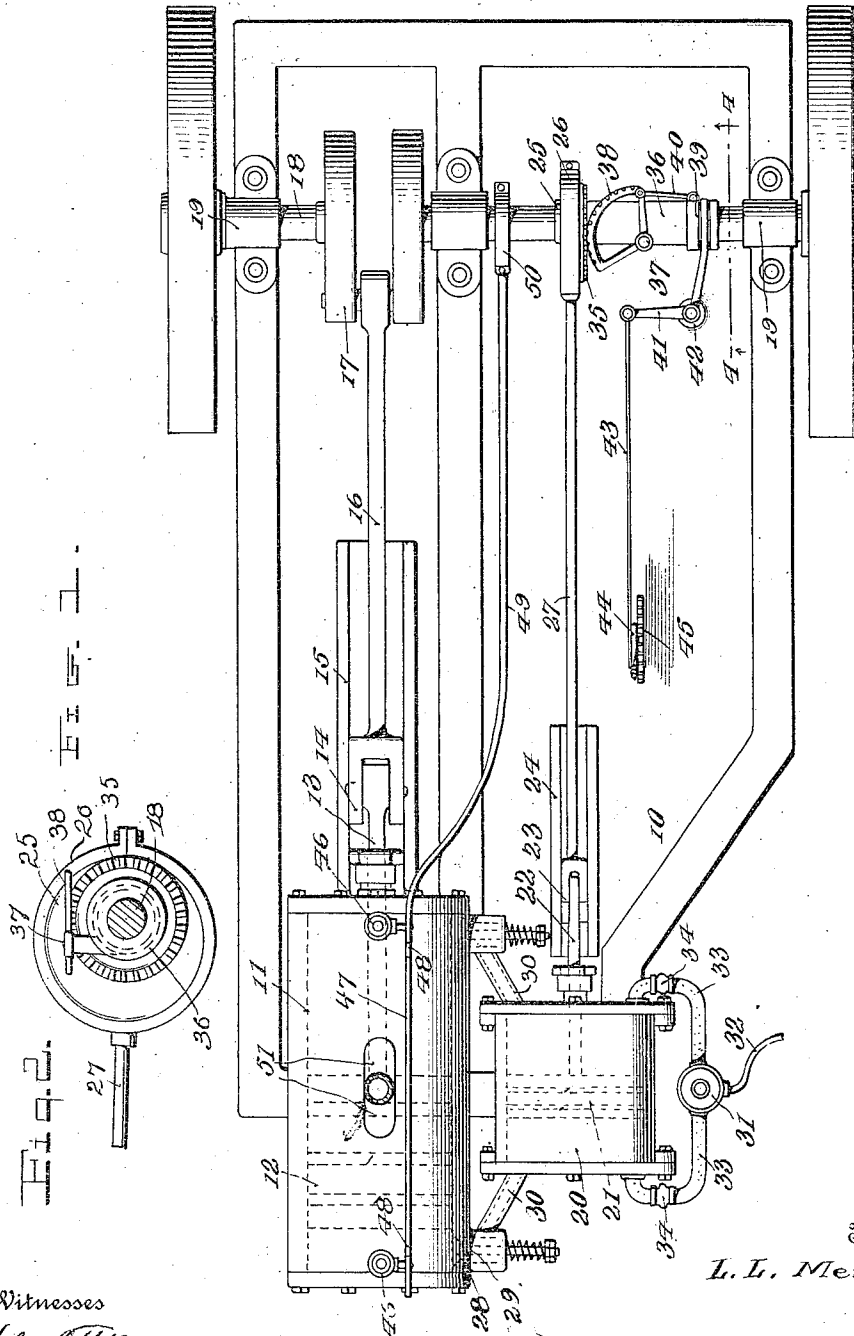


L. L. MENG.
GASOLENE ENGINE.
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GASOLENE-ENGINE.

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To all whom it may concern:

Be it known that I, LEO L. MENG, a citizen of the United States, residing at Murdock, in the county of Kingman, State of Kansas, have invented certain new and useful Improvements in Gasolene-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.

This invention relates to internal combustion engines and has special reference to an internal combustion engine of the double acting, two cycle type.

The invention further relates to means external of the explosion cylinder of such an engine adapted for compressing the charges prior to their admission to the explosion cylinder.

The principal object of the invention is to provide an improved shifting eccentric for controlling the relative movements of the pistons.

With the above and other objects in view the invention consists in general of a double acting two cycle internal combustion engine provided with an auxiliary compression cylinder having a piston therein the stroke of which is controlled in a novel manner by an improved mechanism.

The invention further consists in certain novel details of construction and combinations of parts hereinafter fully described, illustrated in the accompanying drawings, and specifically set forth in the claim.

In the accompanying drawings, like characters of reference indicate like parts in the several views, and Figure 1 is a plan view of an engine constructed in accordance with this invention. Fig. 2 is a detail section on the line 4-4 of Fig. 1, certain of the parts being omitted in order to show the remainder more clearly.

This engine is provided with the usual bed 10 whereon is mounted an explosion cylinder 11 having a piston 12 reciprocating therein. Connected to the piston 12 is a piston rod 13 which is in turn attached to a cross head 14 slidable on the guides 15. To this cross head is attached one end of a connecting rod 16 the other end of which is carried by a crank 17 formed on a shaft 18, the latter being mounted in bearings 19 on the bed 10. On the bed 10 is also mounted a compression cylinder 20 wherein reciprocates a piston 21 provided with a piston rod 22 extending through one of the heads of the cylinder and connected to a cross head 23 slidable in guides 24. An eccentric 25 is so mounted on the crank shaft that it is freely rotatable thereon and surrounding this eccentric is the usual eccentric strap 26 which is connected to the cross head 23 by the eccentric rod 27.

At each end of the cylinder 11 is an inlet port 28 controlled by the usual spring actuated valve 29. Leading from the port 28 to a respective end of the cylinder 20 is a duct 30 it being understood that there is one of these ducts for each of the ports 28.

At 31 is a carbureter which is connected by a pipe 32 with any suitable source of hydro-carbon supply. Leading from carbureter 31 to opposite ends of the cylinder 20 are pipes 33 in each of which is a check valve 34 opening away from said carbureter.

In order to control the relative movements of the pistons 12 and 21 there is provided a beveled gear 35 which is fixed to the eccentric 25 in such position that it is concentric with the shaft 18. On this shaft 18 is keyed a sleeve 36 whereon is a journal pin 37, the sleeve and journal pin thus forming a bracket. On this journal pin is journaled segmental bevel gear 38 which meshes with the gear 35, the arrangement being such that as the segmental gear is rotated on the pin 37 the eccentric 25 will be rotated relative to the shaft 18. On the sleeve 36 is splined the shipper collar 39 which is connected by means of a link 40 to the gear 38.

At 41 is a bell crank shipper lever which is mounted on the standard 42 extending upward from the bed 10. One of the arms of this lever is forked to engage the collar 39 while the other arm is connected by a reach rod 43 to a latch lever 44 cooperating with a quadrant 45 fixed on the bed 10.

At each end of the cylinder 11 is a sparkler 46 of any preferred form and extending adjacent to these sparkers is a cam rod 47 provided with a sparkler actuating cam 48. This cam rod is connected by an eccentric rod 49 to the strap 50 of an eccentric mounted on the shaft 18. The specific details of the sparkers have not here been shown as these details form no essential part of the present invention and the showing is to be taken as typical of any form of sparkler adapted for this use.

In the operation of the engine, as the piston 12 moves toward one end of the cylinder the piston 21 will move in the opposite direction. The movement of the piston 21 may be timed with relation to the piston 12 by shifting the eccentric 25 on the shaft 18 through the mechanism previously described. Under certain conditions, however, the compression of the mixture in the cylinder 20 is greater than the pressure on the inner face of the respective valve 28 so that this valve is opened and the compressed charge forced into the cylinder 11. At the usual point in the stroke of the piston the sparker at the end of the cylinder which has been charged is actuated and the charge exploded. It is to be noted that the compressed charge is admitted to the cylinder 11 prior to the piston 12 reaching the limit of its stroke in either direction so that additional compression takes place within said cylinder 11 and upon the explosion of the charge the piston 12 is driven forward and uncovers one of a pair of exhaust ports 51 located centrally of the cylinder 11. As the respective exhaust port is uncovered, the admission of a fresh charge takes place, either while the piston 12 is completing its stroke or when returning, this being regulated as before noted by the position of the eccentric 25. At this time the charge previously admitted at the opposite end of the cylinder will have been fully compressed and the explosion takes place at said opposite end. It will furthermore be noted that by rotation of the eccentric 25 through a half circle the direction of movement of the two pistons

will be reversed so that one will move in the opposite direction to the other and the engine may thus be reversed so that it may run in the opposite direction by proper actuation of said eccentric.

There has thus been provided a simple and efficient device of the kind described and for the purpose specified.

It is obvious that many minor changes may be made in the form and construction of this invention without departing from the material principles thereof. It is not therefore desired to confine the invention to the exact form herein shown and described, but it is wished to include all such as properly come within the scope of the appended claim.

Having thus described the invention, what is claimed as new, is:—

In a piston controlling mechanism, the combination with a shaft, of an eccentric loosely mounted thereon, a bevel gear fixed to the eccentric and arranged concentric to the shaft, a sleeve fixed on the shaft, a journal pin on said sleeve, a segmental bevel gear journaled on said pin and engaged with said gear, a shipper collar splined on said sleeve, a link connecting the segmental gear and collar, and means for sliding said collar along the sleeve.

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

LEO L. MENG.

Witnesses:

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