

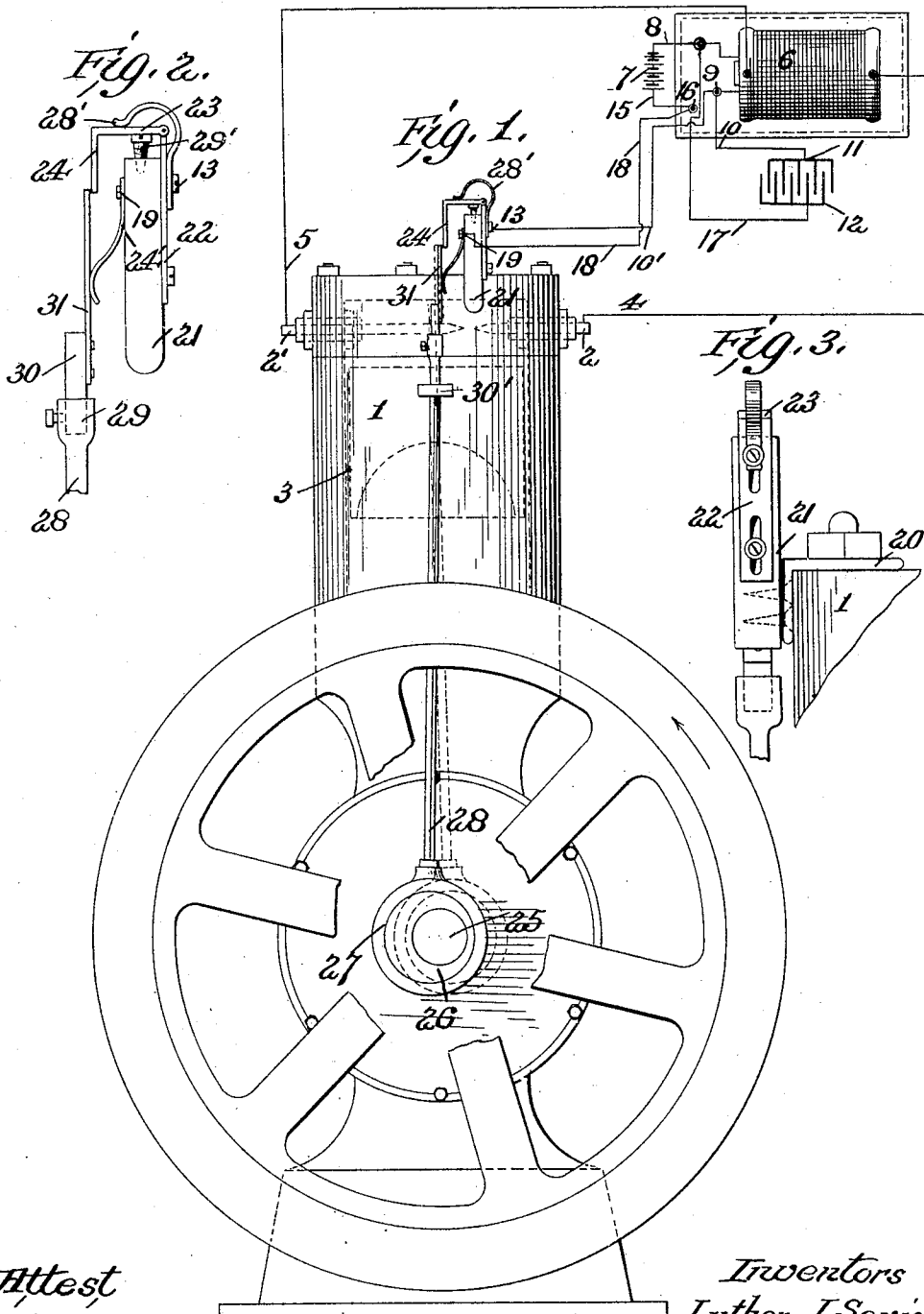
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L. J. SEVISON & L. D. COND.
ELECTRIC IGNITER FOR GAS ENGINES.

(Application filed June 29, 1900.)

(No Model.)



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UNITED STATES PATENT OFFICE.

LUTHER J. SEVISON AND LOUIS D. COND, OF CONSTANTINE, MICHIGAN.

ELECTRIC IGNITER FOR GAS-ENGINES.

SPECIFICATION forming part of Letters Patent No. 672,017, dated April 16, 1901.

Application filed June 29, 1900. Serial No. 22,059. (No model.)

To all whom it may concern:

Be it known that we, LUTHER J. SEVISON and LOUIS D. COND, citizens of the United States, residing at Constantine, Michigan, have invented certain new and useful Improvements in Electric Igniters for Gas-Engines, of which the following is a specification.

Our invention relates to igniter devices for combustion-engines, such as gas or gasoline engines, in which an induction-coil and stationary electrodes are employed.

The object of the invention primarily is to provide for the employment of fixed electrodes which may be packed so tight as to prevent leakage incident to movable electrodes and to avoid the liability of the parts becoming disarranged or inoperative through corrosion, so objectionable where movable electrodes are used.

The invention also includes a circuit breaker or contact outside of the engine-cylinder and the special construction of the same.

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

Figure 1 is a side elevation of a representative form of engine having the improved igniter applied thereto, and Fig. 2 is a detail view. Fig. 3 is a detail view showing the end of the cylinder and circuit-breaker.

The engine herein shown has a vertically-arranged cylinder 1, through the side wall of which, at diametrically opposite points, electrodes 2 2' extend, the ends thereof projecting into juxtaposition at the end of the cylinder-chamber in which the piston 3 reciprocates. The electrodes are suitably insulated from the cylinder, and to their outer ends the wires 4 5, extending from the winding of the secondary coil of the induction-coil 6, are electrically connected. The induction-coil is in circuit with the battery 7, from which a wire 8 leads to the primary coil thereof and from thence to the terminal 9, from which one wire 10 leads to the positive terminal 11 of a condenser 12, while another wire 10' leads to the terminal 13 of the circuit-breaker. From the negative pole of the battery a return-wire 15 leads to a terminal 16, from which a wire 18 leads to the terminal 19 of the circuit-breaker. The wire 17 leads from the negative terminal of the condenser to the

wire 8. To the end of the engine-cylinder 1 a bracket 20 is secured, which carries an insulated block 21, to which a plate 22 is secured, having hinged to its upper end an angle-piece 23, the depending end 24 of which forms one of the contacts of the circuit-breaker. The terminal 13 extends through the plate 22 and is in electrical contact therewith. The terminal 19 extends through a spring 24', holding one end of the same to the block 21 and forming an electric contact with said spring. To the engine-shaft 25 a cam 26 is keyed, which is encircled by a strap 27, carrying the arm 28, having a socket 29 at the end thereof which receives an insulated plug 30, carrying the second contact 31 of the circuit-breaker, which is in the form of a flat plate, with which the free end of the spring 24 contacts. The plate 22 is adjustably secured to the block 21 by pins which extend through elongated slots in said plate. The hinged piece 23 is normally passed down by the spring 28' against an adjustable pin 29', screwed in the block 21. The arm 28 is guided near its end in a strap 30', secured to the engine-cylinder, this strap being placed directly over the axes of the shaft, so that as said shaft rotates the throw of the cam causes the contact carried by said arm to describe substantially an ellipse. The contact is so positioned that during the upward movement of the arm, this being the time the piston is being forced down, the contact 31 moves in a plane to one side of the contact 24; but toward the close of the upward movement the contact 31 moves over against the contact 24, and during its downward movement, this being the time the piston is compressing the charge in the cylinder, slides upon the same. During this period the current passes from the battery through the primary coil, through the wire 10' to the terminal 13, through the contacts, over the spring, and back to the battery through wire 18. As the cam reaches its lowest position the contacts are separated, interrupting this current, when a current induced in the secondary coil passes through the wire 4 to the electrode 2 and through the same to the opposite electrode 2', the spark which ignites the charge being formed by the current jumping the space separating said electrodes.

By the adjustment of the arm carrying the electrode 24 the time when the break occurs can be regulated. In reversing the movement of the engine the position of the cam is reversed.

We claim—

1. The combination with a combustion-engine, of an igniter comprising electrodes, an induction-coil, electrical connections to the electrodes, a condenser and a circuit-breaker comprising a stationary member, and a reciprocatory member moving longitudinally of the cylinder, said reciprocatory member having a sliding contact during a portion of the stroke of said reciprocatory member, substantially as described.

2. The combination with a combustion-engine, of an igniter comprising electrodes, an inductor-coil, electrical connections to the electrodes, a condenser and a circuit-breaker comprising a stationary member and an arm reciprocated from the engine-shaft, said arm having a pivotal movement, the second member being carried by said arm, said pivotal movement permitting said second member to slide on the first member during one-half of its stroke and to separate therefrom at the end of said half-stroke, substantially as described.

3. The combination with an igniter for combustion-engines including electrodes and an induction-coil and condenser, of a circuit-breaker comprising an insulated block, an adjustable plate in electrical connection with

the coil carried thereby, a hinged contact carried by the plate, and a second contact with means for reciprocating the same, said contact sliding on the first contact in one reciprocating movement thereof, said contacts separating at the end of said movement whereby a spark will be formed between said electrodes by the passage of the induced current, substantially as described.

4. The combination with an igniter for combustion-engines including electrodes and an induction-coil and condenser, of a circuit-breaker comprising an insulated block carried by the engine-cylinder, a plate having an electrical connection to the induction-coil adjustably secured to said block, an angle-contact hinged to said plate, means for depressing the same, means to arrest said depression, a second contact, a spring carried by said block electrically connected to the coil and permanently in contact with said second contact, a cam secured to the engine-shaft, an arm reciprocated thereby, and a strap forming a guide and pivot for the arm, said arm carrying the second contact, substantially as described.

In testimony whereof we affix our signatures in presence of two witnesses.

LUTHER J. SEVISON.
LOUIS D. COND.

Witnesses:

B. H. SCOVILL,
JAS. A. MARSH.