



IGNITION APPARATUS  
AND ACCESSORIES





**EISEMANN**

**HIGH TENSION  
MAGNETOS  
AND IGNITION  
APPARATUS**

FOR  
ELECTRICALLY IGNITED  
INTERNAL COMBUSTION  
ENGINES

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MADE BY

**EISEMANN MAGNETO CORPORATION**

GENERAL OFFICE & FACTORY  
BROOKLYN, N. Y.

BRANCHES:

DETROIT, MICH.  
429 Willis Ave. W.

CHICAGO, ILL.  
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## A Few General Facts



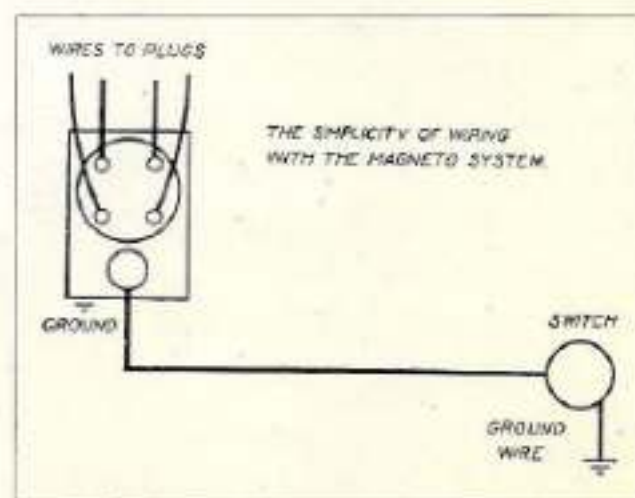
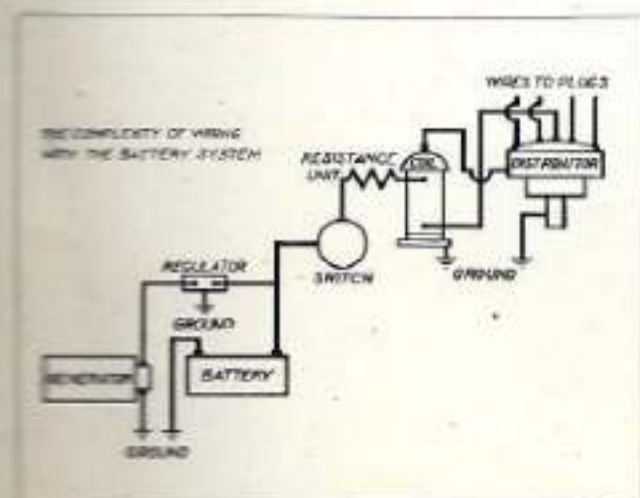
THE prime factors to be considered when specifying ignition equipment for electrically ignited Internal Combustion Engines are: Dependability, Economy of Upkeep, Simplicity and Sturdiness of Design. In short, your ignition system must be one that will provide an intensely hot, fat spark, under any and all conditions—winter or summer, high or low speed, all day, every day.

The Battery ignition system as used on some automotive equipment depends entirely upon a battery for its current or electrical energy. The system cannot, therefore, be more dependable than the source of the current—when the battery is dead, the whole ignition system is dead.

The Battery system is not self-contained, that is to say, it is not one unit only, but consists of a battery, coil, distributor and switch, all of which are separate. Consequently, this involves the necessity of connecting various wires with many resultant dangers.

A Battery has many things to do: operate the starting motor; blow the horn; furnish ignition current, which in turn depends on the generator to charge the battery. As all of these are interconnected, the wiring is expensive, complicated, easily disarranged and a short-circuit or bad connection will make trouble that only an expert can adjust.

With the Magneto, however, all of this is eliminated—one wire to each spark plug and one to the switch. See comparative wiring diagrams below.





The Magneto switch only serves to stop the engine, and consequently in the event it should not function properly it will not keep the car or other equipment out of service. The Magneto is the only dependable, self-contained unit that generates high-tension current, delivering it to the spark plugs without any assistance from, or connection with, a battery or coil.

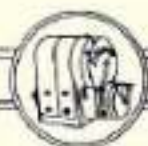
The Magneto spark is hot, fat, and lingers across the spark plug gaps for a longer period than the battery ignition spark; thus firing every atom of gas in the cylinders of the engine. The Magneto spark produces three to four times the heat of the spark produced by the battery systems. The illustration on page three graphically presents the relative intensity of the two sparks; as the spark of the Magneto is so intensely hot, it will fire a leaner mixture, even low-grade fuel and is therefore economical in the use of gasoline.

In cold weather, the efficiency of a battery is greatly reduced, which in conjunction with excessive current required to turn over a cold engine, results in the igniting current becoming so low that only an extremely thin and weak spark results in the cylinder, which of course means hard starting, or not starting at all.

On the other hand, the magneto gives a strong, hot spark in all temperatures, uses no battery current and prevents exhaustion of the battery by starting the engine immediately. The magneto is absolutely independent of weather conditions.

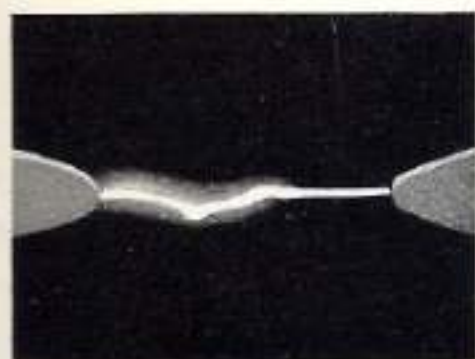
The Eisemann is the pioneer high-tension Magneto. In fact, Ernst Eisemann in 1901 was the first to manufacture and introduce a "jump-spark" magneto. Its wonderful efficiency and proven dependability to "keep on the job" are natural results of years of experience in design and precise methods of manufacture. That the high standard of the Eisemann Magneto has been rigidly maintained is evidenced by the fact that one hundred and seventy manufacturers use the Eisemann Magneto as factory equipment of which total one hundred thirty-two are leading concerns in the production of the highest priced motor trucks and tractors in the Country.

No greater responsibility or harder usage could possibly be imposed upon an ignition system than the severe tests to which it was put by the late active war service at home and overseas. The absolute dependability of the Eisemann Magneto caused the United States Government to adopt it as standard for the Ordnance and Signal Corps branches of the Service, where the power plant had to be kept in commission through the most gruelling of conditions. Trucks and ambulances, with their

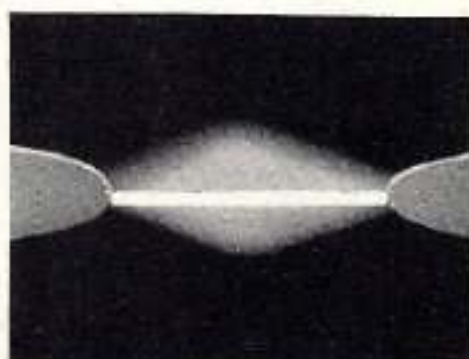


precious cargoes, lurching over the roughest of roads; plowing through vast areas of mud or deep sand; pitching into unexpected shell holes, and last but not least—running "wide-open" for hours at a stretch under adverse conditions, were just a few of the tests which determined the U. S. Government to adopt Eisemann ignition.

Besides its remarkable durability and rugged construction the Eisemann Magneto is impervious to moisture; its working parts, however, are easily accessible for inspection or cleaning by merely swinging aside two flat springs and removing the distributor plate and end-cap. Furthermore, it produces an intensely hot spark at low speeds, especially on a hard pull and will start the engine at as slow a speed as the carburetion will permit.



*Battery Spark*



*Magneto Spark*

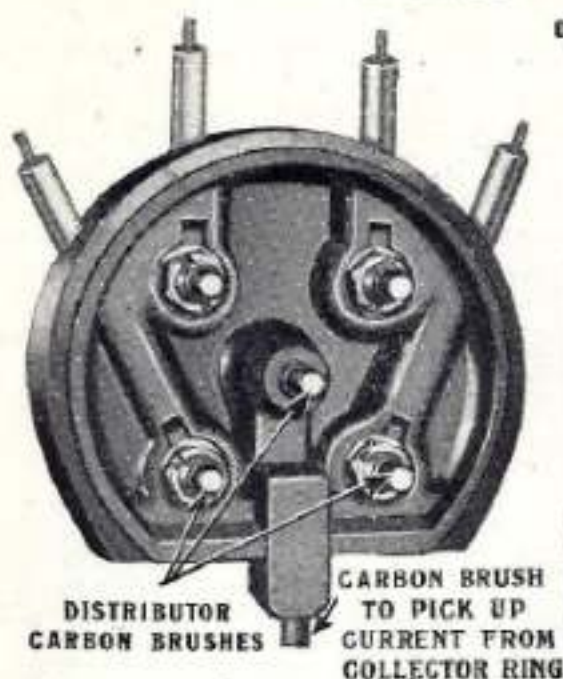
Finally, the masterful performance of the Eisemann Magneto is due mostly to the simplicity and carefulness of design, the extreme care employed in selection of material and in the manufacture, the well proportioned winding, effective condenser, and the perfect electrical insulation used throughout.





## Description of the Magneto

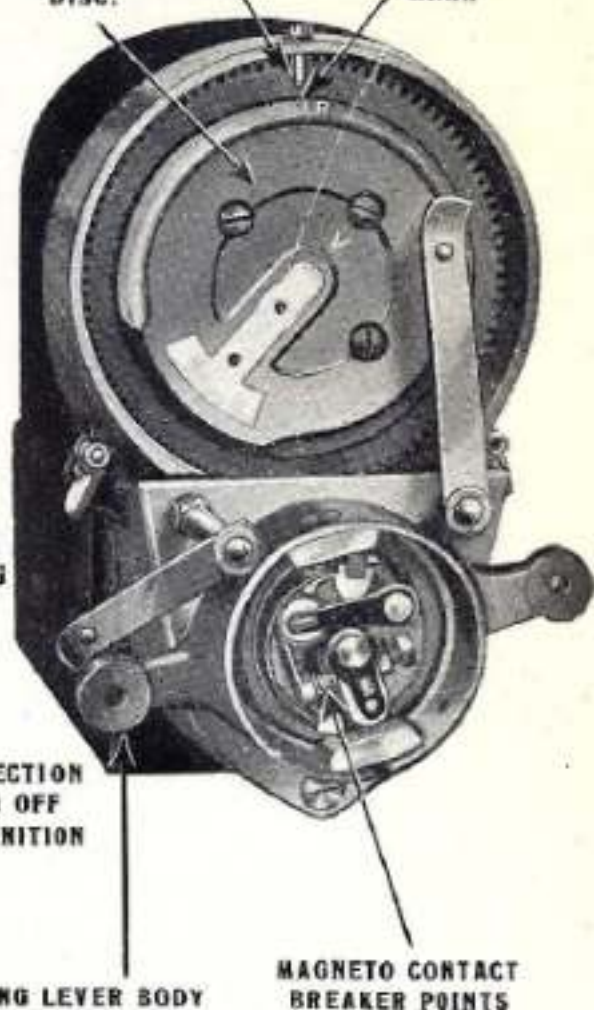
DISTRIBUTOR PLATE  
WITH  
WATER-PROOF CABLE FASTENINGS



INDICATOR POINT  
FOR SETTING MAGNETO  
TO MOTOR

DISTRIBUTOR  
ROTATING  
DISC.

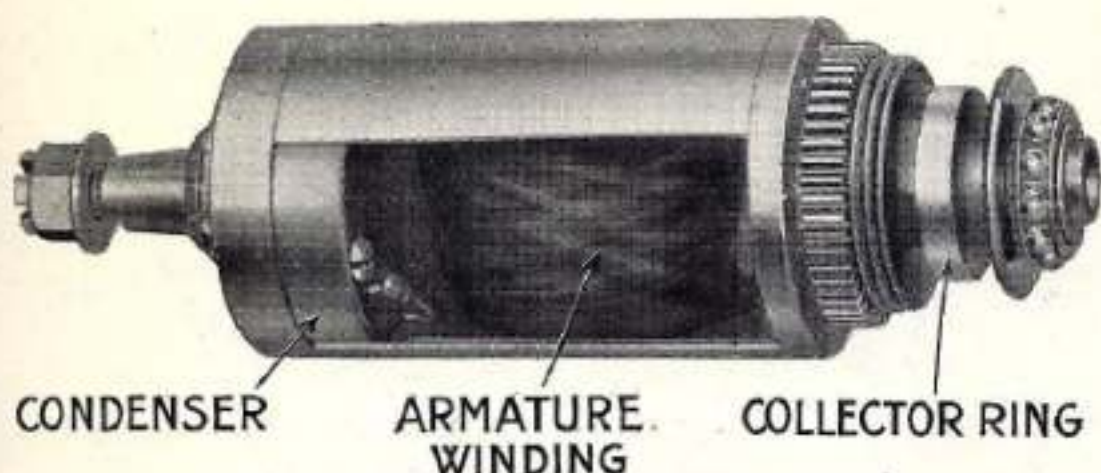
SETTING  
MARK



### THE MAIN COMPONENT PARTS

The Eisemann Magneto, Type "G4", may be considered as basically representing the complete line, so a general description of this type only will be given here. The essential points of difference in the other types will be described under their respective headings, beginning on page 10.

**Generation of Current**—The magnetic field, which is the region permeated by lines of magnetic force, is created by two permanent horseshoe magnets which fit accurately over two pieces of soft iron, called the "pole shoes." These magnets, being of the highest grade it is possible to obtain, are powerful and permanent. In the magnetic field, between the pole shoes, there rotates an armature which is mounted on ball bearings, and driven by the engine itself. This armature has a combined winding—primary and secondary—and, when rotated in the magnetic field, a low-tension current is induced in the primary winding. When, at the moment of greatest intensity this current is broken by the opening of the contact breaker, a high-tension spark of great heat is developed in the secondary winding. One end of this secondary is connected to a so-called "collector ring," from which the current is led to the distributing mechanism and finally delivered to the spark plugs in proper sequence.



**The Armature**—The armature core, which carries the combined winding as previously mentioned, is of the "H" shaped type, or what is possibly better known as the Siemen's Shuttle Wound type. It is made up of two end-pieces of malleable iron, between which are a number of insulated laminations of soft sheet-iron, riveted together with the end-pieces by a special process, so that the complete core is one solid unit (see above illustration).

On this core are wound a few layers of medium size copper wire, the beginning of which is grounded to the armature core, and the end, through several mediums, makes connection with the contact breaker mechanism. Over this primary winding is a secondary winding consisting of many turns of very fine copper wire, the wire itself being insulated its entire length and the layers carefully insulated from each other. The beginning of the secondary is connected directly to the end of the primary winding and the end is led to the collector ring which is mounted on one end of the armature.

The greatest care and skill is necessary in the winding of an armature and insulating the windings from one another, and hence only the most skilled workmen are employed. The Eisemann armature, when wound, is then subjected to a special insulating process which adds greatly to its efficiency. Insulating by impregnating consists of first drying and withdrawing all moisture and air by vacuum in tanks especially constructed for the purpose. While still in vacuum, the insulating varnish is drawn in the tank, submerging the armatures after which the tank is subjected to high air pressure, forcing the varnish through into the winding. It is then baked, and two brush coats of varnish applied, each coat being baked for several hours. This treatment produces an armature absolutely impervious to moisture. The excellent workmanship and material, the great care exercised in the winding and insulating processes are responsible for the perfection of Eisemann armatures, and it is a noteworthy fact that the short-circuiting or "burning out" of an Eisemann armature is an extremely rare occurrence.

**The Condenser**—The condenser, which is built in at one end of the armature, prevents a spark from occurring at the contacts at the opening of the contact breaker which would otherwise pit and burn the platinum contacts, and it also increases the intensity of the spark at the plugs. The Eisemann condenser, due to the very best mica and other materials used and care taken in its construction, is the acme of efficiency. By glancing at the above illustration it will be seen that it is enclosed and consequently protected by a neat housing.



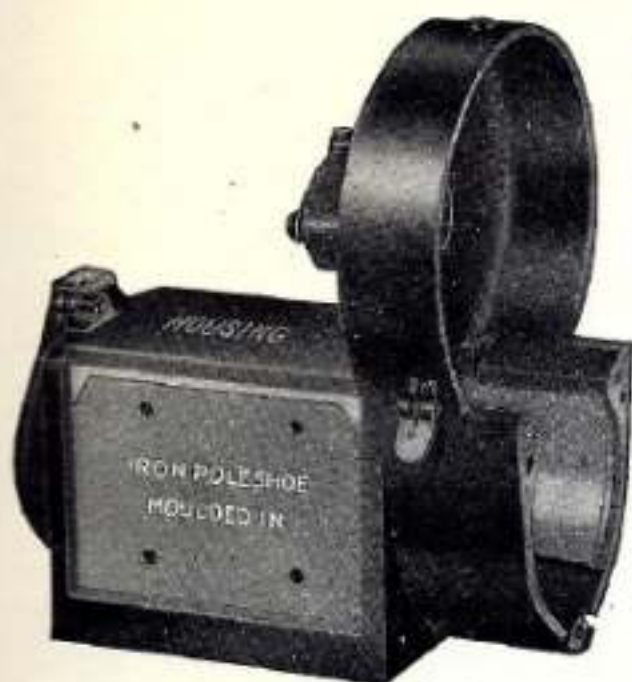
*Contact Breaker*

**The Contact Breaker**—This part is so called because the separation of its contacts “breaks” the primary circuit. An idea of its general appearance may be gained by a study of the illustration. It consists essentially of a brass disc fastened in a cone in the end of the armature, and carrying the mechanical and electrical elements on its outward face. Mounted on this face is a stationary insulated contact block, connected with the end of the primary winding by means of the screw which holds the entire breaker, and which block carries the fixed platinum contact screw. Operating against this contact is another platinum contact attached on a bell-crank lever, or “rocker-arm,” swinging on a self-lubricated bearing of exclusive design, and which is actuated by a specially treated fibre block in its outer end riding over two flat steel cams in the timing lever body (see illustration). The contacts are normally kept closed by a flat steel spring which also serves the function of “grounding” the rocker-arm and, consequently, the moving platinum contact.

Since the breaker mechanism must open and close in a fixed relation to the position of the armature, it is set by a key formed on its conical part, and which fits into a corresponding key-way in the armature.

**The Distributor**—As previously described, the end of the secondary winding is attached to the collector ring, whence, the high-tension current is picked up by a brush in the Distributor Plate and carried to the center brush as illustrated on page 6. This center brush in turn makes contact with the “T” shaped metal insert on the distributor disc. This disc is attached to the distributor gear and rotates with it, so that the metal insert makes contact in rotation with each of the outside carbons of the distributor plate, whence the current is led to the spark plugs by the high-tension cables.

The proper fastening of the cables to the distributor plate and end cap is of great importance in order to avoid short-circuiting due to water. In the Eisemann all connections are entirely inside where they are completely protected, as seen in the illustration on page 6. The high-tension cables are fastened by winding the end of the wire around the carbon brush holder, and pinching it with a large hexagon nut. This ingenious method is a patented feature and, besides being waterproof, it forms so solid an attachment that there is no possibility of the cables becoming loosened.



*Unit-Cast Housing*

**The Housing**—The housing, illustrated opposite, is of a new unit-cast construction, whereas the earlier housings were built of several parts screwed together. This unit-casting has the advantage that it is extremely rigid, thus positively eliminating all danger of loosened screws or end-plates, etc., due to vibration or accidental twisting. Another benefit resulting from the absence of any joints is that it forms an absolutely water, oil and dust tight protection for the vital elements, such as the winding and the condenser. Further, since it can be bored out and machined all in one piece, and because of its rigidity, it is possible to hold more closely the running clearance between the armature and the poles of the magnets. This tends to give increased magnetic efficiency and, as a result, a much hotter spark. The Eisemann Magneto Corporation was the first magneto

manufacturer to conceive this efficient method, and it is now copied extensively by other manufacturers.

**Direction of Rotation**—Magnetos are made to turn in either direction, and care must be taken when ordering to state the correct rotation as seen from the driving end of the magneto. If no definite information is given about the direction, it will be taken for granted that it is required clockwise, and the apparatus corresponding will be sent. The direction of rotation is marked with an arrow on the driving end. A positive drive must be used; a flexible coupling, if at all possible, otherwise gears or chain.

**Advance and Retard of the Spark**—As the spark occurs only when the primary circuit is broken by the opening of the contacts, the timing of the spark can, therefore, be controlled by having these contacts open sooner or later. This is accomplished by the angular movement of the timing lever body, and gives a timing range of thirty degrees. The spark is retarded when the timing lever is pushed in the direction of rotation, and is advanced when pushed in the opposite direction.

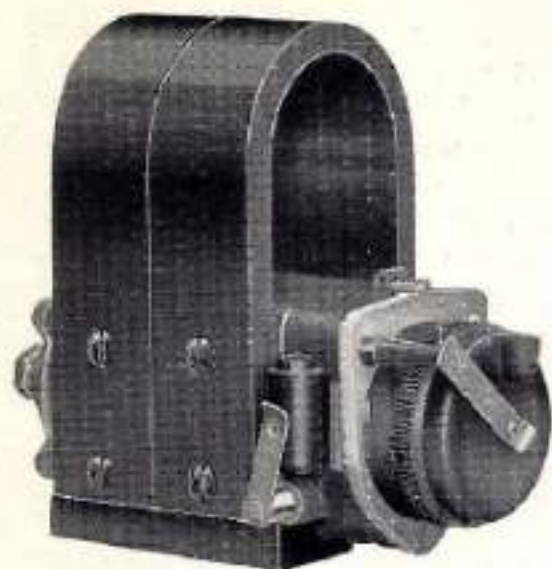
In fixed ignition the timing lever body is not equipped with controlling arms, and is permanently set at the point of greatest spark intensity.

**Timing the Magneto to the Engine**—This operation is extremely simple with the Eisemann Magneto, and the usual dismantling of the instrument to measure the armature distance or eye-straining observation of the breaker points, are eliminated. It is merely necessary to bring one of the setting marks (shown on the distributor disc on page 6) up to the pointed screw at the top of the gear housing and couple up the drive, the piston of No. 1 cylinder being at the top of its compression stroke.

**Safety Spark Gap**—Should a spark plug cable become disconnected or broken, or should the gap in the spark plug be too great, then the secondary current, in endeavoring to find a "ground," may puncture the insulation of the armature or other parts. To prevent this, a so-called "Safety Spark Gap" is provided, and consists of a pointed screw placed in the housing at a certain distance from the collector ring. When the current for reasons already mentioned is deviated from its proper course, it will jump across the intervening gap and thus protect the winding and other high-tension insulations.



## Types G-1 and GS-1



For one-cylinder, 4-cycle engines, should be driven at  $\frac{1}{2}$  engine speed but it is preferable and is common practice to drive at engine speed—sparking alternately on compression and exhaust strokes.

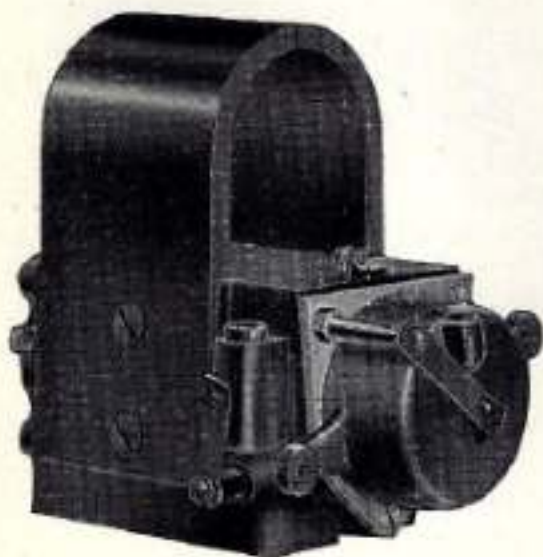
For one-cylinder, two-cycle engines—engine speed.

The "G 1" is recommended for use on large, slow speed engines, whereas the "G S 1" is recommended for use on smaller, one-cylinder engines which generally rotate at relatively higher speeds.

The Type "G 1," illustrated above, has the same powerful electrical characteristics as the type "G 4" instrument described in previous pages. The contact breaker, however, is different to that used in the "G 4" magneto in that it is arranged to cause only one spark per revolution of the armature, nor is a distributing mechanism necessary, as in the case of a 4-cylinder engine.

These G and G S types are fully enclosed and are dirt and waterproof. All exterior joints are very close fitting and are provided with felt or rubber packing.

The terminals are so arranged as to be very easily removed with the fingers for inspection or cleaning purposes.



These magnetos have the same general characteristics as the "G 1" and "G S 1," with the exception that it is necessary to have two collector brush holders and terminals and a contact breaker same as the "G 4" type, that is, arranged to cause two sparks per revolution of the armature. The collector ring, consequently, does not form a full circle of metal but has merely a segment which makes contact alternately with the collector brushes and terminals. The "G S 2" is particularly recommended on small marine engines, small railway motor cars, farm engines, and small tractors, under conditions where fully protected apparatus is absolutely necessary.

*(For dimensions, see page 28)*



## Types G-2 and GS-2

For 2-cylinder, 2-cycle engines—engine speed. For 2-cylinder, 4-cycle engines, it should be driven either engine speed or  $\frac{1}{2}$  engine speed, according to throws of the cam and the relative firing positions. See Page 29. It is, however, always advisable to drive at engine speed in which case one spark will occur in the exhaust stroke, which however, does no harm. See illustration at bottom of Page 10.



### Type G4

For 4-Cylinder, Four-Cycle Engines.

Single Ignition.

Manual Advance or Fixed Spark.

Driven at Engine Speed.

### Type G $\frac{4}{2}$

For 2-Cylinder, Opposed, Four-Cycle Engines Driven at Engine Speed.

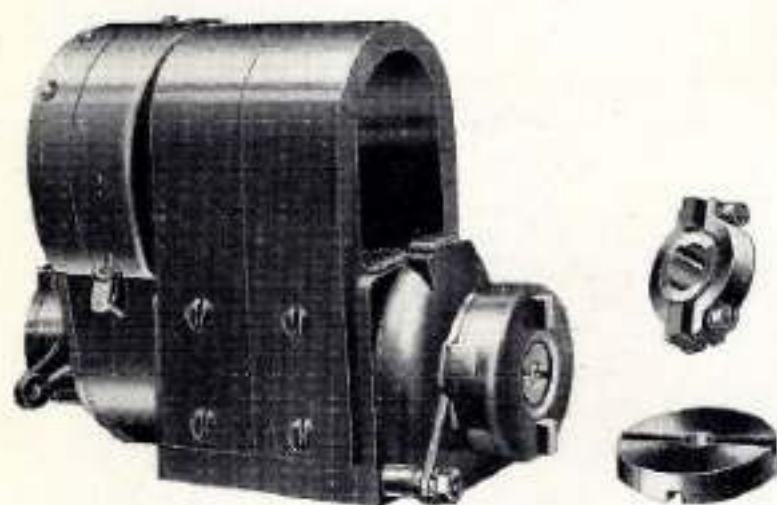
The "G 4", as the representative Eisemann Magneto, has been described in the introduction and, being so thoroughly well known, needs no further explanation here. It will easily start, and efficiently operate, even the largest of engines, and is "right there" when it comes to a hard pull at slow speed, especially under adverse mixture conditions. It is for these and many other reasons as outlined in previous pages that the Eisemann type "G 4" is the universal Truck Magneto of today.

The type "G  $\frac{4}{2}$ " is simply a "G 4" having a distributor block with only two cable leads, and incorporating a breaker arranged to cause only one spark per revolution of the armature. This combination makes it an ideal ignition device for 2-cylinder opposed, four-cycle engines—the increased efficiency resulting from it being able to operate at engine speed gives it a great advantage over the ordinary 2-cylinder magneto without distributor, which latter must be run at "half-time" in order to give the proper firing intervals for an engine of this type.

*(For dimensions, see page 28)*



## Impulse Starter Coupling



*G 4 Magneto With Impulse Starter Attached.  
Can Be Furnished With Dust Cover if  
Desired.*

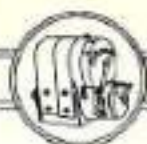
IS II attached to G 4 or GS4 Magneto. Produces a powerful spark for starting engines with inaccessible cranks, regardless of cranking speed. Entirely automatic engagement. Self-enclosed and fool-proof. Includes noiseless Oldham coupling.

The Impulse Starter is sold separate from the magneto and can be installed by any automotive mechanic.

Easy starting has always been an inherent feature of the Eisemann Magneto, but there are, however, certain engines which, owing to their location or size, cannot be cranked at a speed sufficient to produce a spark from any magneto irrespective of its efficiency. This is especially true in the case of ponderous trucks, tractors, and engines, and necessitates the added expense and complication of an auxiliary battery system.

The Eisemann Impulse Starter, however, eliminates entirely the necessity of this auxiliary system. This device causes the Magneto to produce a hot, fat spark regardless of how slowly the engine is cranked. This result is accomplished by automatically compressing and releasing a powerful spiral spring which is a part of the driving mechanism. This gives the Armature a sharp twist and thus causes the spark to occur at the proper moment. The device does not have to be set by hand and above 150 R.P.M. is automatically withdrawn from action.

*(For dimensions, see page 29)*



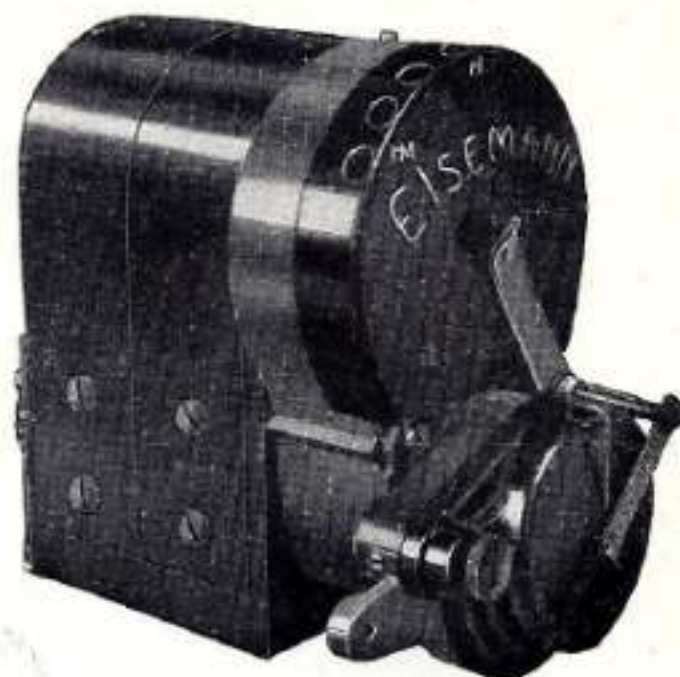
## Type GR4

For 4-Cylinder, Four-Cycle Engines.

Dual Ignition (Magneto with Battery and Dash Coil).

Manual Advance or Fixed Spark.

Driven at Engine Speed.



The extreme dependability of the Eisemann magneto makes an auxiliary system entirely unnecessary, but in certain cases, Fire Engines, for example, an auxiliary system is demanded. For this purpose, therefore, we offer the Eisemann high tension dual system, which furnishes an auxiliary or reserve source of ignition, without the expense of two separate units on one engine. Its advantages over the latter are many: greater simplicity; only one driving means needed; one set of spark plugs only; no "dead" plug to foul up; only one spark control necessary; and ability to start "on the spark," thus eliminating a great deal of needless cranking.

The primary purpose of this system, as mentioned above, is to give two sources of ignition, magneto and battery, using one distributor and one set of spark plugs. The arrangement consists essentially of a high-tension magneto, used in conjunction with a transformer coil and switch which can be mounted on the dash (see pages 20 and 21). This transformer is used only in connection with the battery, whereas the switch is used in common with both battery and magneto.

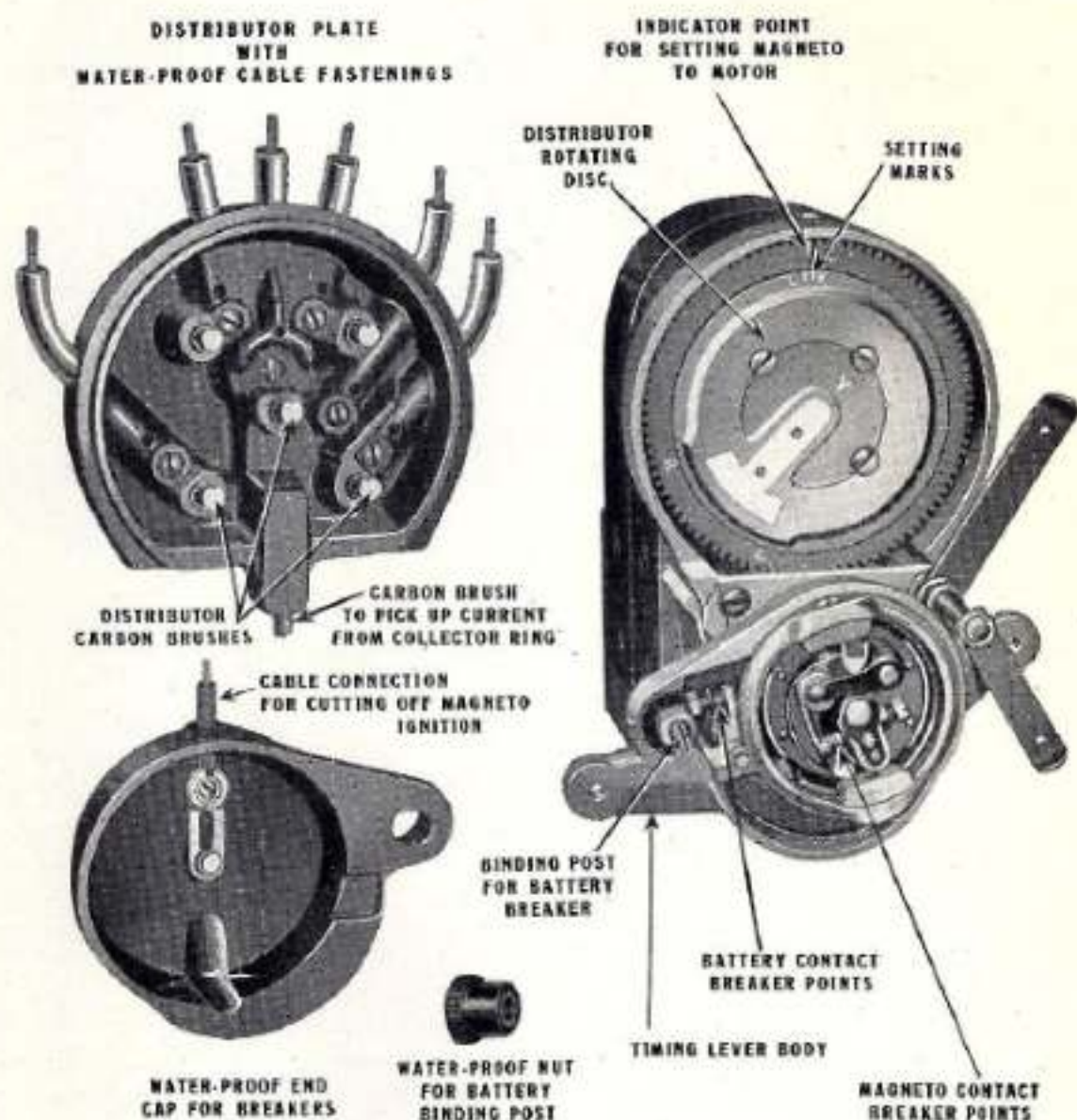
The Eisemann type "G R 4" magneto, as seen from the illustration of its principal parts on next page, is practically the same as the popular "G 4" independent instrument with two main exceptions—the timing arm is equipped with an extra, separate contact breaker for the battery current and the distributor is modified to permit of its electrical separation from the magneto armature when distributing the battery spark.

The battery breaker operates in much the same manner as the corresponding part on the magneto. It is mechanically actuated by two polished steel cams attached to the magneto breaker, but is electrically entirely separate from the latter. Like the magneto breaker, it causes the spark to occur at the instant of separation of the

*(For dimensions, see page 29)*



## Main Component Parts of Type GR 4 Magneto



contact points. For practical reasons this interruption is timed to take place 10 degrees later than the magneto, but is, naturally, subject to the same degree of advance and retard, being mounted on the same timing lever. Both breakers are protected by the same waterproof cap, and are easily exposed to view. It should be noticed that the Eisemann battery breaker is near the top—where it remains clean—and is not at the bottom in a pool of oil and dirt, as is common with other makes.

The distributor is the same as the "G 4" except that there is no connection between the lower carbon brush and the centre one. Cables lead from each of these to the switch portion of the coil enabling the centre brush to be connected to the lower one when running "on the magneto," or to the coil when running "on the battery."



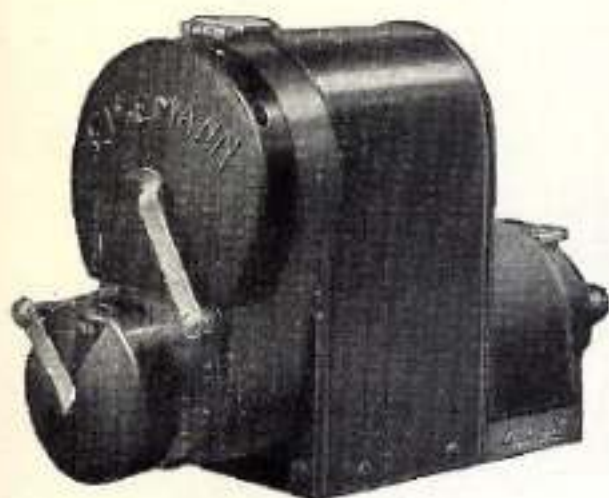
## Type GA 4

For 4-Cylinder, Four-Cycle Engines.

Type GSA 6 for 6-Cylinder Engines.

Automatic Spark Advance.

Driven at Engine Speed for GA 4 and  $1\frac{1}{2}$  Times Engine Speed for GSA 6.



*In regard to the Governor the following description also applies to the GSA 6.*

*NOTE:—This magneto can also be furnished in Dual Ignition, Type GAR 4, having the same battery breaker and general features as are described on page 13.*

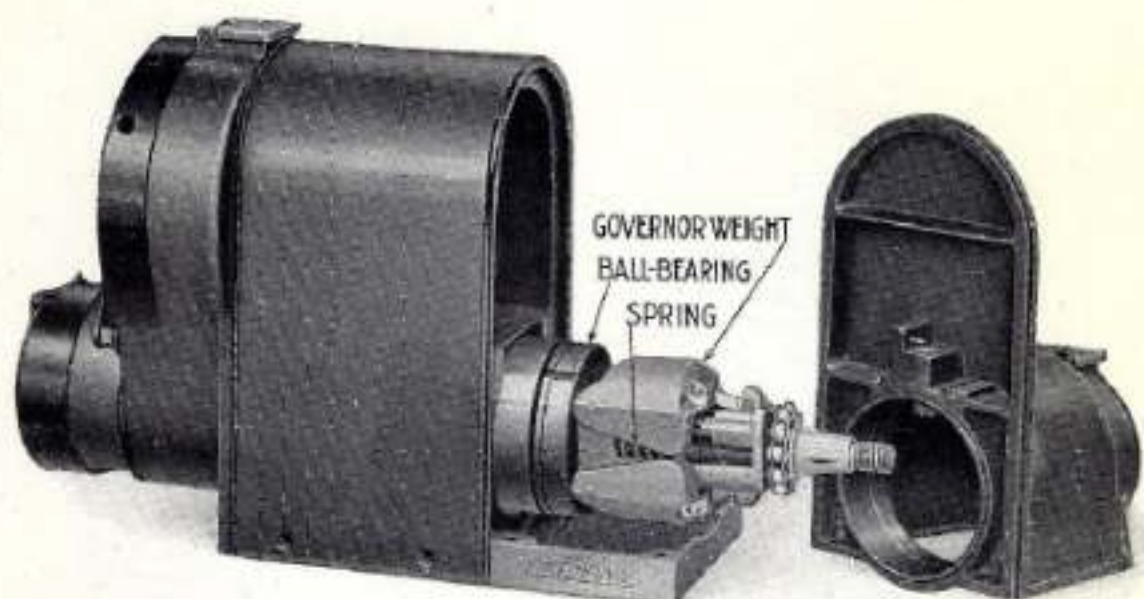
The "GA 4" is of the same construction as the standard "G 4," with the addition of the automatic mechanism, or governor (see illustration on following page). The automatic control of the spark is accomplished by the action of centrifugal force on a pair of weights linked at one end to a sliding block, mounted upon the driving spindle of the magneto, and hinged at the other end to a yoke which is keyed to the armature itself. The armature spindle has two helical cut grooves which engage in similarly shaped splines in the sliding block. A coil spring pressing against this block keeps the governor normally "closed" when the engine is running very slowly. In this position the spark is fully retarded.

As the engine speeds up, the centrifugal force causes the governor weights to spread out, drawing the sliding block lengthwise against the spring and compelling the helicoidal splines to cause angular displacement of the yoke, thus advancing the armature relatively to the shaft and consequently to the motor itself. Naturally, the greater the engine speed, the further will the sliding block travel, and the greater will be the amount of the advance. When the engine speed decreases, the action of the helicoidal sleeve is reversed and the spring gradually closes the governor and retards the spark.

With this design, the *Advance* is obtained by changing the position of the driving coupling keyway relative to the armature and the contact breaker, which is keyed thereto.

With the variable spark magneto, there is always one position of the timing lever at which the hottest spark is obtained. As the driving member is advanced relative to the armature, it is possible with this type of automatic advance "to fix the timing lever" in the position of maximum strength thereby securing the hottest spark at all speed regardless of the amount of the "retard."

*(For dimensions, see page 29)*



### TYPE G A 4 MAGNETO (Continued)

The action of the governor is absolutely steady at all speeds, due to the positive drive through the helicoidal splines, which are cut at an angle so small as to completely prevent any temporary shocks from the engine disturbing the relative angle of the sliding block to the shaft.

As is well known, all engines do not have the same requirements as to the total amount of necessary spark advance, or the relative rate at which this amount is reached. The Eisemann Automatic Governor can be furnished to give any amount of advance up to 60 degrees, and by varying the pitch (or angle of thread) of the spindle, in conjunction with different springs, practically any desired advance curve can be produced.

## Summary of Advantages

1. *Longer life to the engine*—timing of the spark not left to guesswork of the driver, thus eliminating damage to bearings, etc., due to "knocking."
2. *Dangerous backfires impossible*—spark set in retard automatically when ready for cranking, thus preventing broken arms or damaged starter mechanisms.
3. *Saving in gasoline*—ignition always at most efficient point in rotation of engine.
4. *Increase of flexibility and power of engine*—60° of advance obtainable.
5. *Easy starting*—maximum intensity of spark, even in "retard."
6. *Greater simplification of control*—troublesome timing control rods from steering column to magneto are eliminated, and driver has only to handle the throttle.

(For dimensions, see page 29)



## Type GS 4



A Small but Powerful Magneto for 4-Cylinder Four-Cycle Engines with Bore up to 4 inches.

Single Ignition.

Manual Advance or Fixed Spark.

Driven at Engine Speed.

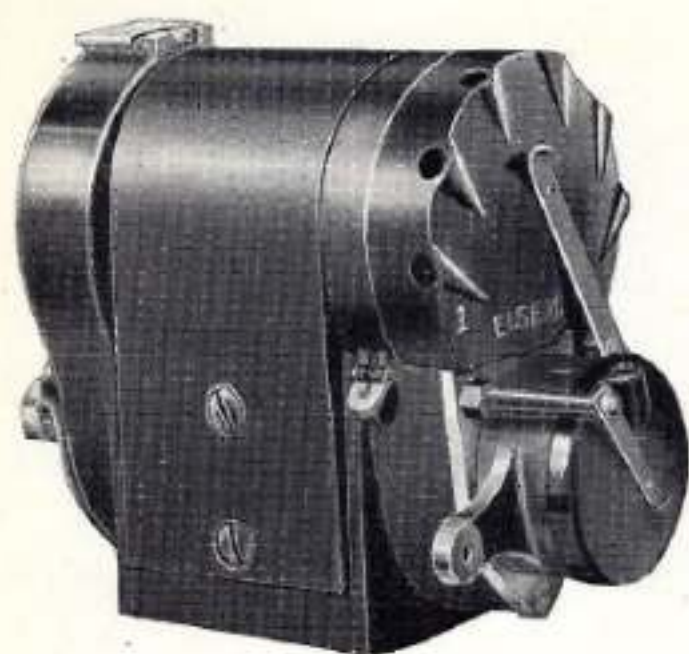
*NOTE:—This magneto can also be furnished with Impulse Starter, and also for 2-cylinder opposed engines, Type G S 4/2. If ordered in sufficient quantity, it can be furnished with Automatic Advance, Type G S A 4.*

Although considerably smaller and somewhat lower in price, the "G S 4" is in no way inferior to its big brother, the type "G 4," in carefulness of design, excellence of workmanship and quality of materials, and is in the same high class as the larger instrument. It has the same well-proportioned winding, the same reliable contact breaker, and the same dependable and waterproof distributor—the similarity even extending to the use of the wonderfully strong and watertight construction of the unit-cast housing. As will be readily apparent from an inspection of the instrument itself, the slightly lower cost is due solely to the reduced size of its main parts.

It is strictly interchangeable with all other Eisemann magnetos, because, like the others, it has the Standard S. A. E. dimensions for the fastening holes in the base and for the driving shaft.

With the "G S 4" easy starting and steady slow-speed operation is assured on all engines up to 4 inches bore. Although it has been successfully used in emergencies on much larger engines, this practice is not recommended as a regular procedure. However, in conjunction with the Eisemann Impulse Starter, its use on engines somewhat above 4 inches bore has been found to be very satisfactory.

*(For dimensions, see page 31)*



## Type GS 6

A Small but Powerful Magneto  
for Small 6-Cylinder, Four-  
Cycle Engines.  
Single Ignition.

Manual Advance or Fixed  
Spark.

Driven at One and One-half  
Times Engine Speed.

*NOTE:—Can also be obtained with Automatic Spark Advance, Type G S A 6, with same advance mechanism as that described on pages 15 and 16.*

The Type "G S 6" has the same general characteristics and high grade construction as the "G S 4" described on the previous page.

Its adaptation to the 6-cylinder engine gives it a slightly different outside appearance which, however, in no way detracts from its compactness or neat lines, as is apparent from a glance at the accompanying illustration. It will be seen that there is an extra casing at the driving end enclosing the distributor gears, which have been shifted to the end opposite to that employed in the 4-cylinder instrument.

This modification is necessary in order to retain the large safety factor in the electrical installation of the high-tension collector ring, which is adhered to in all Eisemann magnetos.

Aside from the above-mentioned departure, the "G S 6" fully retains the exclusive Eisemann feature of mounting all the electrical elements at the front end, where they are instantly accessible for inspection or cleaning.

*(For dimensions, see page 31)*



## Type GN 6

For 6-Cylinder, Four-Cycle Engines.

Single Ignition.

Manual or Fixed Spark Control.

Driven at One and One-half Times Engine Speed.

*NOTE:—If ordered in sufficient quantities this instrument can also be supplied in the dual style, Type G N R 6, having the same battery breaker, etc., as described on page 13.*

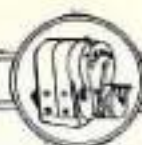
The above instrument is the standard Eisemann magneto for 6-cylinder engines of all sizes, and corresponds in its power and its intensely hot spark to the type "G 4" described on preceding pages.

As far as its distinctive 6-cylinder characteristics are concerned, the "G N 6" follows very closely the description applied to the type "G S 6," in the second paragraph on the previous page.

Outside of the differences inherent to the 6-cylinder engine, the "G N 6" differs from the "G 4" in the following particular only. The high-tension cable fastenings take the form of waterproof binding posts, or bosses, outside the distributor plate instead of the internal hexagon-nut style of fastenings, as in the "G 4."

*(For dimensions, see page 31)*





## Type D C R

Dash Coil for Use with Dual Ignition Magnetos, Types G R 4, G A R 4 or G N R 6.

Ratchet Device Produces Shower of Sparks for Starting on Compression.

Built for 6 Volts.

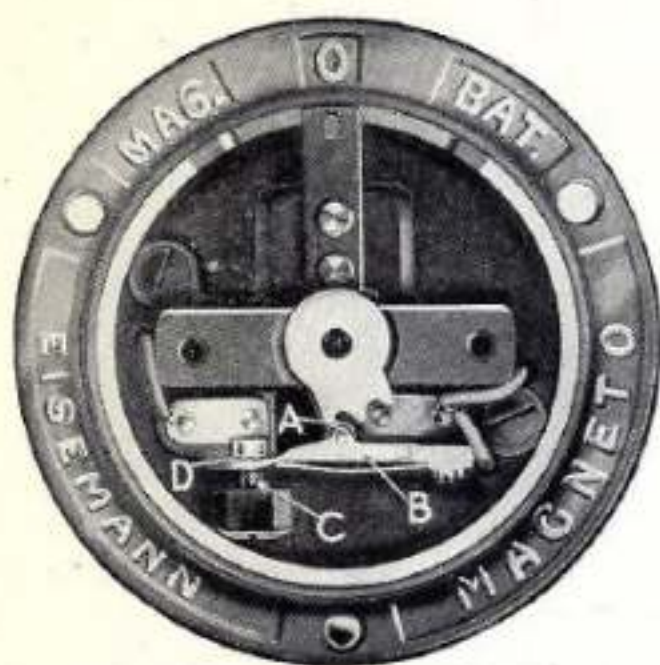


The Type "D C R" Coil, as illustrated above, consists of a non-vibrating transformer and a switch, the latter being used in common to put either the magneto or battery ignition into operation. It is cylindrical in form, compact, and placed through the dashboard. The end which projects toward the engine, contains the coil and the switch and has terminals for the cables. The other end, facing the operator, contains the starting mechanism. The transformer proper is used only in conjunction with the battery, and is very economical in current consumption, so that in case of accident to the magneto, the engine may be run on the battery system alone without undue strain on the battery or dry cells. This coil is also provided with a lock and two keys so that the switch may be locked in the "off" position.

The device used for starting "on the spark" is an exclusive Eisemann feature, and is sometimes called a "mechanical vibrator," for, with it a shower of sparks is produced similar to an electrical vibrator, but without the well known weakness of the latter. This shower of sparks is much more effective for starting on compression than a single spark. The operator accomplishes this result by simply twisting back and forth the starting handle seen on the front of the coil.

The mechanism is illustrated on opposite page, and consists of a ratchet having three teeth, which engage with a roller (A) on a lever (B). This lever is mounted at one end on a hinge, while at its other end is a platinum contact extending through it so as to form a contact on both sides. By working the three-toothed ratchet, the lever (B) makes and breaks the primary current of the battery by making contact alternately with the fixed platinum contacts (C) and (D). This results in a shower of sparks occurring at the spark plug ready for firing, and if there is a combustible mixture left in the cylinder the engine will start.

(For dimensions, see page 32)



*D C R Coil Showing Starting Mechanism*

The Type "D C" Coil has the same transformer and switch arrangement as the "D C R," but, instead of the ratchet mechanism for starting "on the spark," it is fitted with a push button giving only one spark at a time instead of a series of sparks, and consequently is used very extensively on engines having self-starters. The switch handle is removable in the "off" position, thus locking the ignition.

## Type D C

Dash Coil Same as Type D C R Except That It Has Push Button Starting Device, Giving a Single Spark Only.



*(For dimensions, see page 32)*



## Type M 4 G 6



*Breaker Contact View*

A Magneto-Generator for 4-Cylinder Engines of All Sizes.

Variable or Fixed Spark.

6-Volts, 12 Amperes.

Mounting and Drive Interchangeable with any Standard 4-Cylinder Magneto.

Magneto Portion Same as Regular Type G 4.

Generator Portion Removable, Leaving Magneto Intact to Operate Engine.

Can Be Furnished with Impulse Starter. See Page 31.

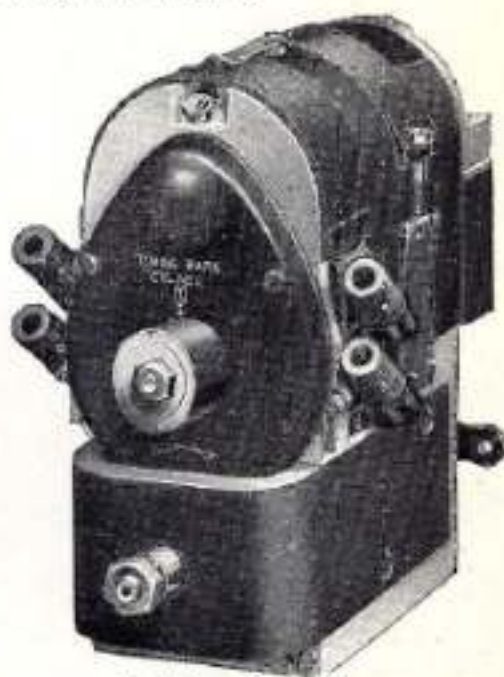
Compact and Waterproof.

Total Weight Only 24 lbs.

The new Eisemann Magneto-Generator makes an ideal outfit, and will take care of lighting and ignition in a thoroughly efficient, reliable and simple manner. It is especially useful for installation on older engines having magneto bracket and drive, but having no arrangements for mounting and driving a generator of the usual cumbersome style. In short, it is a truly wonderful little generator, mounted on top of a magneto, but working electrically separate from the latter.

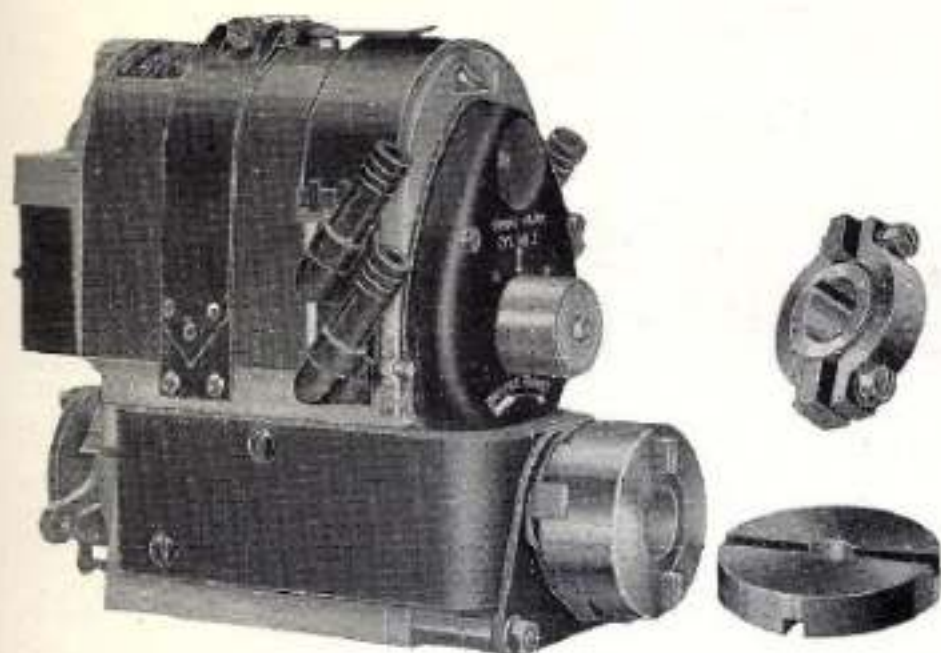
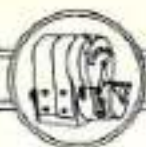
Materials and workmanship are of the highest grade, in common with all Eisemann products, and all main working parts are fully enclosed, yet easily accessible. High grade ball-bearings are used throughout. The generator is driven by noiseless, helical gears—there being no chains with their inherent annoyances.

In addition, it is capable of taking care of a starting motor, on any but the largest of engines. It is interchangeable with any standard magneto and necessitating absolutely no changes whatever to the engine. Thus, it is a simple matter to equip your engine with a reliable source of electric current and with dependable white hot ignition, by replacing in a few moments' time your present magneto with the Magneto-Generator.



*Driving End View*

*(For dimensions, see page 32)*



Impulse Starter  
Coupling I S III  
Attached to Mag-  
neto Generator.

Sold separate from the Magneto Generator and can be installed by any automotive mechanic. One pawl is used, assuring at all

times positive engagement, maintaining at the same time the spring-tension necessary to overcome the comparatively higher load than encountered in the ordinary Magneto. The inertia of the Generator, as well as that of the Magneto must be overcome. Two springs are used to insure double strength.



The illustration shows the high grade and very attractive switch panel, which is finished in black enamel and polished nickel. It consists of a 3-point switch for controlling all the lights of the car, as well as the ignition, and also mounts a flush type ammeter of excellent make, showing the amount of charging or discharging current. The ignition may be controlled, or securely locked, by a pin tumbler lock, for which two keys are furnished with each outfit.

*(For dimensions, see page 33)*



## Oscillator Type Magnetos

### For Stationary Internal Combustion Engines.

TYPES GO,—GS-O,—A-O

#### General Description

The magnetos, types G-O, GS-O, and A-O, are true high-tension magnetos, designed for stationary, single cylinder, internal combustion engines which require not more than 250 sparks per minute. This is equal to 500 R.P.M. on 4 cycle engines, when magneto is operated by the camshaft and 250 R.P.M. on 2 cycle engines, when magneto is operated by the crankshaft.

In designing these models, the Eisemann Magneto Corporation has kept the principle of dependability constantly in mind, as in all its other products.

The design, material and workmanship entering into the types mentioned above are exactly the same high standard as in our multi-cylinder magnetos. In fact the well proportioned winding has

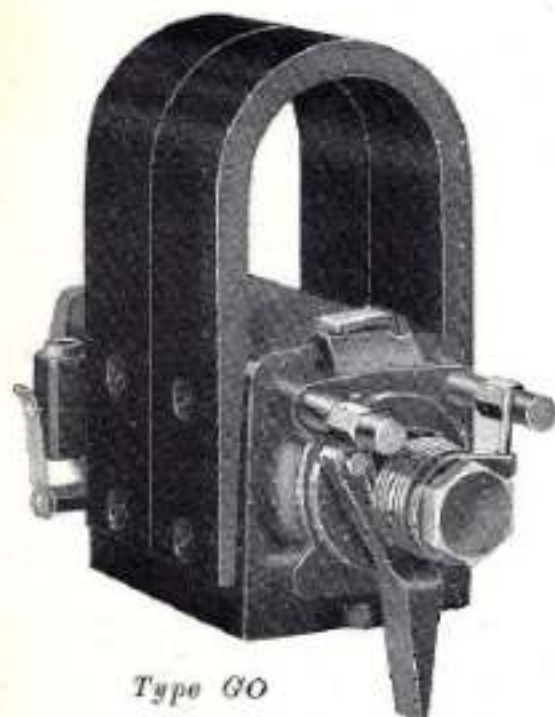
the same excellent insulation qualities; the compact and fool-proof condenser has the same genuine mica and tin-foil materials. The rugged and highly accurate circuit-breaker mechanism is made with identical parts as in the 4 cylinder models. The same unit-cast one piece housing is utilized and insures simplicity, greater rigidity and accuracy in machining; besides being one of the many features contributing to the excellent water-proof qualities of these instruments.

Even the ball-bearings, magnets, etc., are of the same high standard. In short, absolutely no attempt has been made to sacrifice quality and performance in an endeavor to minimize the size or selling price.

The type A-O differs from the other types of Eisemann magnetos, so universally used on trucks, tractors, as well as passenger cars in that the contact-breaker mechanism is of the stationary type, and is actuated by a cam forming part of the armature end-plate. The location of the condenser is a radical departure from previous types—being placed in a special chamber, cast integrally with the unit-housing in very close proximity to the contact breaker; is positively protected but readily accessible.

The material and workmanship entering into this new Type "A-O" is of exactly the same high standard as in the larger Eisemann instruments.

The distinctive and superior features of this new type "A-O" are as follows:



Type GO



Type GS-O



Type A-O



## Oscillator Type Magnetos



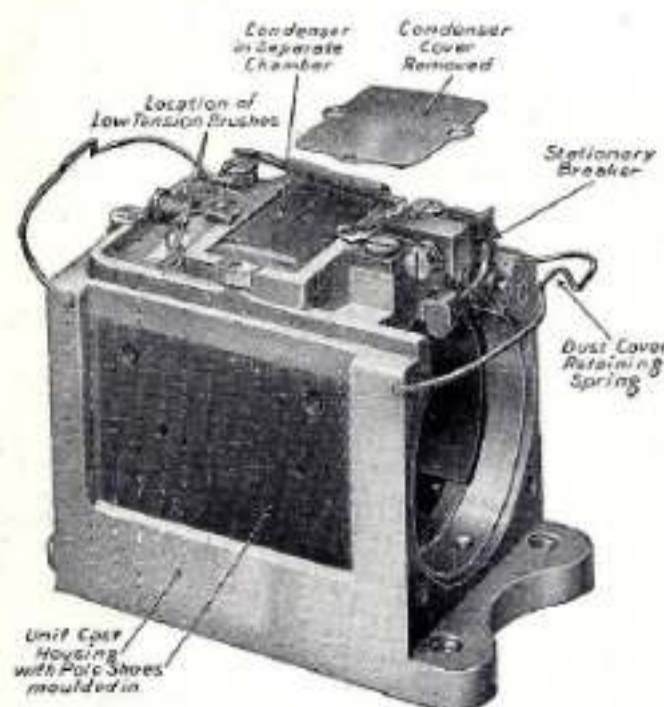
*Type "A" Magneto*

1. It is remarkably efficient in quality of spark and low-speed characteristics. In fact, considering its size, we believe it to be the most powerful magneto ever made.
2. It is dust and waterproof.
3. The contact breaker is exceptionally accessible and can be examined readily while engine is running.

4. The condenser is of the stationary type and is not subjected to the heat generated in the armature.
5. The main housing and pole shoes are cast in one unit, insuring greater rigidity and higher efficiency.



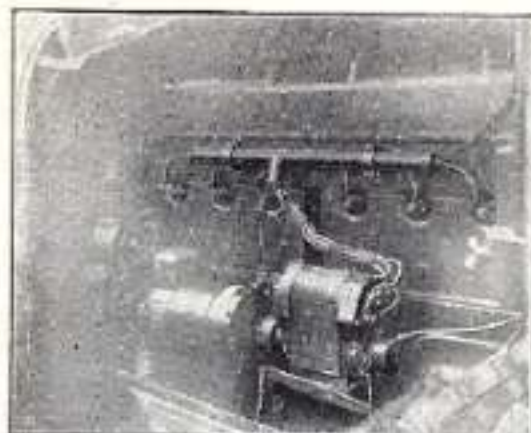
*Armature showing low tension collector ring, breaker cam and high tension conductor.*



*Illustration of Stationary Breaker, Condenser, Brushes, Etc.*

When considering ignition for stationary engines, it must be remembered that if the engine is out of commission for one or two days because of faulty ignition, the loss entailed will almost always be sufficient to pay the entire cost of one of these magnetos. This instrument is particularly adapted for farm-engines, oil-pump engines, concrete mixers, road machinery, water pumps and similar installations which operate under adverse conditions.

*A special "AO" type magneto is made for interchangeable replacement on the Fairbanks-Morse small engines.*

*Marmon*

## Attachments for the More Popular Makes of Passenger Cars.

Many requests for magneto attachments to replace battery ignition equipment have caused the Eisemann Magneto Corporation to give consideration to this demand and they have designed special attachments for the more popular makes of passenger car and light delivery trucks, in addition to an attachment for the well-known Fordson Tractor.

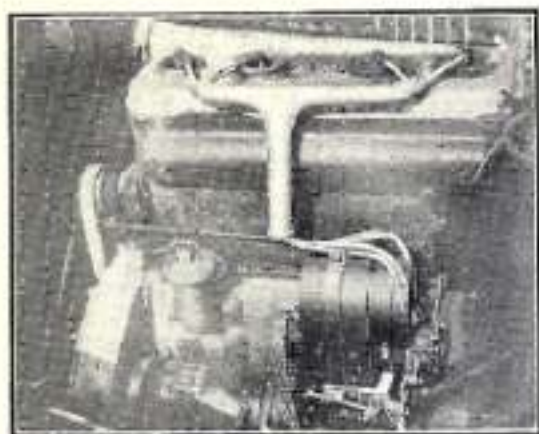
An outstanding feature of the Eisemann Attachments is their simplicity, which permits an installation being made without any of the vital parts of the engine being removed or any alterations made to the engine, besides which, any automotive mechanic or first class garage can make installation of an Eisemann Magneto Attachment in a few hours.

There are now available the following attachments:

Marmon, Hudson, Buick, Willys-Knight, Studebaker "Light Six", Essex, Reo Six, Overland, Dodge, Chevrolet, Ford (for electrical and non-electrical equipped cars and trucks), Reo Speed Wagon, Oldsmobile Economy Truck, Chevrolet one ton truck and Fordson Tractor.

Descriptive folder on any attachment shown may be had on request.

*Buick**Studebaker "Light Six"**Essex**Hudson**Twenty-six*



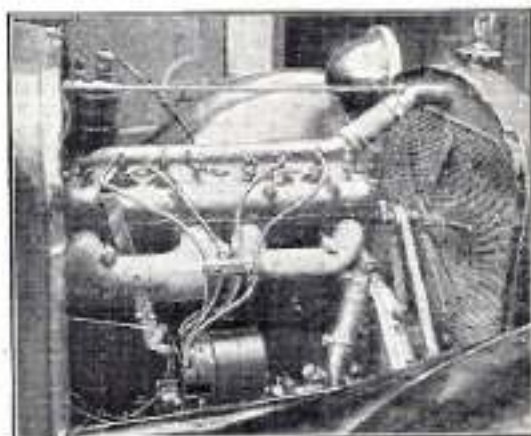
*Willys-Knight*



*Reo "Six"*



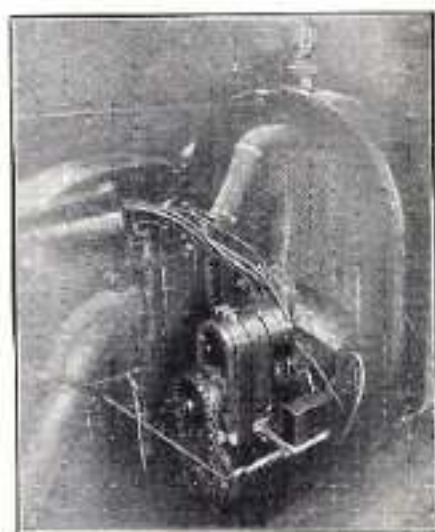
*Overland*



*Dodge*



*Oldsmobile Economy Truck*



*Chevrolet #490*



*Fordson Tractor*



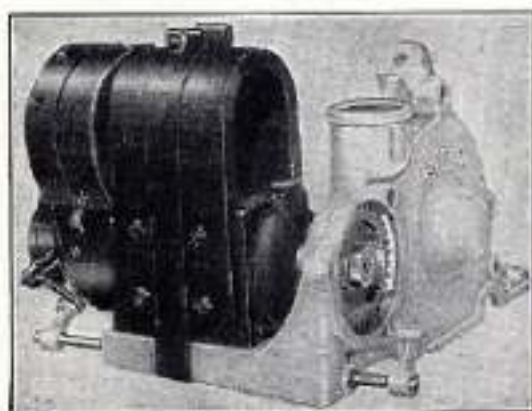
## Eisemann Magneto Attachments



*Chevrolet (1 ton)*

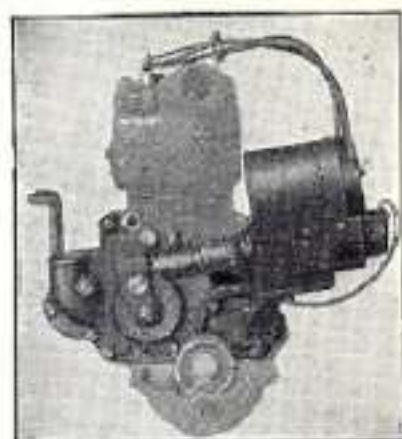


*Reo Speed Wagon*



*Ford (E19)*

*For cars up to and including 1919  
Models not electrically equipped.*



*Ford (E20)*

*For electrically equipped  
cars—1921 Models to date.*

The magneto attachments illustrated herein are of the very highest type of workmanship and material. All of these attachments are fitted with the standard type instruments. Car owners who place ignition dependability beyond all other considerations should have an Eisemann magneto installed. The investment is one that will never be regretted.

### A FEW ADVANTAGES TO BE DERIVED ARE

#### THE CAR—

- Increased power, speed and hill-climbing ability.
- Greater flexibility and freedom from vibration.
- More rapid acceleration.
- Greater fuel economy.
- Neater dash and simpler wiring.

Positive relief from ignition troubles.

#### THE OUTFIT—

- Compact, accessible and mechanically correct.
- Possessing great strength, yet light in weight.
- Easily mounted by anyone.
- High quality all through.



### KICK SWITCH

An attractive, yet rugged switch for use on dash or seat riser.

Can be worked by hand or foot.

Removable handle.

## ACCESSORIES



### KEY SWITCH

A neat and convenient style of switch.

Two removable pocket keys.

Key non-losable in "off" position.



## Adjustable Oldham Coupling

This new coupling incorporates all the well-known advantages of the Oldham style coupling without the possibility of noisy operation, which has heretofore been chargeable to this form of coupling. In this Eisemann coupling the floating member is made of Bakelite-impregnated fabric and hence is *exceedingly quiet running, possesses great strength and is more or less self-lubricating.*

The coupling is applicable to any standard magneto and allows the easy removal of the latter directly upwards.

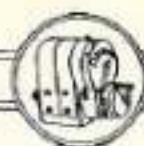
The arrangements for allowing *easy adjustment of the timing of the magneto to the motor* are worthy of notice. As may be seen in the illustration, the driving hub proper, which should be pinned to the shaft, is provided with splines and the magneto setting is changed by *merely loosening two screws, shifting the position of the two clamps, and re-fastening the screws.*

*Settings are possible every 6° throughout a complete circle. Timing variations can be made within 3°. The drive is absolutely positive, as friction is not depended upon in any form.* The shaft member is furnished with a key-slot and also with a pilot hole for the fitting of a taper pin.

The construction is *extremely rugged*—all members (except the floating member) being made of drop-forgings or of cold drawn steel. The various parts are accurately machined and are *neatly finished in black.*

**NOTE:**—*The complete driving hub No. 1398½ may be purchased separately, if so desired, and is known as "Type ADH."*

(For dimensions, see pages 33 and 34)



## The Eyelet Forming Tool



### Half Size

This tool is made for use with  $11/64$ " or  $13/64$ " eyelet. When ordering, be sure to state the size of eyelet you intend to use.

No repairman, garageman or dealer can afford to be without the Eisemann Eyelet Forming Tool and a supply of eyelets. The tool is illustrated below and is of *simple and sturdy construction*. As there is little or no occasion to need a pocket tool for this work, efficiency and strength have not been sacrificed in this regard. The aim has been, rather, to produce an instrument *extremely husky* and well able to withstand hard usage. It is, nevertheless, of *convenient size*, being only four inches in height and weighing only one and one-half pounds.

It is fitted with flanges for attaching to a work-bench; may be clamped in a vise or may simply be set on the engine or held in the hand, as desired, when forming the eyelet.

## The Eisemann Eyelet Terminal



We can furnish the eyelet in *two sizes*. The larger one has a central opening approximately  $13/64$ " in diameter, whereas the smaller one has a hole  $11/64$ " wide. The smaller size is furnished only in the plain style (without reinforcing tongue) as it is used almost exclusively for small braided low-tension cable or for bare wire.

This Eyelet Terminal is convenient and efficient for all manner of high and low-tension electrical conductors—inexpensive and easily attached by anyone in a few minutes' time. No solder is used in any form whatever—a troublesome feature in other terminals. Cable cannot pull out of the eyelet or off the binding post.



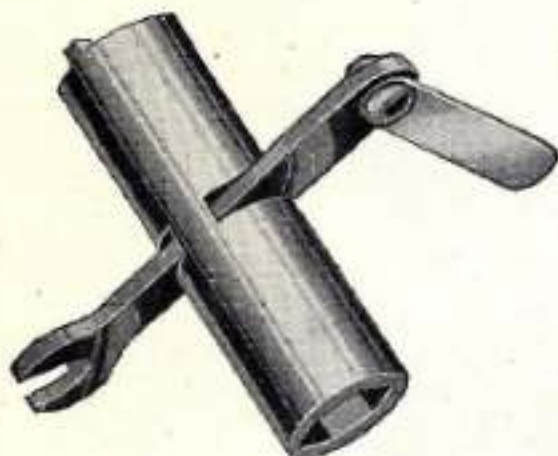
High Tension Cable      Low Tension Cable



## Contact File

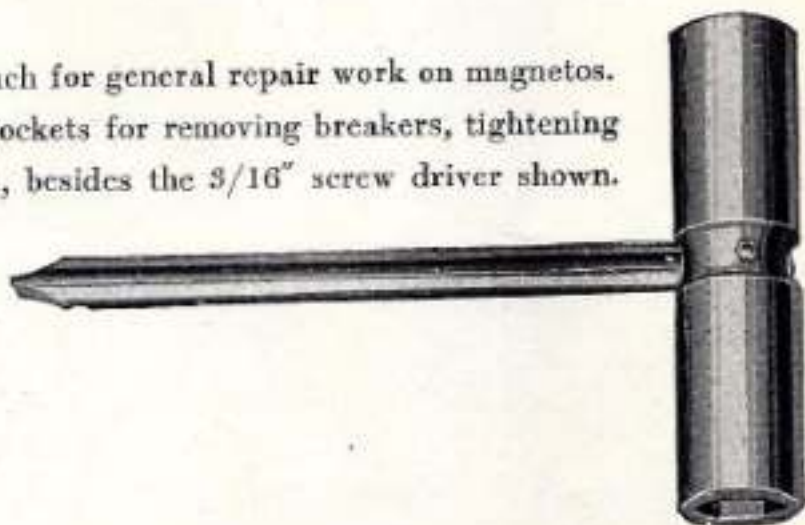


This finely-cut file should be in every tool kit and is very useful for smoothing and cleaning rough or pitted contact points. It is chisel-shaped at the end to facilitate its insertion between the contacts.



No. 9169—Especially useful for Eisemann Magnetos having "spring" type breakers. It has a socket for removing the breaker fastening screw, a socket for distributor binding nuts, an end wrench for the contact screw and a contact point gauge.

No. 6799—A very handy wrench for general repair work on magnetos. Has two sizes of sockets for removing breakers, tightening coil terminals, etc., besides the  $3/16$ " screw driver shown.

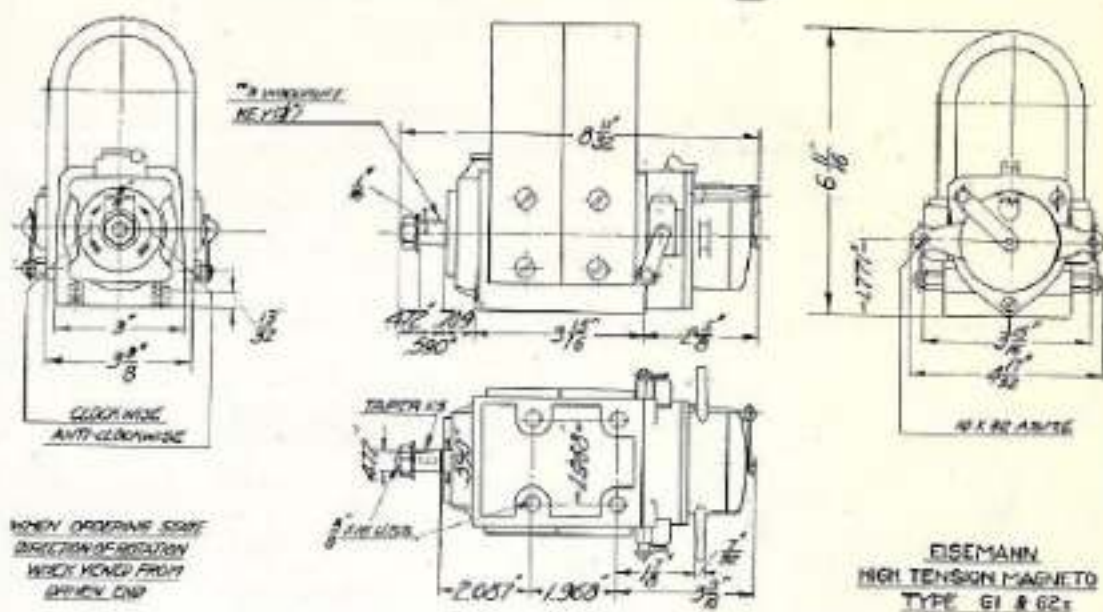


No. 9018—This wrench is intended for Eisemann magnetos having a "rocker-arm" style of breaker. It has a hexagon for removing the breaker fastening screw, a hexagon for coil terminal nuts, an end wrench for contact points, and gauges for the contact points and for the spark plug gaps.



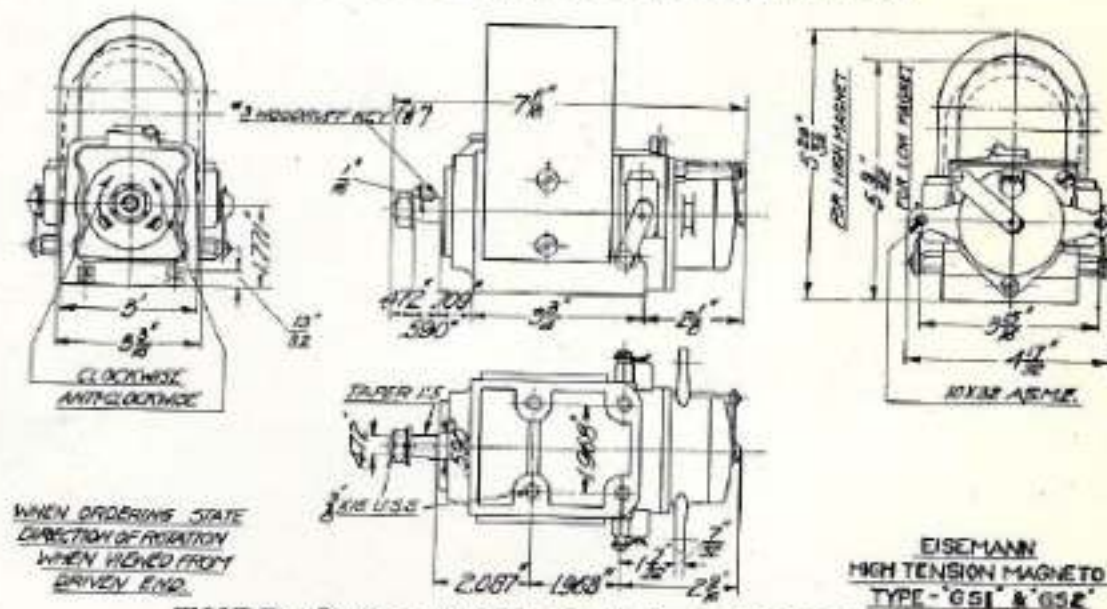
## Dimensional Drawings

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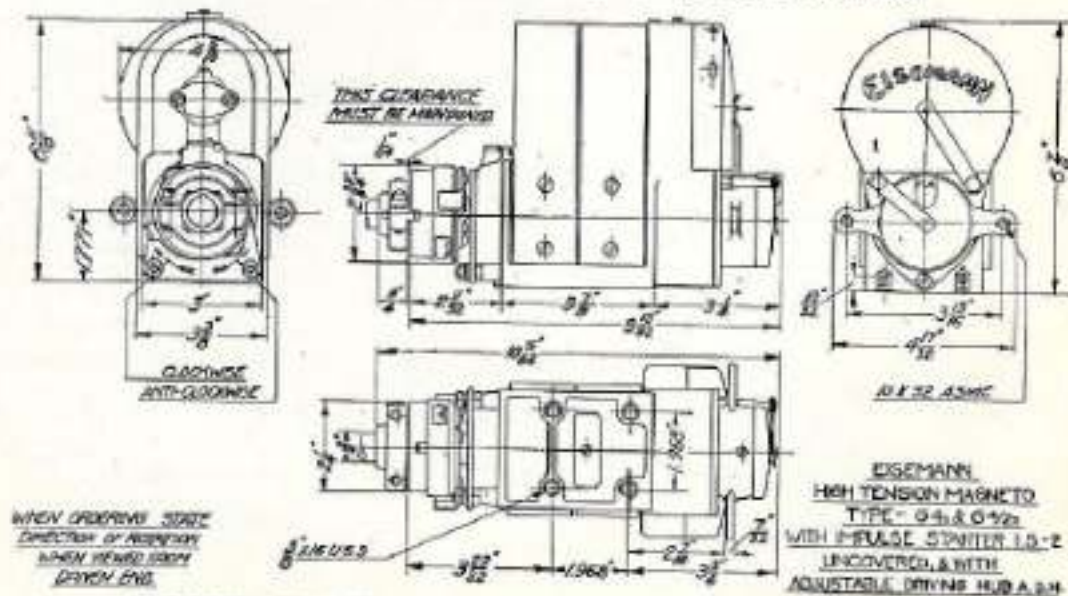
TYPE G 1 AND G 2 MAGNETOS

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TYPE G S 1 AND G S 2 MAGNETOS

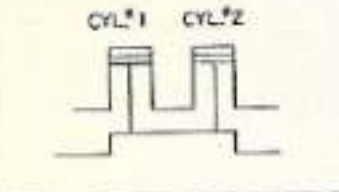
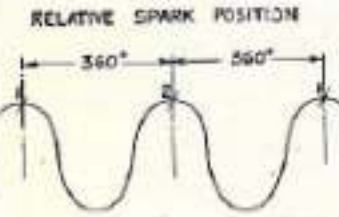
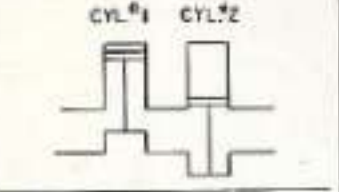
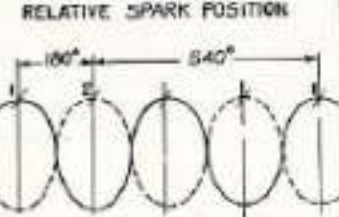
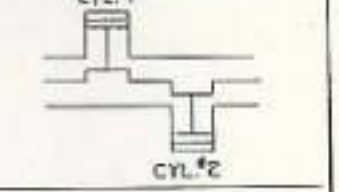
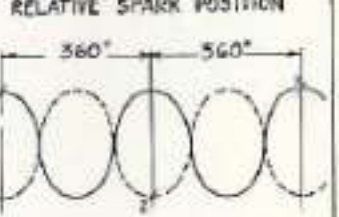
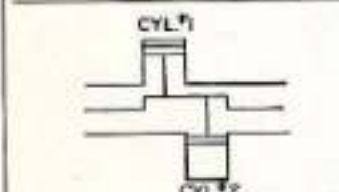
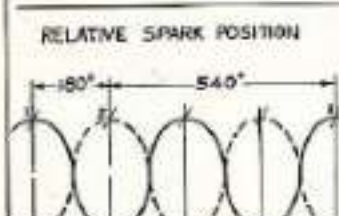
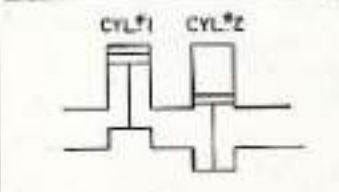
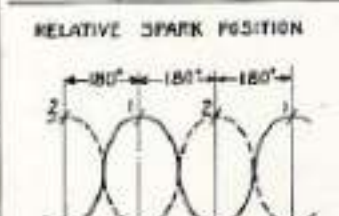
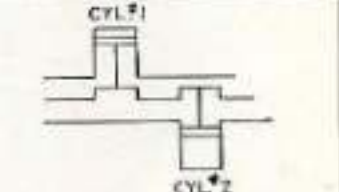
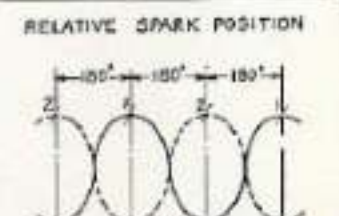
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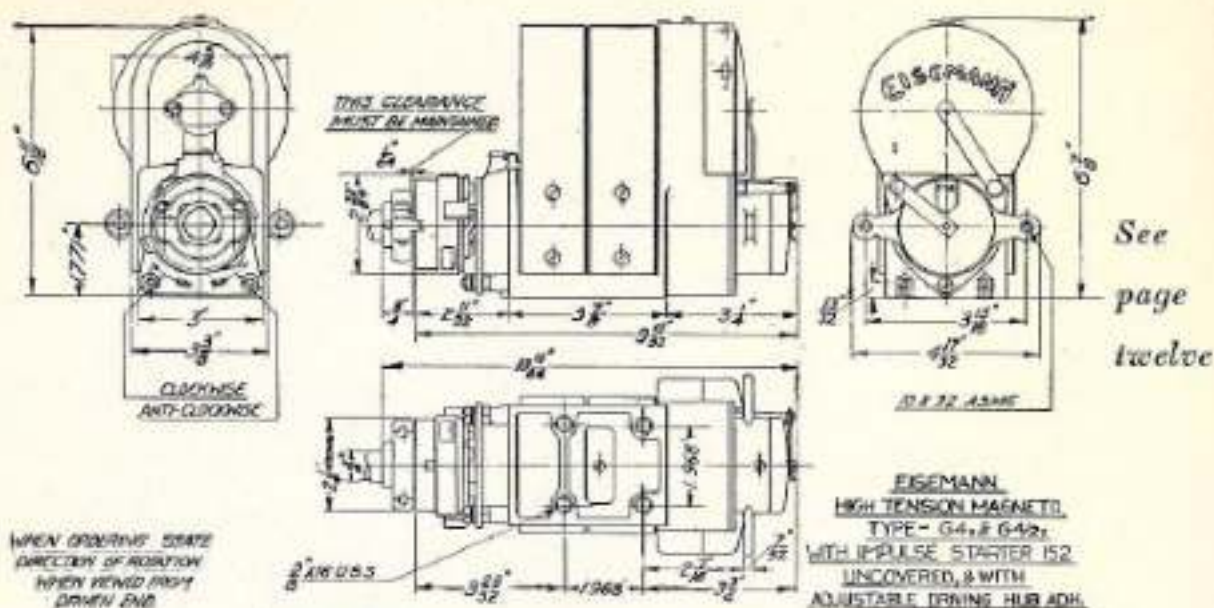
TYPE G 4 II ED. AND G 4/2 MAGNETOS



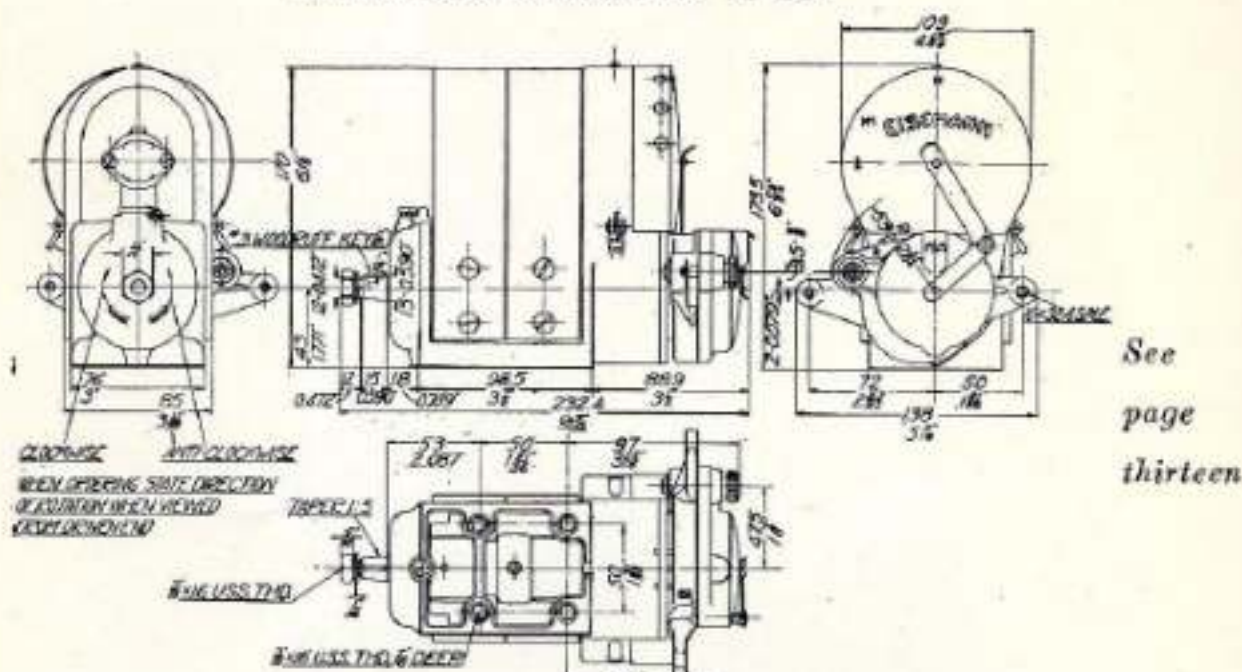
DIAGRAM SHOWING FIRING POSITION OF 2 CYLINDER ENGINES,  
2 AND 4 CYCLE.

<p>2 CYLINDER 4 CYCLE VERTICAL CYLINDERS</p>  <p>RELATIVE SPARK POSITION</p>  <p>RECOMMENDATION. G2 OR G52 - 2 CAMS - SEGMENT COLLECTOR RING - DRIVE HALF CRANK SPEED - STARTS 40 R.P.M. G 1/2 - 1 CAM - DISTRIBUTOR PLATE DRIVE CRANK SPEED - STARTS 50 R.P.M.</p>	<p>2 CYLINDER 4 CYCLE* VERTICAL CYLINDERS</p>  <p>RELATIVE SPARK POSITION</p>  <p>RECOMMENDATION. G2 - G52 - 2 CAMS - SEGMENT COLLECTOR RING - DRIVE CRANK SPEED - STARTS 55 R.P.M. WILL SPARK IN EXHAUST.</p>	<p>2 CYLINDER 4 CYCLE OPPOSED CYLINDERS</p>  <p>RELATIVE SPARK POSITION</p>  <p>RECOMMENDATION. G2 - G52 - 2 CAMS - SEGMENT COLLECTOR RING - DRIVE HALF CRANK SPEED - STARTS 40 R.P.M. G 1/2 - 1 CAM - DISTRIBUTOR PLATE DRIVE CRANK SPEED - STARTS 50 R.P.M.</p>
<p>2 CYLINDER 4 CYCLE OPPOSED CYLINDERS</p>  <p>RELATIVE SPARK POSITION</p>  <p>RECOMMENDATION. G2 OR G52 - 2 CAMS - SEGMENT COLLECTOR RING - DRIVE CRANK SPEED - STARTS 55 R.P.M. WILL SPARK IN EXHAUST.</p>	<p>2 CYLINDER 2 CYCLE VERTICAL CYLINDERS</p>  <p>RELATIVE SPARK POSITION</p>  <p>RECOMMENDATION. G2 OR G52 - 2 CAMS - SEGMENT COLLECTOR RING - DRIVE CRANK SPEED - STARTS 55 R.P.M.</p>	<p>2 CYLINDER 2 CYCLE OPPOSED CYLINDERS</p>  <p>RELATIVE SPARK POSITION</p>  <p>RECOMMENDATION. G2 OR G52 - 2 CAMS - SEGMENT COLLECTOR RING - DRIVE CRANK SPEED - STARTS 55 R.P.M.</p>

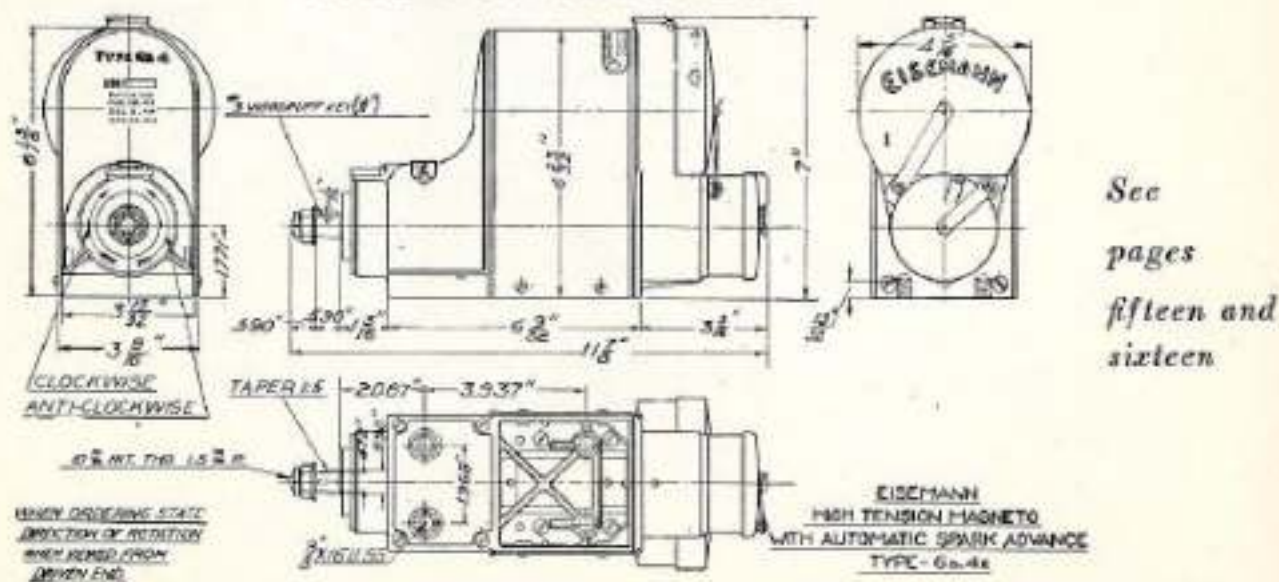
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IMPULSE STARTER II ED.



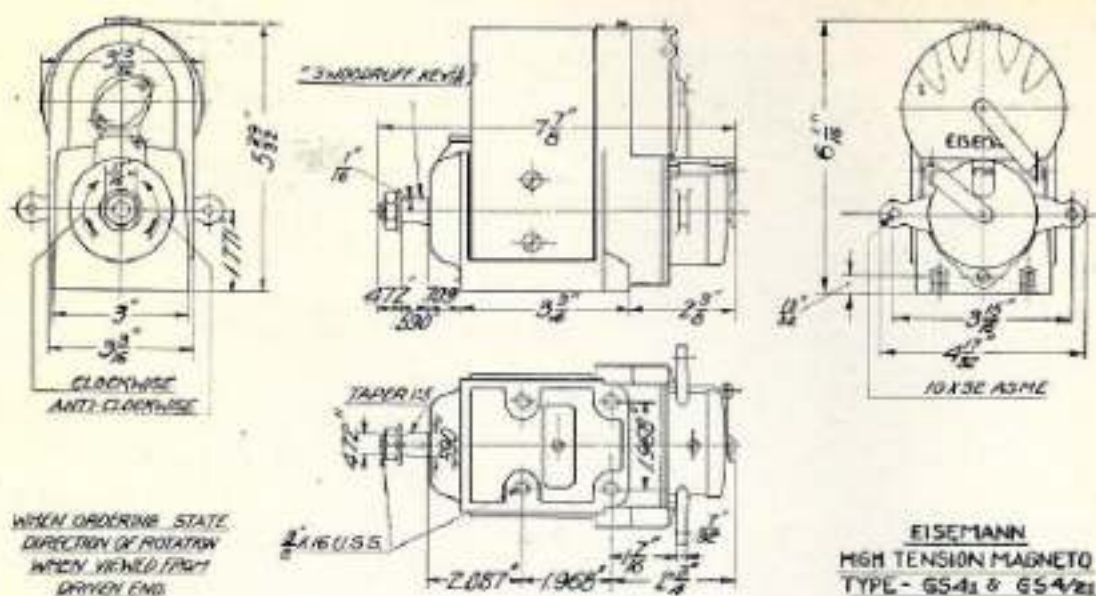
TYPE G R 4 MAGNETO



TYPE G A 4 AND G A R 4 MAGNETOS

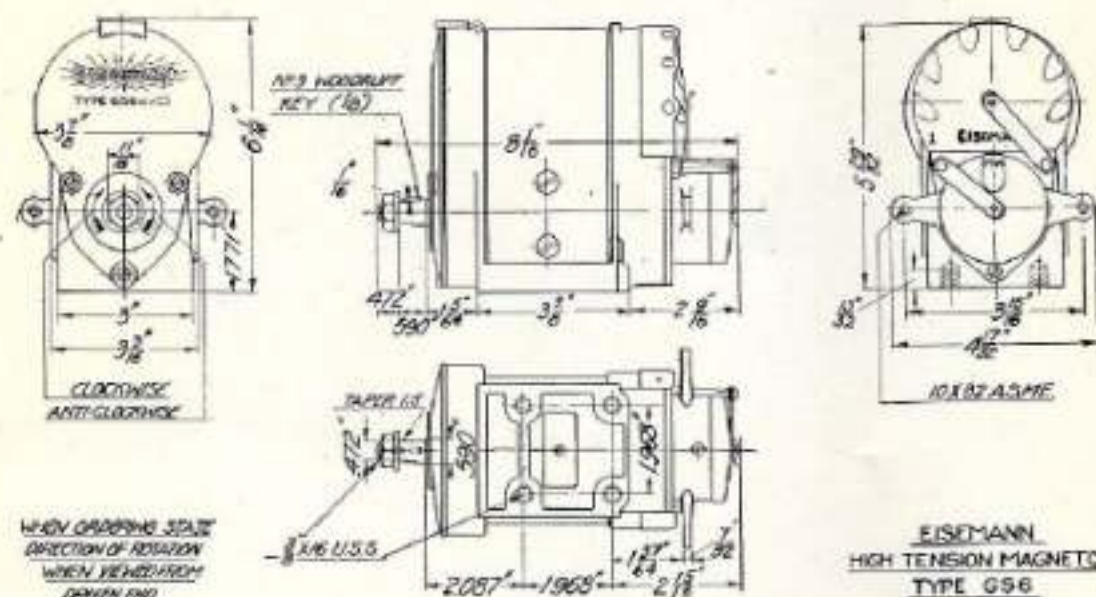


See  
page  
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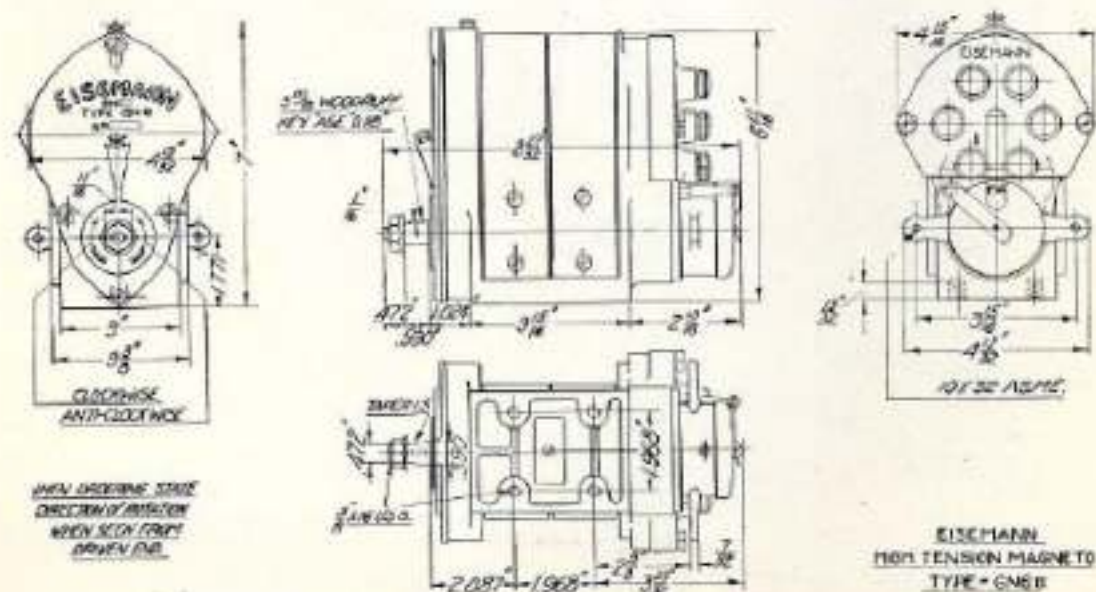
TYPE G S 4 AND G S 4/2 MAGNETOS

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eighteen

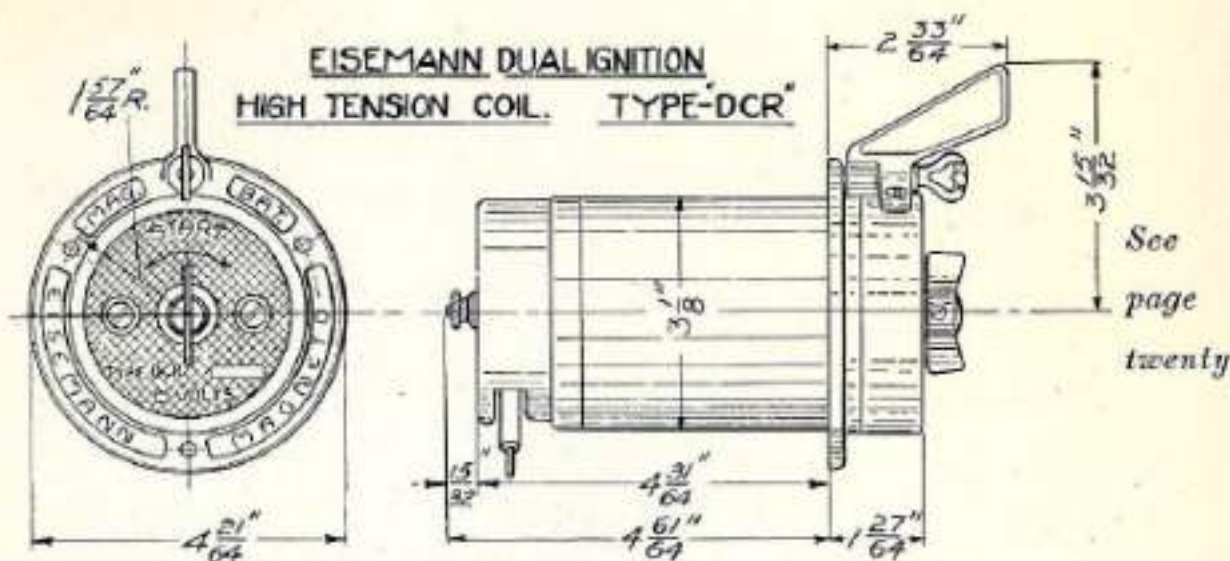
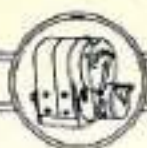


TYPE G S 6 AND G S A 6 MAGNETOS

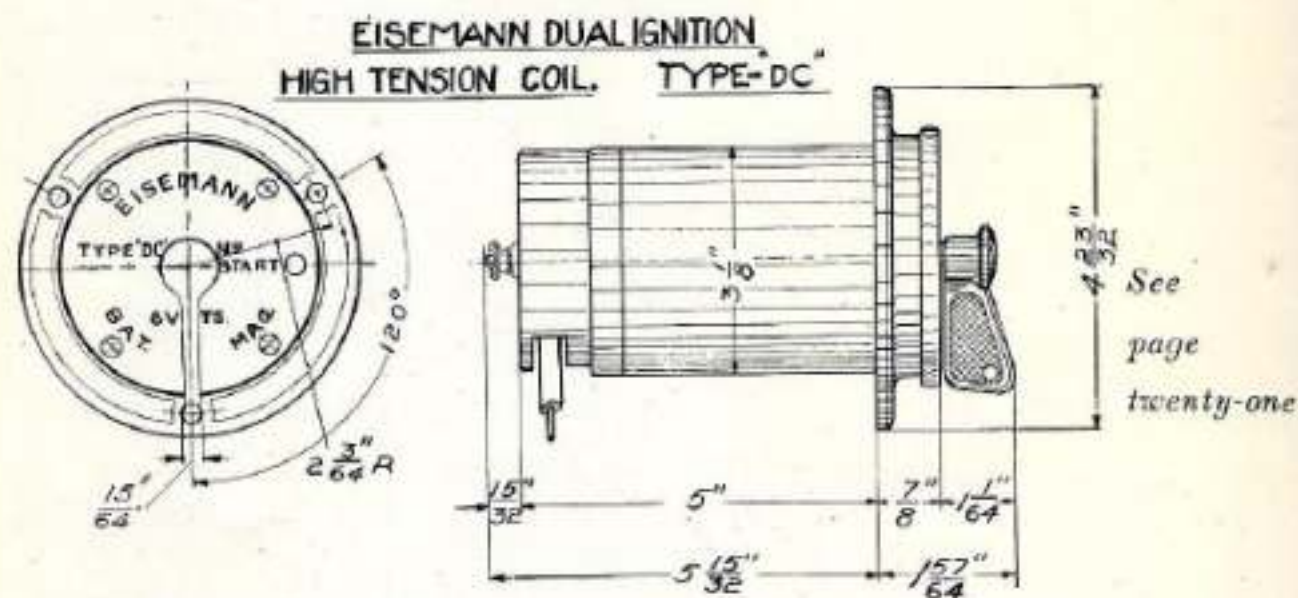
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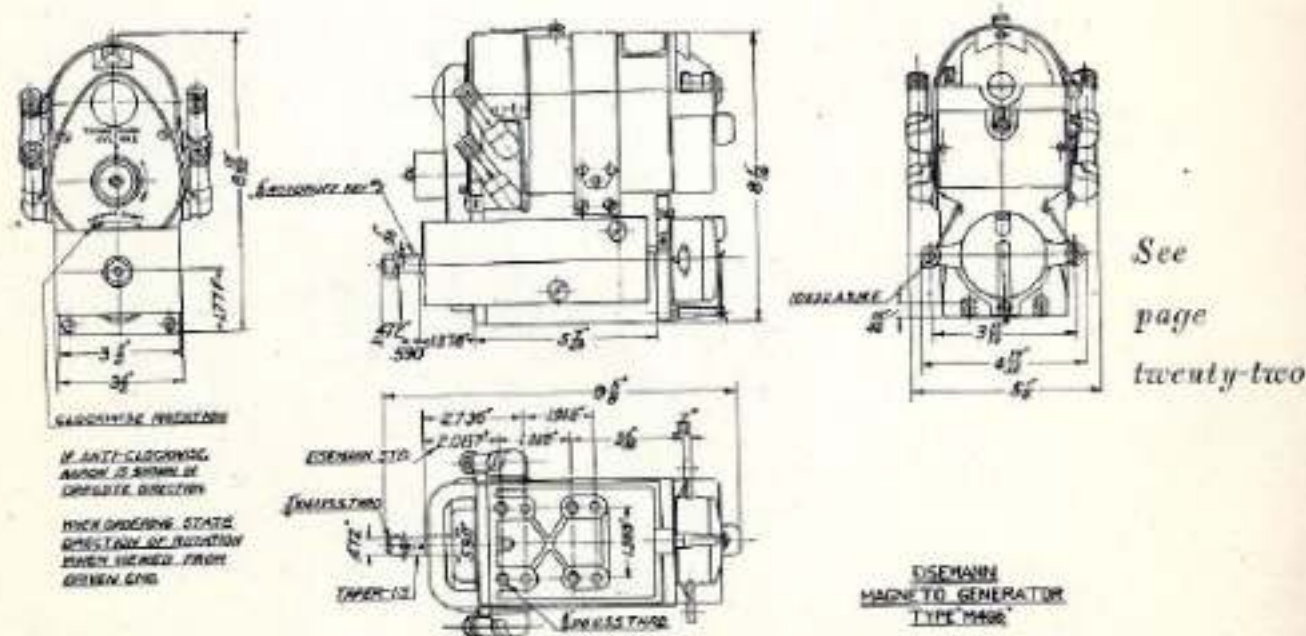
TYPE G N 6 AND G N R6 MAGNETOS



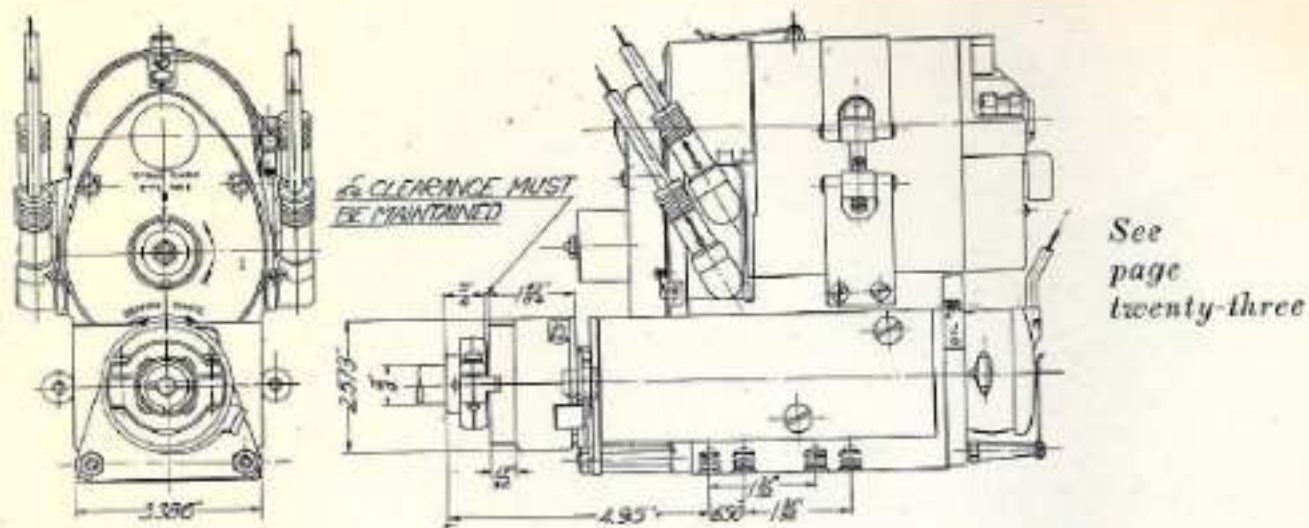
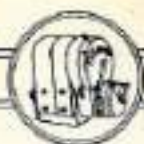
TYPE D C R COIL



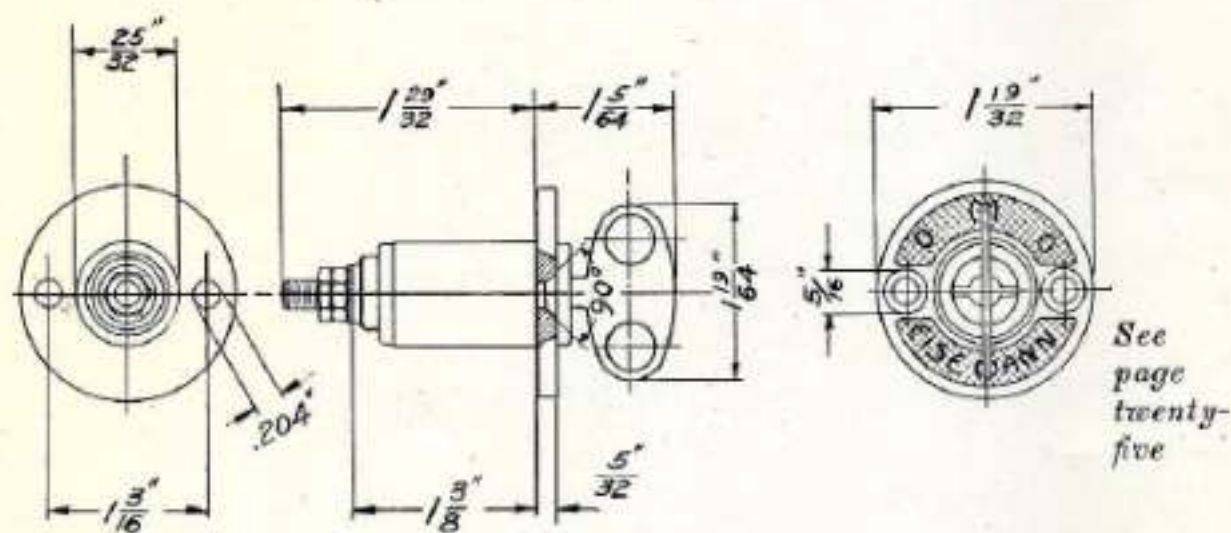
TYPE D C COIL



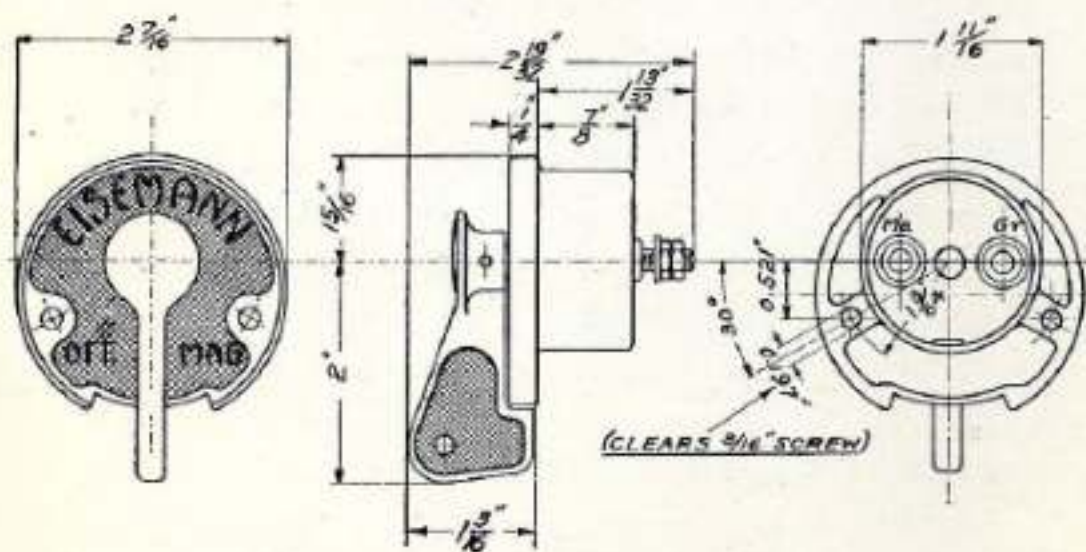
TYPE M 4 G 6 MAGNETO-GENERATOR



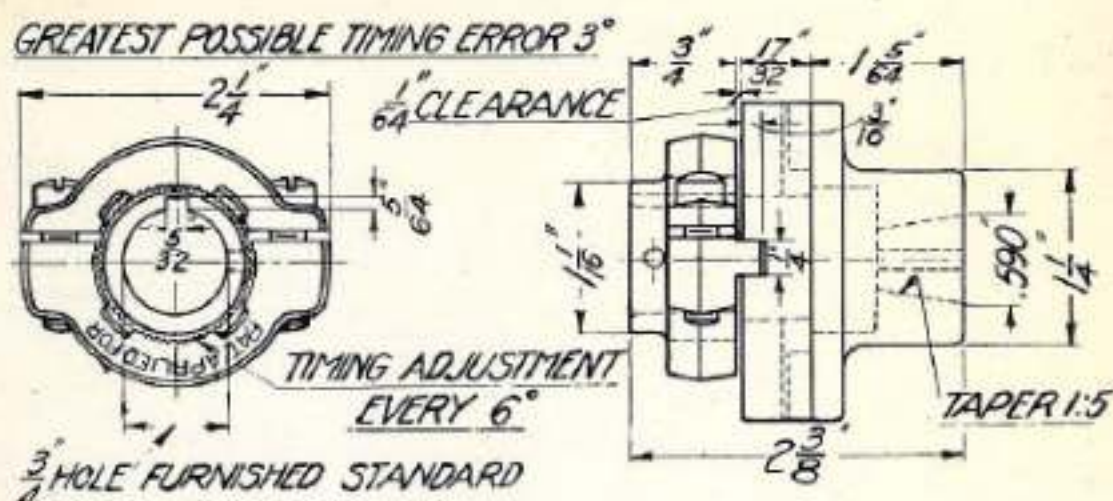
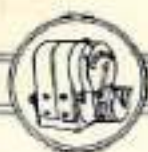
TYPE M 4 G 6 MAGNETO-GENERATOR WITH IMPULSE STARTER.



KEY SWITCH



KICK SWITCH



### ADJUSTABLE DRIVING HUB

NOTE:—Full description of the various types herein shown are published in separate booklets, copies of which will be sent on request.

## Eisemann Branches and Service Stations

Eisemann Service Stations are conveniently located throughout the United States, and "over-night" service may be procured at almost any point. Eisemann Service Representatives are appointed only after thorough investigation and careful consideration of their experience and shop organization. In most instances, the personnel of the Service Station Mechanics are factory trained men. It is the constant endeavor of the Eisemann Magneto Corporation to offer to the users of Eisemann Magnetos the very best service and assistance in maintenance of their product in the field.

Send for a copy of "nearest home" service station.

The Corporation maintains branch offices in Detroit, Mich., and Chicago, Ill., under resident managers.

Complete stock of parts are carried—and service is rendered by efficient and courteous mechanics.



## Demand the Genuine

**I**N designing and developing an ignition device to the high plane of efficiency which is indicative of the Eisemann High-tension Magneto, exhaustive experimental laboratory and road tests, as well as research work covering a very long period of time, are absolutely essential.

When a magneto is sold to the manufacturer or user of a Truck, Tractor, Passenger Car, Marine or Stationery Engine, we are just as much interested in the proper functioning of the instrument in the field, as we were to make the installation or sale.

The material entering into our product is the very highest quality obtainable—also the precise methods in manufacture are the acme of efficiency. Only by adhering rigidly to these standards is it possible to place in the users' hands an absolutely dependable ignition unit.

Keeping the foregoing in mind, we wish to impress most forcibly upon the users of Eisemann Magnetos that they should insist at all times that only genuine Eisemann factory parts be used, when the replacement of a part is found necessary.

The counterfeit or bogus part has been made without any development or research expense. A pirate part can be sold, usually for a little less than the genuine or original part. Some repair shops and garages seeing a chance for a larger profit by substituting counterfeit parts will carry them in stock—and as opportunity offers install the fake part instead of the original. Take no chances with the bogus-parts man—demand genuine Eisemann parts. They cost a trifle more—but, they are worth very much more!

All of our Official Service Stations carry a complete line of genuine Eisemann factory made parts. A copy of list of Service Representatives will be sent upon request.



# Eisemann Magnetos





# In the Making



Armature and Coil Winding



Final Assembly



Final Testing



GENERAL OFFICE and FACTORY  
32-33rd ST., BROOKLYN, N. Y.

BRANCHES

DETROIT, MICH.      CHICAGO, ILL.  
429 Willis Ave. W.      2005 So. Michigan Ave.

SERVICE STATIONS IN ALL PRINCIPLE  
AUTOMOBILE CENTRES

LIST ON REQUEST