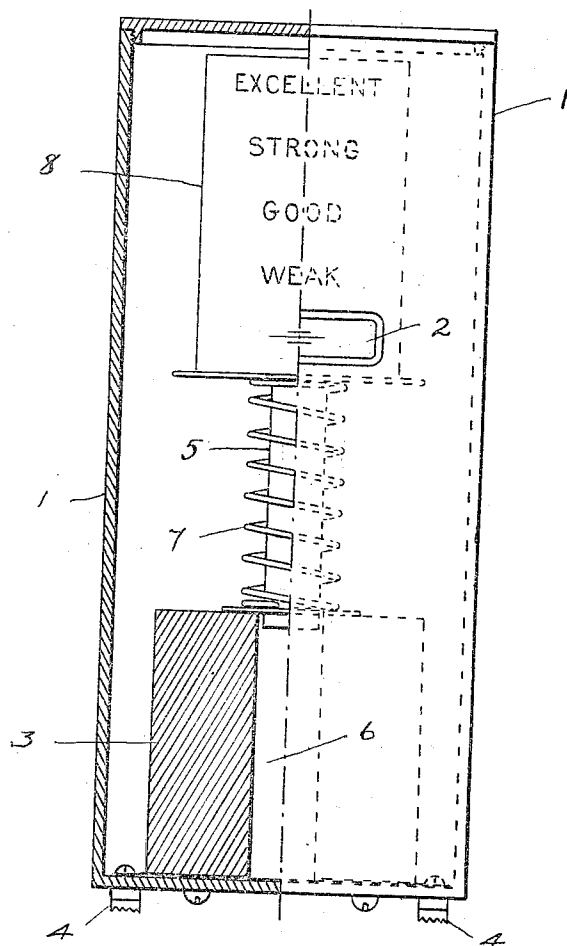


936,001.

E. S. LINCOLN.
DRY CELL TESTER.
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Patented Oct. 5, 1909.



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UNITED STATES PATENT OFFICE.

EDWIN S. LINCOLN, OF BROOKLINE, MASSACHUSETTS.

DRY-CELL TESTER.

936,001.

Specification of Letters Patent.

Patented Oct. 5, 1909.

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To all whom it may concern:

Be it known that I, EDWIN S. LINCOLN, a citizen of the United States, residing at Brookline, in the county of Norfolk and State of Massachusetts, have invented certain new and useful Improvements in Dry-Cell Testers, of which the following is a specification.

My invention relates to means by which the electrical condition of dry cells, batteries, and allied sources of electrical energy, may be easily and quickly ascertained.

More especially I have aimed to embody in a simple and inexpensive form a testing device adapted for use in connection with sources of energy, as dry cells, which are commonly used in the energization of ignition systems of explosive engines, and the like, and affording a means by which it may be determined with a minimum of trouble and manipulation whether said cells are in a fresh or exhausted condition.

The figure of the drawing shows my invention in its preferred embodiment, the left-hand half of said figure being shown partly in section.

My invention as shown in said figure comprises the retaining case or shell 1, which is preferably cylindrical in form and of a compact and portable size, and constructed of metal or other suitable material. In said shell a window or aperture 2 is provided as shown, preferably with a transparent covering for the same by which dust may be excluded from the interior of the shell.

At the bottom of the inside of case 1 is fixedly mounted a coil or solenoid of wire 3. The terminals of solenoid 3 are electrically connected with contacts 4 which are unyieldingly located upon the exterior of the case and preferably on the bottom of the same. The outer faces of said contacts 4 are preferably roughened, as shown.

At 5 is a plunger; made of material susceptible of attraction toward the solenoid under the influence of electric currents passing through the solenoid. The plunger 5 is mounted within the case 1 so as to be movable longitudinally with respect to, and adapted to enter within an axial recess 6 extending through the center of the solenoid. A spring 7, or some other equivalent device, is provided, by which the plunger is normally held, when solenoid 3 is electrically inert, in that position in which the entrance of the plunger end within the recess 6 is a

minimum. On the upper end of the plunger is a disk 8 or other means on which may be inscribed the words or characters which it may be desired to adopt for the purpose of indicating varying electrical conditions possible to the cells under test. For this purpose the words "Excellent", "Strong", "Good", and "Weak", are suggested. When the plunger is in the position shown in the drawing, corresponding to an inert condition of solenoid 3, a blank appears at opening 2, the characters or words inscribed on the dial being concealed by the case of the tester. But as the plunger lowers, in response to the flow of electric current through solenoid 3, the location of the words on the dial is such that they are caused to appear at said opening 2.

The manner of operation of my invention is as follows. The contacts 4 are located so as to register, in their position, with the terminals of the cell under test. The cell tester is then taken in one hand, while the cell to be tested is held in the other hand, and the external contacts are pressed simultaneously into contact with the terminals of the cell under test, thereby short circuiting said terminals through the solenoid. On the completion of the circuit made by the contact between cell terminals and tester contacts current will flow through the solenoid 3, producing magnetic disturbances operating to draw plunger 5 downward, against spring 7, so as to cause the same to enter more or less deeply, according to the strength of said magnetic disturbances, into the recess 6. Dial 8, moving in unison with plunger 5 will show at opening 2 the word corresponding to the strength of the current flowing through the solenoid; thus indicating the condition of the cell by which such current is generated. Inasmuch as the accuracy of the readings indicated by the tester depends upon the perfection of the contact made between the external contacts and the terminals of the cell under test, it is of importance that the former and the latter be capable of being pressed against each other with a force which is sufficient to insure a contact between said tester contacts and the cell terminals which may be relied upon as being substantially free from resistance. In the applicant's tester therefore the said tester contacts are mounted upon the case in an unyielding manner, which feature, taken in connection with the fact that the said con-

tacts register in position with the cell terminals, permits the user of the tester, holding the same in one hand, to rub the external contacts of the same against the terminals of the cell under test, held in the other hand, with a degree of force which will render it reasonably certain that the contact so made is a perfect one, and consequently give the operator reasonable assurance that the tester accurately indicates the condition of the cell. The location of the various words on the dial 8 may be ascertained by experiment with cells known to be in the various stages of electrical condition indicated by the descriptive words used.

Having described my invention, I claim as new and desire to secure by Letters Patent,

1. In a cell testing device, the combination with a casing, of contact members located upon the exterior of said casing, a solenoid magnet within said casing, a core adapted to enter said magnet, a washer surrounding said core and resting upon said magnet, said casing having a side opening formed therein, a drum mounted directly upon the upper end of the core, said drum bearing strength

indicating matter upon its periphery, and a spring which bears between said drum and the washer, the spring normally tending to eject the core from the magnet, said core being drawn into said magnet against the tension of said spring.

2. In a cell testing device, the combination with a casing, of contact members located upon the exterior of said casing, a solenoid magnet within said casing, a core adapted to enter said magnet, said casing having a side opening formed therein, a drum mounted directly upon the upper end of the core, said drum bearing strength indicating matter upon its periphery, and a spring which bears between said drum and the magnet, the spring normally tending to eject the core from the magnet, said core being drawn into said magnet against the tension of said spring.

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

EDWIN S. LINCOLN.

Witnesses:

NATHAN B. DAY,
CHAS. F. RANDALL