

a car and replace them by another set in from two to three minutes. When the car enters this rack, its panels are dropped down on either side and thus form bridges over which the batteries are withdrawn from and replaced in the car. While this change is being made, a competent person inspects the regulators of the car. The motors, gearings, and connections are only inspected once a day, and that at the end of the day's work.

#### GOLD EXTRACTION BY A NEW PROCESS.

IN many places where gold-bearing quartz is found containing a sufficient percentage of the metal to pay for working it, there is either an entire absence of the water necessary to work the process at present employed for its extraction, or it can only be obtained at great expense and trouble, in many cases only part of the year.

which he could quickly determine whether any specimens of quartz contained gold, by simply crushing it with a hammer and running it through the machine. The mechanism of this apparatus consists of an inclined ladder with fine wire cloth upon one side and silk upon the other. A blast of air is passed up and down through the two meshes, blowing off the light particles of dirt and quartz and allowing the free gold to be retained simply by gravity. Another machine is adapted for concentrating various metals from rock, such as sulphates of copper, lead, zinc, and antimony, making the future separation of the valuable metals from the metallic mass, by roasting or chemical processes, an easy matter. During the exhibit an interesting experiment was made to show the value of the machines, and the thoroughness with which they performed their work. The machine used in the experiment weighed about five hundred-weight, and was so compact that it could be readily

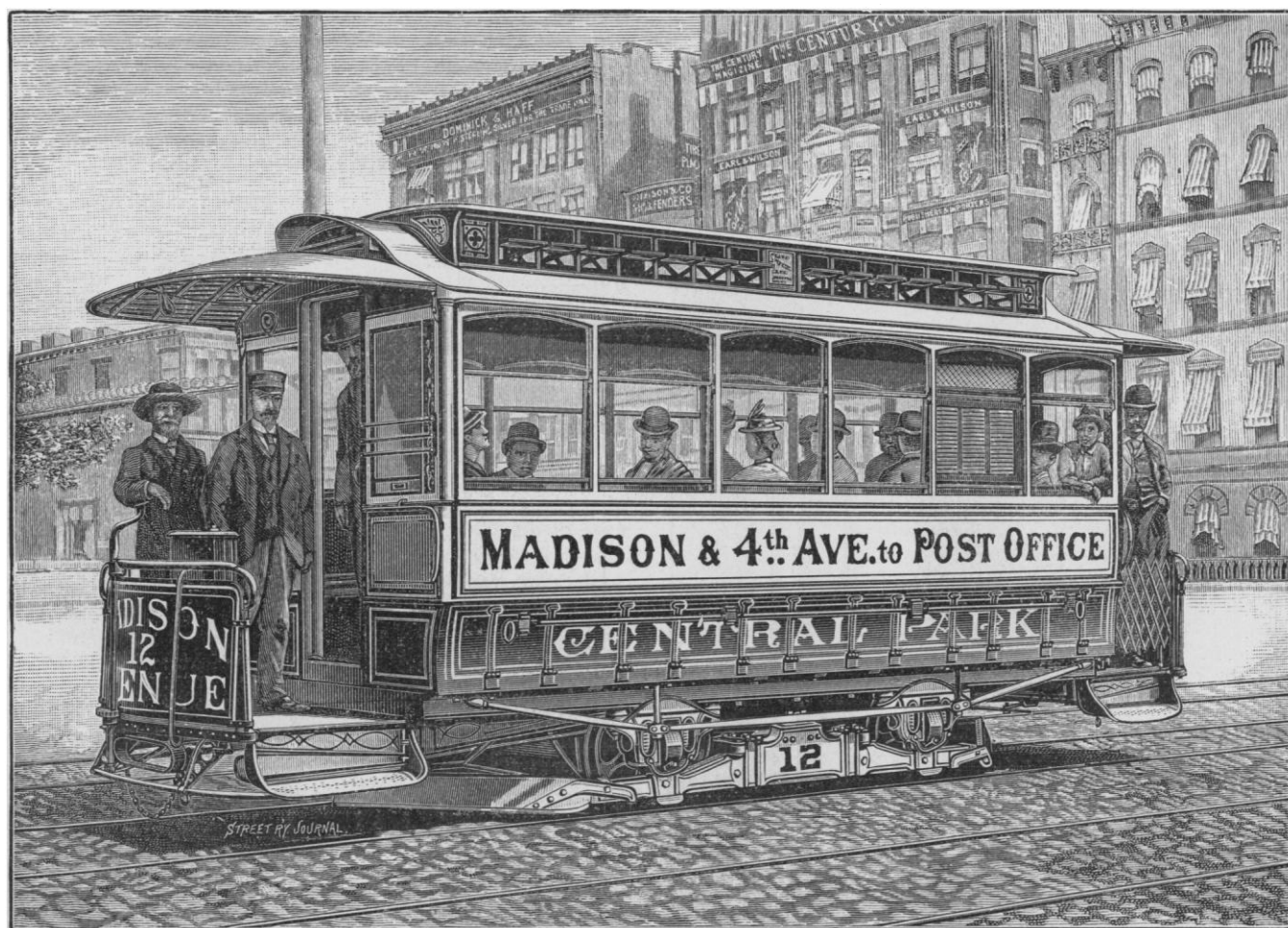


FIG. 3.—STANDARD ELECTRIC CAR, JULIEN STORAGE BATTERY SYSTEM.

Hitherto the processes used for extracting the gold from the alluvial deposit or from crushed quartz have required large quantities of water to flush the fine, pulverized material containing the gold, and even with the best methods large quantities of gold were carried off with the earth and quartz and lost before it reached the mercury.

The need of some ready method for the dry extraction of the gold has long been felt, but until recently the various machines proposed have not been found equal to the old processes. The various difficulties in the way of dry extraction have apparently been overcome in a new machine which was exhibited in London a few weeks ago. By this process, as described in *Iron*, the use of mercury is dispensed with, and the gold is extracted readily from alluvial deposits or quartz. The process is also applicable to the extraction of any combination of metals from refractory ore. One of the machines exhibited weighed but six pounds, and was intended to form part of the outfit of the prospector, by the use of

transported from one place to another. A quantity of gold in minute particles, weighing six drams, and two small nuggets, were put into a large pan with two hundred-weight of gravel and grit, and the whole mass put into the machine, which was operated with about a quarter-horse power, or, as an equivalent, two-man power.

The principle of the machine is similar to the small separator used for prospecting purposes, with the blast of air driving off the fine particles of extraneous material, while "oscillating riddles containing shot shake off the heavier grit and stones, allowing free gold to sink by gravity into the shot, where it is retained, and in turn falls to the bottom of the shot." In about a minute after the mixture was placed in the machine the whole treatment was completed, and of the amount of gold originally put into the machine 96.3 per cent was recovered. With more time devoted to the separation, a considerably smaller percentage of loss would doubtless have ensued.