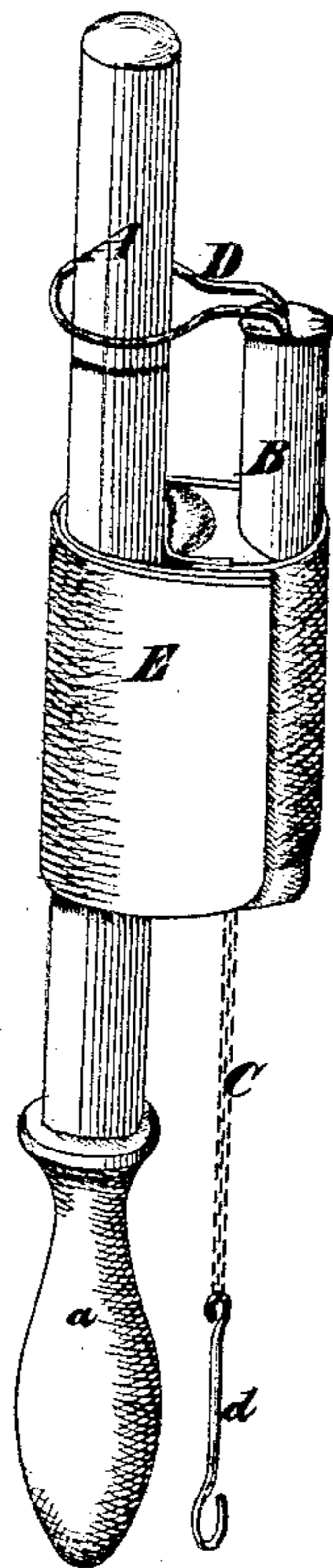


F. H. VARLEY.  
Portable Electrical Apparatus.

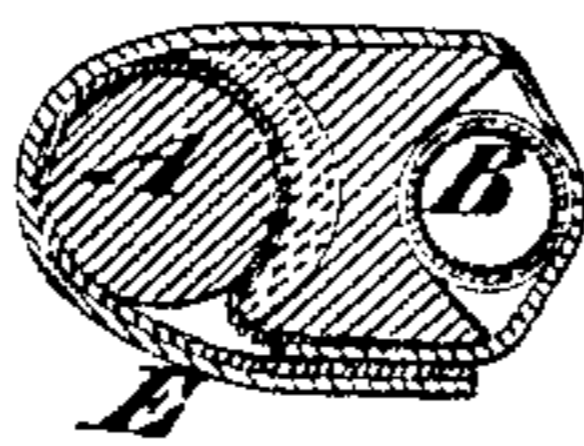
No. 138,455.

Patented April 29, 1873.

*Fig: 1*



*Fig: 2*



*Witnesses:*

*Fred Hunter*  
*Ed. Quack*

*Frederick H. Varley*  
*By his Attorney*  
*Blount & Allen*

# UNITED STATES PATENT OFFICE.

FREDERICK HENRY VARLEY, OF LONDON, ENGLAND.

## IMPROVEMENT IN PORTABLE ELECTRICAL APPARATUS.

Specification forming part of Letters Patent No. **138,455**, dated April 29, 1873; application filed July 22, 1872.

*To all whom it may concern:*

Be it known that I, FREDERICK HENRY VARLEY, of No. 11 Poultry, in the city of London, England, have invented a new Electric Apparatus, termed the "Electric Wand," of which the following is a specification:

This invention consists in the combination of a rod of glass, ebonite, or other dielectric substance, with a rubber and accumulator, combined so as to form a single piece, whereby, if the rod be briskly rubbed with the rubber, electricity will be produced, and conveyed to the accumulator by a ring conductor in electric communication with the latter and surrounding the rod.

In the accompanying drawing, Figure 1 is a perspective view of the device ready for use, and Fig. 2 is a transverse section of the same.

Similar letters of reference indicate corresponding parts in both figures.

A is the rod electric, which may consist of a glass tube, or be made of ebonite, or any other suitable dielectric substance. It may be of any convenient length, and is provided with a handle, *a*; and when made of glass tube the latter is sealed up at one end, and its exterior and interior are then rendered chemically clean, and when perfectly dry its open end is cemented into the handle *a*, and so sealed up, and the interior of the tube is thereby kept perfectly dry. I prefer, generally, to coat the interior of the tube with a dielectric cement of greater inductive capacity than glass, for the purpose of increasing the tube's susceptibility of being charged. B is the accumulator. It is made in the form of a Leyden jar, or in that of an ordinary condenser. When I make it in the form of a Leyden jar I make the inductive surfaces of as uniform insulation as practicable; and by arranging the connections with the inner and outer coatings of the jar so as to have no special focus for inductive polarization, I am enabled to so construct the jar that when overcharged with electricity the latter will not burst through the glass, as it is liable to do in jars of ordinary construction. The neck of the jar I coat with a non-hygro-

metric cement, which may consist of specially-pure sealing-wax, or any other suitable dielectric substance of greater inductive capacity than glass. This jar or accumulator has attached to one of its ends a metallic chain, C, furnished at its free end with a pin, *d*, and to its other end a ring conductor, D, which surrounds the rod A, and conducts the electricity from it to the accumulator. E is the rubber. It consists of a padded cushion or flap, which is attached at one end to the accumulator, and is coated with amalgam, or any other electric excitant.

To use the apparatus, the rod A is held in one hand, and the rubber flap is wrapped around it and held, with the accumulator, in the other hand, the ring conductor having been first slipped over the rod so as to surround it. The rubber is then rubbed briskly on the rod, or the latter is rubbed within the rubber, and the electricity generated is conveyed by the ring conductor to the accumulator, which is speedily charged. If desirable, the rod may now be removed.

To discharge the apparatus, the pin on the end of the chain C is brought near the ring conductor, or, in order to give a shock to any object, to opposite salients thereof.

A great variety of experiments may be performed with this apparatus, such as lighting gas, &c.; in fact, all those which are performed with the ordinary Leyden jar.

When the rod A is made of ebonite the rubber E may be lined with fur instead of amalgam.

### *Claim.*

I claim as my invention—

The rod A, of glass or other dielectric substance, the rubber E, accumulator B, conductor D, chain C, and pin *d*, all arranged and combined for operation, as specified.

FREDERICK HENRY VARLEY.

Witnesses:

THOS. S. GIRDLER, Jr.,  
THOMAS MORGAN.