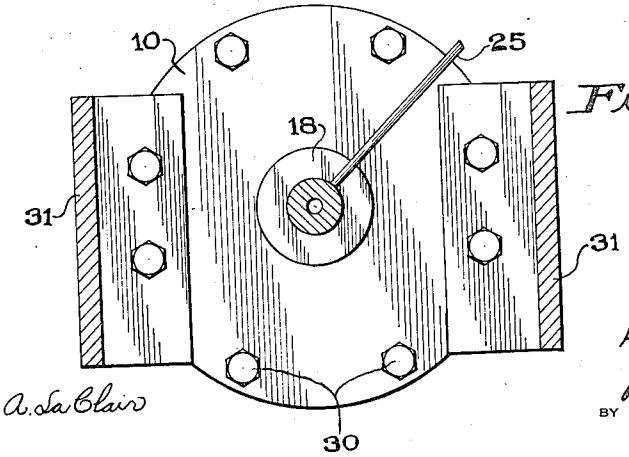


Fig. 3.

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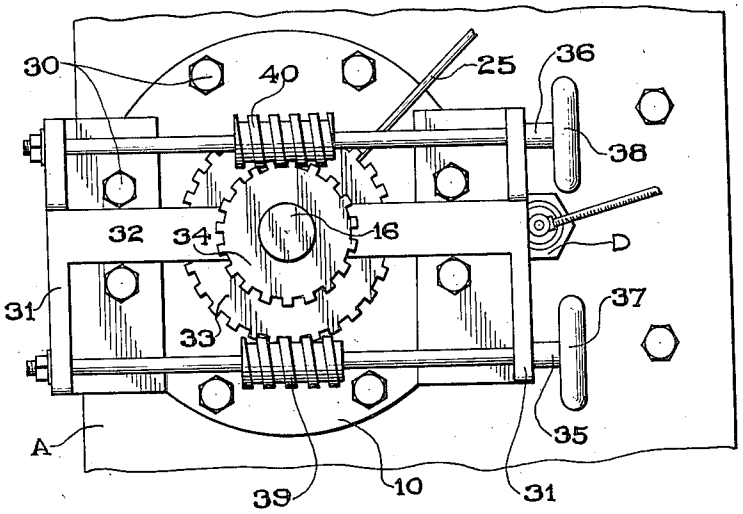


Fig. 2.

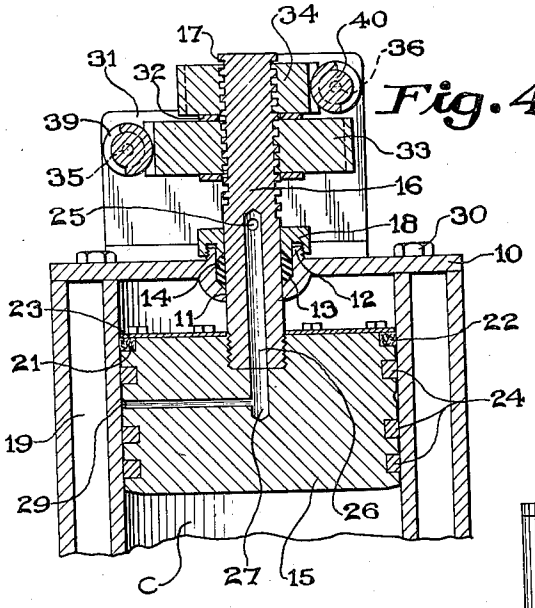


Fig. 4.

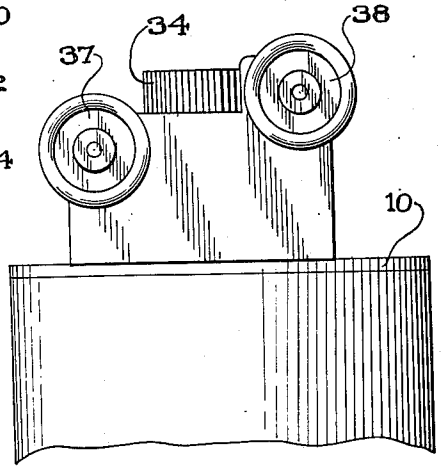


Fig. 5.

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Patented Aug. 5, 1924. 1,504,101

UNITED STATES PATENT OFFICE.

ALF H. DAVIDSON, OF CHIPPEWA FALLS, WISCONSIN.

ENGINE.

Application filed July 26, 1922. Serial No. 577,624.

To all whom it may concern:

Be it known that I, ALF H. DAVIDSON, a citizen of the United States, residing at Chippewa Falls, in the county of Chippewa and State of Wisconsin, have invented new and useful Improvements in Engines, of which the following is a specification.

This invention relates to engines and has for its object the provision of means whereby the compression may be regulated by varying the size of the combustion chamber.

An important object is the provision of an adjustably mounted cylinder head having means for effecting adjustment thereof toward or away from the piston for the purpose of varying the size of the combustion chamber.

Another object is the provision of a device of this character which is fully water jacketed so as to keep down the heat generated during the operation of the engine.

A further object is the provision of a device of this character which is provided with efficient and continuously acting lubricating means.

An additional object is the provision of a device of this character which will be simple and inexpensive in manufacture, efficient and durable in use, easy to control and adjust, durable in service 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 longitudinal section through an engine cylinder showing my device applied thereto,

Figure 2 is a top plan view,

Figure 3 is a horizontal section on the line 3—3 of Figure 1,

Figure 4 is a fragmentary vertical sectional view of the device.

Figure 5 is a fragmentary elevation of the same.

Referring more particularly to the drawings the letter A designates a cylinder of an engine within which operates the usual piston B. The letter C designates the combustion chamber while D represents the ordinary spark plug. The valve mechanism and other details are not necessary to a proper understanding of this invention and are therefore neither described nor illustrated.

In carrying out the present invention the top of the cylinder A is open instead of closed as is usual and mounted upon this top is a plate 10 provided centrally with a hole 11 surrounded by an upstanding flange 12 which defines a chamber or recess 13 which is filled with packing 14. Located within the upper portion of the cylinder is a relatively stationary piston member or abutment 15 carried by a stem 16 which passes through the hole 11 and which has its upper end threaded as shown at 17. A packing cap 18 is screwed upon the flange 12 and operates to compress the packing 14 so as to make a leak proof joint where the stem 16 passes through.

The cylinder wall is of course provided with the usual space 19 constituting a water jacket and the uppermost portion of the cylinder is formed with openings 20 which lead into this space 19 for the purpose of permitting water to circulate above the abutment member 15. The uppermost portion of the abutment member is formed with an annular recess or groove 21 within which fits a felt packing ring 22 for the purpose of preventing the water above the abutment member from seeping down into the combustion chamber and this felt packing ring is held in place by a disk like retaining plate 23 secured on the top of the abutment member. The abutment member is furthermore provided with the usual packing rings 24 such as are always used on pistons and the purpose of which is to prevent compression from escaping up past the abutment member.

Leading into the stem 16 above the packing cap 18 is an oil pipe 25 and located within the stem in an oil passage 26 communicating with the pipe 25 and leading to an oil chamber 27 in the center of the abutment member. I provide a plurality of passages or channels 28 which lead from this chamber 27 to a peripheral groove 29 in the abutment member for the purpose of supplying lubricating oil to the contacting faces or surfaces of the cylinder and abutment member.

Secured upon the top of the cylinder by means of the same bolts 30 which secure the plate 10 in position are brackets 31 formed with frame members 32 through which the

stem 16 passes. Threaded onto the stem 16 are worm wheels 33 and 34 disposed within the frame members 32. Journaled in these brackets 31 are parallel shafts 35 and 36 which carry hand wheels 37 and 38 respectively and which also carry worms 39 and 40 meshing respectively with the worm wheels 33 and 34.

In the operation of the device it will be seen that by manipulating the hand wheel 37 to turn the shaft 35, the worm 39 will operate to rotate the worm wheel 33 in one direction or the other to cause longitudinal up or down movement of the abutment member 15 so as to vary its position with respect to the piston B and thus regulate or adjust the size of the combustion chamber C. The upper worm wheel 34 is used simply as a lock nut and is moved by manipulating the hand wheel 38 to turn the worm 40, the purpose being to maintain any adjustment made by the worm wheel 33. The action of the lubricating device and the water circulating system has already been described and repetition thereof is unnecessary.

From the foregoing description and a study of the drawings it will be apparent that I have thus provided a simply constructed means for varying or regulating the compression in an engine so that all the cylinders might, if desired, be differently adjusted so that each cylinder would develop exactly the same power so that a more easy running motor and also more powerful one will be the result. The adjustment takes care of a great many conditions which might arise and is bound to be highly advantageous.

While I have shown and described the preferred embodiment of the invention it is of course to 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 my invention I claim:

1. The combination with an internal combustion engine cylinder, a vertically adjustable abutment arranged therein, of a pair of brackets supported on the cylinder, a shaft journaled therein, a threaded stem movable through the cylinder and connected with the abutment, a worm wheel carried thereby, a worm on the shaft engaging the worm wheel, a second worm wheel on the threaded stem, a worm formed on the other shaft and engaging said secondary worm wheel, whereby to lock the stem in adjusted position, and a horizontally arranged elongated yoke supported by the bracket and said yoke receiving one of said worm wheels to hold it in place.

2. The combination with an internal combustion engine and a vertically movable abutment therein, of a stem carried by the abutment and passing through the upper wall of the cylinder and provided with screw threads, a horizontally arranged yoke supported on the upper end of the cylinder, a worm gear on the threaded stem and arranged within the yoke, a pair of manually operable worm shafts on the yoke, one of which engaging said worm gear, and a second worm gear on the shaft and engaged by the other worm shaft whereby to lock the abutment in its adjusted position.

In testimony whereof I affix my signature.

ALF H. DAVIDSON.