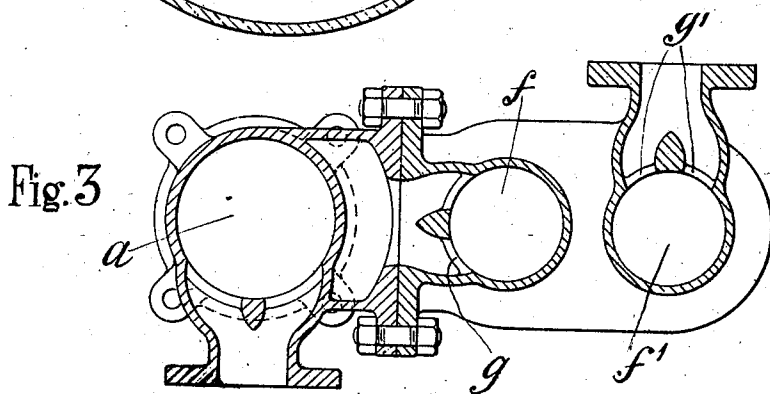
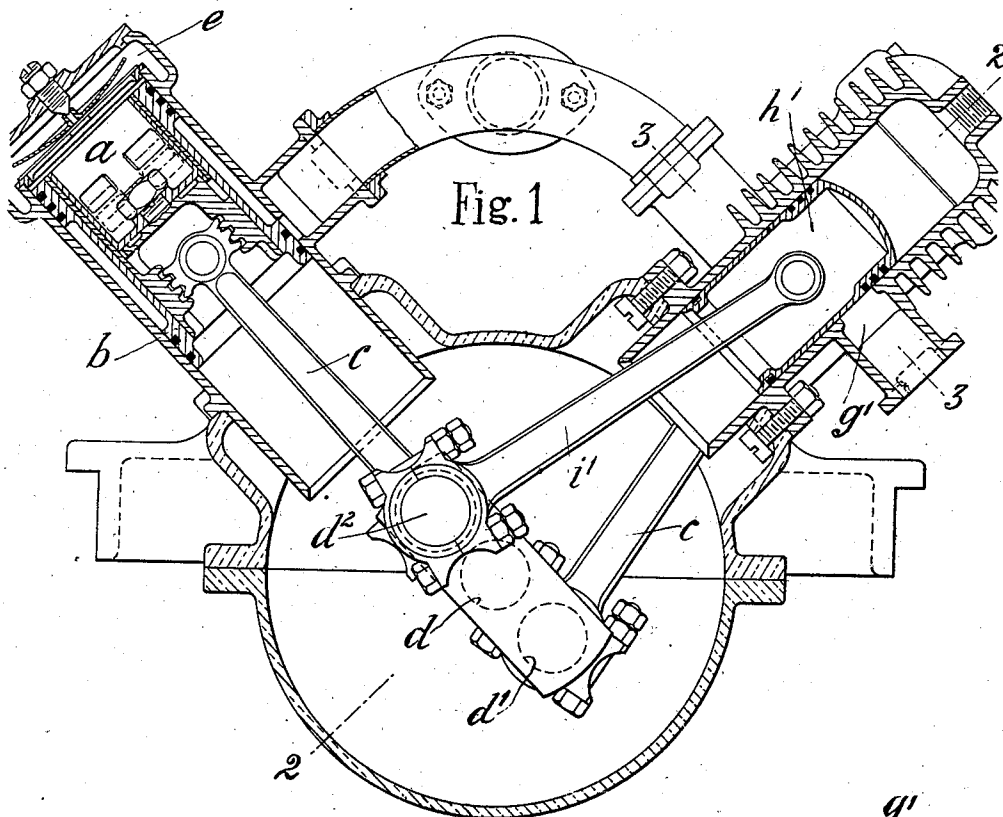


F. LAMPLOUGH.  
 TWO-CYCLE INTERNAL COMBUSTION MOTOR.  
 APPLICATION FILED OCT. 24, 1910.

979,971.

Patented Dec. 27, 1910.

2 SHEETS—SHEET 1.



Witnesses  
 Chas. Smith  
 A. Serrell

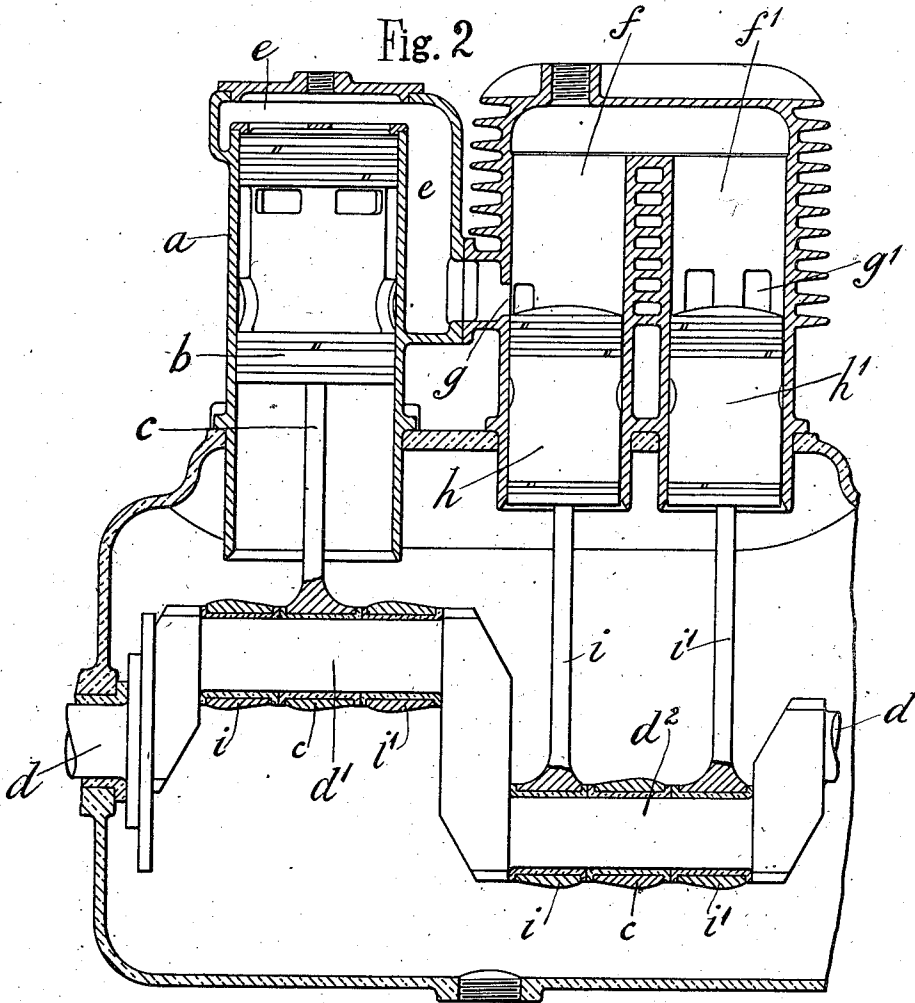
Inventor  
 Frederick Lamplough  
 by Harold Serrell  
 his atty.

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Witnesses  
 Chas. H. Smith  
 A. J. [Signature]

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 by Harold Ferrell  
 his atty

# UNITED STATES PATENT OFFICE.

FREDERICK LAMPLOUGH, OF LONDON, ENGLAND.

TWO-CYCLE INTERNAL-COMBUSTION MOTOR.

979,971.

Specification of Letters Patent. Patented Dec. 27, 1910.

Application filed October 24, 1910. Serial No. 588,582.

To all whom it may concern:

Be it known that I, FREDERICK LAMPLOUGH, a subject of the King of Great Britain, residing at London, England, have invented a new and useful Two-Cycle Internal-Combustion Motor, of which the following is a specification.

The object of the present invention is to construct an improved, compact, simple and powerful two cycle internal combustion engine, and the invention consists in the arrangement of parts herein shown and described.

The invention is illustrated in the accompanying drawings, in which:—

Figure 1 is a cross section taken through a charging cylinder employed for charging one firing element and also taken through a firing cylinder of another firing element. Fig. 2 is a section on the line 2—2 of Fig. 1, taken through a charging cylinder and its own firing element. Fig. 3 is a section on the line 3—3 of Fig. 1.

The invention relates to that class of two cycle internal combustion engine in which two firing cylinders are provided with a single combustion chamber and in which one cylinder has an inlet port and the other has exhaust ports which are covered and uncovered by the two pistons. In such engines the cylinders receive their charge of compressed air or gaseous mixture from a pump connected to a crank at an angle of 180° to the engine crank.

According to the present invention, I employ two complete motors arranged at an angle of 90° to each other and I connect all the six connecting rods to two wide cranks on a single crank shaft. Each motor comprises a pump or charging cylinder *a* provided with a piston *b* which is driven by its connecting rod *c* from a crank shaft *d*. This latter has two cranks *d'* and *d''*.

The pump is of peculiar construction and forms the subject of an application for Patent, Serial No. 552,051. The pump has these characteristics: It has valves which are very rapidly and positively operated and it has a chamber *e* which receives the charge and retains it at the correct pressure to enter the cylinders *f*, *f'*.

When a pump forces the charge direct through a port into the cylinder, the high pressure of the incoming charge causes it to rush through the residual gases left in the cylinder and a considerable proportion of the charge is lost through the exhaust.

The receiving chamber *e* is open to the ports *g* in the cylinder *f* and these latter are uncovered when the piston *h* is approaching the end of its stroke. The cylinder *f'* has exhaust ports *g'* which are uncovered by the piston *h'* just before the ports *g* are opened. The pistons *h* *h'* have connecting rods *i* *i'* which are connected to one of the cranks and to this same crank is connected the connecting rod *c* of the charging cylinder of the other motor. Each crank has thus three connecting rods, the two outside ones *i* *i'* being connected to the firing pistons *h* *h'* of one motor and the center one *c* being connected to the charging device of the other motor.

The invention is not limited to the precise construction of charging cylinder shown in the drawings as other forms of charging cylinders may be employed having valves which are positively and rapidly operated by the connecting rod.

It will be understood that several motors similar to that herein shown and described may be arranged side by side all connected to the same driving shaft.

What I claim is:—

In an internal combustion motor, the combination of two complete motors arranged at an angle of 90° to each other, each consisting of two firing cylinders provided with a common combustion chamber and a charging cylinder and a crank shaft having two cranks at an angle of 180° to each other, the pistons of the firing cylinders of one motor and the piston of the charging cylinder of the other motor being connected to each crank, substantially as herein shown and described.

In witness whereof I have hereunto set my hand in presence of two witnesses.

FREDERICK LAMPLOUGH.

Witnesses:

RIPLEY WILSON,  
WM. GIRLING.