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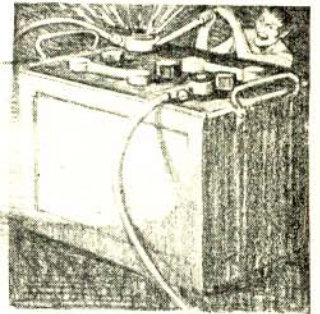
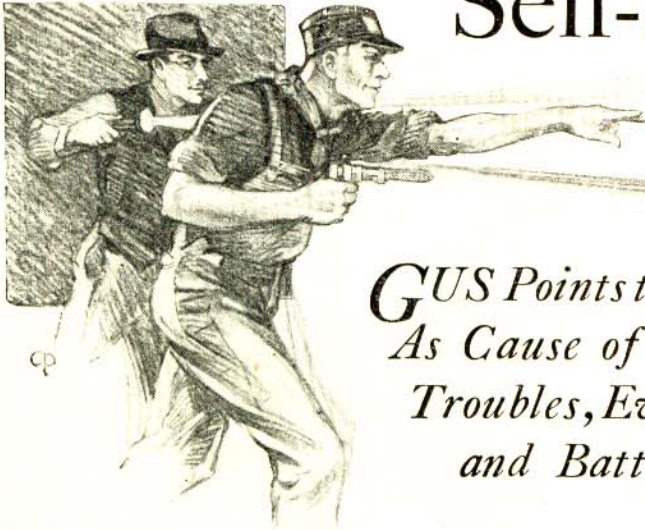
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# Don't Be Too Quick to Blame Your Self- Starter



*GUS Points to Bad Connections As Cause of Many Starting Troubles, Even When Motor and Battery are Good*

By

MARTIN BUNN

"IT'S funny how we seem to have runs first on one kind of work and then on another," observed Joe Clark to Gus Wilson as the two partners prepared to close the Model Garage for the night. "Right now it seems to be all electrical troubles," agreed Gus.

"Here's another one, I'll bet two cents!" Joe muttered under his breath as a shiny, new car pulled up in front.

The driver of the car looked as though he had been doing strenuous work.

"The self-starter is on the blink. Can you fix it?" he called out. "I had to crank it by hand to get down here. I can't see why it should go bad all of a sudden. It worked fine up to now."

Gus didn't ask any questions. He climbed in behind the wheel and, after testing the lights and noting that they seemed to be working at full brilliance, stepped on the self-starter pedal. There was a clank as the starter motor gear engaged with the teeth on the engine flywheel. The lights immediately went out, but the starter motor appeared to be too weak to spin the engine. Gus took his foot off the self-starter pedal, and the lights at once returned to full power.

"Humph!" he grunted. "I don't think there is anything the matter with the self-starter. The trouble probably is in the battery connections."

"That's it, all right," he continued, after he had pulled up the floor boards and examined the clamps on the battery terminal lugs. "Look here! This one is loose."

It was so loose, in fact, that he was able to pull it off without touching a wrench to the clamping bolt. Joe handed him a piece of sandpaper, and Gus proceeded to give both the battery terminal and the clamp on the end of the cable a good polishing.

After he had bolted it firmly back in place, he removed the other terminal and gave it the same treatment. "And while we are about it," he observed, "I'm going to inspect the battery to make sure that it's getting enough charging."

When Gus had put the floor boards back in place, Burns, the owner of the car, stepped on the starter pedal, and the

starting motor spun the engine at a great rate.

"Gosh, that's fine!" exclaimed Burns. "It's simple enough when you know how, I suppose. Still, I don't see why the lights should work when the self-starter was dead as a doornail. I always thought that electric current either flowed if there was a circuit or didn't flow at all if the circuit was broken. I didn't know there were half-way points."

"That idea," Gus explained, "is responsible for a whole lot of electrical trouble on automobiles. Electric current going through a wire is a whole lot like water flowing through a pipe. It's a matter of pressure and volume. In the spark plug circuit you have thousands of volts pressure to shove a small volume of current through the resistance of a poor contact. Conditions in the starter motor circuit are just the other way around. The storage battery only develops a pressure of six volts, and yet you have to push as much as two hundred amperes through the windings of the starter motor to get power enough to start the engine when it is cold and stiff."

BURNS was interested. "I had no idea that the self-starter took so much current. That explains why they put in such a big cable to connect up the battery with the starter switch and motor."

"Right," Gus replied. "The big cable is absolutely necessary."

"Even when all the connections and the switch are in good condition, there is still a chance for trouble. If the brushes that make contact with the commutator of the starter motor get burned a bit, the extra resistance will cut down the current enough to make the self-starter sluggish and irregular."

"The queerest trouble I ever ran into," Gus continued, "wasn't due to anything wrong with the wiring or the brushes, although this self-starter certainly acted as though there was a poor connection somewhere. One time it would spin the motor just as it ought to, and the next time it would fail to work at all. I went over all the connections, cleaned the

switch and sandpapered the starter motor brushes. But it didn't help matters enough to notice."

"I finally located the trouble under the frame of the self-starter motor. You know the current goes back to the battery by way of the frame of the car, and bolts holding the self-starter motor in place had worked loose. The car had been at the seashore for quite a while, and the dampness had caused rust. Some sandpaper cured the trouble."

"But why didn't the current get to the frame through the self-starter pinion and the gear on the flywheel?" asked Burns.

"Part of it must have gone that way," Gus replied. "But there isn't much chance for a lot of current to flow through the oily bearings of the crankshaft or the fabric facings of the clutch plates."

"And I suppose it couldn't get to the flywheel gear anyway on account of the oil on the pinion and gear," added Burns.

"You're wrong there," laughed Gus. "The bendix type of starter gearing that is used on so many cars now is a peculiar piece of mechanism. It's the one moving part of the car that works better without oil. Don't ever oil it."

"A MAN who lives down the street here wouldn't believe me when I told him that, and he smeared a lot of cup grease all over the self-starter. It worked all right for a while, and then one chilly morning he stepped on the pedal and the starter motor hummed at a great rate without engaging with the flywheel. He tried again, and the engine started. Then it wouldn't disengage, and the strain busted three teeth out of the flywheel gear. He believes me now!"

"Light oil wouldn't gum up like that when it got cold," suggested Burns. "Why not use that?"

"Don't do it," Gus insisted. "Even light oil is bad because it picks up dust and dirt, and after awhile the starter gets all gummed up."

"Well, it's a relief to know that there's at least one part on the car that will work best if I neglect it!" laughed Burns as he stepped on the self-starter.