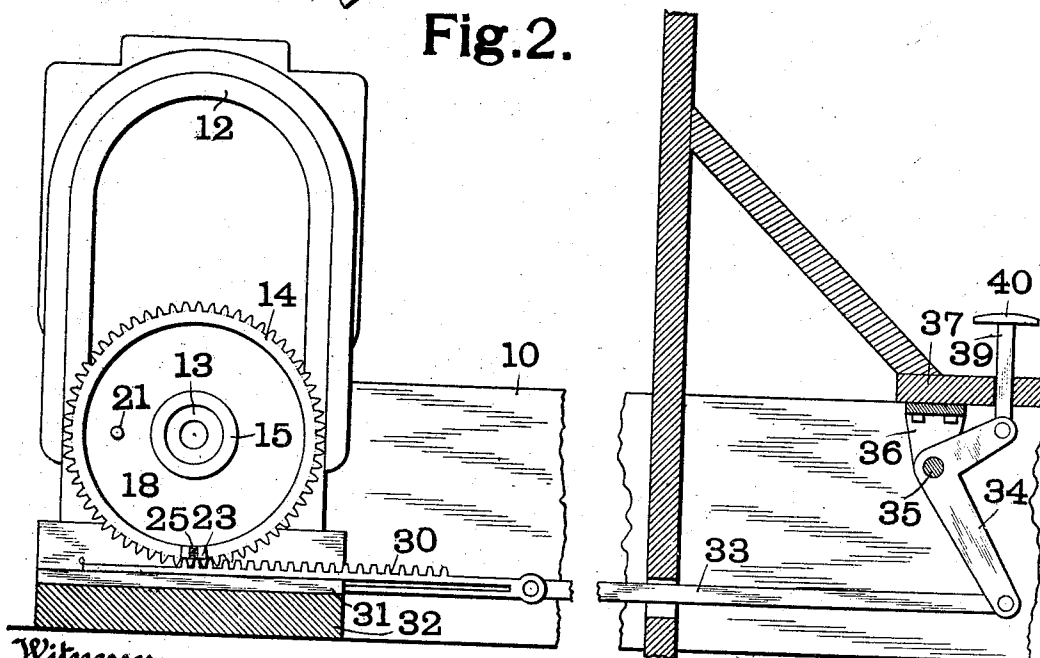
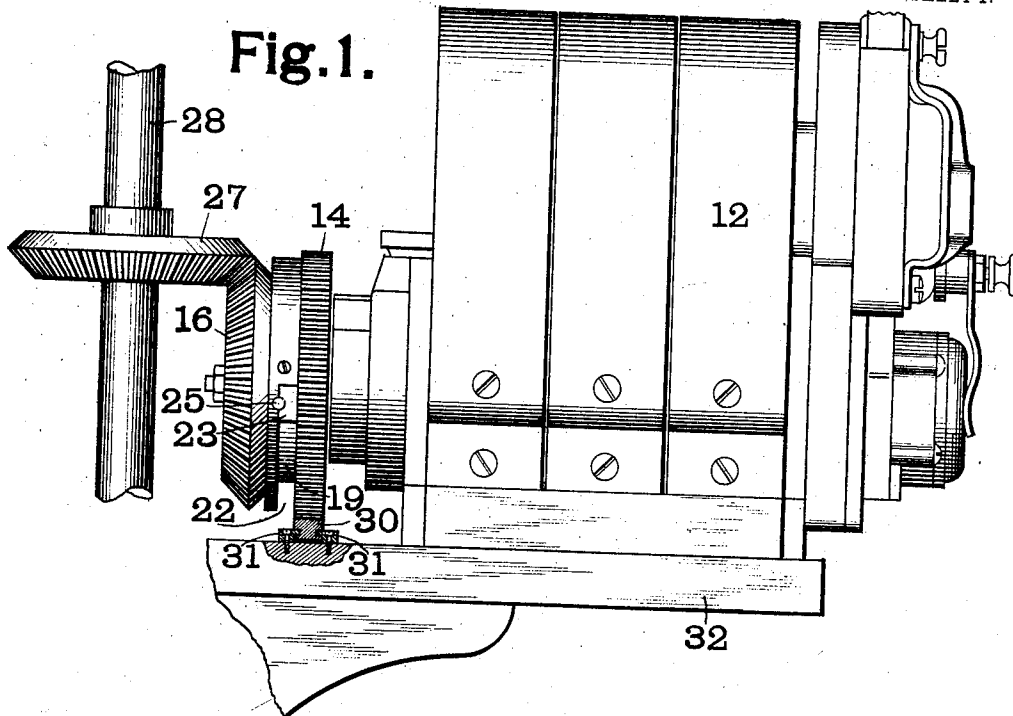


W. H. ROZIER & S. C. IGOU.  
 STARTING DEVICE FOR INTERNAL COMBUSTION ENGINES.  
 APPLICATION FILED JULY 10, 1908.

989,057.

Patented Apr. 11, 1911.

2 SHEETS—SHEET 1.



Witnesses

L. L. Mead.  
 W. A. Alexander.

Inventors  
 Welton H. Rozier  
 Samuel C. Igou  
 By their Attorneys  
 Fowler & Bryson

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Fig. 3.

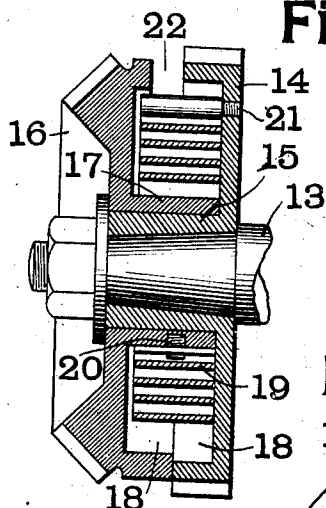


Fig. 4.

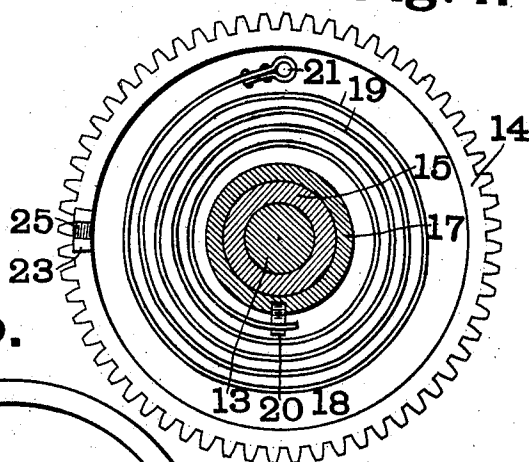


Fig. 5.

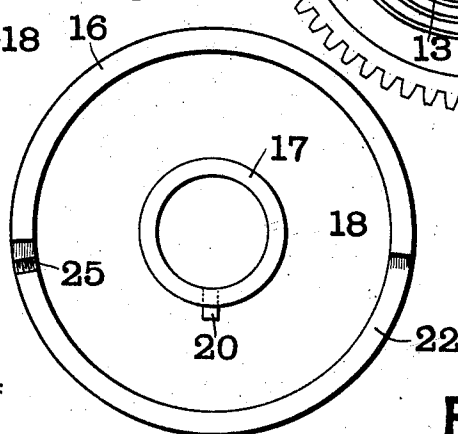


Fig. 6.

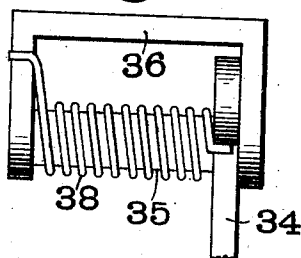
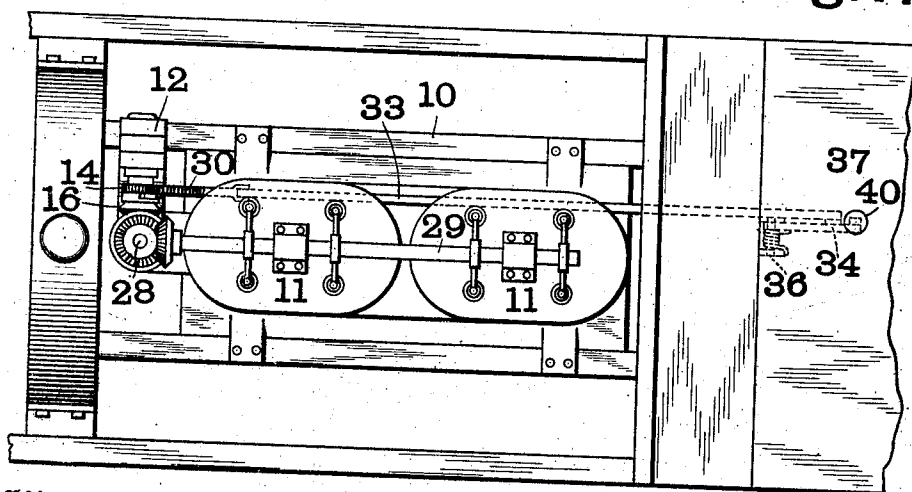


Fig. 7.



Witnesses

L. L. Mead.

W. A. Alexander.

Inventors

Welton H. Rozier

Samuel C. Igou

By their Attorneys

Fowler & Bryson

# UNITED STATES PATENT OFFICE.

WELTON H. ROZIER AND SAMUEL C. IGOU, OF ST. LOUIS, MISSOURI, ASSIGNORS TO  
MOTOR CAR AND DEVICE COMPANY, OF ST. LOUIS, MISSOURI, A CORPORATION OF  
MISSOURI.

STARTING DEVICE FOR INTERNAL-COMBUSTION ENGINES.

989,057.

Specification of Letters Patent.

Patented Apr. 11, 1911.

Application filed July 10, 1908. Serial No. 442,837.

*To all whom it may concern:*

Be it known that we, WELTON H. ROZIER and SAMUEL C. IGOU, citizens of the United States, residing at St. Louis, in the State of Missouri, have invented a certain new and useful Starting Device for Internal-Combustion Engines, of which the following is such a full, clear, and exact description as will enable any one skilled in the art to which it appertains to make and use the same, reference being had to the accompanying drawings, forming part of this specification.

Our invention relates to means for supplying an initial spark to start an internal combustion engine and is particularly designed for use in connection with such engine when applied to a motor vehicle.

The engines of motor vehicles are now usually supplied with sparks for igniting the explosive charge by means of electrical generators of the magneto type. With such generators it is necessary that the generating machine be run in time with the engine, that is, the armature of the magneto must make a certain definite number of revolutions to a given number of revolutions of the crank shaft of the engine so that the time of passage of the poles of the machine may bear a definite relation to the time of ignition of the cylinders of the engine. Owing to this it is not possible to independently operate the magneto to produce an initial charge. Owing to this fact the entire engine must be manually operated to start it notwithstanding the fact that a sufficient charge will remain in the cylinders for a great length of time to start the engine if means is supplied for applying the sparks thereto. Heretofore advantage has been taken of retention of the charge by supplying the machine with what is known as a dual ignition system, such system including in addition to the magneto machine a storage battery and induction coil.

It is the object of our invention to provide means whereby a limited movement can be given to the armature of the magneto independent of the engine, thus dispensing with the storage battery and induction coil and at the same time providing means whereby the engine and magneto are kept in proper time during the ordinary operation of the machine.

In the accompanying drawings which illustrate one form of igniting device made in accordance with our invention, together with a portion of a motor vehicle to which the same is applied, Figure 1 is a side elevation of the magneto and operating devices therefor, Fig. 2 is an end view of the devices shown in Fig. 1, a portion of the connections being removed, Fig. 3 is a section through the gearing connecting the engine and magneto, Figs. 4 and 5 are detailed views of some of the parts shown in Fig. 3, Fig. 6 is a detailed view of the means for returning the rack to normal position, and Fig. 7 is a top plan view on a reduced scale of the front part of a motor vehicle containing our device.

Like marks of reference refer to similar parts in the several views of the drawings.

10 is the frame forming the forward part of the motor vehicle on which is mounted an internal combustion engine 11 of any suitable type. The engine 11 is supplied with sparks for igniting the charges in its cylinders by means of the magneto 12. Rigidly mounted on the end of the armature shaft 13 of the magneto 12 is a toothed disk 14. The disk 14 is provided with a hub 15 on which is loosely mounted a beveled gear wheel 16. The beveled gear wheel 16 is provided with a sleeve 17 fitting over the hub 15 as best shown in Fig. 3. The disk 14 and beveled gear wheel 16 are recessed on their opposing faces so as to form a chamber 18 adapted to receive the coil spring 19. This coil spring 19 is attached at one end by means of a pin 20 to the sleeve 17 on the beveled gear wheel 16 and at the other by means of a pin 21 to the toothed disk 14. The beveled gear wheel 16 is provided with a cut-away portion 22 preferably extending about half way around its circumference. This cut-away portion 22 is adapted to receive a lug 23 formed on the toothed disk 14. This allows of a limited movement between the disk 14 and the beveled gear wheel 16 and at the same time these two parts are normally held together by means of the tension of the coil spring 19 so that the lug 23 is retained in the position shown in Fig. 1 of the drawings. In order to permanently lock these parts together in case the spring 19 should become broken or weakened, we provide a hole 25

formed partly in the lug and partly in the adjacent part of the wheel 16 so that by the insertion of a screw or pin the parts may be firmly locked together.

5 The beveled gear wheel 16 meshes with a beveled gear wheel 27 carried on an upright shaft 28 connecting the crank shaft (not shown) of the engine with the shaft 29 which drives the valve gear of the engine.  
10 With the particular type of engine and magneto shown these two wheels 16 and 27 are of the same diameter so that the armature of the magneto makes one revolution to each revolution of the crank shaft on the  
15 engine.

In order to rotate the armature of the magneto 12 independently of the engine we provide a rack 30 which is normally out of engagement with the toothed disk 14 but is  
20 adapted to be moved into engagement therewith. This rack 30 runs between guide strips 31 secured on the bracket 32 carrying the magneto 12. Pivoted to the end of the rack 30 is one end of a link 33, the opposite  
25 end of which is pivoted to a bell crank lever 34 mounted upon a short shaft 35 carried in a bracket 36 depending from the floor 37 of the vehicle. The shaft 35 is surrounded by a helical spring 38 which  
30 engages with the bracket 36 at one end and at the other with the bell crank lever 34 so as to normally hold the bell crank lever in position to withdraw the rack 30 from engagement with the toothed disk 14. The  
35 bell crank lever 34 has pivoted to it a rod 39 projecting through the floor 37 and provided at its upper end with a pedal piece 40 by means of which the device is operated.

In the operation of our device, when it is  
40 desired to start the engine 11, if a sufficient charge is retained in the cylinders of the engine, it is only necessary to place the foot upon the pedal piece 40, thus operating the bell crank lever 34 and driving the rack 30  
45 into engagement with the toothed disk 14, thus rotating said disk against the pressure of the spring 19 so as to move the armature of the magneto 12 in the opposite direction to that in which it normally runs. As soon  
50 as the pedal piece 40 is released the spring 38 will return the rack to its normal position carrying with it the wheel 14 and consequently rotating the armature of the magneto in the proper direction to produce an  
55 initial spark for igniting the engine. As soon as the engine is ignited, the movement of the armature will be continued in the usual manner, the tension of the spring 19 being sufficient to hold the parts 14 and 16  
60 together as though made in one piece. The rack 30 moves entirely out of engagement with the wheel 14 and thus does not inter-

fere with the proper operation of the device. In case of the spring 19 becoming weakened or broken, a pin or screw may be  
65 placed in the opening 25 thus firmly locking the two parts together so that the machine may be operated in the usual manner.

Having fully described our invention, what we claim as new and desire to secure  
70 by Letters Patent of the United States is:

1. The combination with an internal combustion engine, of an electrical generator therefor, gearing for driving said generator  
75 in time with said engine, means for permitting a limited movement of said generator relative to said engine, and connections independent of the engine adapted to engage with the generator when it is in any position  
80 to move said generator to produce an initial spark.

2. The combination with an internal combustion engine, of an electrical generator therefor, gearing for driving said generator  
85 in time with said engine, spring controlled means for permitting a limited movement of said generator relative to said engine, and toothed connections independent of the engine adapted to engage with the generator  
90 when it is in any position to move said generator to produce an initial spark.

3. The combination with an internal combustion engine, of an electrical generator for said engine, gearing for driving said  
95 generator in time with said engine, spring controlled means for permitting a limited movement of said generator relative to said engine, said means being provided with a locking device for rendering the same in-  
100 operative, and connections independent of the engine for moving said generator to produce an initial spark.

4. The combination with an internal combustion engine, of an electrical generator therefor, gearing for driving said generator  
105 in time with said engine, means for permitting a limited movement of said generator relative to said engine comprising two spring connected parts, one of which is rigidly connected with said generator  
110 and provided with teeth, and toothed connections independent of the engine for engaging and rotating said part rigidly connected with the generator to produce an  
115 initial spark.

In testimony whereof we have hereunto set our hands and affixed our seals in the presence of the two subscribing witnesses.

WELTON H. ROZIER. [L. S.]  
SAMUEL C. IGOU. [L. S.]

Witnesses:

RHODES E. CAVE,  
W. A. ALEXANDER.