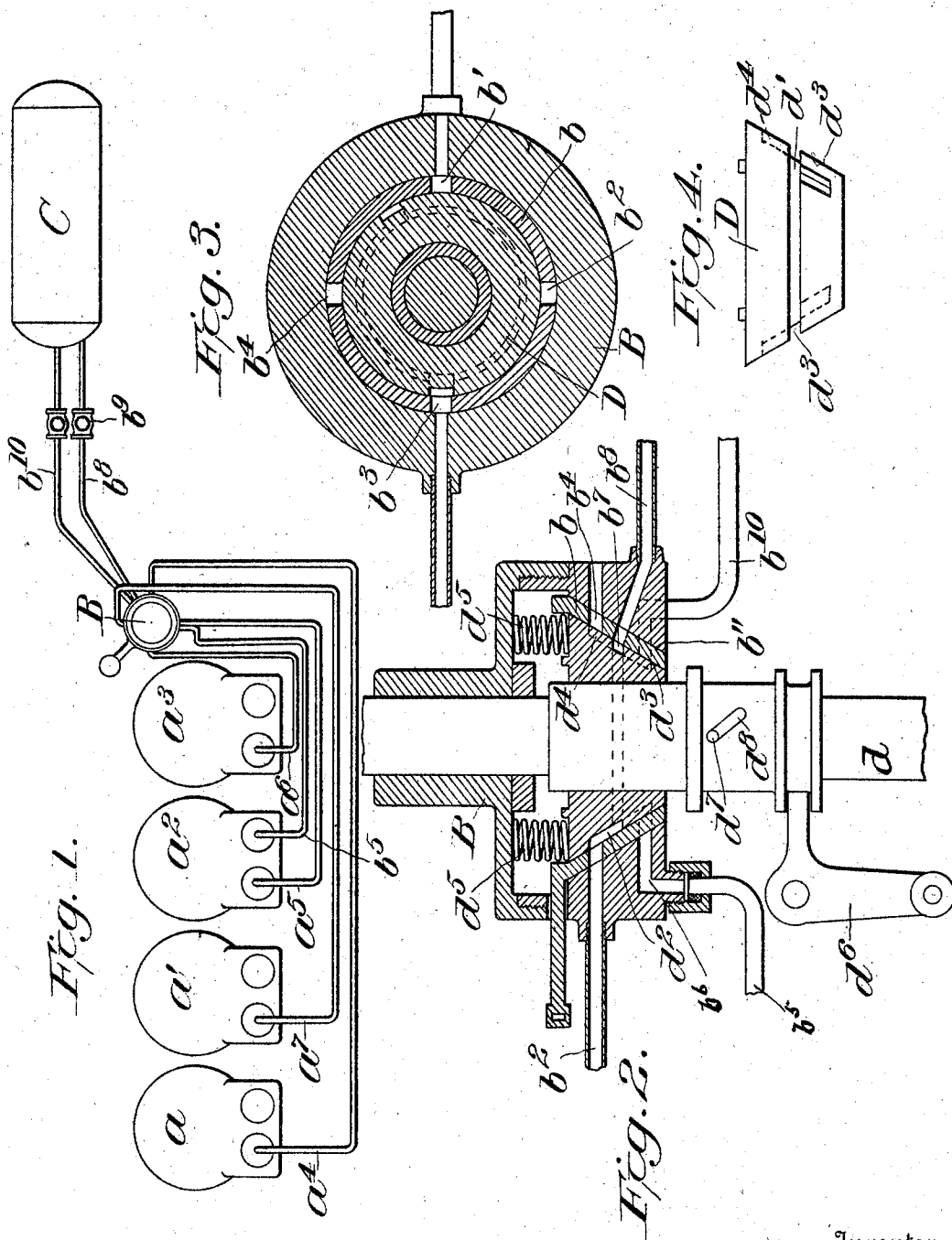


W. L. TERRY, JR.
STARTING MECHANISM.
APPLICATION FILED JULY 13, 1909.

957,813.

Patented May 10, 1910.



Witnesses

C. M. Walker
F. M. Thompson

Inventor

William L. Terry, Jr.

By

Robert P. Haines

Attorney

UNITED STATES PATENT OFFICE.

WILLIAM LEAKE TERRY, JR., OF LITTLE ROCK, ARKANSAS.

STARTING MECHANISM.

957,813.

Specification of Letters Patent.

Patented May 10, 1910.

Application filed July 13, 1909. Serial No. 507,430

To all whom it may concern:

Be it known that I, WILLIAM L. TERRY, Jr., a citizen of the United States, residing at Little Rock, Arkansas, have invented certain new and useful Improvements in Starting Mechanism, of which the following is a full, clear, and exact specification.

This invention relates to certain new and useful improvements in explosive engines, and pertains more particularly to improved starting mechanism therefor.

The invention has for its object to provide a simple and efficient mechanism for starting the explosive engines of automobiles, motor boats, and the like, without resorting to the usual method of cranking by hand.

A further object is to provide an improved valve controlling the admission of initial pressure to the engine cylinder, and means for storing pressure for imparting initial movement to the engine, said pressure storage being also controlled by said valve.

The invention will be hereinafter fully set forth and particularly pointed out in the claims.

In the accompanying drawings:—Figure 1 is a diagrammatic view illustrating my improved starting mechanism; Fig. 2 is a longitudinal sectional view of the controlling valve; Fig. 3 is a transverse sectional view of valve; and Fig. 4 is a detail view of the valve.

Referring to the drawings similar letters of reference are issued to indicate corresponding parts in each of the views.

In my improvement the motor is preferably provided with four cylinders a , a' , a^2 and a^3 , which in addition to the usual valves and other gear controlling the admission of the explosive mixture, are each provided with pipes or conduits a^4 , a^5 , a^6 , a^7 , leading to a valve casing B. Mounted in said casing is a sleeve b provided with ports b^1 , b^2 , b^3 , and b^4 , controlling the outlets from pipes a^4 , a^5 , a^6 , and a^7 respectively. Leading from the cylinder a^2 is a pipe b^5 which communicates with the valve casing through a port b^6 below the plane of the above mentioned ports, and opposite said port b^6 is another port b^7 communicating with a pipe b^8 leading to a storage tank C of any suitable or preferred construction. A check valve b^9 is placed in the pipe b^8 whereby the pressure in tank C is maintained. A discharge pipe b^{10} leads from the tank C to the valve

casing and the outlet to said pipe is controlled by a port b'' in the sleeve b . Mounted to rotate within the sleeve b is a valve D mounted on a shaft d which is normally stationary and rotates only when it is desired to rotate valve D as hereinafter set forth. Said valve D is provided with an annular channel d' in line with port b'' . Said valve is also provided with a longitudinal channel d^2 leading from the channel d' to a point in line with ports b^1 , b^2 , b^3 and b^4 and with longitudinal channels d^3 , d^4 leading from the channel b' to the ports b^6 and b^7 respectively. The valve D is preferably conical in form and is held to its seat by springs d^5 . The shaft d is shifted by means of a bell crank lever d^6 , and a pin d^7 engaging a slot d^8 effects a partial rotation of said shaft and said valve. Such rotation of the shaft, however, is not sufficient to interfere with the action of the springs d^5 as said springs are always retained in their seats on top of the valve and have sufficient sidewise play to prevent their being thrown out of position by the slight rotation of the shaft d .

The operation is as follows: It is assumed that the motor has been previously started by hand and is operating on the usual four cycle principle and that cylinder a' has drawn a charge of the explosive mixture through the carbureter and is compressing it on the up stroke of the piston. The sleeve b is shifted or rotated so that the ports b^1 , b^2 , b^3 and b^4 are closed, and the ports b^6 and b^7 are open. When the valve D arrives at the proper point to bring the ports b^6 and b^7 into communication through channels d^3 and d^4 , which it will during a small part of the compression stroke of the motor, the mixture under compression will be forced from pipe b^5 through pipe b^8 to the tank C. The valve closes ports b^6 and b^7 during the firing or working stroke of the motor and prevents any chance of back firing into the tank C, although said tank is preferably made strong enough to withstand any pressure that may come on it from this cause. After the motor has run a short while, the sleeve b is shifted, either automatically by means of a pressure regulator, or by hand, so that all ports from motor and tank are closed. The tank is ready.

To start the motor, the operation is as follows: The sleeve or valve seat b is moved so that ports b^1 , b^2 , b^3 , b^4 , b^7 register with tubes a^4 , a^5 , a^6 , a^7 , b^{10} , thereby communi-

cating with the cylinders of motor and also with tank through port b^7 . By virtue of the annular port a^1 on the valve D, port b^7 is in constant communication with tank 5 through tube b^8 when sleeve b , is in starting position. Since the motor stops with one of the cylinders near the firing position, the valve D takes a position to put gas from the stored tank into the cylinder or cylinders about ready for an impulse, and the motor is 10 started by throwing on the switch and firing the charge.

Having thus fully described my invention, what I claim as new and desire to secure by Letters Patent of the United States, 15 is:—

1. A starting mechanism for explosive engines, comprising a pressure tank, means for charging said tank with fluid under pressure from one or more of the engine cylinders, means for distributing fluid under 20 pressure from said tank to the engine cylinders, a valve casing, a sleeve located therein and having ports controlling the storage and distribution of said fluid under pressure, 25 and a valve provided with channels co-operating with said ports.

2. A starting mechanism for explosive engines, comprising a pressure tank, means for 30 charging said tank with fluid under pressure from one or more of the engine cylinders, means for distributing fluid under pressure from said tank to the engine cylinders, a valve casing, a sleeve located therein 35 and having ports controlling the storage and distribution of said fluid under pressure and a valve controlling said ports and located within said sleeve.

3. A starting mechanism for explosive engines, comprising a pressure tank, means for 40 charging said tank with fluid under pressure from one or more of the engine cylinders, means for distributing fluid under pressure from said tank to the engine cylinders, a valve casing, a sleeve located therein 45 and provided with ports controlling the storage and distribution of said fluid under

pressure a valve located within said sleeve and controlling said ports, and means for 50 independently operating said sleeve and said valve.

4. A starting mechanism for explosive engines, comprising a pressure tank, means for 55 charging said tank with fluid under pressure from one or more of the engine cylinders, means for distributing fluid under pressure from said tank to the engine cylinders, a valve casing, a sleeve located therein 60 and provided with ports controlling the storage and distribution of said fluid under pressure, a valve controlling said ports, and means for independently operating said sleeve and said valve.

5. A starting mechanism for explosive engines, comprising a pressure tank, means for 65 charging said tank with fluid under pressure from one or more of the engine cylinders, means for distributing fluid under pressure from said tank to the engine cylinders, a valve casing, a sleeve located therein 70 and provided with ports controlling the storage and distribution of said fluid under pressure, an operating arm for said sleeve, and a valve controlling said ports.

6. A starting mechanism for explosive engines, comprising a pressure tank, means for 75 charging said tank with fluid under pressure from one or more of the engine cylinders, means for distributing fluid under pressure from said tank to the engine cylinders, a valve casing, a sleeve located therein 80 and provided with ports controlling the storage and distribution of said fluid under pressure, a shaft extended through said sleeve, means for operating the same, and 85 a valve carried by said shaft and controlling said ports.

In testimony whereof I have signed my name to this specification in the presence of two subscribing witnesses.

WILLIAM LEAKE TERRY, Jr.

Witnesses:

M. D. OGDEN,
W. L. TERRY.