

(No Model.)

F. M. LYTE.
ELECTRODE.

No. 507,374.

Patented Oct. 24, 1893.

FIG. 1.

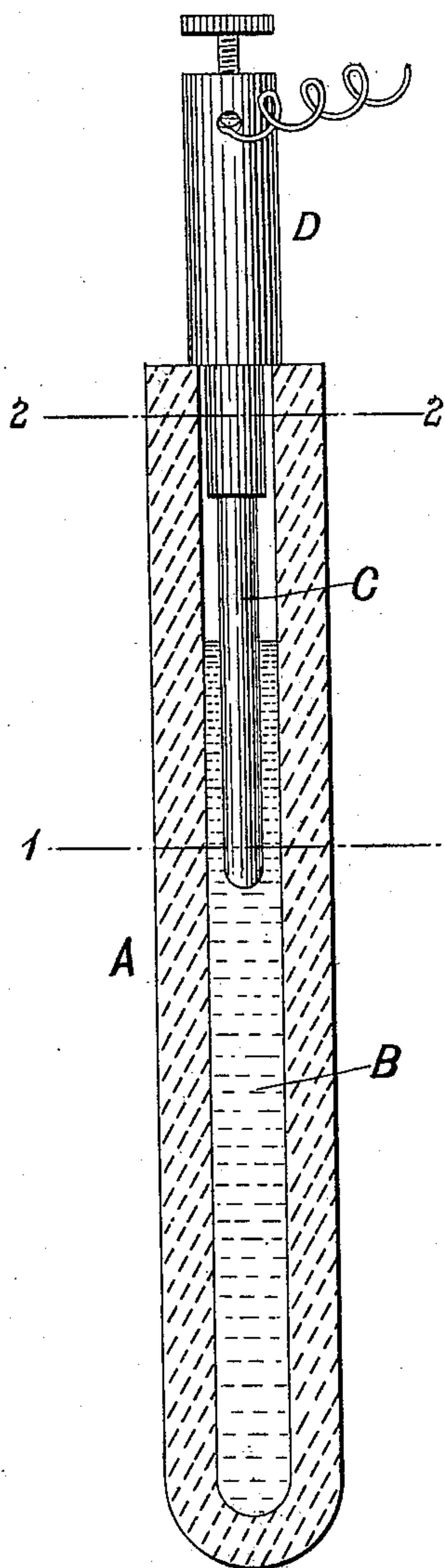


FIG. 3.

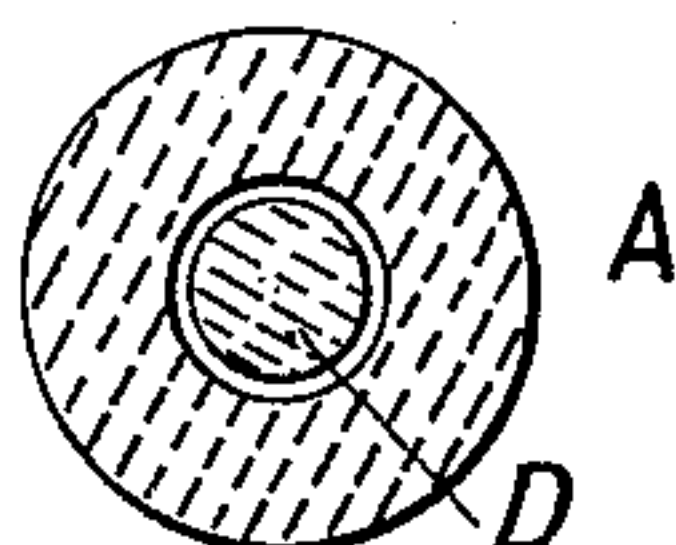
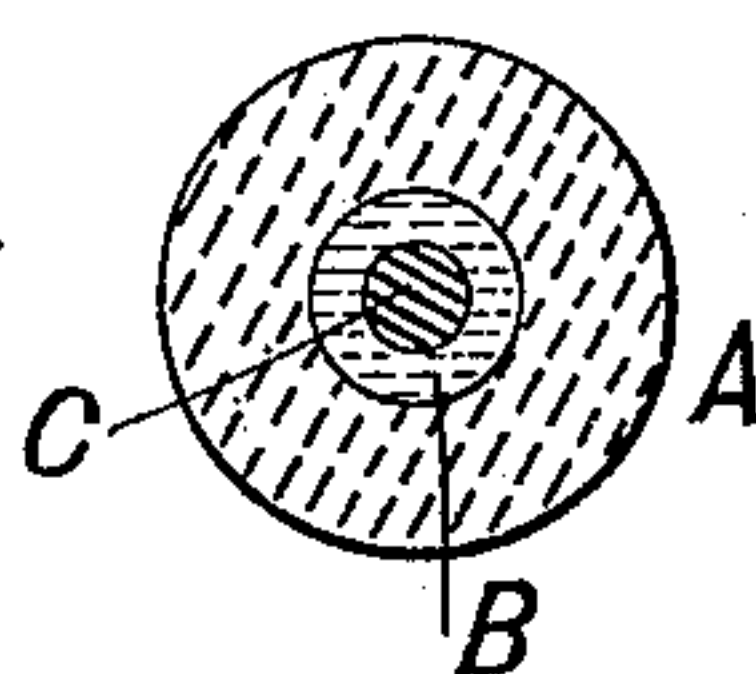


FIG. 2.



WITNESSES.

C. E. Holske
C. Sedgwick

INVENTOR:

F. M. Lyte
BY *Munn & Co*

ATTORNEYS

UNITED STATES PATENT OFFICE.

FARNHAM MAXWELL LYTE, OF LONDON, ENGLAND.

ELECTRODE.

SPECIFICATION forming part of Letters Patent No. 507,374, dated October 24, 1893.

Application filed July 1, 1893. Serial No. 479,363. (No model.)

To all whom it may concern:

Be it known that I, FARNHAM MAXWELL LYTE, analytical chemist, of 60 Tinborough Road, London, England, have invented new and useful Improvements in Electrodes for Use in the Electrolytical Decomposition of Metallic Salts, of which the following is a full, clear, and exact description.

My invention relates to the carbon electrodes used in the electrolytic decomposition of metallic chlorides or other metallic haloids in a fused condition.

The invention has for its object to obtain the advantage, as regards conductivity, of a metal core for the carbon, without the liability of defective electrical contact between the carbon and the core, or of bursting the carbon in consequence of the different ratios of expansion of the metal and carbon, when heated by immersion in the fused salt to be decomposed.

To this end the invention consists essentially in the combination with a hollow carbon electrode closed at bottom and open at top, of a core of metal or alloy which is fusible at the same or at a lower temperature than the metallic salt to be decomposed, so that the core will melt and in the fluid state will make intimate electrical contact with the carbon of the electrode, but will exert no bursting strain thereon in consequence of the expansion of the metal. The terminal of the electrode is put in electrical communication with the fusible core by a conducting rod dipping into the fusible core but entirely free from the carbon. By means of this fusible metallic core, the thickness of the carbon to be traversed by the current may be so much reduced and the electrical resistance so greatly diminished, that the current will easily traverse the carbon throughout its whole area, thereby enabling electrodes of considerable length to be used.

Reference is to be had to the accompanying drawings, forming part of this specification, wherein—

Figure 1 is a vertical section and Fig. 2 a cross section on line 1—1, and Fig. 3 is a cross section on line 2—2 of Fig. 1 of one form of electrode embodying my invention; but it must be understood that my invention is not limited to any particular external or internal form of the electrode.

A, is the carbon electrode in the form of a hollow cylinder closed at the lower, and open at the upper, end but any other form may be adopted provided it is hollow and closed at the lower end. It may either be molded hollow, or be made solid and bored out, and may be made either of retort carbon or of plumbago.

B, is the fusible core of lead, tin, or any other metal or alloy which fuses at the same or a lower temperature than the metallic salt to be decomposed. The fusing point of the metal or alloy of which the core is composed should of course not be so far below the fusing point of the salt to be decomposed, as to render the core liable to be sublimed or volatilized by the heat necessary to fuse the salt. In the case of decomposing fused plumbic chloride, for which this invention is principally intended, I find that lead will answer the purpose.

C, is a rod of difficultly fusible metal, such as copper or iron, attached to the terminal D which is shouldered and fits quite loosely in the upper end of the carbon, so as to exert no bursting strain thereon, or is otherwise supported so as to maintain the rod C in position, the rod, which is of considerably smaller section than the bore of the carbon, plunging into the fusible core B. This rod, if of iron, may be coated with another metal, lead for instance, to prevent corrosion and insure good electrical contact with the fusible core B.

Having now particularly described and ascertained the nature of the said invention and in what manner the same is to be performed, I declare that what I claim is—

1. The combination, with a hollow carbon electrode closed at bottom, of a core of metal

or alloy which is fusible at or below the temperature at which the electrolytic decomposition of a fused metallic salt is to be performed, substantially as specified.

- 5 2. The combination, with a hollow carbon electrode closed at bottom, of a core of metal or alloy which is fusible at or below the temperature at which the electrolytic decomposition of a fused metallic salt is to be performed,
10 and of a terminal conductor of metal, not fusible at that temperature, which is plunged into the fusible core and is free from the car-

bon so as to exert no bursting strain whatever thereon, substantially as specified.

Dated this 16th day of June, 1893.

FARNHAM MAXWELL LYTE.

Witnesses:

T. W. KENNARD,
Clerk to A. M. & Wm. Clark, Patent Agents,
53 Chancery Lane, London.

G. F. WARREN,
Notary Public, 17 Gracechurch Street, London.