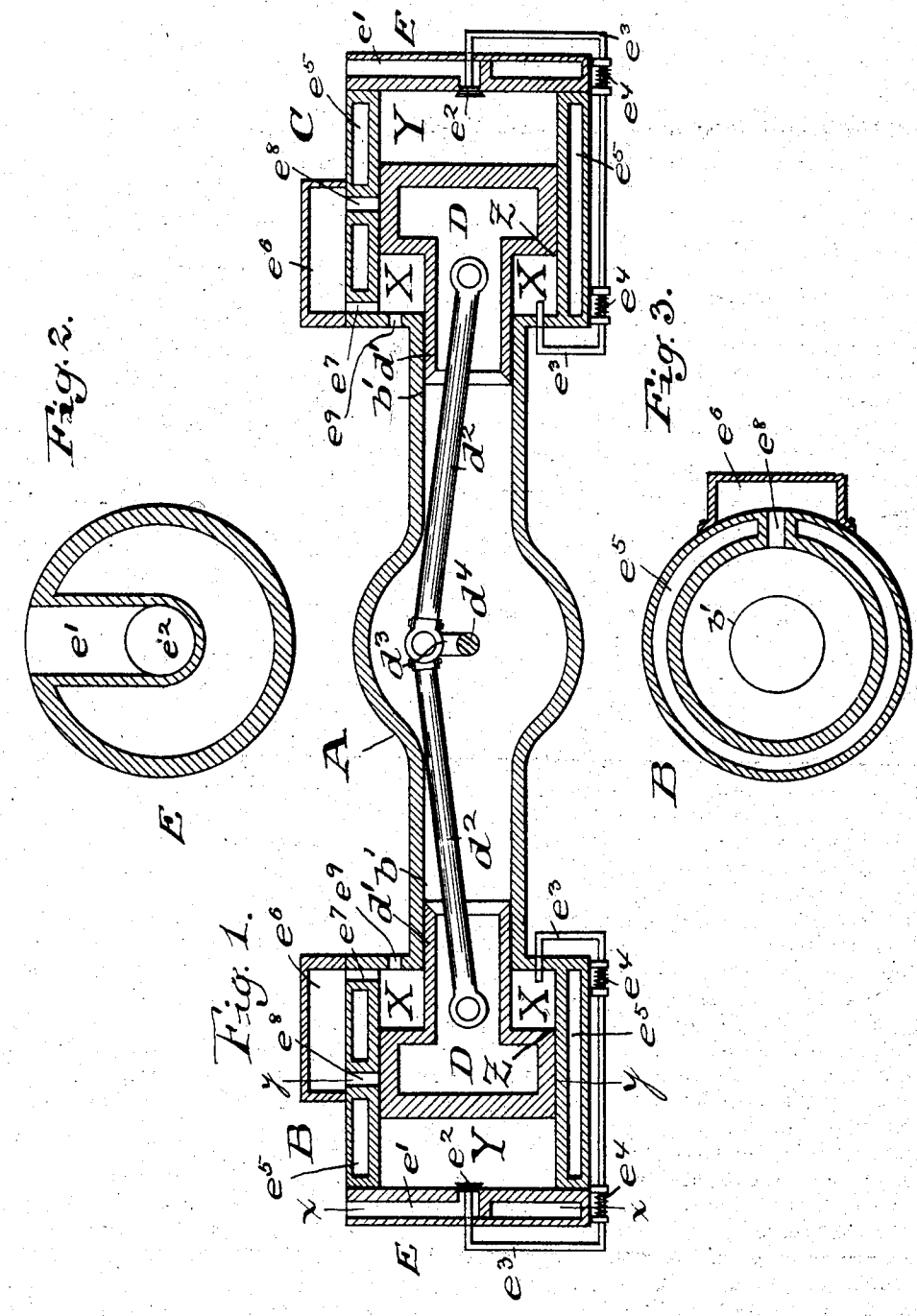
No. 773,021. PATENTED OCT. 25, 1904.

S. S. & A. LEWIS.

EXPLOSION MOTOR.

APPLICATION FILED MAR. 18, 1902. RENEWED JAN. 28, 1904.

NO MODEL.



Witnesses
Arthur L. Helmes.
Frederic D. Pangborn.

Inventors
Shirley S. Lewis and
Albert Lewis
By their Attorney
Arthur V. Beeken

No. 773,021. Patented October 25, 1904.

UNITED STATES PATENT OFFICE.

SHIRLEY S. LEWIS AND ALBERT LEWIS, OF SYRACUSE, NEW YORK.

EXPLOSION-MOTOR.

SPECIFICATION forming part of Letters Patent No. 773,021, dated October 25, 1904.
Application filed March 18, 1902. Renewed January 28, 1904. Serial No. 191,060. (No model.)

To all whom it may concern:

Be it known that we, SHIRLEY S. LEWIS and ALBERT LEWIS, citizens of the United States, and residents of Syracuse, in the county of Onondaga and State of New York, have invented certain new and useful Improvements in Explosion-Motors, of which the following is a specification.

Our invention relates generally to explosion motors or engines, and more particularly to the class known as "two-cycle" motors.

We shall describe a double two-cycle reciprocating engine embodying our invention and afterward point out the novel features in the claim.

The object of our invention is, chiefly, to produce a construction which will admit of two single two-cycle reciprocating engines being coupled together and is intended to be used especially on automobiles.

In the drawings we have shown our invention in a form which we consider preferable; but changes in construction may of course be made within the scope of the claim.

In the said drawings, Figure 1 is a longitudinal section of a double reciprocating two-cycle explosion-engine embodying our invention. Fig. 2 is a section through the cylinder-head on the line X X. Fig. 3 is a section through the cylinder on the line Y Y.

Similar letters of reference indicate corresponding parts in the different views.

Heretofore it has been customary to construct two-cycle reciprocating engines with the forward part of the cylinder communicating freely with the base or casing and by means of a passage with the rear part of the cylinder. The gasolene and air are drawn into the casing or base on the rearward stroke of the piston and compressed by the piston as it moves forward and passed into the rear part of the cylinder as the burned gas of the preceding explosion escapes. When it is desired to couple two single two-cycle reciprocating engines together, it becomes necessary, as the forward end of each cylinder communicates freely with the casing, to provide means whereby the gas will not flow from one cylinder to another, thereby interfering with the operation of the motor. This to our knowledge has never before been accomplished.

A indicates a central casing of any suitable construction.

B and C are two cylinders which have communication with each other through the said casing, which has a guideway b' at each end adjacent to the forward end of the cylinders, but of a diameter somewhat smaller than the said cylinder and with its axis coincident with the axes of the cylinders.

D is the piston, one in each cylinder, provided with an extension d' adjacent to the forward end of the cylinder. This extension is of a diameter somewhat smaller than the piston proper and is adapted to work in its corresponding guideway and also on the rearward stroke to enter the cylinder proper.

The guideway b' may, if desired, be considered as part of the cylinder, so far as the extension of the piston is concerned. The full length of the piston, with its extension, must not be less than the length of the cylinder proper. The extension of the piston acts as a cross-head and has attached the connecting-rod d^2, fastened to the crank-pin d^3, carried by the main shaft d^4.

As both cylinders are identical in construction, one only will be described.

E is the cylinder-head, suitably attached to the cylinder and provided with an exhaust-passage e' and an exhaust-valve e^2, having the rod e^3, which projects into the cylinder on the other side of the piston proper and is provided with springs e^4 for holding the valve closed.

e^5 is a water-jacket.

e^6 is an intermediate chamber fastened on the outside of the cylinder adjacent to the forward portion of same and communicating with the inside of the cylinder by means of the two passages e^7 and e^8.

e^9 is the inlet for the gasolene and air, located adjacent to the passage e^7.

The operation is as follows: The piston proper, D, moves in the cylinder proper and the extension b' of the cylinder or casing, which acts as a guideway. As the piston moves rearward it draws the gasolene and air into the chamber X, where it is mixed and formed

into gas, from whence it passes through the passage e^7 into the chamber e^6, where it is confined until the piston makes its forward stroke, when it passes through the passage e^8 into the chamber Y of the cylinder, where it is compressed by the return stroke of the piston and exploded by an electric spark or otherwise. The explosion drives the piston forward until the end Z comes in contact with the rod e^9, thereby opening the exhaust-valve and allowing the burned gas to escape. During this forward motion of the piston the passage e^8 is opened or uncovered, allowing the fresh charge to pass into the chamber Y. The exhaust-valve is held open only until the piston has moved back a little more than enough to close the passage e^8.

Having thus described our invention, what we claim is—

In a two-cycle reciprocating engine, the combination of a cylinder, an intermediate chamber located adjacent thereto, a port in the forward end of the cylinder and a port intermediate of the cylinder communicating with said intermediate chamber, a gas-admitting port in the front of the cylinder, an exhaust-valve in the rear of the cylinder, a tappet-rod in front of the cylinder having connections with the rear exhaust-valve, and a piston in the cylinder acting as a valve to close the port intermediate of the cylinder leading to said intermediate chamber and to strike said tappet-rod.

Signed at Syracuse, in the county of Onondaga and State of New York, this 8th day of March, A. D. 1902.

SHIRLEY S. LEWIS.
ALBERT LEWIS.

Witnesses:
CHARLES SEALS,
JAMES F. CARBERRY.