(No Model.) 2 Sheets—Sheet 1.

B. TROPP.

ELECTRIC LIGHTER.

No. 500,357. Patented June 27, 1893.

Fig: 2.

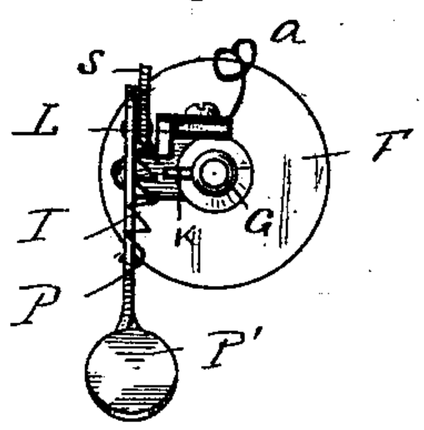

Fig: 1.

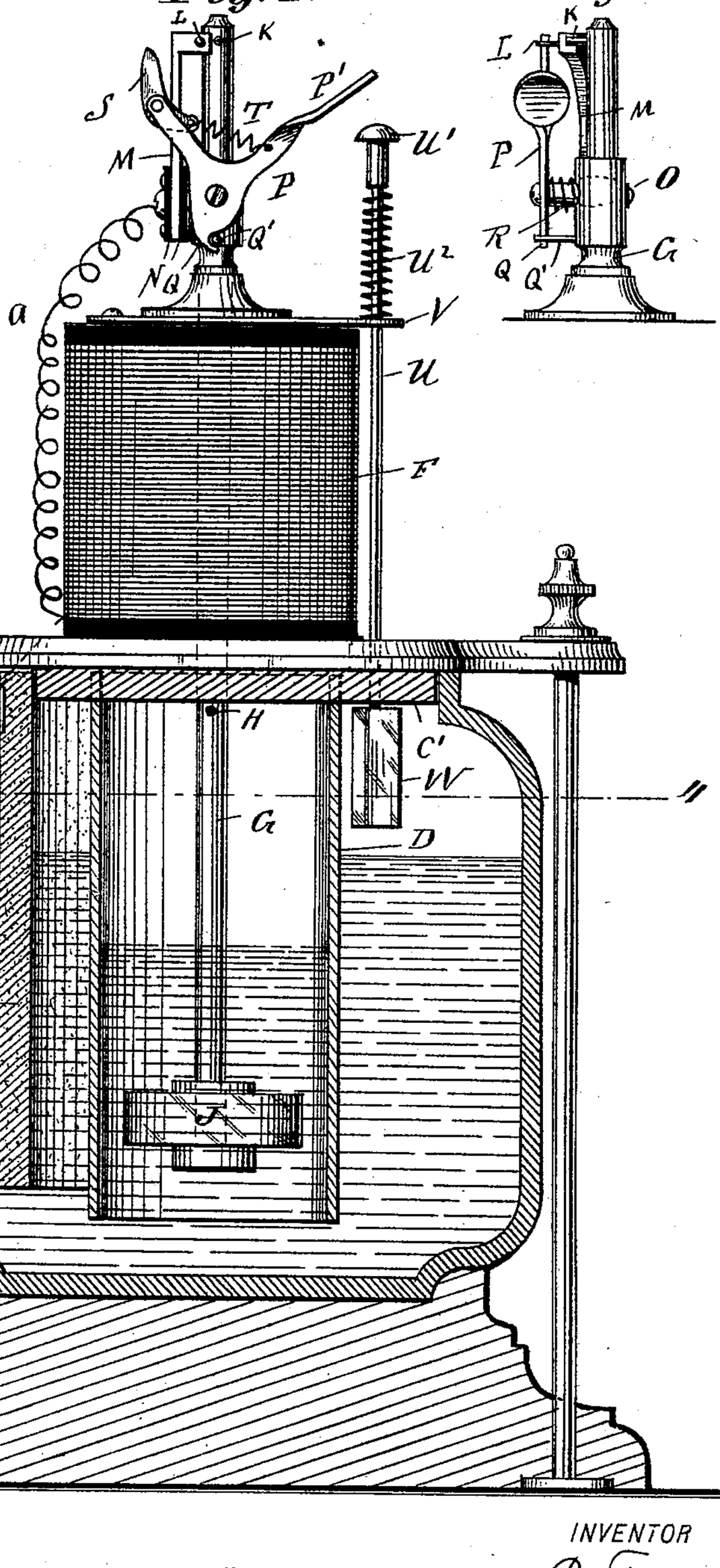

Fig: 3.

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INVENTOR

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ATTORNEYS.

(No Model.) 2 Sheets—Sheet 2.

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Fig: 4.

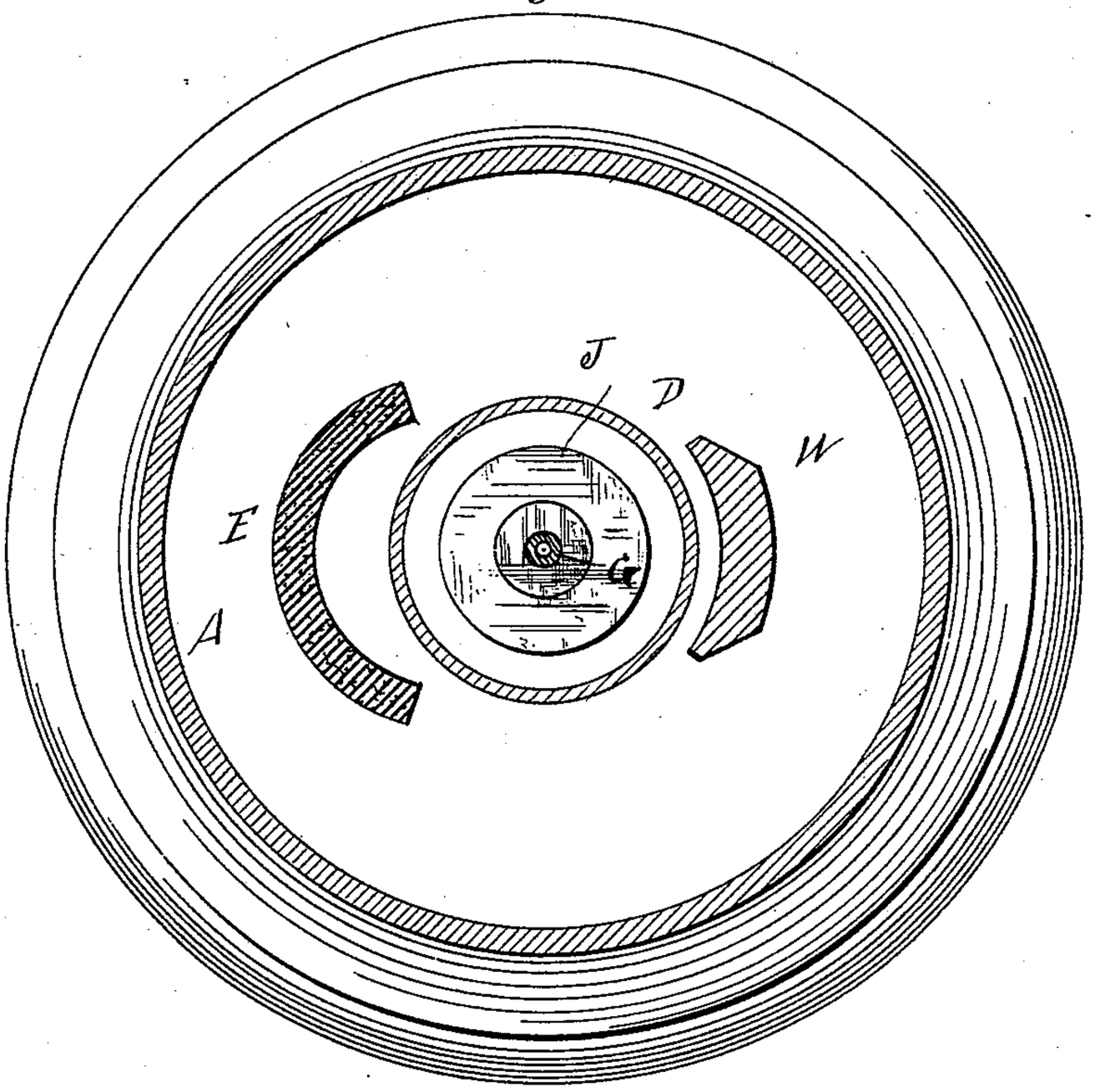
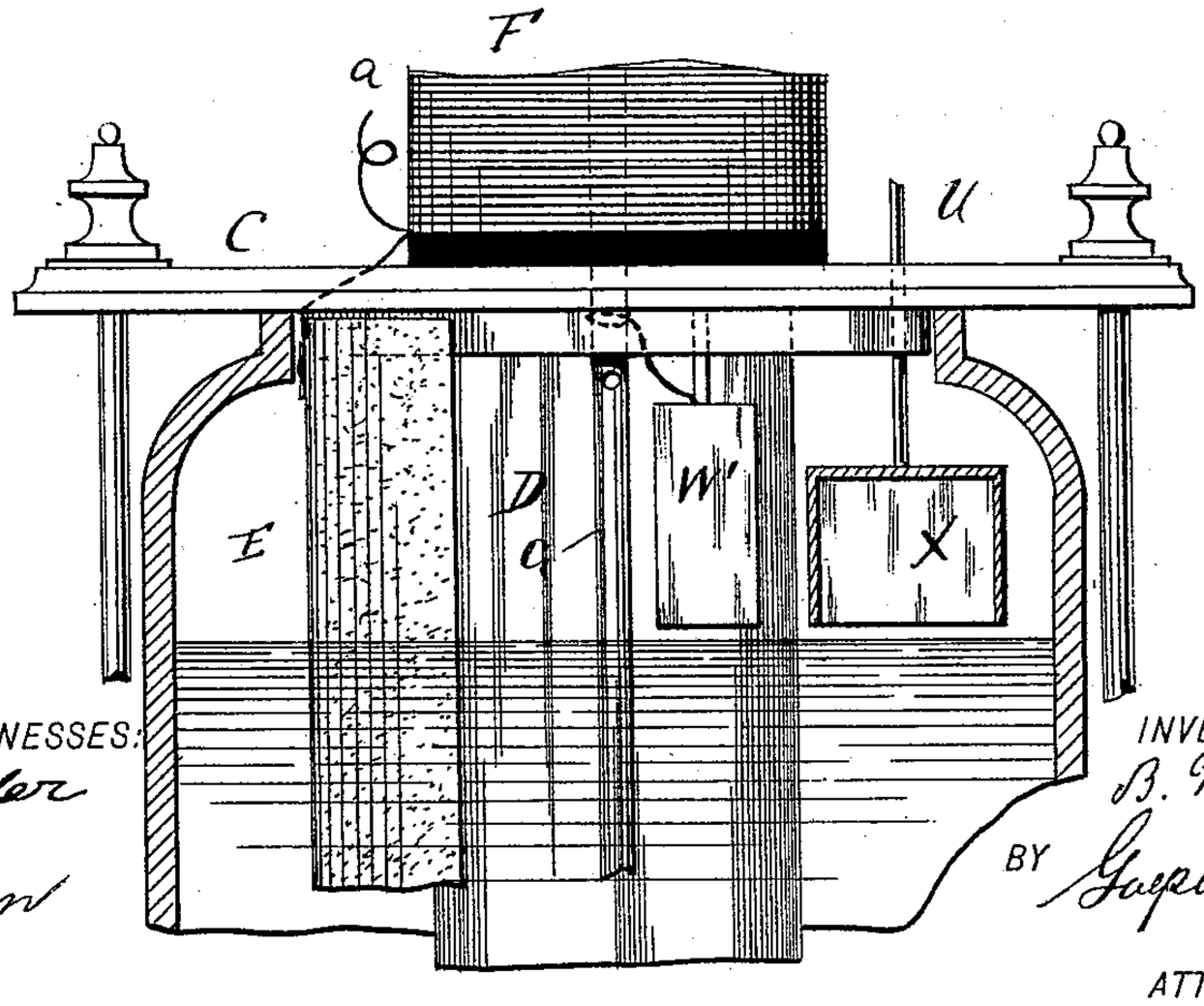


Fig: 5.



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UNITED STATES PATENT OFFICE.

BERNHARD TROPP, OF NEW YORK, N. Y., ASSIGNOR OF ONE-HALF TO GEORGE CURTIS WRIGHT, OF SAME PLACE.

ELECTRIC LIGHTER.

SPECIFICATION forming part of Letters Patent No. 500,357, dated June 27, 1893.

Application filed August 30, 1892. Serial No. 444,498. (No model.)

To all whom it may concern:

Be it known that I, BERNHARD TROPP, a citizen of the United States, and a resident of the city of New York, in the county of New York and State of New York, have invented certain new and useful Improvements in Electric Lighters, of which the following is a specification.

This invention relates to a new and improved electric lighter, which is to be used for lighting cigars, as a blow-pipe for jewelers and for similar purposes.

The invention consists in a lighter constructed with a wet primary battery, means for collecting the gases produced by said battery, burner for said gases, means for conducting the gases from the collecting vessel to the burner, an electric coil and a current breaker at said burner.

The invention further consists in the combination with the above-mentioned parts of an auxiliary zinc and means for bringing said auxiliary zinc in contact with the exciting liquid whenever the current-breaker is operated.

The invention also consists in the construction and combination of parts and details which will be fully described hereinafter and finally pointed out in the claims.

In the accompanying drawings, Figure 1 is a vertical section of my improved lighter, parts being shown in elevation. Fig. 2 is a plan-view of the burner and spark-producing device on the top of the coil. Fig. 3 is a side-view of the same. Fig. 4 is a horizontal-sectional view on the line 4 4, of Fig. 1, and Fig. 5 is a vertical-transverse sectional view of the upper part of the jar, showing a modified construction.

Similar letters of reference indicate corresponding parts.

The jar A, which may be made of glass, porcelain, rubber or any other suitable material, is open at the top and closed at the bottom and is provided with a base B, which if desired may form part of the jar. The top of the jar is closed by a plate C of ebonite, rubber, vulcanized fiber or other suitable material, and provided on its under side with a packing ring C′ fitting in the top of the jar. To the under side of the cover C a cylindrical glass, rubber, or earthenware vessel D is fastened, which is open at its lower end, and adjacent to the same a segmental or maniscus shaped piece of carbon E is arranged which projects from the under side of the plate C, said carbon being arranged outside of the vessel D. A coil F made in the usual manner and provided with the top and bottom plates of insulating material is fastened on the upper surface of the cover C, and through said coil a tube G projects, the upper end of which projects a greater or less distance from the top of the coil F and the lower end of which extends down through the vessel D to near the lower end of the same. Said tube has an aperture H directly below the cover C. A piece of zinc F is fastened to the lower end of the tube G within the vessel D and a short distance above the lower end of the same. From the upper end of the tube G a small burner tube K projects laterally, and adjacent to the same a pin L projects from an arm M that is fastened to the burner end of the tube G and suitably insulated from the same by layers N of insulating material. One end of the wire forming the coil F is connected by the wire *a* with the arm M and the other end of the wire is connected with the carbon E. Within the burner end of the tube G a cock or valve O is arranged, and to the stem of the same the V-shaped lever P is fastened, which is provided at one end with a finger plate P′. Said lever P has a lug Q that can rest against a stop-pin Q′ projecting from the side of the burner tube G under the action of the spring R surrounding the outer end of the spindle of the cock or valve O. To that end of the lever P opposite the one provided with the finger-plate P′ a dog S is pivoted, one end of which is connected by a spring T with the lever P, as shown. A rod U passing through an aperture of the cover plate C and through an aperture in the plate V on the top of the coil F is provided by a helical spring U^2, which presses said rod upward, the head U′ being a short distance below the finger-plate P′ of the lever P when said rod is in raised position. A piece of zinc W is secured to the lower end of said rod U.

The cup A is filled about half full of diluted sulphuric acid. The diluted sulphuric acid

attacks the zinc J, whereby hydrogen gas is produced which gas accumulates in the vessel D, as it cannot escape through the tube G as the same is closed by the cock or valve O. As said gas accumulates it forces down the level of the acid in the vessel D until finally the level of the acid is below the zinc J, when the formation of said gas ceases. As the level of the acid in the vessel D is lowered the level of the acid in the cap A rises and thereby the air surrounding the vessel D is compressed more or less. The finger-plate P′ is pressed down, the cock O is opened and a quantity of the hydrogen gas permitted to pass from the vessel D through the opening H into the tube G and out through the burner-tube K. At the same time the dog S is brought in contact tact with the pin L on the arm M, whereby the circuit is closed, and as said dog S slides off the pin L the circuit is suddenly broken, whereby a spark is produced that ignites the hydrogen gas issuing from the burner-tube K. By pressing down the finger-plate P′ the rod U is forced down and its zinc W is dipped into the acid. As the rod U is in electrical connection with the plate V and tube G, said zinc for the time being increases the current of electricity passing through the coil, and thus a larger spark is produced. As soon as the finger-plate P′ is released the spring R draws the lever P up, closes the cock O and presses the dog S back into its original position. The spring U^2 at the same time raises the rod U, whereby the zinc is lifted out of the acid. As the hydrogen gas in the vessel D is consumed the pressure decreases and the level of the acid in the vessel D rises, the acid can come in contact with the zinc J and more hydrogen gas is produced and so on.

In place of making the zinc W movable, a piece of zinc W′ can be fixed permanently to the under side of the cover C and an inverted cup X can be fastened to the under side of the rod U, so that when said rod U is forced down, the said inverted cup causes the level of the acid to rise, so as to bring the acid in contact with said fixed zinc W′, and thereby the current is likewise increased for producing the spark.

Having thus described my invention, what I claim as new, and desire to secure by Letters Patent, is—

1. In an electric lighter, the combination, with a battery-jar, of a vessel arranged in the same, open at its lower end and closed at its upper end, a carbon element in the battery outside of said inner vessel, a zinc element within said inner vessel, a tube extending upward from said vessel and having a burner-tube, a current-breaker at said burner-tube, a cock or valve in said tube connected with and operated by the current-breaker, and an electric coil connected with the elements of the battery, substantially as set forth.

2. In an electric lighter, the combination, with a battery-jar, of a vessel in the same which is closed at the top and open at the bottom, a carbon arranged in the jar outside of said interior vessel, a zinc element within said inner vessel near the lower end of the same, a tube extending upward from said vessel, an electric coil surrounding said tube and connected with the battery elements, an insulating arm on said tube, a valve or cock in said tube, a lever attached to the spindle of the valve or cock, a dog pivoted to said arm and a spring acting on the arm, substantially as set forth.

3. In an electric lighter, the combination, with a wet primary battery and burner-tube, means for conducting the gases produced by the battery to the burner-tube, a current-breaker at said burner-tube, an auxiliary zinc and means for bringing said auxiliary zinc in contact with the exciting liquid when the current-breaker is operated, substantially as set forth.

In testimony that I claim the foregoing as my invention I have signed my name in presence of two subscribing witnesses.

BERNHARD TROPP.

Witnesses:

OSCAR F. GUNZ,

CHARLES SCHROEDER.