

USES NEW PRINCIPLE IN IGNITION SYSTEM

Varley's Discovery Has Been Incorporated in Many Transformers.

HOTTER SPARK OBTAINED

In Addition to Usual Low and High Tension Windings, a Choke Coil Is Used.

A new principle in electrical transformer action which is expected to prove an important advance in ignition systems as applied to automobile and other internal combustion engines has been discovered by Richard Varley of Jersey City. The principle, which can be used with nearly any source of alternating current, has been incorporated in a large number of transformers for ignition purposes, where the potential at the secondary terminals has been shown to be more than eight times as great as could be obtained from the regular type of transformer. In other words, a hotter and more lasting spark is obtained with simplified apparatus.

Mr. Varley's discovery is described by The Horseless Age in its issue today, in part as follows:

"Mr. Varley employs a specially wound transformer, which, connected in circuit with the armature of a low-tension magneto, provides a high-tension ignition system that is in many respects different from all others known, and the arc flame is obtained without the necessity of winding the secondary upon the magneto armature.

Choke Coil Is Used.

"The new transformer has a closed iron circuit, and, in addition to the usual low and high-tension windings, a third winding, known as a choke coil, is used and is wound preferably under the high-tension winding. This choke coil occupies very little space and usually consists of one layer of turns under the secondary, or half of the turns may be placed on either side of the secondary.

"The chief advantage resulting from the use of this choke coil winding is that no condenser is required across the breaker contacts—provided, of course, that the three windings are properly proportioned. The secondary discharge from the new transformer is said to be of long duration and to have all the characteristics of the spark delivered by a high-tension magneto with both primary and secondary windings on the armature and with a condenser.

"With this three-coil transformer the primary winding is connected to any source of alternating current and the mechanical circuit breaker is of the usual type and placed in the choke coil circuit. The generator armature is of the H-type and contains only one winding, the generator being positively driven by the engine in the usual manner. The size of the transformer is reduced by about half as compared with the usual coil, primarily in consequence of the elimination of the condenser and the reduced bulk of the secondary winding.

Reduces the Magnetic Flux.

"The choke coil is used in circuit with an interrupter opened and closed by a cam. When the circuit is closed while the alternating current flows through the primary coil, an induced current flows in it which creates a counter-magnetizing force and greatly reduces the magnetic flux through that leg of the magnet core on which the choke coil and secondary coil are wound, the greater portion of the magnetic flux created by the primary winding returning through leakage paths past the secondary coil.

"Rotation of the cam causes a sudden opening of the choke coil circuit, and as the cam is in synchronous relation to the generator, the circuit may be opened when the current wave is at its maximum. At the instant of separation of the contacts a high voltage is induced in the secondary coil, and if the coil terminals are sufficiently close together a flaming discharge is produced and continues for the balance of the current wave in the secondary, unless arrested by another short circuiting of the choke coil. The high voltage at the secondary terminals is due to the inrush of flux into the core leg surrounded by the secondary winding.

Current in Secondary Circuit.

"When the arc is established, current flows in the secondary circuit and the ampere turns of the secondary coil produce an effect similar to that of the choke coil, that is, they restrain the inflow of flux and prevent an abrupt or instantaneous exhaustive discharge of energy at high voltage.

"The secondary winding also acts somewhat in the manner of a condenser, by suppressing the spark at the breaker contacts. With all three windings properly proportioned and with a very small potential across the contacts (obtained by making the choke coil with few turns of heavy wire) there is little or no tendency to sparking at the contacts upon opening of the choke coil circuit.

"By making the turns of the choke coil winding the same as the primary and connecting the choke coil in parallel with the primary, the circuit breaker can be placed in either circuit. With these arrangements a condenser may be used across the breaker contacts. The secondary may be divided, with half of the turns over the primary winding and the other half over the choke coil winding, both secondaries being connected in series, or the secondary may also be placed

directly over the iron core midway between the primary and choke coil windings. Preference, however, is given to the scheme where the choke coil winding is such as to obviate the need of a condenser.

Startling Increase in Voltage.

"This new transformer principle can best be demonstrated by connecting to the house circuit, where alternating current is available. A transformer wound to step up the voltage to, say, 3,000 at the secondary with the choke coil open, will, when the choke coil is connected to a vibrator, show a startling increase in voltage at the secondary, something like 24,000, the vibrator vibrating in synchronism with the primary current.

"The discovery of this transformer principle was brought about by an endeavor to design a coil to work with an external source of alternating current, the secondary discharge to have all of the characteristics of the spark from a high-tension magneto with revolving primary and secondary windings, the energizing current to be alternating to prevent pitting of the breaker contacts.

Can Be Used On Many Cars.

"When, in the course of the experimental work, coils with closed iron circuit were used, the potential at the secondary terminals was far too low, and if the turns were increased the voltage was raised at the expense of the amperage. But by the introduction of the third winding startling results were obtained. The voltage in the secondary was multiplied and the arc maintained by the continued current in the primary.

"The new transformer can be used on cars fitted with direct connected, continuous current, two-pole dynamos for lighting purposes, as it is a simple matter to fasten slip-rings to the armature of the lighting machine and take off a suitable alternating current, thereby eliminating the use of a magneto, provided the lighting machine is of a size sufficiently large to permit of being driven at magneto speed."

MCCANN WILL DEFEND SUIT.

Richard Croker's Nephew Has \$7,300 Default Judgment Opened.

Supreme Court Justice Shearn yesterday granted permission to Charles E. F. McCann, lawyer son-in-law of Frank W. Woolworth, and nephew of Richard Croker, to open a default judgment for \$7,300 obtained against him by Mrs. Sarah A. Frazier. Mrs. Frazier was a sister of Richard Croker's first wife, who is dead. McCann is permitted to put in a defense and the suit will be placed on the trial calendar for the Fall term of the court.

The complaint recites that prior to September, 1894, Catherine Frazier, mother of the plaintiff, died, and in her will named as trustee Maria J. McCann, sister of the plaintiff and mother of the defendant lawyer. Under the terms of the will, Mrs. McCann was to collect the rents from 2,166 Second Avenue, and pay them over to the plaintiff for life, and at Mrs. Frazier's death the property was to go to the defendant, McCann. There was an alternative power given to Mrs. McCann, the complaint recites, to sell the property and invest the proceeds in other realty.

Further, the complaint sets forth, in October, 1900, Mrs. McCann, as trustee, deeded the property, without consideration, over to the defendant McCann. McCann, on Nov. 6, 1903, sold the property for \$7,300. Then, without the plaintiff's knowledge, Mrs. Frazier says, he invested the proceeds in the property at 157 East 118th Street, upon which there was a first mortgage of \$15,000. Later, this property was foreclosed at a price insufficient to satisfy the first mortgage, and the \$7,300 was lost to the Frazier estate. Mrs. Frazier asked that McCann be compelled to file an accounting.

Yesterday McCann declared that the transfer of the property to him was made at the request of the plaintiff, that the sale was made with her consent and the proceeds turned over to her directly. He denies absolutely that he made any investment of the \$7,300 in the property in 118th Street. He also pleads the statute of limitations as a defense.

MAY BUY CORONA BANK.

Bank of Long Island Offers \$180 a Share for \$100,000 Stock.

The Bank of Long Island, with main office in Jamaica and branches in Flushing, College Point, Far Rockaway and Woodhaven, has offered to purchase the First National Bank of Corona at \$180 a share for its capital stock. The proposal has been referred to the shareholders of the Corona bank and it is believed the purchase will be consummated.

The holders of more than 500 shares of Corona bank stock have signified their willingness to sell at the figure stipulated. There are 1,000 shares of First National of Corona with a par value of \$100. The bank was founded in 1907 by William J. Hamilton and C. W. Copp of Flushing and Henry S. Johnston of Elmhurst.

Conference of Hebrew Scholars.

A conference of Hebrew scholars was held yesterday at Wave Crest Manor, Wave Crest, L. I., to consider plans for the publication of a number of Hebrew classics. Among those present were Professor Solomon Schechter, President of the Jewish Theological Seminary of America; Drs. Israel Friedlaender, Alexander Marx, and Louis Ginsberg of the Faculty of this institution; Dr. Kaufman Kohler, President of the Union Theological Seminary at Cincinnati; Drs. David Philipson and Jacob Z. Lauterbach of the Faculty of that seminary; Dr. Cyrus Adler, President of Dropsie College of Philadelphia; Dr. Henry Malter of the Faculty of this college, and the Rev. Dr. Samuel Schulman, rabbi Temple Beth-El, New York City.