

F. B. SMITH.
BATTERY.

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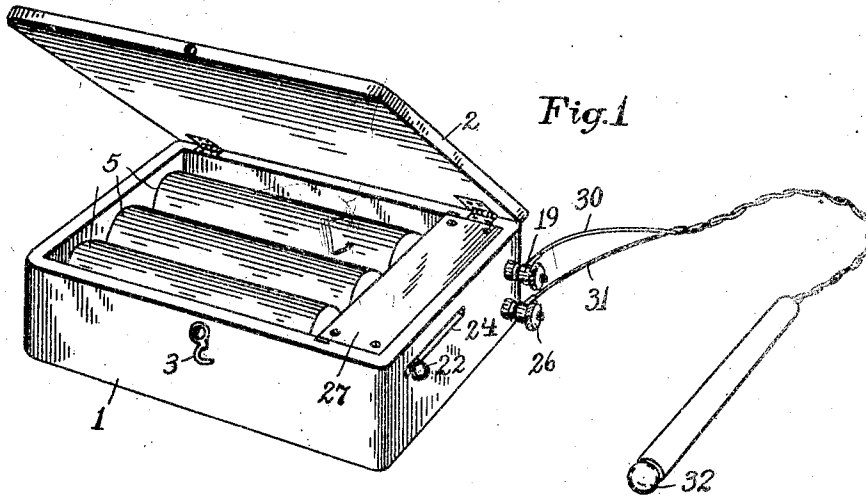


Fig. 1

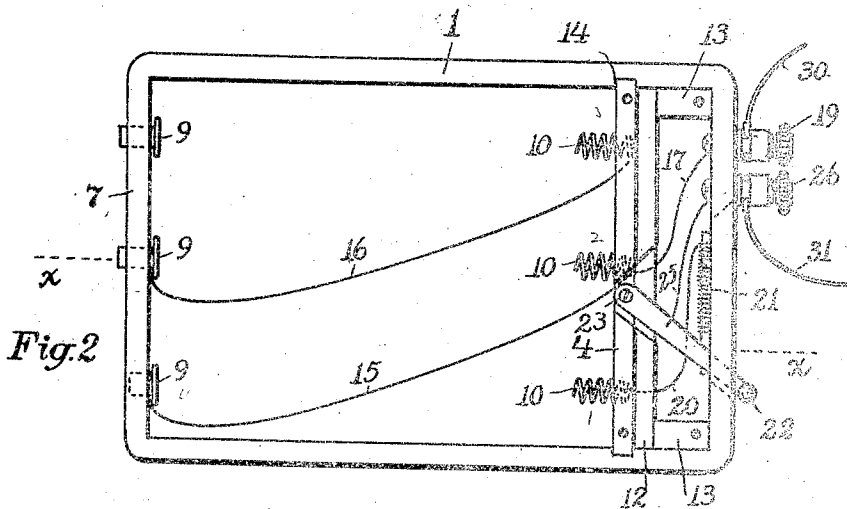


Fig. 2

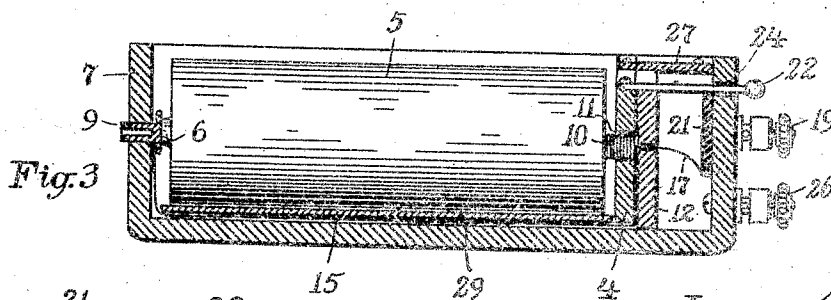


Fig. 3

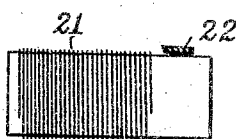


Fig. 4

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BATTERY.

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To all whom it may concern:

Be it known that I, FRANK BOWER SMITH, a subject of the King of Great Britain, and a resident of the city of Malden, in the county of Middlesex and Commonwealth of Massachusetts, have invented certain new and useful Improvements in Batteries, of which the following is a full, clear, and exact specification.

10 The small electric lights actuated by portable batteries, used by physicians, are open to the objection of frequently getting burned out. This I find is caused by the user's coupling the smaller lamps with the same battery power as the largest lamps. To prevent this, I have devised a battery containing several dry cells and so connected with a resistance as to enable the power to be instantly varied to suit the lamp to be used.

20 Referring to the drawings forming part of this specification, Figure 1 is a perspective view of a battery embodying my improvements. Fig. 2 is a plan view of the same. Fig. 3 is a section of the battery through X—X in Fig. 2. Fig. 4 is a detail view of the rheostat employed.

The battery case 1 is provided with a hinged cover 2 and a suitable locking device, as the hook 3. Near one end of the case is a transverse partition 4 between which and the farther end of the case the dry cells 5 are placed. These cells are cylindrical, each having its ends metallic and connected with the respective poles thereof, one of the ends having a contact lug 6.

30 In the end 7 of the case are preferably three spaced contacts 9 positioned to meet the contact lugs 6 of as many cells; and projecting from the partition 4 are three helical springs 10 located similarly to the contacts 9. Between a contact 9 and its opposing spring 10, a battery cell 5 is placed by pressing its base against the end of the spring until the latter is sufficiently compressed to permit the contact lug 6 to be brought down into terminal engagement with the contact 9, with the cell lying upon the bottom of the case.

50 The springs 10 are each seated in a hole 11 in the partition 4 and rest against a false partition 12 kept in place by blocks 13 at its ends, the partition being received in grooves 14 formed in the front and back respectively of the case.

60 The wiring of the springs and contacts is as follows: The first contact 9 relative to the case-front, is connected by a wire 15 with the

second spring 10; and the second contact is connected by a wire 16 with the third spring. From the second spring a wire 17 passes to a binding post 19, and from the first spring 10 a wire 20 joins with an end of a resistance 21. Moving over the resistance 21 is a switch arm 22 pivoted at its inner end 23 to the partition 4, and extending to the exterior of the case through a slot 24 shown in Fig. 1. A wire 25 joins the switch arm with a binding post 26.

When the switch arm is positioned as shown in Fig. 2, that is, with its outer end nearest the case-front, it is out of contact with any of the coils of the resistance; but as it is swung rearward it comes into touch with one of the coils and then successively cuts out more and more of the coils until it reaches the one directly connected with the wire 20 and so cuts out all resistance.

70 I prefer to screw a cover 27 over the space embraced between the partition 4 and the nearer end of the case, as indicated in Figs. 1 and 3, for the better protection of the wiring; and to lay a false bottom 29 over the wires 15, 16.

The operation is as follows: The three cells being in place as hereinbefore described, the terminals 30, 31 of a cable connected with a small electric lamp 32, are put into engagement with the binding posts 19, 26. The switch arm 22 is now moved along into engagement with the resistance 21 causing the lamp to begin a slight glow, and is further advanced until the lamp shines with its maximum intensity.

80 As thus coupled up, the electric lamp 32 is actuated by one cell alone,—the one next the front of the case,—the current passing from the cell through the spring 10 in contact therewith, through the wire 20, resistance 21, switch arm 22, wire 25, binding post 26, terminal 31, lamp 32, terminal 30, binding post 19, wire 17, spring 10, wire 15 and contact 9, back to the other pole of the cell.

90 Hence, since the light will most naturally be connected up with the binding posts, and since but one cell is in circuit therewith, there can be no danger of burning out even the smallest ones. If a larger lamp is to be used, its terminal 30 is removed from the binding post 19 and thrust into the tubular end of the contact 9 of the second cell. Current now passes from said cell to said contact, thence through the terminal 30, the light 32, terminal 31, binding post 26, wire

25, switch arm 22, resistance 21, wire 20, spring 10, the nearest cell 5, its contact 9, the wire 15, spring 10, and back to the cell from which the current started.

5 If a still stronger lamp is to be used, the terminal 30 is introduced into the contact 9 at the rear of the case, and in the same manner as just described, the current will be taken from all three cells, the switch arm 10 and resistance being in control of each of the three combinations.

In case the smaller lamps are used a large proportion of the time, it is well to change the front and rear cells after a time so that 15 the more nearly exhausted front one may be replaced by the less used rear one.

Supplied with this battery, a physician can at a moment's notice bring into use any type of the small incandescent bulbs which 20 he may need for the examination of his patient's throat, nasal passages and other portions of his internal organism, and which will be almost incapable of burning out the lamps, even of the smallest candle power.

25 What I claim is:

1. A battery comprising a case having contacts adapted to receive dry cells in circuit with the contacts, a resistance in circuit with one of the contacts, a binding post, a 30 switch arm cooperating with said resistance and in electric circuit with said binding post, a second binding post, electric connection between the second binding post and one of the contacts not in circuit with the 35 resistance, and electric connection between the second-named contact and a contact adapted to engage one pole of a cell whose other pole engages the first named contact, there being a binding-post contact disposed 40 to engage a pole of a cell while the other pole is in engagement with the second-named contact.

2. A battery comprising a case adapted

to receive a plurality of dry cells, a resistance, a contact in circuit with said resistance, a switch arm movable in touch with 45 said resistance, a binding post in circuit with said switch arm, a second contact, a second binding post in circuit with the second contact, a third contact, a fourth contact adapted 50 to receive a dry cell between it and the first contact and in circuit with both, a connection between the fourth contact and the second contact, a fifth contact adapted to receive a dry cell between it and the second 55 contact and in circuit with both, a connection between the fifth contact and the third contact, and a sixth contact adapted to receive a dry cell between it and the third contact, the fifth and sixth contacts being 60 each a binding post.

3. A battery comprising a case, a transverse partition near one end thereof, the partition having a plurality of holes through 65 it, a second partition in contact with the first partition and between it and the nearer end of the case, a helical spring in each hole abutting against the second partition, a rheostat within the space included between 70 the second partition and the nearer end of the case, binding posts supported by said end, a switch arm pivoted to the partitions and externally operative, wiring between one of said springs and the rheostat, a second of said springs and one of the binding 75 posts and between the switch arm and the other binding post, stationary contacts being provided at the opposite end of the case between which contacts and said springs suitable dry cells can be introduced, 80 and wiring between certain of the contacts and an equal number of said springs.

In testimony that I claim the foregoing invention, I have hereunto set my hand this 24th day of April, 1917.

FRANK BOWER SMITH.