

H. ADELSON.

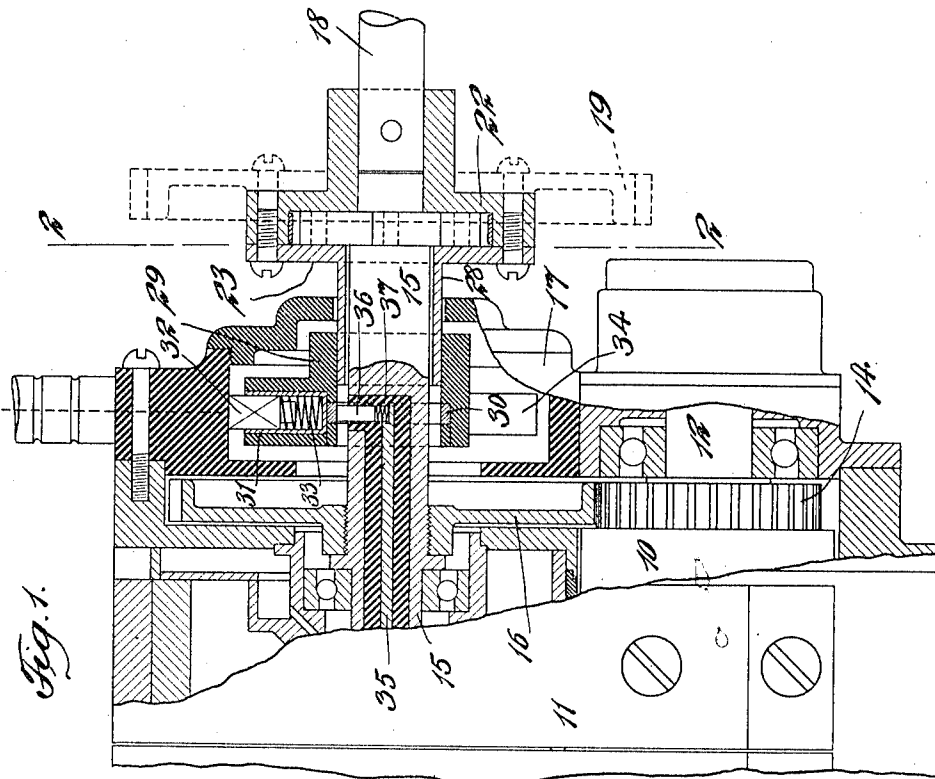
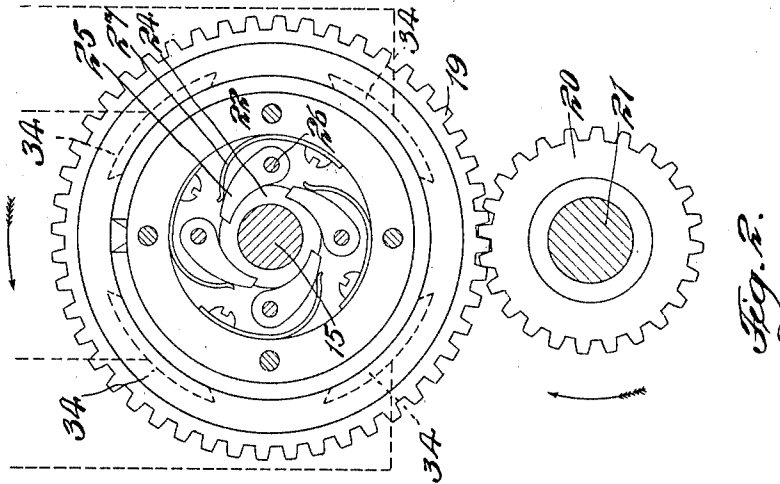
MAGNETO.

APPLICATION FILED APR. 16, 1910.

1,063,947.

Patented June 10, 1913.

2 SHEETS—SHEET 1.



WITNESSES:

Fred L. Martin
B. Bejje

INVENTOR

Harry Adelson
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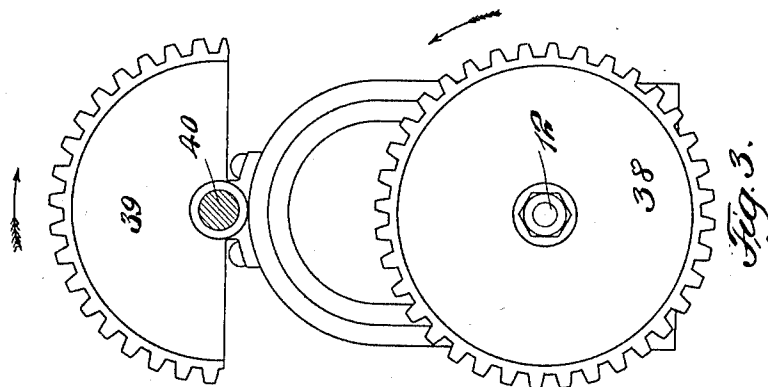
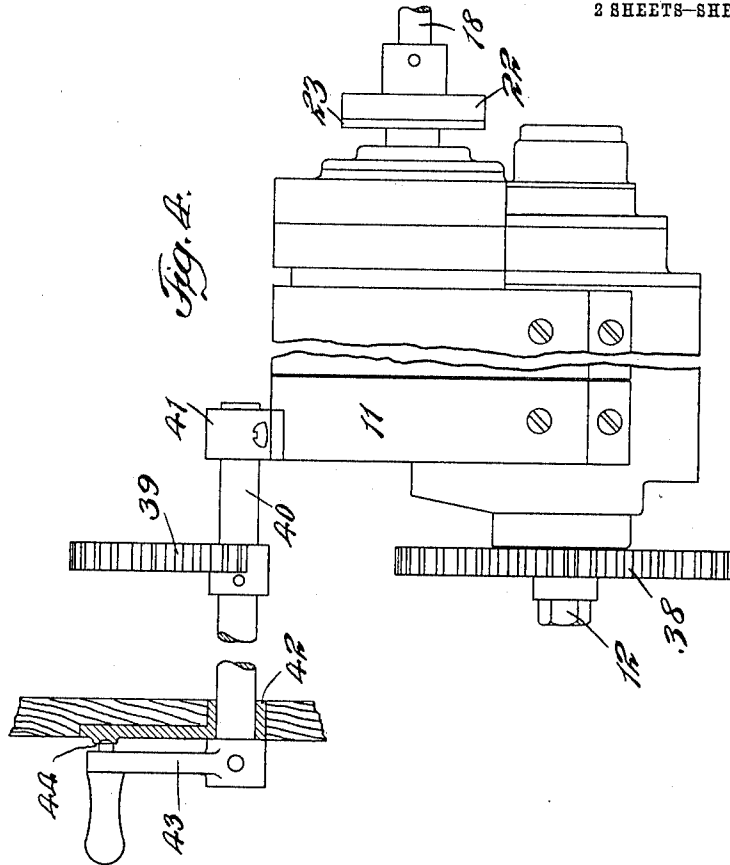
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UNITED STATES PATENT OFFICE.

HARRY ADELSON, OF BROOKLYN, NEW YORK.

MAGNETO.

1,063,947.

Specification of Letters Patent.

Patented June 10, 1913.

Application filed April 16, 1910. Serial No. 555,881.

To all whom it may concern:

Be it known that I, HARRY ADELSON, of the city of Brooklyn, county of Kings, State of New York, have invented certain new and useful Improvements in Magneto, of which the following is a full, clear, and exact specification, such as will enable others skilled in the art to which it appertains to make and use the same.

My invention relates to a means by which the magneto or generator supplying a spark to an internal combustion engine may be caused to operate without cranking the engine, thereby allowing the machine to be started by a slight motion on the part of the driver which does not necessarily involve his leaving the seat of the machine.

Particularly, my invention relates to the application of such a device to a magneto with which a distributor is geared in such a manner that the starting operation of the magneto will not disturb the distributor and thereby interfere with its necessary relation to the cylinders of the engine.

With these and other ends in view, the invention consists in certain novel features of construction and combinations of parts which will be fully set forth hereinafter and particularly pointed out in the claims.

Reference is now had to the accompanying drawings, which represent, as an example, one manner in which the principles of my invention may be practically embodied.

In these drawings—Figure 1 is a sectional elevation of the distributor end of a magneto of the type referred to, showing my invention embodied therein; Fig. 2 is a diagrammatic section on the line 2—2 of Fig. 1, illustrating the operation of the clutch; Fig. 3 is an elevation of the hand starting end of the magneto; and Fig. 4 is a side elevation of the magneto with part broken away to economize space on the sheet.

In the drawings the magneto is illustrated as of a conventional type of high tension generator, with a distributor embodied therein and geared with the armature shaft. Thus 10 indicates the armature; 11 the magnets; 12 the armature shaft; 14 a gear turning concentrically with the armature; 15, the distributor shaft; 16, a gear fastened to the shaft 15 and meshing with the gear 14; and 17, the distributor case, all of which parts, excepting, as hereinafter modified, may be of the usual and of any desired construction.

In Figs. 1 and 4, 18 indicates the element by which the driving motion is transmitted to the magneto. This element is here shown as a rotating shaft, which in practice is geared with or otherwise driven from the engine. The magneto may, of course, be driven otherwise, as suggested by a gear 19, indicated by broken lines in Fig. 1 and shown by full lines in Fig. 2; 20 indicating a pinion and 21 a driving shaft for actuating the gear. The driving motion is transmitted to a housing 22, which is mounted loosely on the end of the distributor shaft 15, the same being projected beyond the case for this purpose.

23 indicates a cover plate attached to the housing 22 and forming therewith a housing inclosure for a ratchet 24. This ratchet is for and fastened to the shaft 15 and coacts with pawls 25 pivoted on studs 26 carried by the housing 22 and pressed into active position by springs 27. The result of this arrangement is that the housing 22 and its pawls 25 when turning in the direction of the arrow in Fig. 2 transmits rotation motion to the shaft 15, but when turning reversely, the housing moves idly around the shaft. Further, the ratchet 24 being on the shaft within the housing prevents axial displacement of the housing on the shaft.

The cover plate 23 carries a sleeve 28 which projects loosely through an orifice in the face of the distributor cover 17 and carries to rotate with it an insulation hub or collar 29. This has a conducting band 30 extending around its inner wall and in electrical connection with a socket tube 31, carrying a contact pin 32 and spring 33. The contact pin 32 is adapted to be turned around with the hub or collar 29 and its connected parts within the circular distributor case 17 and successively to contact with the conducting members 34 which are placed at suitable intervals in the inner surface of said case 17 and respectively connected with the spark plugs of the engine, as indicated diagrammatically in Fig. 2. In accordance with the structure shown in the drawings, the current is led from the magneto by way of a conductor 35 which passes, suitably insulated through the shaft 15, to a point co-extensive with the position of the annulus 30. At this point is located a contact pin 36 pressed outward by a spring 37 so that the contact pin 36 is continuously in connection with the conduct annulus 30.

As shown in Figs. 3 and 4 the armature shaft 12 is provided with a gear 38, which is fastened to the shaft and adapted to coast with a mutilated gear 39, fastened on a shaft 40. This shaft 40 may be mounted in any convenient or desired situation which will largely depend upon the surrounding conditions. As here shown, one end of the shaft is carried in a bearing 41 attached to the magneto, while the other end is carried in a bearing 42 which may, for example, be attached to the dashboard of an automobile in which the magneto may be installed. For the purpose of allowing the shaft 40 to be manually rotated at will, a small crank 43 is attached to the shaft and provided with a suitable stop device indicated at 44, whereby the crank consequently and the gear 39 may be held in the inactive position indicated in Figs. 3 and 4. This stop device 44, however, is such as admits rotation of the crank when sufficient pressure is applied to release the stop device.

The operation of the apparatus may be traced as follows: In the normal operation of the engine and magneto, the housing 22 will be rotated from the engine in the direction indicated by the arrow in Fig. 2. This will cause the pawls 25 positively to engage the ratchet 24 and the shaft 15 will be correspondingly rotated, thus driving the gears 16 and 14 and the armature of the magneto. Simultaneously, however, the sleeve 28 is rotated and this rotates the collar 29 and causes the contact 32 successively to engage the contacts 34, thus distributing current in proper succession to the various cylinders of the engine. Should the engine be at rest and it be desired to start the same, the operator should grasp the crank handle 43 and impart a rotation to the mutilated gear 39. This causes said gear to run into the gear 38 and impart a direct rotation to the armature. This generates a current sufficient to produce a spark, but it should be noted that although the shaft 15 will turn at this time, the ratchet 24 will run ahead of the pawls 25 and motion will not be imparted to the housing 22 or to the parts 28 and 29, so that the position of the distributor will not be changed, but the current will pass through the parts 36, 30, 33, 32 and 34 in the usual manner, thus allowing the current to be transmitted to the spark plug of the cylinder, the piston of which is then in position firing. Assuming this cylinder to be charged, it then follows that the charge will be exploded and the engine started. The gear 39 would instantly roll out of mesh with the gear 38 and the stop 44 will hold said gear in the inactive position shown. As the engine takes up its motion the housing 22 runs ahead in the direction indicated by the arrow in Fig. 2 and the operation of the magneto then becomes normal as described.

It will be noted that the mutilated gear 39 is shaped to have just enough teeth to run into and turn the gear 38 exactly 180°. It will also be noted that the gear 20 is of exactly one-half the pitch diameter of the gear 19. The operator in grasping the crank handle 43 imparts a rotation to the mutilated gear 39 and this will turn the armature shaft one-half of a revolution and the shaft 15 one-quarter of a revolution. This brings each pawl to the next successive notch of the ratchet 24. The springs 27 prevent the momentum of the armature from continuing the rotation of the latter. As the ratchet 24 will, during these hand turns, run ahead of the pawls 25 motion will not be imparted to housing 22 or to the parts 26 or 29 and the position of the distributor will not be changed from the original point until the current generated by the hand turn will pass through the parts 26—30—33—32 and 24 in the usual manner thus allowing the current to be transmitted to the spark plug of the cylinder which may happen to be on the compression stroke and if there is a charge of gas in this cylinder it will explode and will start the engine. The butt of the distributor being directly connected with the engine and with the ratchet, will continue rotation in the proper relation to the engine cycles. The rotation of the armature through 180 degrees does not effect the relationship of the armature to the cycle.

One of the important advantages of the invention is that in automobile and other gas or gasoline power plants, my improvements dispense with the necessity of batteries and the other incidents to the dual ignition system. The engine may be started without cranking by a slight operation of the handle 43 and no batteries are required. Having thus described my invention, what I claim as new and desire to secure by Letters of the United States, is:

1. The combination, with a magneto and a distributor with a rotary element, of a magneto shaft geared to said distributor, a driving element carrying the rotary element of said distributor, means for independently rotating the armature shaft, and a clutch for releasing said rotary element from positive connection with said driving element when said armature shaft is independently rotated.

2. In combination, with a magneto and a distributor with a rotary element geared thereto, of a driving means for positively actuating the rotary member of said distributor, means for independently actuating the armature shaft of said magneto, and means interposed between said rotary member and said driving means whereby the former may be driven in proper time without action of said driving means.

3. The combination of a magneto, a shaft

geared therewith and carrying a part in circuit with the magneto, a distributor with which said part is also in circuit, means connecting the distributor with the source of driving motion, a clutch connecting the shaft and said means when the latter is turned in one direction, and means for independently rotating the magneto armature.

4. The combination with a magneto, of a shaft geared therewith, a distributor, a part carried by the shaft, said part being in circuit with the magneto and in electrical connection with the distributor, a housing loosely mounted on the shaft and adapted to receive the driving motion, a clutch connecting the housing and shaft when the former revolves in one direction, and a sleeve carried by the housing and loosely surrounding the shaft, the sleeve carrying the moving part of the distributor.

5. The combination with a magneto, of a shaft geared therewith, a distributor, a part carried by the shaft, said part being in circuit with the magneto and in electrical connection with the distributor, a housing loosely mounted on the shaft and adapted to

receive the driving motion, a clutch connecting the housing and shaft when the former revolves in one direction, a sleeve carried by the housing and loosely surrounding the shaft, the sleeve carrying the moving part of the distributor, and means for imparting a manual rotation to the magneto armature.

6. The combination, with a magneto and a distributor with a rotary element, of means connecting the rotary element of said distributor with the source of power, driving connections between the distributor and the armature of the magneto, means for the rotation of said armature independent of the distributor, and means whereby the timing relation between the distributor and the cylinders of an engine is left undisturbed when said armature is independently rotated.

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

HARRY ADELSON.

Witnesses:

B. BIGGE,

F. C. MARTIN.