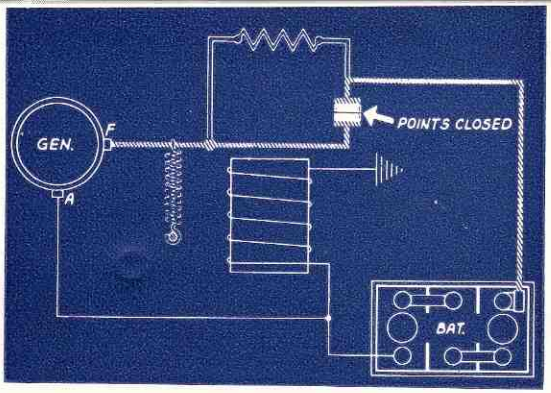
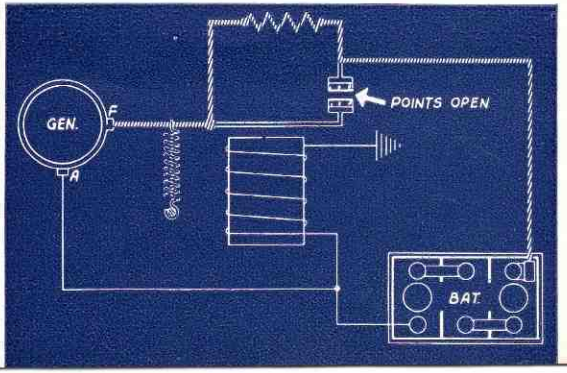


ground. The path is direct . . . from the field, through the contact to ground . . . no resistance whatsoever in the field circuit. No resistance means a strong field. A strong field means a lot of current from the armature.

So a lot of current flows from the armature to the battery and through the winding. The voltage in the circuit goes up. The winding becomes strong . . . pulls down the armature towards it . . . breaks the contacts.

How will the generator field get to ground now? Very simple: Through the resistor—of course, that's a lot tougher road to travel than direct through the contact—so the field strength oozes out a bit and the field gets weak.



So less magnetism is produced by the field . . . less current comes out of the generator armature. The voltage in the circuit drops . . . the winding gets weak and lets the spring pull the regulator armature away from it . . . the contacts close again.

The business starts up all over again.

Fifteen thousand times a minute this happens . . . resistor in . . . resistor out . . . field weak . . . field strong . . . voltage up . . . voltage down. Fifteen thousand times a minute . . . fast? . . . plain dizzy.

But—because it's so fast, you don't get high hills and low valleys in voltage . . . more like a straight line . . . like the blades of a fan going around so fast that you don't see them turning. That's why you get a constant voltage in the line . . . that's how the voltage control unit works.

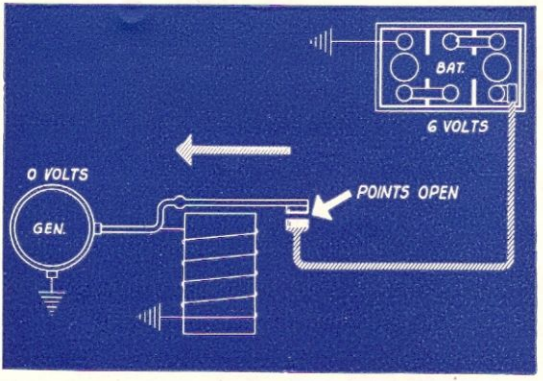
THE CURRENT CONTROL?
. . . works the same way:

Windings, armatures, contacts, resistor . . . except that it operates when the total generator current gets up high . . . when you turn on the radio, lights, heater and other gadgets.

You see, a generator has a certain safe current rating . . . say 35 amperes, and will last for a long time if no more than that is pulled out of it. But if you overload it and pull out more than the safe amperage, it would heat up and burn up.

So the current control of the regulator stops the output of the generator at the rated safe limit and saves it from overload . . . like the third brush used to do in the older generators.

You stop or idle the engine . . . the generator dies . . . sends no more current to the winding . . . the armature is not attracted anymore . . . the points open . . . the connection is broken . . . no current can flow from the battery to the generator.



That's all there is to the cutout . . . there just isn't any more.

THE VOLTAGE CONTROL

That's the unit that does most of the work . . . keeps the battery charged but not overcharged. It's also a kind of switch; it switches resistances in and out of the generator field.

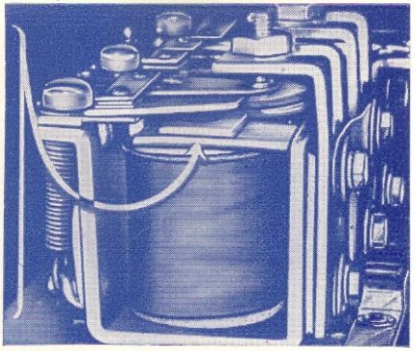
The generator field is really a magnet. When an electrical conductor, a wire, is moved through a magnetic field, electrical current is produced in the conductor. The stronger the magnet the more current in the wire and vice versa.

That's your generator.

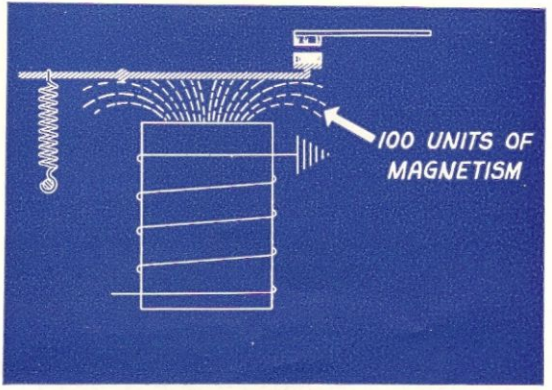
The magnet is the field coil . . . the wire is the armature . . . just a bundle of wires connected together in a certain manner.

metal, but it's full of tricks . . . when cold, it is a good magnet . . . when hot, it is no magnet at all.

We put this compensator between the winding and the armature.



Now, let us say that it takes 100 units of magnetism to pull down the armature and separate the contacts.



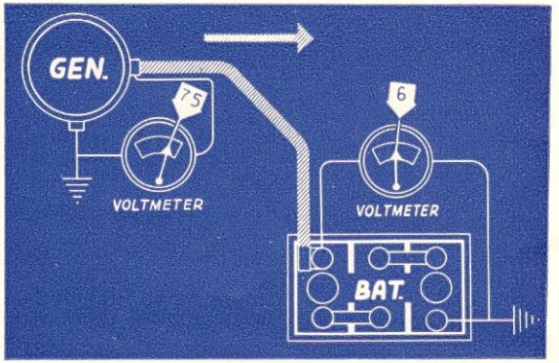
We designed the winding to produce 150 units of magnetism when it's cold . . . that would be too much when we need only 100. But the compensator is also cold at that moment, so it is a

while it is rotated by the engine above a certain speed. When the engine idles or is shut off, the generator is dead . . . it produces nothing.

The battery just stores electrical energy furnished by the generator, to be used when the generator is not in operation.

When the generator operates, its voltage is usually about 7½ volts. When the generator is idle, its voltage is to be considered as zero (0), (actually about 2 volts). Current always flows from a higher voltage to a point of lower voltage—just as water flows from a higher level to a lower level.

When the generator operates at 7½ volts, it will send current into the 6 volt battery . . . this is as it should be.

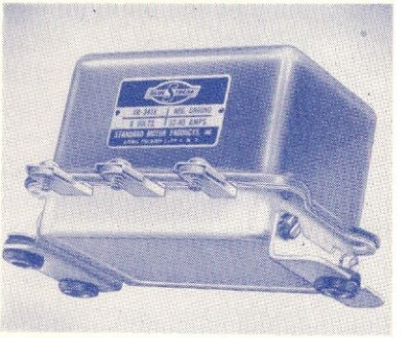


When the generator is idle, the 6 volt battery would try to send current through the 0 volt generator. This would discharge the battery and probably burn out the generator . . . *and we don't want that to happen.*

A few more words and the regulator is all yours, but before we turn it over to you we want to call your attention to a special gimmick we have on our BLUE STREAK Voltage Regulator, which you will find on no other.

The resistors we talked about are always on the underside of the regulator. On all regulators, except the BLUE STREAK, these vital resistors are not protected in any way against accidental physical damage or electrical shorts.

In the BLUE STREAK Regulator we have a special bottom enclosure.



This casing entirely surrounds the resistors and other live parts and connections of the regulator. This exclusive BLUE STREAK construction prevents regulator failures caused by physical damage to the resistors, or by electrical shorts of live parts.

The BLUE STREAK Voltage Regulator is the *only* one with a special bottom that completely protects the regulator against such hazards. It is one of the numerous BLUE STREAK extras.

This is the latest in the "Standard" series of informative booklets on Starting, Lighting and Ignition.

Other booklets in the series are: "What Price Quality" and "Behind the Scenes." Copies may be obtained by writing to . . .

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and DONTs

DON'T try to adjust a regulator by breaking the seals and screwing the contacts up or down or changing the tension of the springs by guess work. Without meters the best engineer can't do it. He wouldn't even try.

DON'T try to use any old regulator with any old generator . . . it won't work. The regulator must be *matched* to the generator.

DON'T use a "positive" regulator on a car with a negative battery ground connection and vice versa. The regulator will fool you. It will work for a while . . . maybe a day, maybe a week . . . then the points will stick and burn out the generator, the regulator and the customer's good-will.

DON'T connect the wires to the regulator any old way . . . make sure the correct wire goes on the correct terminal. The thin wire always goes on the "F" terminal . . . the thick wire that throws a spark when you touch it to a ground must go on the "B" terminal. You only have one thick wire left . . . connect it to the "A" terminal. *What if you don't? Well, if you interchange the A and F wires you won't go to jail but the regulator will be knocking at the Pearly Gates in about three minutes—yes, it will die a hot and quick death.*

SO do it right and you'll be on top

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