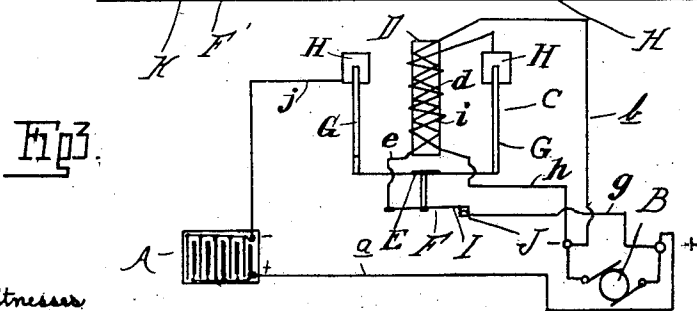
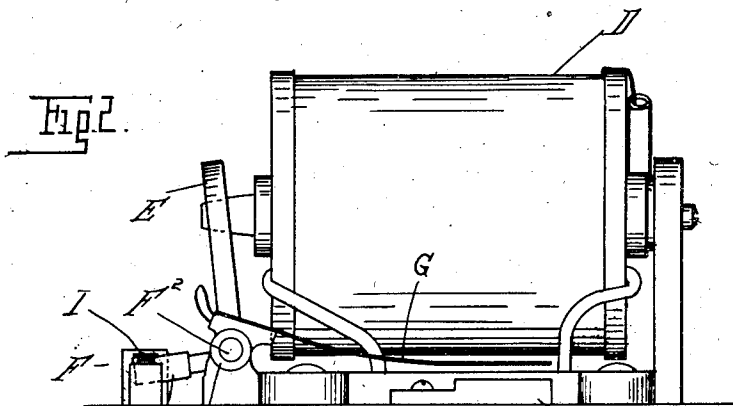


1,013,959.



Witnesses
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UNITED STATES PATENT OFFICE.

JOHN B. SCHUG, OF DETROIT, MICHIGAN.

MECHANISM FOR CHARGING STORAGE BATTERIES.

1,013,959.

Specification of Letters Patent.

Patented Jan. 9, 1912.

Application filed October 20, 1910. Serial No. 588,133.

To all whom it may concern:

Be it known that I, JOHN B. SCHUG, a citizen of the United States of America, residing at Detroit, in the county of Wayne and State of Michigan, have invented certain new and useful Improvements in Mechanism for Charging Storage Batteries, of which the following is a specification, reference being had therein to the accompanying drawings.

The invention relates to a battery charging mechanism including an automatic switch acting to establish a charging circuit and to automatically break the same when charging has been effected or when the operation of the generator ceases, thereby preventing back flow of the current.

The invention resides in the novel construction of the mechanism, in the construction of the switch, and in various details of construction and their arrangements and combinations, as will be more fully hereinafter described and claimed.

In the drawings,—Figure 1 is a top plan view of the electric switch; Fig. 2 is a side elevation thereof; and Fig. 3 is a diagrammatic view of the switch and circuits.

In the drawings thus briefly described, the reference-letter A represents a storage battery of any approved construction that is to be charged.

B is a suitable generator, and C is a controlling switch the detail construction of which will be more fully hereinafter set forth.

The charging circuit in addition to the generator and battery includes the electro-magnet D of the switch and a circuit closer E, the circuit being normally open. A shunt circuit is provided including the generator, the electro-magnet, and a circuit breaker, F, the circuit being normally closed.

The detail construction of the switch through which the circuits are automatically made and broken is as follows: The electro-magnet D is arranged preferably—though not necessarily—in a vertical position, and its armature E therebeneath, so as to be retracted by gravity. I preferably mount the armature upon a horizontal rock shaft F² journaled in suitable bearings F' between which the armature is positioned, acting to prevent endwise travel of the shaft.

The circuit closer comprises preferably a pair of spring contact arms, as G, one positioned at each end of the rock shaft, and

suitable contacts as H beneath the extremities of the arms and normally out of engagement therewith.

The circuit breaker F is formed in a manner somewhat similar to the circuit closer, comprising a horizontally positioned spring arm I and a suitable contact J, the entire device being located immediately beneath the armature, as plainly shown in Fig. 1.

K represents an operating member projecting downwardly from the rock shaft and armature, and intermediate the arm I and its support I', so that as the magnet is energized and the armature attracted the arm will strike and raise the arm I out of engagement with its contact. Thus, as the generator operates, the armature is attracted by the energized magnet operating the circuit breaker, and at the same time the spring contact arms G engage the contacts H, establishing the main charging circuit.

When the apparatus is not in operation the armature is in the position shown in Figs. 1 and 2, the switch F being closed and the arms G out of engagement with the contacts H. The generator being in proper condition to charge the battery the current first passes through the shunt circuit represented by *b d e F g*, polarizing the magnet and rocking the armature. The rocking of the armature opens the circuit breaker F and moves the arm G into engagement with the contacts H. The current then flows through the main charging circuit represented by *h i H G j a*, the magnet remaining polarized until the charging operation is completed and the generator ceases to operate, in which case the charging circuit is automatically broken and the shunt circuit reestablished, thereby preventing back flow of the current.

It will be obvious from the foregoing description of the apparatus that the automatic switch effectively guards and protects the battery through the agency of the retractive armature. In most instances, a gravity-actuated armature will answer, but a further safeguard is preferably provided in the circuit breaker which in the form of the spring arm described acts normally to throw the armature away from the magnet by reason of its engagement with the armature operating member K.

What I claim as my invention is,—

1. In switch mechanism, the combination with an electro-magnet, of its armature, a circuit closer operated by the armature upon

the energizing of the magnet, and a circuit breaker also operated by the armature and acting to retain the latter normally in its retracted position.

5 2. In an electric switch mechanism, the combination with a vertically disposed electro-magnet, of a horizontal rock shaft therebeneath, an armature and a contact arm carried by the shaft, a circuit breaker below the
10 armature, and a depending arm connected to the armature projecting in operative relation to the circuit breaker.

3. In switch mechanism, the combination with an electric magnet, of its armature, a
15 circuit closer operated by the armature upon the energizing of the magnet, a projecting arm upon the armature, and a circuit breaker

operated by said arm and acting to retain the armature normally in its retracted position.

4. In switch mechanism, the combination with an electric magnet, of a rockable shaft, an armature and a circuit closer secured to the shaft to rock therewith, an arm projecting from said armature, and a circuit
25 breaker operated by said arm and acting to retain the armature normally in its retracted position.

In testimony whereof I affix my signature in presence of two witnesses.

JOHN B. SCHUG.

Witnesses:

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