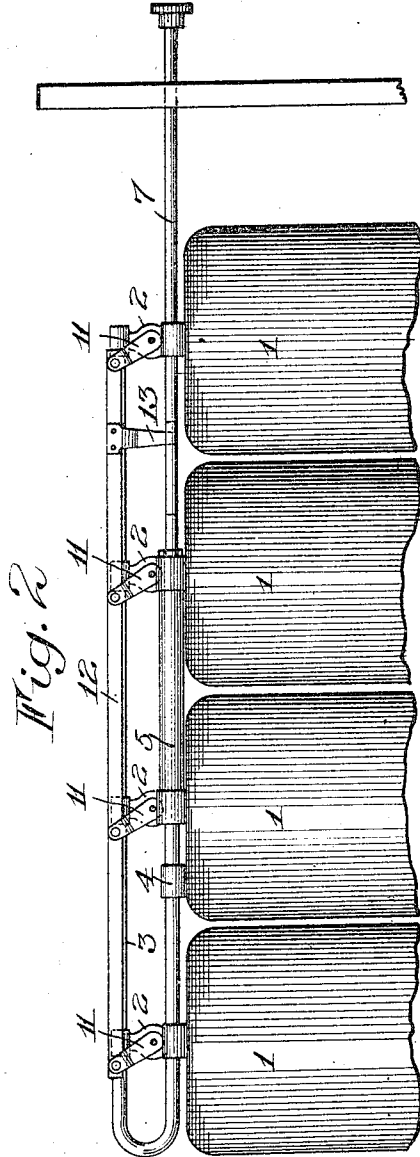
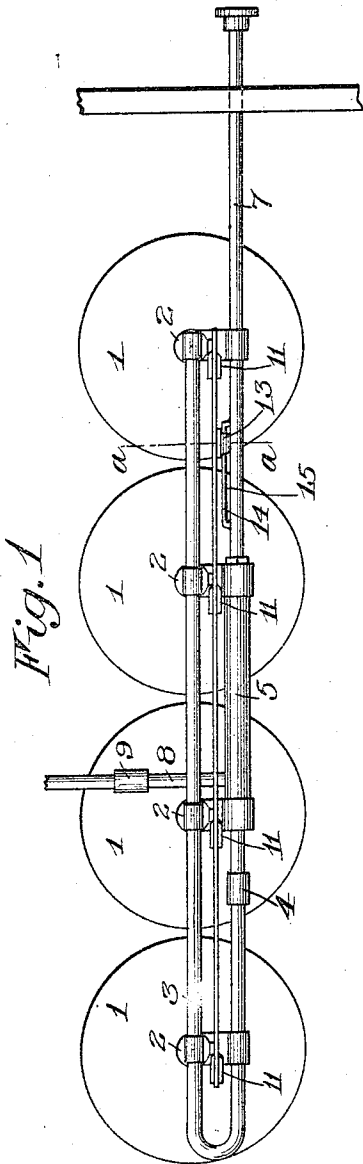


J. H. DURNO.
 PRIMING MECHANISM FOR EXPLOSIVE ENGINES.
 APPLICATION FILED OCT. 11, 1911.

1,042,415.

Patented Oct. 29, 1912.
 2 SHEETS—SHEET 1.



Witnesses

Nelson H. Cpp
 H. E. Stonebraker

Inventor
 JOHN H. DURNO

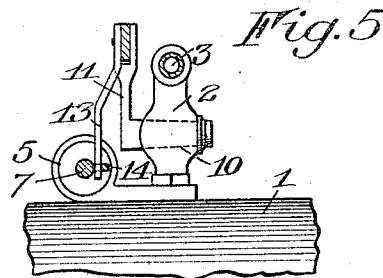
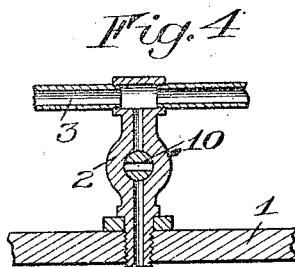
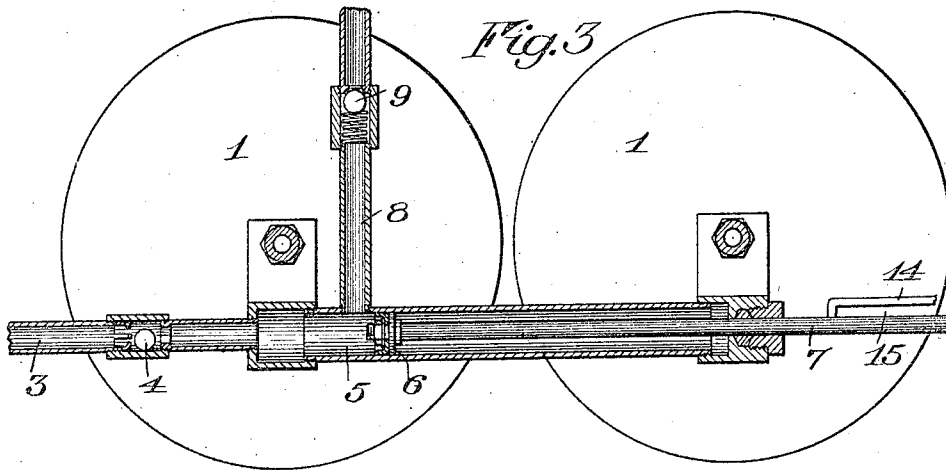
By *Church & Pich*
 his Attorneys

J. H. DURNO.
PRIMING MECHANISM FOR EXPLOSIVE ENGINES.
APPLICATION FILED OCT. 11, 1911.

1,042,415.

Patented Oct. 29, 1912.

2 SHEETS—SHEET 2.



Inventor
JOHN H. DURNO

Witnesses
Nelson H. Opp.
H. E. Stonebraker

By *Charles Rich*
his Attorney

UNITED STATES PATENT OFFICE.

JOHN H. DURNO, OF ROCHESTER, NEW YORK.

PRIMING MECHANISM FOR EXPLOSIVE-ENGINES.

1,042,415.

Specification of Letters Patent.

Patented Oct. 29, 1912.

Application filed October 11, 1911. Serial No. 654,131.

To all whom it may concern:

Be it known that I, JOHN H. DURNO, of Rochester, in the county of Monroe and State of New York, have invented certain new and useful Improvements in Priming Mechanism for Explosive-Engines; and I do hereby declare the following to be a full, clear, and exact description of the same, reference being had to the accompanying drawings, forming a part of this specification, and to the reference-numerals marked thereon.

The present invention relates to a priming mechanism for explosive engines, being especially designed for use in connection with that type of engine embodying a plurality of cylinders having valves or pet-cocks through which the fuel-oil, such as gasolene, is introduced into the cylinders for the usual priming operation, and it has for its object, more particularly, to provide improved means for opening the pet-cocks and simultaneously forcing the fuel-oil into the cylinders.

To these and other ends the invention consists in certain improvements and combinations of parts, all as will be hereinafter more fully described, the novel features being pointed out in the claims at the end of the specification.

In the drawings: Figure 1 is a plan view of a four cylinder engine equipped with a preferred embodiment of my invention; Fig. 2 is a side elevation of the same; Fig. 3 is a horizontal sectional view through the pump, showing a portion of the supply and feed pipes, respectively; Fig. 4 is a vertical sectional view of one of the pet-cocks, and Fig. 5 is a sectional view on the line *a-a* of Fig. 1.

Similar reference numerals throughout the several figures indicate the same parts.

In the present embodiment, I have shown the invention as applied to an engine embodying the cylinders 1, each being provided with a controlling valve or pet-cock 2. The pet-cocks are suitably connected to a feed pipe 3 which is provided with a gravity check valve 4, for a purpose presently to be explained, and leads to a pump comprising the cylinder 5, piston 6, and piston rod 7.

Leading to the pump cylinder 5 is a fuel supply pipe 8, to which the fuel-oil, such as gasolene, is fed from the main tank, or from the carbureter, the supply pipe 8 being

provided with the spring controlled check valve 9 which prevents return of the fuel-oil when the pump is operated to force the oil into the cylinders, as will hereinafter be explained.

Each of the valve plugs 10 of the pet-cocks are provided with crank arms 11, the latter being suitably connected for simultaneous operation by means of the connecting rod 12. In order to make provision for actuating the connecting rod 12 from the piston rod 7, at certain stages in the movement of the latter, there is afforded, in the present embodiment, an arm or lever 13 carried by the connecting rod 12 and arranged to project into the path of the piston rod, the latter being provided with an extension 14 having a slot 15 adapted to be engaged by said lever or arm 13, whereby the latter is moved at the proper moment. By the provision of the check valve 4, the fuel-oil that may be within the feed pipe 3 is prevented from returning into the pump cylinder when the pump is operated to draw the oil from the supply pipe, as will be apparent.

In the operation of the device, the piston rod is actuated, slightly, back and forth, to force the fuel-oil from the supply pipe 8 into the feed pipe 3, the movement of the piston rod for this purpose not being sufficient to engage the lever 13 on the connecting rod which actuates the pet-cocks. When, however, the feed pipe 3 is full, as can readily be determined by the amount of resistance offered to the movement of the piston, the piston rod is drawn outwardly of the cylinder to the full limit of its movement, thus filling the cylinder with the fuel-oil, and at the same time moving the connecting rod 12 through the lever 13, and causing the several pet-cocks to be opened. The piston rod is then moved in the opposite direction, so as to force the fuel-oil from the pump cylinder and feed pipe through each of the pet-cocks into the cylinders of the engine. As the piston rod moves inwardly to effect the last described operation, the lever 13 is reengaged, and the connecting rod 12 moved along whereby the pet-cocks are again closed when the piston has reached its innermost position at the end of the pump cylinder, the parts being then ready for a second priming operation.

While I have described the invention with reference to a particular embodiment, it will

be understood that I am not limited to the precise construction and arrangement of parts shown, but may adopt various modifications without departing from the essential feature of the invention claimed herein.

I claim as my invention:

1. The combination with a plurality of cylinders and pet-cocks for the cylinders, of a feed pipe leading to the pet-cocks, a supply pipe, and a pump arranged to force liquid from the supply pipe to the feed pipe, said pump having operative connection with the pet-cocks.

2. The combination with a plurality of cylinders and pet-cocks for the cylinders, of a feed pipe leading to the pet-cocks, a supply pipe, and a pump arranged to force liquid from the supply pipe to the feed pipe, said pump including a piston rod, movement of the piston rod in one direction serving to open the pet-cocks and in the opposite direction to close the same.

3. The combination with a plurality of cylinders and pet-cocks for the cylinders, of a feed pipe leading to the pet-cocks, a supply pipe, a connecting rod having operative engagement with each of the pet-cocks, and a pump arranged to force liquid from the

supply pipe to the feed pipe, said pump including a piston rod having operative connection with the aforesaid connecting rod.

4. The combination with a plurality of cylinders and pet-cocks for the cylinders, of a feed pipe leading to the pet-cocks, a supply pipe, a connecting rod having operative engagement with each of the pet-cocks, and a pump arranged to force liquid from the supply pipe to the feed pipe, said pump including a piston rod having operative connection with the aforesaid connecting rod, whereby the latter is actuated when the piston rod approaches the limiting points of its movement.

5. The combination with a plurality of cylinders and pet-cocks for the cylinders, of a feed pipe leading to the pet-cocks, a supply pipe, a pump arranged to force liquid from the supply pipe to the feed pipe, and a single actuating means for simultaneously operating the pump and the aforesaid pet-cocks.

JOHN H. DURNO.

Witnesses:

RUSSELL B. GRIFFITH,
H. E. STONEBRAKER.

Copies of this patent may be obtained for five cents each, by addressing the "Commissioner of Patents, Washington, D. C."