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H. E. ATWATER.

SPARKING MECHANISM FOR GASOLENE ENGINES.

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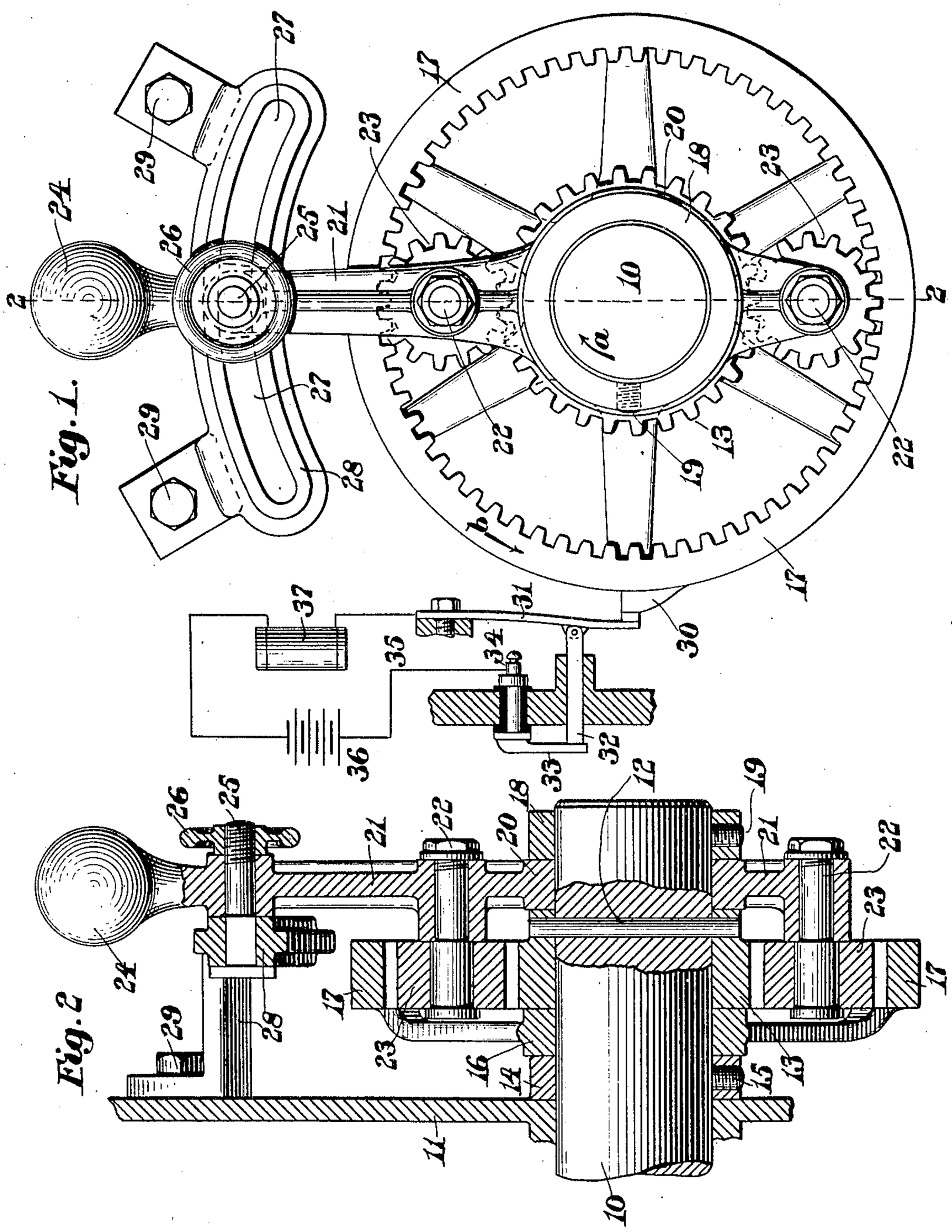

UNITED STATES PATENT OFFICE.

HARRY E. ATWATER, OF CHAMPLAIN, NEW YORK.

SPARKING MECHANISM FOR GASOLENE-ENGINES.

No. 849,716. Specification of Letters Patent. Patented April 9, 1907.

Application filed February 23, 1906. Serial No. 302,341.

To all whom it may concern:

Be it known that I, HARRY E. ATWATER, a citizen of the United States of America, and a resident of Champlain, in the county of Clinton and State of New York, have invented certain new and useful Improvements in Sparking Mechanisms for Gasolene-Engines, of which the following is a specification.

This invention relates to revoluble electric igniters, and has for its object the production of a suitable device whereby the ignition may be accurately timed to assist in the more perfect operation of the engine to which it may be attached.

The invention consists in certain novel features of construction and arrangement of parts which will be readily understood by reference to the description of the drawings and to the claims, to be hereinafter given.

Of the drawings, Figure 1 represents an elevation embodying the features of this invention, showing applied thereto in diagram an electric ignition device; and Fig. 2 represents a vertical section of the same on line 2 2 on Fig. 1.

Similar characters designate like parts throughout the several figures of the drawings.

In the drawings, 10 represents a revoluble shaft having a bearing in a suitable stationary part 11 The shaft 10 has secured thereto, near one of its ends, by means of a pin 12, a spur-gear 13, between which and the collar 14, secured to said shaft by means of the set-screw 15, is interposed the hub 16 of an annular gear 17. The hub 16 of the annular gear 17 is freely revoluble about the axis of the shaft 10 between the gear 13 and the collar 14. The extreme outer end of the shaft 12 is provided with another collar 18, secured thereto by means of the set-screw 19, and between this collar and the outer face of the hub of the gear 13 is interposed the hub 20 of an arm 21, said hub being adapted to be moved freely about the axis of said shaft between the gear 13 and the collar 18.

The arm 21 has mounted thereon two studs 22, upon one end of each of which is mounted, so as to be freely revoluble thereon, a pinion 23, the teeth of which mesh with the spur-gear 13 and the annular gear 17. The upper end of the arm 21 is provided with a handle 24, by which said arm may be moved about the axis of said shaft. The arm 21 near the handle 24 is provided with a headed bolt 25, the threaded end of which is provided with a clamping member 26, said bolt extending through a slot 27 in a bracket 28, secured by bolts 29 to the stationary part 11.

When the arm 21 is moved into an adjusted position by means of the handle 24, it may be clamped in such position by means of the clamping member 26 in an obvious manner. The freely-revoluble member or annular gear 17 is provided with an actuator or cam projection 30, which in the revolution of said member is adapted to coact with the spring member 31, having pivoted thereto the contact member 32, which is normally held by means of said spring free from contact with the member 33, secured to the binding-post 34. An electric circuit 35 extends from said binding-post 34 to the spring member 31 and has in this circuit a battery 36 and a sparking coil 37.

It is obvious from an inspection of the drawings that two revolutions of the shaft 10 in the direction of the arrow *a* in Fig. 1 will cause a revolution of the annular gear member 17 in the opposite direction, as indicated by the arrow *b*, and this revolution of said member 17 will cause an electric contact to be made between the members 32 33 and quickly broken to cause the igniting device to properly operate. The member 17 may be provided with as many projections or actuators upon its periphery as may be desired. It is obvious that by moving the arm 21 by means of the handle 24 in either direction along the bracket 28 and clamping the arm in adjusted position the member 17 will be advanced in relation to the gear 13 or moved in the opposite direction, as the case may be, thereby changing the time of operation of the ignition device to accommodate itself to the operation of the engine. This makes a very convenient device for regulating the time of operation of an ignition device, inasmuch as the mechanism for operating the igniter need not be disconnected and may be operated, if desired, while the shaft 10 continues to revolve.

It is believed that with the foregoing the operation of the invention will be thoroughly understood without any further description.

I claim—

1. In an igniter, the combination of a revoluble shaft, a gear secured thereto, a freely-revoluble annular gear concentric therewith provided with an actuator, an ignition de-

vice operated by said actuator, a pinion interposed between said gears and meshing with both, and means for adjusting the position of said pinion about the axis of said shaft and securing it in adjusted position.

2. In an igniter, the combination of a revoluble shaft, a spur-gear secured thereto, an annular gear freely revoluble about said shaft and provided with an actuator, an ignition device operated by said actuator, a pinion driven by said spur-gear and meshing with said annular gear, and means for moving said pinion about the axis of said shaft and securing it in any desired position.

3. In an igniter, the combination of a revoluble shaft, a spur-gear secured thereto, an annular gear freely revoluble upon said shaft and provided with an actuator, an ignition device operated by said actuator, an arm freely movable about the axis of said shaft, a pinion upon said arm interposed between said gears and meshing with each, and means for locking said arm in adjusted position.

4. In an igniter, the combination of a revoluble shaft, a spur-gear secured thereto, an annular gear freely revoluble upon said shaft and provided with an actuator, an ignition device operated by said actuator, an arm freely movable about the axis of said shaft, a pinion upon said arm interposed between said gears and meshing with each, and means for clamping said arm to a stationary part.

5. In an igniter, the combination of a revoluble shaft, an ignition device, an actuator therefor, mechanism carried by said shaft for operating said actuator, and means for adjusting said mechanism and securing it in adjusted position to accurately time the operation of said actuator.

6. In an igniter, the combination of a revoluble shaft, an ignition device, an actuator therefor, mechanism carried by said shaft for operating said actuator, and means mounted upon said revoluble shaft for adjusting said mechanism and securing it in adjusted position to accurately time the operation of said actuator.

7. In an igniter, the combination of a revoluble shaft, a gear secured thereto, a freely-revoluble annular gear concentric therewith provided with an actuator, a pinion mounted upon a stud interposed between said gears and meshing with both, and means for moving said pinion-stud about the axis of said shaft and securing it in adjusted position.

8. In an igniter, the combination of a revoluble shaft, a gear secured thereto, a freely-revoluble annular gear concentric therewith provided with an actuator, a member adapted to move about the axis of said shaft, a revoluble pinion thereon meshing with both of said gears, a bracket, and means for locking said member to said bracket in adjusted position.

9. In an igniter, the combination of a revoluble shaft, a gear secured thereto, a freely-revoluble annular gear concentric therewith provided with an actuator, a radial member adapted to move about the axis of said shaft, a revoluble pinion thereon meshing with both of said gears, a bracket, and means for locking said member to said bracket in adjusted position.

10. In an igniter, the combination of a revoluble shaft, a gear secured thereto, a freely-revoluble annular gear concentric therewith provided with an actuator, a radial member adapted to move about the axis of said shaft, a revoluble pinion thereon meshing with both of said gears, a slotted bracket, and a clamping member extending through said slot for locking said member to said bracket in adjusted position.

11. In an igniter, the combination of a revoluble shaft, an ignition device, an actuator therefor, mechanism carried by said shaft for operating said actuator, a device for adjusting said mechanism circumferentially of said shaft to accurately time the operation of said actuator, a fixed member, and means for securing said adjusting device to said fixed member in adjusted position.

Signed by me at Champlain, New York, this 17th day of February, 1906.

HARRY E. ATWATER.

Witnesses:
CLARA E. WHITE,
ALONSON S. ATWATER.