C. H. TALLEY.

ENGINE.

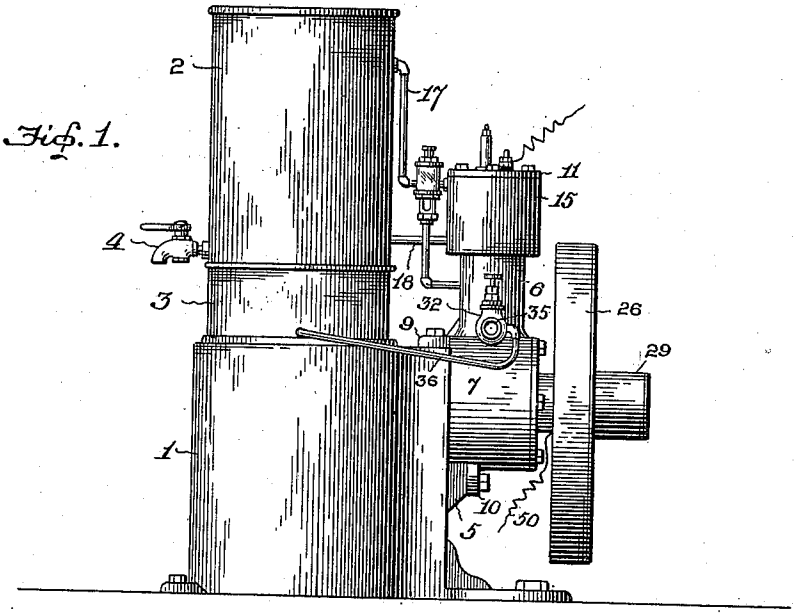
APPLICATION FILED JUNE 11, 1909.

996,434.

Patented June 27, 1911.

2 SHEETS—SHEET 1.

Fig. 1.



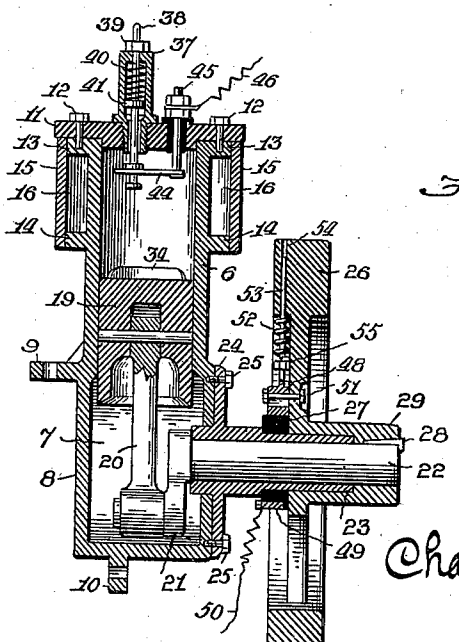


Fig. 2.

Witnesses:—

R. J. Beall.

D. R. Hershey.

Chas. H. Talley,

Inventor,

By John J. Thomas & Co.

Attorneys.

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2 SHEETS—SHEET 2.

Fig. 3.

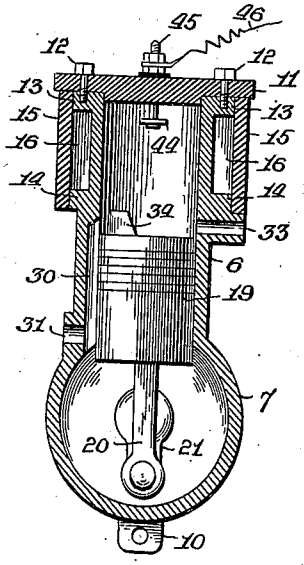


Fig. 4.

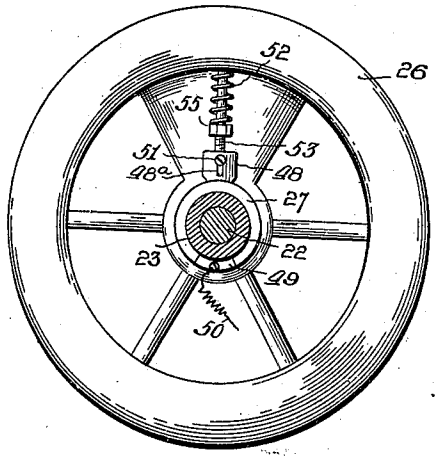


Fig. 5.

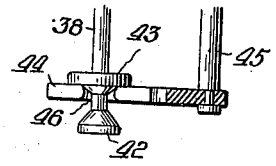
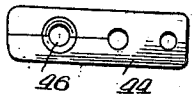


Fig. 6.



Witnesses

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D. R. Hershey.

Chas. H. Talley,

Inventor,

By John B. Thomas & Co.

Attorney

UNITED STATES PATENT OFFICE.

CHARLES H. TALLEY, OF LINCOLN, ILLINOIS.

ENGINE.

996,434. Specification of Letters Patent. Patented June 27, 1911.

Application filed June 11, 1909. Serial No. 501,593.

To all whom it may concern:

Be it known that I, CHARLES H. TALLEY, a citizen of the United States, residing at Lincoln, in the county of Logan and State of Illinois, have invented certain Improvements in Engines, of which the following is a specification.

This invention is an improvement in internal combustion engines, and relates more especially to what is commonly known as the two-cycle type, in which the gas or carbureted air is drawn into the crank case and compressed by the piston so as to force a charge into the working cylinder simultaneously with the exhaust of the expended gases.

The primary object of my present invention is to provide a cheap, simple and compact engine of this type which is especially adapted for domestic purposes.

With this primary object in view my invention consists principally in the provision of a novel igniting device, in connection with a governor for controlling the ignition and consequently the speed of the engine.

My invention further consists in the particular construction and arrangement of parts constituting the complete engine, all as hereinafter fully described and specifically set forth in the appended claim.

In the accompanying drawings, which form a part of this specification:—Figure 1 is a side elevation of a gasolene engine, constructed in accordance with my invention. Fig. 2 is an enlarged view, in vertical longitudinal section, through the engine cylinder and fly-wheel. Fig. 3 is a sectional view through the engine cylinder, on the line 3—3 of Fig. 2. Fig. 4 is a detail view of the fly-wheel and parts coöperating therewith. Figs. 5 and 6 are detail views of parts of the igniting device.

Like numerals of reference indicate like parts in all the figures of the drawings.

In carrying out my invention I employ in the first place a supporting-base 1, to one side of which the engine is bolted, and upon which is mounted a tank having upper and lower compartments, 2 and 3, respectively, the upper compartment containing the water for cooling the engine, while the lower compartment contains a supply of gasolene. The upper compartment 2 is provided at its lower end with a draw-off cock 4. This supporting base may, and preferably does, contain the electric batteries for producing the ignition spark, and also may contain tools, etc. On one side of the supporting-base, at a suitable distance below the upper end thereof, is a projecting lug or bracket 5, forming a support to which the engine is bolted, as hereinafter described.

In the present instance the cylinder 6 and the crank-casing 7 are formed integrally, and one of the flat sides, as 8, of the crank-casing, is provided at its upper end with a horizontal attaching-flange 9, while the bottom of said casing is provided with a depending attaching flange or lug 10, said flanges 9 and 10 being for the purpose of bolting the engine to the supporting-base, as illustrated in Fig. 1 of the drawings. The depending lug or flange 10 is therefore located so that it may be bolted to the outer end of the lug or bracket 5, upon which the engine rests, the flange 9 overlying the top of the supporting-base and bolted thereto to provide an additional support or brace. In this manner, as will be seen, the engine is firmly supported at one side of the supporting-base.

The upper end of the engine-cylinder 6 is provided with a head 11 bolted thereon, said bolts, as 12, being threaded into an outwardly projecting flange 13 extending around the cylinder. The annular flange 13 coöperates with a similar flange 14 therebelow to receive a jacket 15, so as to provide a water chamber 16 surrounding the upper part of the cylinder. I purpose to shrink the jacket 15 on the flanges 13 and 14, this method providing a tighter and more secure joint than is obtained by the employment of packings and bolts.

The water chamber 16 is connected to the water tank 2 by means of pipes 17 and 18, which enter the upper and lower ends of said chamber, respectively, and are arranged so as to provide for the proper circulation of the water to keep the engine cylinder cool.

Within the cylinder 6 is a piston 19, which is connected in the usual manner by a rod 20 to the crank-arm 21 of a driving-shaft 22. The driving or crank shaft extends through one side only of the crank-

casing, and is journaled in a long bearing-sleeve 23, beyond the outer end of which it projects for connection with the fly-wheel. The bearing-sleeve is provided with an annular attaching-flange 24 which is secured to the side of the crank-casing by means of bolts 25, said attaching-flange being located a short distance from the inner end of the sleeve so that the latter may project through an opening therefor in the crank-casing. The outer end portion of the bearing-sleeve is reduced in diameter, as shown, to receive the hub of the fly-wheel 26, and also a contact-collar 27, the latter being located at the inner side of the fly-wheel and forms part of the electric sparking device. As will be seen, the inner part of the bore in the hub of the fly-wheel is adapted to receive the outer end of the bearing-sleeve 23, while the outer reduced portion of said bore receives the projecting end of the crank-shaft to which it is connected by a key 28. By this arrangement the fly-wheel is securely connected to the crank-shaft and has a bearing on the sleeve, while the said crank-shaft bears within the sleeve, and when the bearings are properly oiled the crank-casing is made securely air-tight. The outer end of the hub of the fly-wheel forms a pulley, as 29, over which passes a belt for transmitting the power of the engine.

Referring to Fig. 3 it will be seen that the engine is provided in one side with a vertical inlet passage or port 30, the upper end of which terminates immediately above the piston when the latter is in its lowermost position, the lower end of said passage opening out into the crank-casing. Communicating with the crank-casing, by way of the lower end of the passage 30 is a gas-inlet opening 31, connecting with a carbureter, as 32 (Fig. 1), of any approved type, and at the opposite side of the cylinder, substantially on a plane with the upper end of the passage 30, is an exhaust port 33. The piston is provided on its upper side with a baffle-plate or deflector 34, located with respect to the gas inlet so as to direct the gas or carbureted air toward the upper end of the cylinder and thus preventing it from passing directly across to the outlet. The carbureter 32 is provided with the usual air intake 35, and with a gasolene supply pipe 36, the latter extending from the lower compartment 3 of the tank.

The electric igniting device which I employ is of the make and break type, and in the present instance is of peculiar construction so that it is not only effective in use but is cheap and easily applied. In the top or head 11 of the engine cylinder is threaded a tube 37, which is closed at its upper end and opens at its lower end into the cylinder, as shown in Fig. 2. Slidably mounted in this tube and projecting through the upper end thereof is a rod 38, the downward movement of which is limited by means of an adjusting-nut 39 on the upper or outer end thereof engaging the end of the tube. The rod is normally depressed by means of a spring 40 located within the tube 37 and interposed between the upper closed end thereof and a collar 41 on the rod. The lower end of the rod is provided within the engine cylinder with a head 42, above which is a disk 43, said head and disk being spaced apart so as to co-act with a plate 44 (Figs. 5 and 6) carried at the lower end of the rod 45 extending through the head of the cylinder and electrically connected by a wire 46 to one pole of a battery. The rod 45 is suitably insulated from the cylinder, as indicated in Fig. 2, and the contact-plate 44 is provided at its outer or free end with an opening 47 through which the slidable rod 38 passes, said opening being slightly larger than the rod, so that the plate will be in electrical connection therewith only by way of the disk and head. In connection with this sparking device I employ a controller, which consists of a contact piece 48, adapted to travel over the contact-collar 27 fixed on the bearing-sleeve 23, and is adapted to form an electric contact with a plate 49 on the fiber collar, said contact-plate 49 being connected by a wire 50 to the other pole of the battery. The contact-piece 48 is slidably connected to the fly-wheel by means of a bolt 51, and in order to maintain said contact-piece in engagement with the contact-collar under normal conditions it is provided with an actuating spring 52. In the present instance the contact-piece is provided with a rod 53, the outer end of which is slidable in a hole 54 in the rim of the fly-wheel, the spring 52 being interposed between the rim of the fly-wheel and a nut 55 adjustable on said rod.

When the fly-wheel turns at a normal speed the contact-piece carried thereby will travel over the surface of the contact-collar 27, and as it passes over the contact-plate 49 thereon the current will pass into said contact-piece to the fly-wheel and from the latter through the metal parts of the engine to the rod 38 completing the circuit through the plate 44 and its supporting-rod, and when the piston strikes the lower end of the rod 38 moving it upward a spark will be formed as the disk 43 on the rod leaves the plate 44, as will be obvious. Of course it will be understood that the contact-collar 27 is stationary, and that the contact-plate 49 thereon is so located with respect to the other operating parts of the igniting device and co-acting parts of the engine, that when the contact-piece passes over the contact-plate the piston will be at the upper part of the engine-cylinder operating the rod 38. Now when the fly-wheel runs beyond the

normal speed the contact-piece 48 will be thrown out of contact with the collar by centrifugal force, and as there will then be no contact between the parts of the controller there will be no spark, and consequently no explosion, so that the engine will slow down until the contact-piece is returned by the spring to its normal position in contact with the collar. The normal speed of the engine may be regulated by the adjusting-nut 55, so that more or less centrifugal force will be required to overcome the tension of the spring 52.

The engine operates after the manner of the ordinary two-cycle type, that is to say, the gas or carbureted air is drawn into the crank-case through the inlet 31 on the upstroke of the piston, and on the downstroke of the piston is compressed until the upper end of said piston uncovers the port 31 when the gas passes into the upper part of the cylinder and is compressed prior to its ignition by the operation of the sparking device. When the gas is exploded and drives the piston downward the charge of fresh gas which passes into the upper part of the cylinder is directed by the baffle-plate so as to force the burned gases out of the exhaust 33.

Having thus described my invention, what I claim as new, and desire to secure by Letters-Patent, is:—

In a gas-engine, the combination with the crank-shaft and casing, of a bearing-sleeve bolted to the casing and having a portion of its outer end reduced in external diameter, the crank-shaft bearing in said sleeve and projecting beyond the outer end thereof, a contact-collar fixed on the inner end of the reduced portion of the sleeve, a fly-wheel having a differential bore to fit on the reduced outer end of the sleeve and on the projecting end of the crank-shaft, a rod movable radially on the fly-wheel and having a contact-piece engaging the collar, a spring for holding the contact-piece normally in engagement with the collar, and a device for regulating the tension of the spring; together with an igniting device electrically connected to the contact-collar and contact-piece, respectively, substantially as shown and described.

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

CHARLES H. TALLEY.

Witnesses:
I. B. PETITT,
JOHN H. BECKERS.