

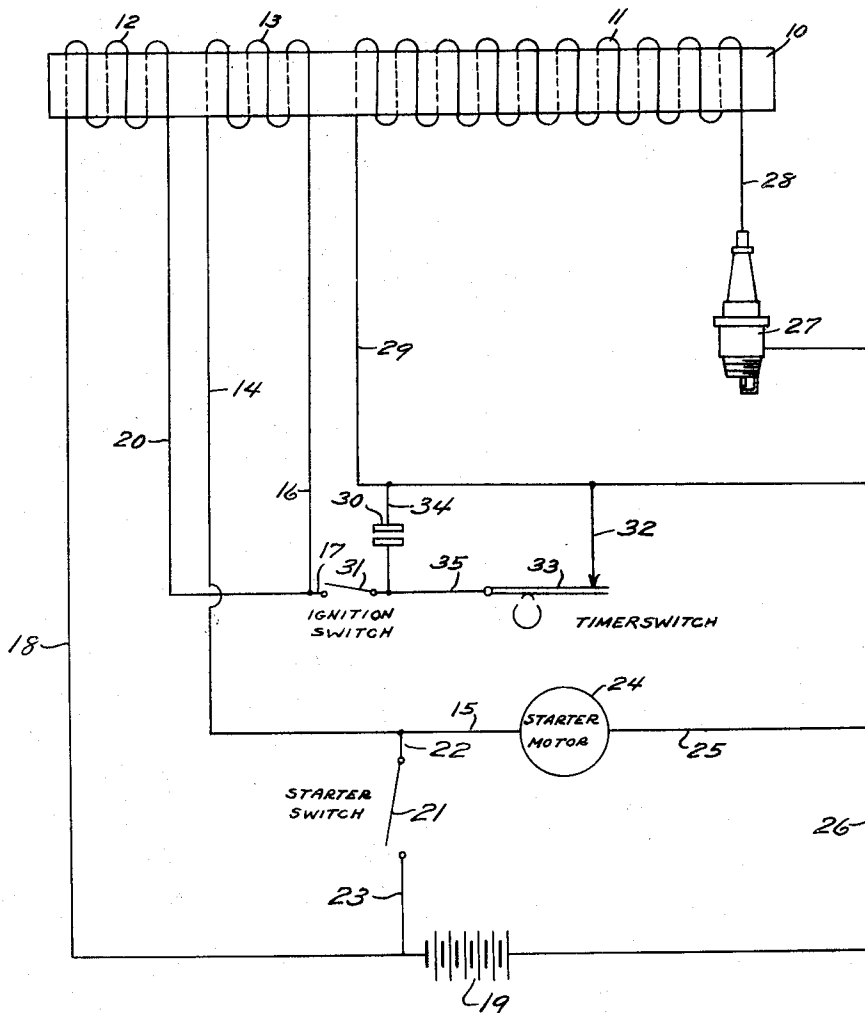
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INTERNAL-COMBUSTION ENGINE IGNITION SYSTEM

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INTERNAL-COMBUSTION ENGINE
IGNITION SYSTEM

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1 Claim. (Cl. 123—179)

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This invention relates to starting devices of internal combustion engines, and in particular a method and means of increasing the spark intensity of an ignition system of an internal combustion engine when starting the engine and during the comparatively short time interval when the starter button is held inwardly or the starter switch closed and in which the circuit that provides the increased spark intensity is instantly broken when the engine starts to operate.

One of the main objects of this invention is to prevent damage to the electrical components of the ignition system by making it impossible to have an increased spark condition at anytime the increased spark condition is not needed.

The purpose of this invention is to eliminate the strain on a motor vehicle battery and also the inconvenience of waiting for an engine to start by providing an auxiliary circuit from a coil of the engine which provides increased spark intensity in starting the engine.

With the conventional type of motor vehicle engine ignition system the pull of the starter motor on the battery circuit causes reduced voltage with correspondingly reduced spark and when the motor does not start immediately the continued drain on the battery continues to reduce the spark. This condition is accentuated in cold weather where the thick oil causes the motor to rotate at a slower speed. With this thought in mind this invention contemplates an additional or auxiliary primary coil on the magnetic core of the coil of the ignition system and means connecting the auxiliary primary coil in the system whereby the circuit is closed therethrough when the starter switch is held closed and this circuit is broken as soon as the starter switch is opened. By this means the increased spark intensity is applied only during the starting period of the motor and is released instantly when the motor takes hold or when the starter button is released.

The object of this invention is, therefore, to provide means for incorporating an auxiliary primary coil in the coil of a motor vehicle ignition system whereby increased spark intensity is provided in the starting period and is instantly withdrawn at the termination of said starting period.

Another object of the invention is to provide means for incorporating a coil for increasing the intensity of the spark of a motor vehicle engine ignition system that may be incorporated in ignition systems now in use.

Another important object of this invention is

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to provide an ignition system in which the increased spark condition exists during the period the starter motor is in operation, and is exactly limited to this time only.

A further object of the invention is to provide an improved ignition system for motor vehicle engines that provides increased spark intensity for starting the engine, which is of a simple and economical construction.

With these and other objects and advantages in view the invention embodies an internal combustion engine ignition system in which the coil is provided with a core having a secondary winding and a plurality of primary windings and whereby one of said primary windings is connected in the system with a circuit whereby the said primary winding provides increased spark intensity when the starter switch is in the closed position.

Other features and advantages of the invention will appear from the following description taken in connection with the drawings wherein:

The drawing illustrates a typical ignition system circuit in which the parts are diagrammatically shown.

Referring now to the drawing wherein like reference characters denote corresponding parts the improved internal combustion engine ignition system of this invention includes a coil having a transformer core 10 with a secondary winding 11 on the core, with the conventional primary winding 12 also on the core, and with an auxiliary primary winding 13 on the core and connected to the starter motor with wires 14 and 15 and to the ignition switch with wires 16 and 17.

The primary winding 12 is connected by a wire 18 to a battery 19 at one end and the opposite end is connected by a wire 20 to the ignition switch through the wire 17.

The starter switch 21 is connected across the wires 15 and 18 by wires 22 and 23 and the opposite terminal of the starter motor 24 is connected by a wire 25 to a wire 26 which extends from one terminal of the battery 19 to a spark plug, as indicated by the numeral 27. The opposite terminal of the spark plug 27 is connected by a wire 28 to the secondary winding 11 of the coil and the opposite terminal of the secondary winding 11 is connected by a wire 29 to the wire 26 extended from the battery with a wire 32 connecting the wire 29 to the timer switch 33, the timer switch being connected to the ignition switch through a wire 34.

A capacitor or condenser 30 is connected in

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parallel to the timer switch 33 by wires 29 and 32 on one side and wire 35 on the other.

With the parts arranged in this manner, the closing of the starter switch 21 instantly closes a circuit to the auxiliary primary winding 13 and this circuit is completed only as long as the starter switch remains closed. With the primary winding coupled to the spark plugs through the secondary winding 11 by electro-magnetic induction in a manner to add to the strength of primary winding 12 increased spark intensity is provided which facilitates starting the engine during the period while the starter button is retained in the closed position.

It will be understood that although only one spark plug is shown, the circuit may be extended to include as many spark plugs as may be desired.

It will also be understood that modifications may be made in the design and arrangement of the parts without departing from the spirit of the invention.

What is claimed is:

An internal combustion engine ignition system, comprising a starter motor, a transformer core having a primary winding, a secondary winding and an auxiliary winding therearound, one end of said secondary winding connected to a spark

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plug system, the other end of said spark plug system being connected to said starter motor and to one end of a direct current source, the other end of said secondary winding being connected to one end of a capacitor and to a terminal of a timer switch and also to the connection between the spark plug system and the direct current source, one end of said primary winding and one end of said auxiliary winding being connected together and to one contact of an ignition switch, the other end of said ignition switch being connected to the other end of said capacitor and to said timer switch, the other end of said auxiliary coil being connected to one side of a starter switch and also to the other side of said starter motor, the other end of said primary winding being connected to the other side of said starter switch and also to the other side of said direct current source.

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