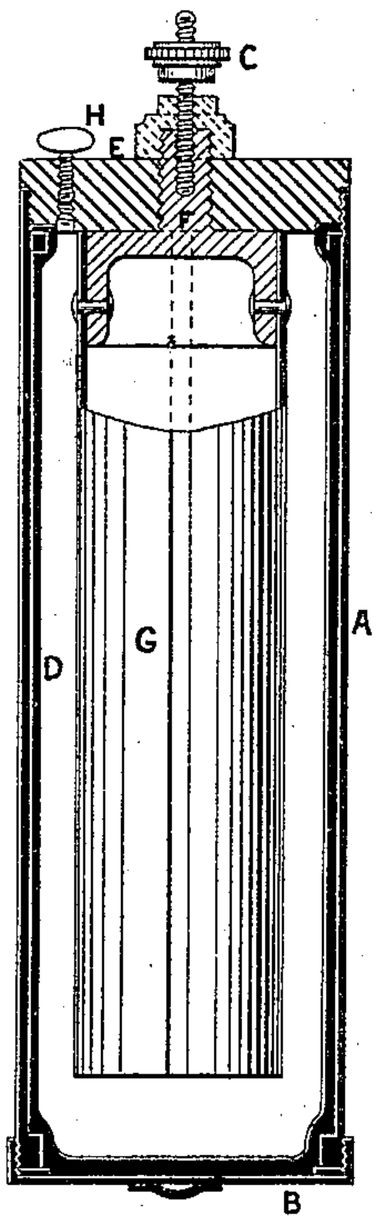
(No Model.)

J. MACKENZIE.

PORTABLE VOLTAIC BATTERY.

No. 270,551. Patented Jan. 9, 1883.



Witnesses.

J. A. Rutherford

George H. Rea

Inventor.

James Mackenzie.

By James L. Norris.

Atty.

UNITED STATES PATENT OFFICE.

JAMES MACKENZIE, OF OSNABURGH STREET, COUNTY OF MIDDLESEX, ENGLAND.

PORTABLE VOLTAIC BATTERY.

SPECIFICATION forming part of Letters Patent No. 270,551, dated January 9, 1883.

Application filed November 9, 1882. (No model.) Patented in England September 21, 1882, No. 4,512.

To all whom it may concern:

Be it known that I, JAMES MACKENZIE, a citizen of England, residing at Osnaburgh Street, in the county of Middlesex, England, have invented an Improved Portable Voltaic Battery, (for which I have obtained Provisional Protection in Great Britain, No. 4,512, bearing date September 21, 1882,) of which the following is a specification.

My invention relates to the construction and arrangement of a chloride-of-silver battery-cell so as to be powerful in its action, tight against leakage, and conveniently portable.

The accompanying drawing is a vertical section of my improved cell.

A is a cylindrical tube, of copper, brass, or other suitable metal, which is fitted at one end with a cap, B, of the same metal, that can be screwed onto the tube, with a ring of caoutchouc or other packing material interposed to make the joint tight. Both the tube A and the cap B are plated internally with silver, and on their silvered surface is fixed by fusion a layer, D, of chloride of silver. At the other end of the tube A is screwed a cover, E, made of ebonite or other suitable insulating material. Through the center of the cover E is screwed a zinc pin, F, to the externally-projecting end of which is screwed a binding-screw, C, to take one of the conducting-wires. The internal head of the zinc screw F has fixed upon it by zinc rivets a zinc tube, G, made by simply bending a strip of sheet-zinc into tubular form, so as to leave free passage for the exciting-liquid between the adjacent edges of the zinc. The zinc tube reaches nearly to the bottom of the cell, but does not touch it, and around the tube, between it and the chloride-of-silver lining, there is a clear annular space. In the cover E there is a hole fitted with a plug, H, made of silver or of ebonite or other material that will not be acted on by the exciting-liquid. Through this hole the cell can be charged, and the soundness of the joints can be tested by subjecting the cell to fluid-pressure. The cell being charged with suitable exciting-liquid—such as solution of sodium sulphate, or of sodium chloride, or of zinc chloride—a conducting-wire connected to the zinc pin F and another wire connected to the exterior of the tube A will form an external circuit for the electric current generated in the cell.

The cell constructed as above described, having the internal surface of its tube and cap silvered and coated with chloride of silver, and having its internal zinc tube secured to a zinc pin, presents at each electrode only a single metal, and therefore there is no liability to any cross-polarization. As the cap and cover can be screwed tightly against packing material, the cell can be placed or carried in any attitude without the leakage of any part of its liquid contents.

Having thus described the nature of my invention and in what manner the same is to be performed, I claim—

A portable voltaic-battery cell, consisting of a metallic tube and tightly-closed cap internally silvered and coated with chloride of silver, in combination with a tightly-closed cover of insulating material, through which passes a zinc pin holding a zinc tube, substantially as and for the purposes herein set forth.

In testimony whereof I have signed my name to this specification, in the presence of two subscribing witnesses, this 24th day of October, 1882.

JAMES MACKENZIE.

Witnesses:
OLIVER IMRAY,
JOHN DEAN.