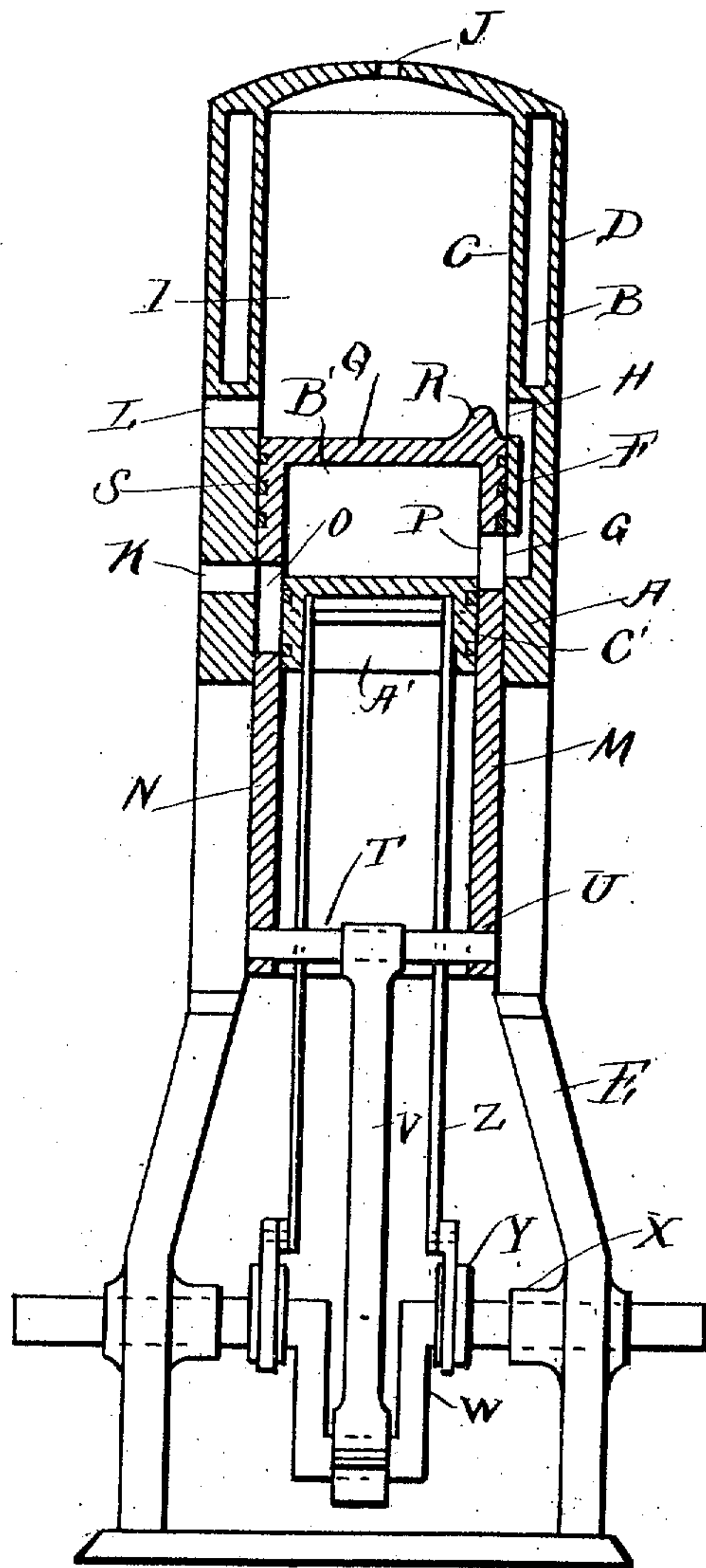


H. E. NORRIS.  
EXPLOSIVE ENGINE.  
APPLICATION FILED JULY 26, 1910.

988,650.

Patented Apr. 4, 1911.



WITNESSES

*Francis W. Pock*  
*S. M. Gallagher*

INVENTOR

*Harry E. Norris*

BY

*H. W. Williamson*

ATTORNEY

# UNITED STATES PATENT OFFICE.

HARRY E. NORRIS, OF WORTHINGTON, OHIO.

EXPLOSIVE-ENGINE.

988,650.

Specification of Letters Patent.

Patented Apr. 4, 1911.

Application filed July 26, 1910. Serial No. 573,999.

*To all whom it may concern:*

Be it known that I, HARRY E. NORRIS, a citizen of the United States, residing at Worthington, in the county of Franklin and State of Ohio, have invented a certain new and useful Improvement in Explosive-Engines, of which the following is a specification.

My invention relates to a new and useful improvement in explosive engines, and has for its object to provide an exceedingly simple and effective device of this character whereby the charge may be compressed before entering the combustion chamber. I obtain this object by placing an auxiliary piston head within a hollow main piston head, and by working these heads in opposite directions the charge taken in between them will be compressed before entering the piston chamber.

With these ends in view, this invention consists in the details of construction and combination of elements hereinafter set forth and then specifically designated by the claims.

In order that those skilled in the art to which this invention appertains may understand how to make and use the same, I will describe its construction in detail, referring by letter to the accompanying drawing forming a part of the specification, in which the figure is a vertical sectional view of an engine made in accordance with my improvement.

In carrying out my invention as here embodied, A represents the cylinder, having a water space B formed between the inner and outer walls C and D respectively, and E represents the uprights, which support the cylinder. Below the water space is formed a passageway F, having an inlet G and an outlet H, said outlet being in connection with the combustion chamber I, and into said piston chamber leads a hole J for the reception of a suitable sparking plug whereby the charge may be ignited. Opposite the inlet G is formed an intake port K and directly above this and opposite the outlet H is formed an exhaust port L.

M denotes the main piston head, having side walls N provided with an inlet slot O and an outlet opening P and having a top Q with which is formed an integral baffle plate R, said baffle plate being situated in proximity to the outlet H; said piston head

has a number of packing rings S mounted therein in proximity to its upper end.

T is a shaft journaled in the side walls of the piston head M, as indicated by U and on this shaft is mounted the piston rod V, the lower end of which is attached to the crank shaft W, which is journaled in the bearings X formed with the supports E.

On the crank shaft W at both sides of the piston rod are mounted the eccentrics Y, to which are connected the lower ends of the rods Z, the upper ends of said rods being journaled in the auxiliary piston head A', adapted to slide within the main piston head M, thereby forming between said auxiliary piston head and the top of the main piston head a compression chamber B'. The auxiliary piston head is also provided with packing rings as indicated by C'.

The operation of the device is as follows:—A charge is drawn from the carbureter (not shown) through the contact port K and the slot O into the compression chamber B' by the action of the piston heads Q and A' and when the charge is within the compression chamber the piston heads are farthest removed from one another. The next action of the engine brings them toward one another compressing the charge, and when the outlet port P registers with the inlet G the charge is forced through the passage way F and the outlet H into the combustion chamber I, the baffle plate R forcing said charge upward; thereby forcing the burned gases therefrom through the exhaust L. As the piston head M again moves upward the new charge will be compressed and another charge drawn into the compression chamber B', the inlet and outlet to the passageway F and the exhaust port L being closed, and when the charge is compressed within the combustion chamber, the same will be ignited, forcing the piston head M downward, as is the case in explosive engines.

Of course I do not wish to be limited to the exact details of construction here shown, as these may be varied within the limits of the appended claims without departing from the spirit of my invention.

Having thus fully described my invention, what I claim as new and useful, is—

1. The herein described combination of a cylinder having a water space, a passageway below the water space, inlet and exhaust



ports, the inlet port being opposite the inlet of the passageway and the exhaust port being opposite the outlet of said passageway, a hollow main piston provided with an inlet slot and an outlet opening adapted to register with the inlet port and the inlet to the passageway, respectively, and having a baffle plate mounted on the outer face of the top thereof for deflecting the gases as they enter the combustion chamber, means for reciprocating said piston, an auxiliary piston slidably mounted within the main piston, and means for simultaneously reciprocating said auxiliary piston in the opposite direction to that of the main piston.

2. The herein described combination of a cylinder having a water space, a passageway below the water space, inlet and exhaust ports, the inlet port being opposite the inlet of the passageway and the exhaust port being opposite the outlet of said passageway,

a hollow main piston provided with an inlet slot and an outlet opening adapted to register with the inlet port and the inlet to the passageway, respectively, and having a baffle plate mounted on the outer face of the top thereof for deflecting the gases as they enter the combustion chamber, a crank shaft, a piston rod for connecting said piston with the crank shaft, eccentrics mounted upon the crank shaft on both sides of the piston rod, an auxiliary piston slidably mounted within the main piston, and rods for connecting said auxiliary piston with the eccentrics.

In testimony whereof, I have hereunto affixed my signature in the presence of two subscribing witnesses.

HARRY E. NORRIS.

Witnesses:

CLARENCE E. NORRIS,  
J. E. LINES.