No. 720,577. PATENTED FEB. 17, 1903.

E. R. GILL.

ELECTRIC BATTERY.

APPLICATION FILED JUNE 26, 1900.

NO MODEL. 2 SHEETS—SHEET 1.

Fig. 1.

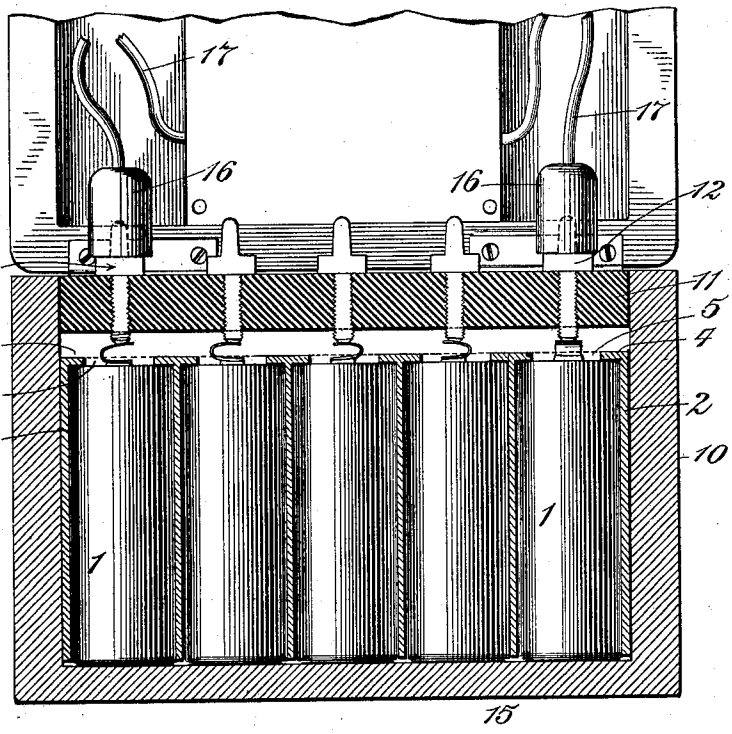
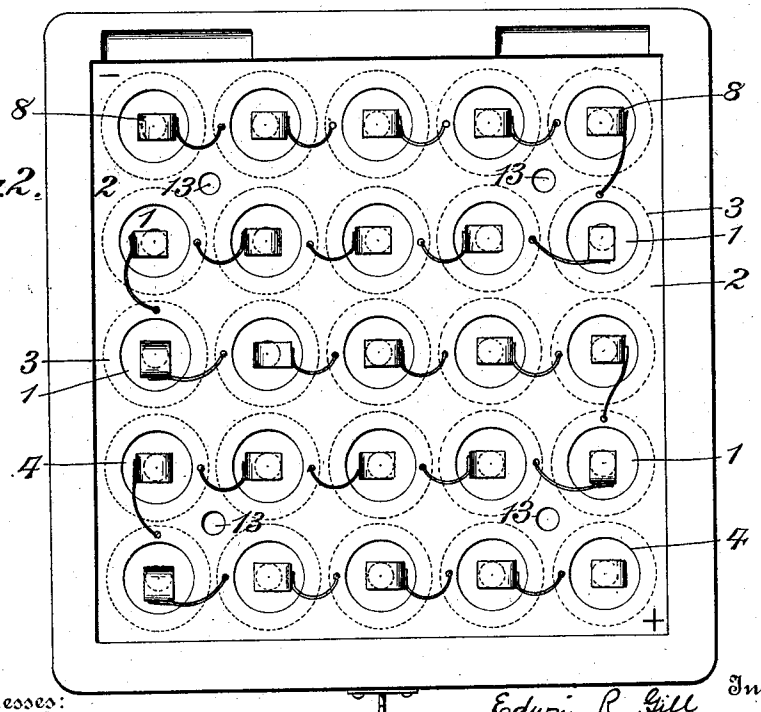


Fig. 2.



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ELECTRIC BATTERY.

APPLICATION FILED JUNE 26, 1900.

NO MODEL. 2 SHEETS—SHEET 2.

Fig. 3.

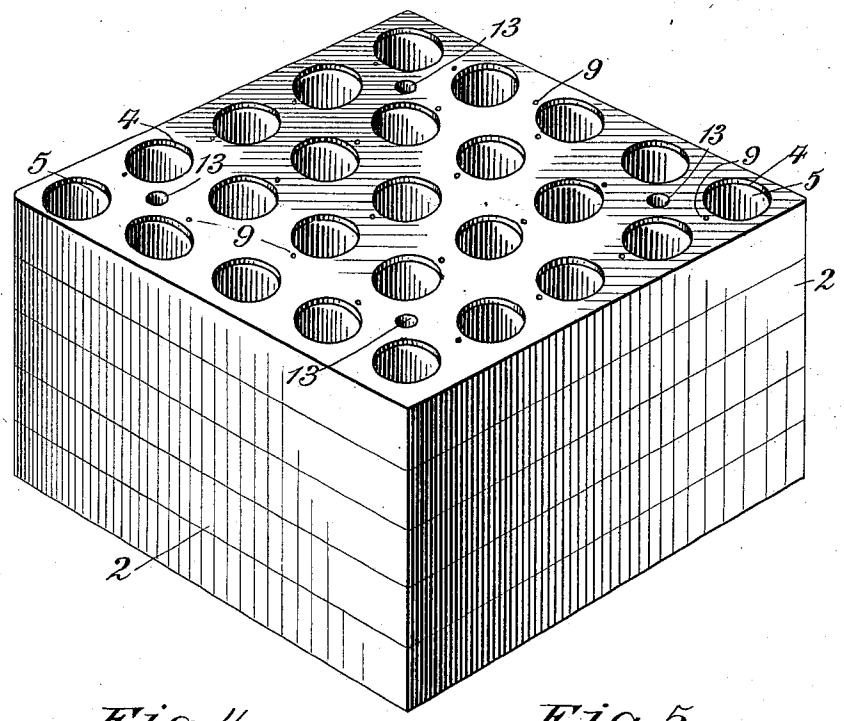


Fig. 4.

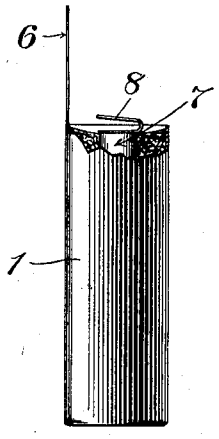
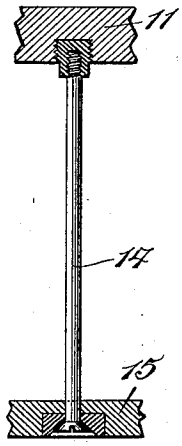


Fig. 5.



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UNITED STATES PATENT OFFICE.

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ELECTRIC BATTERY.

SPECIFICATION forming part of Letters Patent No. 720,577, dated February 17, 1903.

Application filed June 26, 1900. Serial No. 21,680½. (No model.)

To all whom it may concern:

Be it known that I, EDWIN R. GILL, a citizen of the United States, residing in the city, county, and State of New York, have invented a certain new and useful Improvement in Electric Batteries, of which the following is a specification.

My present invention has relation to an improved arrangement of batteries particularly useful for making measuring tests on electric circuits.

My invention is illustrated in its preferred form in the accompanying drawings, wherein—

Figure 1 is a sectional view of the case and retaining-block, showing the cells in side elevation. Fig. 2 is a top plan view of the same, the cover and terminal plate being removed. Fig. 3 is a perspective view of my preferred retaining-block. Fig. 4 is a preferred form of dry battery-cell for use in my arrangement, and Fig. 5 is a detail view of the preferred means for holding the various parts of my device together.

The cells for my improved device are shown at 1, and they are held in place by the retaining-block 2, the preferred construction of which is shown best in Fig. 3. The block 2 is formed of a number of slabs glued together with the grain of each running at right angles to that of its neighbor's. The slabs having been glued together are bored from beneath with holes 3 of such diameter as to snugly inclose the cells 1. It is to be understood that the proportion and the number of apertures shown in Fig. 3 are not essential features of my invention. As shown in Fig. 1, these holes are not carried entirely through the block 2, but a thin covering 4 is left at the top, through which an aperture 5 is subsequently bored. The depth of each cavity thus formed is such that when a cell 1 is pushed in so as to bear on the rim 4 it projects slightly beneath the block.

The battery-cells are preferably of the dry type and may be of any known character. Each cell is inclosed in the usual metallic cup, usually of zinc, which forms one electrode, and a connecting-wire 6 is preferably electrically attached to the cup, projecting above it, as shown in Fig. 4. To the other electrode, usually of carbon 7, is attached a contact-spring 8. In adjusting each cell within its cavity 3 the wire 6 is threaded through an appropriate eyehole 9 in the rim 4, and the cell is pushed home until the spring 8 projects through the aperture 4. (See Fig. 1.) The wire 6 of each cell, beginning at one end of the series, is soldered to the spring 8 or otherwise electrically connected to the opposite electrode in the next cell. As shown in Fig. 2, I prefer to make these connections by proceeding down one row and up the next until all the cells in the set are united in a single series in a permanent manner.

The means whereby the parts of my device are held together and whereby the desired connections may be conveniently made are as follows: The main casing 10, preferably provided with a hinged lid 11, is of such dimensions as to snugly inclose the retaining-block 2. Over the retaining-block there is a terminal-plate 11, of hard rubber or other insulation, through which plate the terminal-pins 12 are made to project, preferably screwing into the plate, as shown in Fig. 1. These pins 12 extend beneath the plate 11 to make contact with the respective springs 8 on the cells, there being one pin 12 over each cell. The retaining-block 2 is pierced appropriately, as by holes 13, and through these holes project the shanks of screws or bolts 14, screwing at their tops into the plate 11, and thereby drawing said plate down toward the bottom 15 of the case 10. (See Fig. 5.) By this means the whole group of terminal-pins is drawn down, so that they all exert the same pressure upon the contact-springs 8, each cell being thereby held to its place vertically by the plate 11, while the block 2 confines all the cells horizontally. Each terminal-pin 12 is appropriately shaped above the plate, so that the bored connecting-tips 16 may fit upon any two pins desired. These tips carry current in the usual way by means of conductors 17 to the exterior terminals of the box.

It will be evident that by the use of the devices above set forth connections may be quickly made between any two cells in the total series, thus obtaining the potential desired, while at the same time all interior connections are permanently soldered save at two

points, thus reducing to a minimum the internal resistance and the danger of variations in such resistance due to temporary contacts.

The construction of my device may be varied in a number of respects without departing from the scope of my invention, and I am not to be understood as limiting myself to the precise details shown and described.

What I claim is—

1. In a test set, a retaining-block containing cavities opening at one surface of the block, battery-cells in said cavities projecting slightly beyond their orifices, and means operating by spring tension for holding said cells in place, substantially as described.

2. In a test set, a number of battery-cells, a retaining-block provided with cavities in which said cells are placed, said cavities being open at one end to receive said cells and having smaller apertures at their opposite ends, and means projecting through said latter apertures for making electrical connection with said cells.

3. In a test set, a retaining-block containing cavities surmounted by pierced rims or covers; in combination with cells fitting said cavities, a spring-terminal on one electrode of each cell adapted to project above each rim or cover, and a conductor connected to the opposite electrode of each cell, and threaded through the rim over said cell, substantially as described.

4. In a test set, a retaining-block, battery-cells in said block, contact-springs on each cell, a terminal-plate, terminal-pins in said plate, one over each cell, and means for pressing said plate and group of pins down upon said contact-springs.

5. In a test set, a group of battery-cells, connections from cell to cell whereby the same are kept permanently in series connection, a group of terminal-pins, one for each cell, means for constantly pressing said pins down upon said cells for making electric connection therewith, and connecting-tips for bringing any two of said terminal-pins into the circuit to be tested.

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