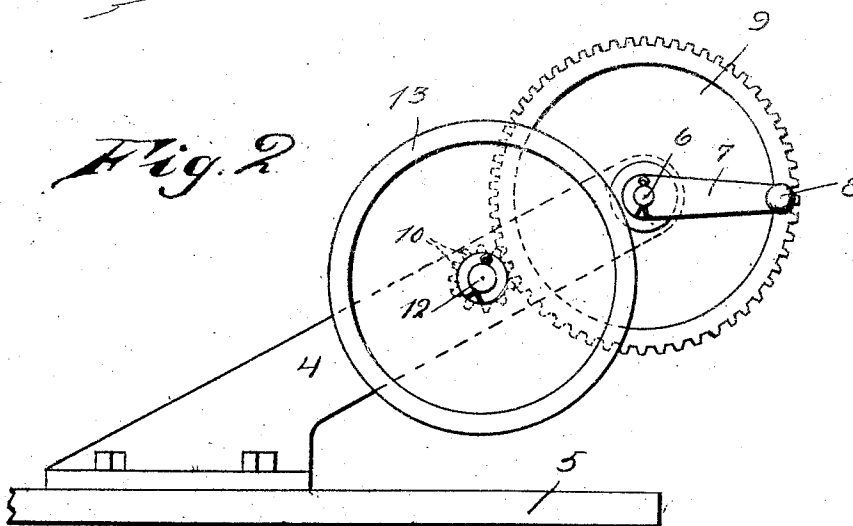
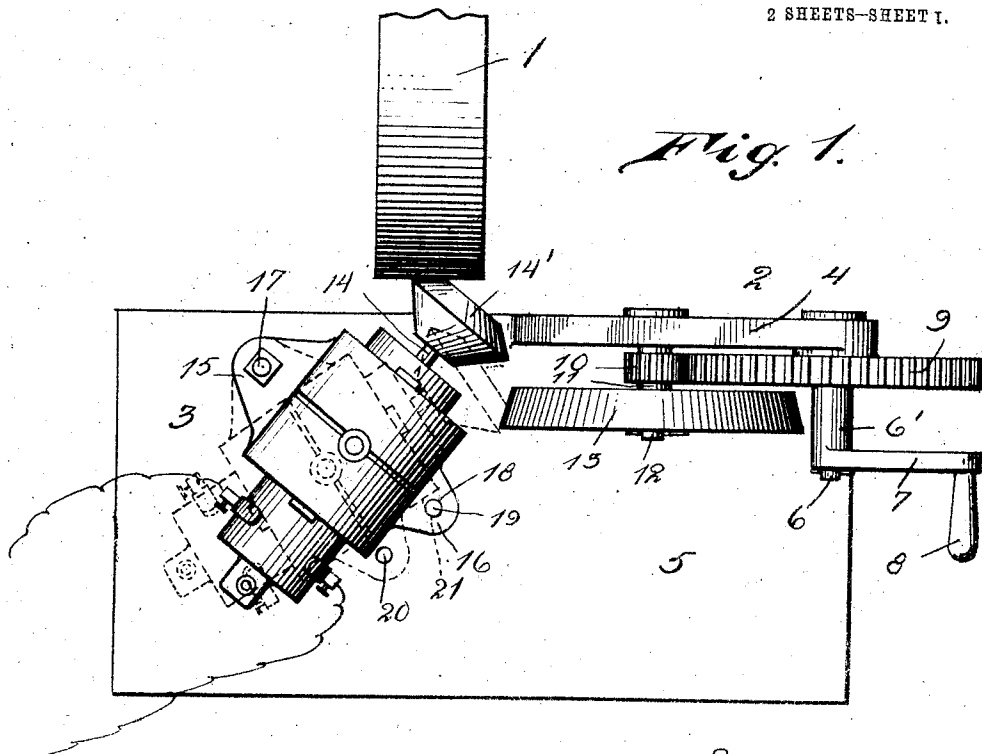


D. E. COLLARD.
IGNITION APPARATUS FOR EXPLOSIVE ENGINES.
APPLICATION FILED AUG. 11, 1911.

1,035,318.

Patented Aug. 13, 1912.
2 SHEETS—SHEET 1.



Witnesses

J. Milton Jester.
B. H. Hildebrand

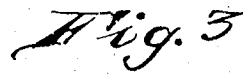
By

Inventor
David E. Collard

C. L. Parker
Attorney

1,035,318.

2 SHEETS--SHEET 2.



J. Milton Foster
B. H. Williams

 $\mathfrak{B}_4$

C. L. Parker.
Attorney

UNITED STATES PATENT OFFICE.

DAVID EDWARD COLLARD, OF JEFFERSON, COLORADO.

IGNITION APPARATUS FOR EXPLOSIVE-ENGINES.

1,035,318.

Specification of Letters Patent. Patented Aug. 13, 1912.

Application filed August 11, 1911. Serial No. 848,528.

To all whom it may concern:

Be it known that I, DAVID E. COLLARD, a citizen of the United States, residing at Jefferson, in the county of Park and State of Colorado, have invented certain new and useful Improvements in Ignition Apparatus for Explosive-Engines, of which the following is a specification.

This invention relates to ignition apparatus for explosive engines, adapted for use in the place of batteries, said apparatus being adapted to be manually operated when starting the engine and subsequently driven by the engine to continue the supply of current.

An important object of this invention is to provide novel and simple means whereby an electrical generator or magneto may be manually operated for starting the engine and subsequently geared with the engine to be driven thereby.

A further object of this invention is to provide apparatus of the above mentioned character, which is simple in construction, easy and reliable in operation, not liable to derangements and cheap to manufacture.

Other objects and advantages of this invention will be apparent during the course of the following description.

In the accompanying drawings forming a part of this specification and in which like numerals are employed to designate like parts throughout the same, Figure 1 is a plan view of the apparatus as a whole, Fig. 2 is a side view of the manually operated means for driving the electrical generator or magneto. Fig. 3 is a plan view of a slightly modified form of the invention, and Fig. 4 is a plan view of another modified form of the invention.

In the drawings wherein is illustrated a preferred embodiment of my invention, the numeral 1 designates the fly-wheel of an explosive engine and the numeral 2 designates as a whole manually operated means adapted to drive an electrical generator or magneto 3. The fly-wheel 1 and the means 2 are disposed at substantially a right angle, and the magneto 3 is positioned at the apex of the angle.

In the manually operated means 2, the numeral 4 designates an upwardly extending arm or bracket which is rigidly mounted upon a fixed support or base 5. To the upper end of the arm 4 is rigidly connected a shaft 6, upon which is journaled a sleeve

6' carrying a crank 7, provided with a handle 8. Rigidly mounted upon the sleeve 6' is a large gear-wheel 9, in constant mesh with a small pinion 10, which is rigidly mounted upon a sleeve 11. The sleeve 11 is suitably journaled upon a shaft 12, rigidly connected with the arm 4. A wheel 13 is rigidly mounted upon the sleeve 11. This wheel has its periphery slightly beveled, as shown.

The magneto 3 may be of any well known or preferred type and the same comprises an armature shaft 14, having a friction bevel pulley 14' rigidly connected therewith. A centrifugal governor (not shown) may preferably be connected in the shaft 14 to control the transmission of the rotation of the bevel pulley 14' to the armature, when it is desired to retain the rotation of the armature at a constant speed. This centrifugal governor may be of any well known or preferred type. Rigidly connected with the lower portion or base of the magneto 3 and disposed upon the opposite sides thereof are ears 15 and 16, as shown. The ear 15 is pivotally connected with the base 5 by a bolt 17 and the ear 16 has an aperture 18 formed therein for receiving a removable locking pin 19 adapted for insertion within spaced openings 20 and 21 formed in the base 5.

It is seen that by bodily swinging the magneto to the right, the pulley 14' will engage the wheel 13, and the openings 18 and 20 will be in registration. The pin 19 is now inserted in the openings 18 and 20 and serves as means to lock the magneto in its new position. The operator manually turns the handle 8 and this rotation is imparted at an increased speed by element 9 and 10, to the wheel 13, which in turn rotates the pulley 14'. By removing the locking pin 19 and bodily swinging the magneto to the left, the pulley 14' will engage the fly-wheel 1 and be driven thereby. The openings 18 and 21 are now in registration to receive the locking pin 19, which rigidly holds the magneto in this position.

In Fig. 3, I have shown the fly-wheel 1 and manually operated means 2 disposed to form an obtuse angle. The magneto 3 is positioned so that friction pulley 22, which is employed in the place of the bevel pulley 14', is disposed between the fly-wheel 1 and the wheel 13, to be alternately moved into engagement with the same. In this form

of the invention the wheel 13 does not have its periphery beveled. All other parts of the apparatus remain the same. In connection with this form of the invention, the magneto 3 may be bodily shifted to bring the pulley 22 into engagement with either the fly-wheel 1 or wheel 13. The same means are employed to lock the magneto in either of its operative positions.

In Fig. 4, the fly-wheel 1 and wheel 13 are shown as spaced and disposed to form a straight angle. The magneto 3 is pivotally mounted upon the base 5 (not shown) in the same manner and the same means are provided to lock the magneto in its two operative positions. The shaft 14 is provided with a friction pulley 23, which is substituted for the pulley 14, said pulley 23, having its periphery rounded as shown. It is obvious that by bodily swinging the magneto 3, the pulley 23, can be brought into engagement with either the fly-wheel 1 or the wheel 13.

Figs. 3 and 4 are shown to illustrate that the fly-wheel 1 and means 2 may be disposed at different angles without interfering with the operation of the apparatus or causing any material change therein.

I wish it understood that the forms of my invention herewith shown and described are to be taken as preferred examples of the same and that certain changes in the shape, sizes and arrangement of parts may be resorted to without departing from the spirit of the invention or the scope of the subjoined claims.

Having thus described my invention, I claim:—

1. The combination with a rotatable element driven by an explosion engine, of means manually operable independently of said rotatable element and including a rotatable element, a support, a dynamo pivotally connected with the support to be bodily swung in a substantially horizontal plane, and a pulley connected with the dynamo, disposed between the rotatable elements and brought into engagement with said rotatable elements by the substantially horizontal swinging movement of the dynamo.

2. The combination with a rotatable element driven by an explosion engine, of means manually operable independently of said rotatable element and including a rotatable element, a support, a dynamo, means pivotally connecting the dynamo and support whereby said dynamo may be bodily swung in a substantially horizontal plane, a pulley connected with the dynamo, disposed between the rotatable elements and brought into engagement with said rotatable elements by the substantially horizontal swinging movement of the dynamo, and means to rigidly hold the dynamo in either of its operative positions.

In testimony whereof I affix my signature in presence of two witnesses.

DAVID EDWARD COLLARD.

Witnesses:

J. P. CARRUTHERS,
T. T. WILKIE.