E. ARMELIN.

CONNECTION WITH DRY BATTERIES.

APPLICATION FILED SEPT. 14, 1918.

1,299,813.

Patented Apr. 8, 1919.

Fig. 1.

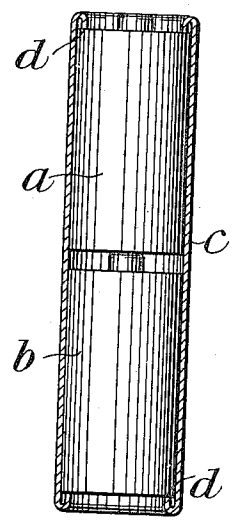


Fig. 2.

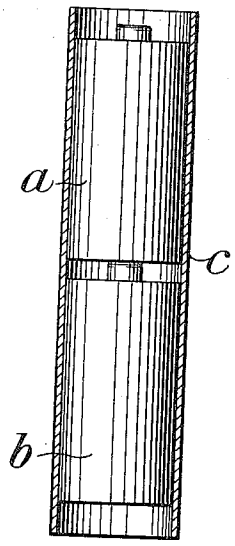


Fig. 3.

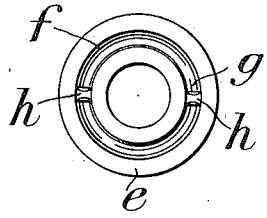
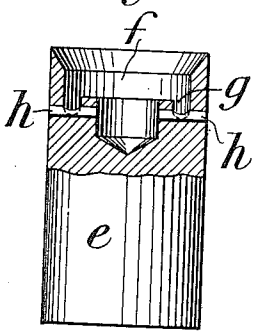


Fig. 4.



Witnesses.

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UNITED STATES PATENT OFFICE.

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CONNECTION WITH DRY BATTERIES.

1,299,813. Specification of Letters Patent. Patented Apr. 8, 1919.

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To all whom it may concern:

Be it known that I, EDOUARD ARMELIN, a citizen of the Republic of France, residing at "Clovelly," The Shrubberies, South Woodford, Essex, England, have invented new and useful Improvements in or in Connection with Dry Batteries, of which the following is a specification.

My invention relates to dry batteries and to that class of battery, such as is employed in connection with electric torches and the like, and comprising two or more cells which are connected together in series in a paper or like case or cartridge.

In such batteries as heretofore made, the usual practice is to place the two or more cells composing a battery, loosely in the paper cartridge or case, the ends of which are left open, the result being that there is a liability of the cells falling out of the case or cartridge, and of becoming separated from one another thereby breaking the electrical connection between them. In some cases to obviate this defect the adjacent terminals of the individual cells are permanently connected by means of a piece of flexible wire, but this construction is expensive, requires skilled labor and is not altogether satisfactory.

Now, according to my invention, the object of which is to provide simple and efficient means for obviating the above described difficulties, I insert the two or more cells loosely in the paper or like case or cartridge, which is made of such a length, that it projects somewhat from either end of the inserted cells, the projecting ends being then turned over, so as to form at each extremity an internal shoulder or flange which bears against the end of the cells and securely retains the latter within the cartridge.

Any suitable means may be made use of for turning or spinning over the projecting ends of the case or cartridge; for example, I may introduce the end into a tubular tool having one or more radially arranged pins against which the end of the cartridge bears, the tool and cartridge being then caused to rotate relatively to one another, so that the end of the latter is turned or spun over when applied against the pin or pins.

To enable my invention to be fully understood I will describe it by reference to the accompanying drawing, in which:—

Figure 1 is a sectional elevation of a battery construction according to my invention.

Fig. 2 is a view similar to Fig. 1 but showing the cartridge before the ends are turned or spun over.

Fig. 3 is a plan view of a convenient tool for spinning over the ends of the case; and

Fig. 4 is a sectional elevation thereof.

a and *b* indicate the two dry cells which constitute the battery, and *c* is the paper or like case or cartridge into which the two said cells *a* and *b* are introduced, with their opposing terminals in electrical contact. The case or cartridge *c* is of such a length that its ends project beyond the extreme ends of the pair of dry cells, as clearly shown in Fig. 2, and these ends of the case are turned or spun over so as to form internal shoulders or flanges *d*, Fig. 1, which bear against the outer ends of the cells *a*, *b* and securely retain the latter within the case.

As above stated, any suitable apparatus or means may be employed for spinning or turning over the ends of the case, and a convenient tool for the purpose is illustrated in Figs. 3 and 4. This tool comprises a cylindrical shank *e* one end of which is hollow, so as to form a tubular recess *f* with an annular groove *g* at its bottom. Extending radially through the annular groove *g* are two pins *h*. The tool is employed as follows, that is to say, it is fixed in a lathe such that it can be rotated and the end of the case *c* is inserted into the recess *f* which is of a diameter to receive it, its extremity extending into the annular groove *g*. If, now, the case *c* be pressed against the radial rotating pins *h*, the latter will turn or spin over the end thereof in the manner above described.

By my invention not only is the appearance of the finished article enhanced, but the durability and lasting power of the cells is also increased, particularly in cases

where the spinning operation is effected under heat or the ends of the proper cartridge or case have ben previously treated with paraffin wax or the like, as the said spinning operation hermetically seals the battery.

Claim:

A dry battery comprising a tubular casing having open ends, and a plurality of cells located in said casing, the casing having its tubular extremities bent inwardly to form shoulders which engage opposite ends of two cells and maintain the cells in electrical contact.

EDOUARD ARMELIN.