

T. CAILTEAU.
Electric-Gas Lighting Device.

No. 223,578.

Patented Jan. 13, 1880.

Fig. 1.

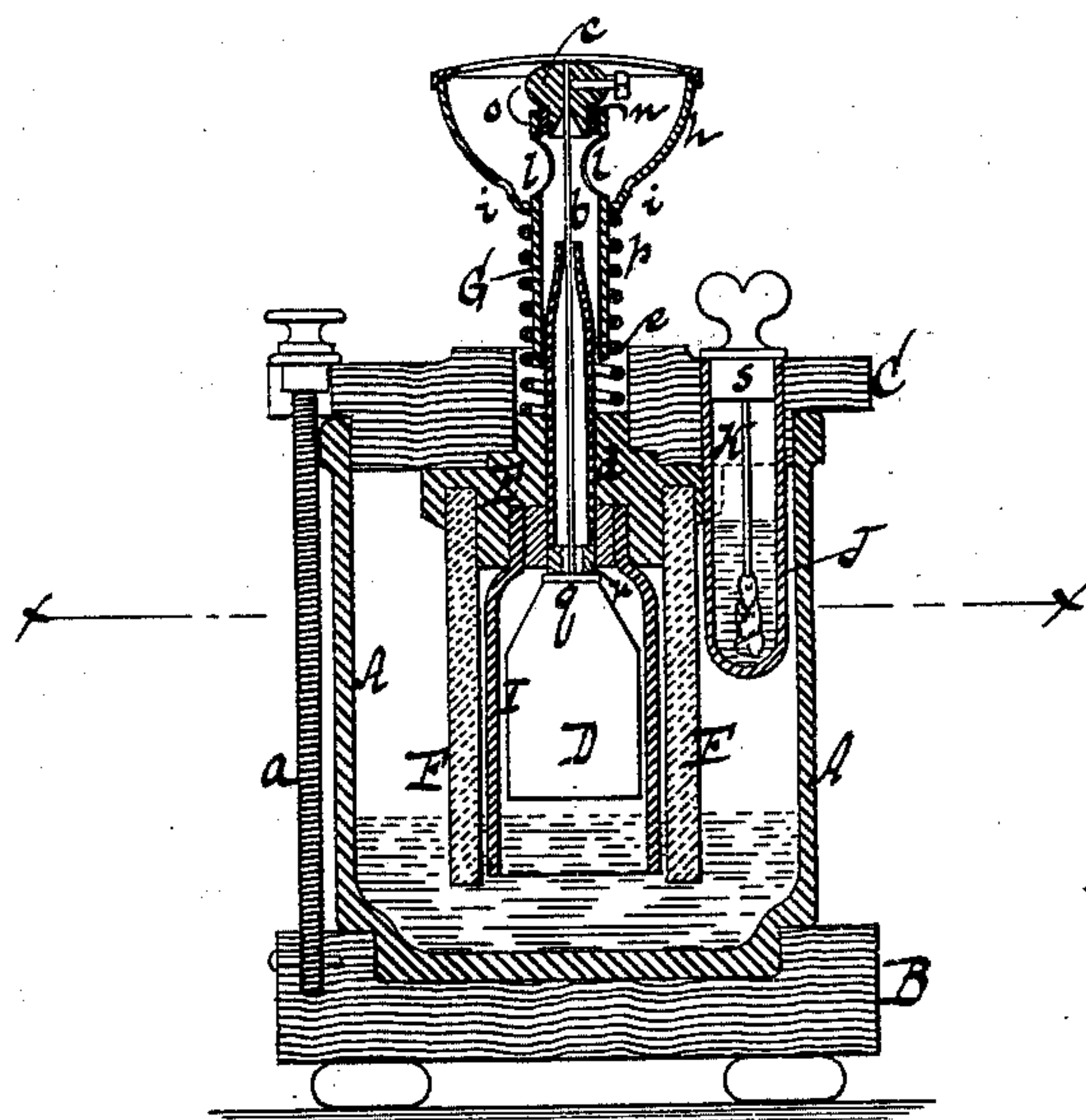
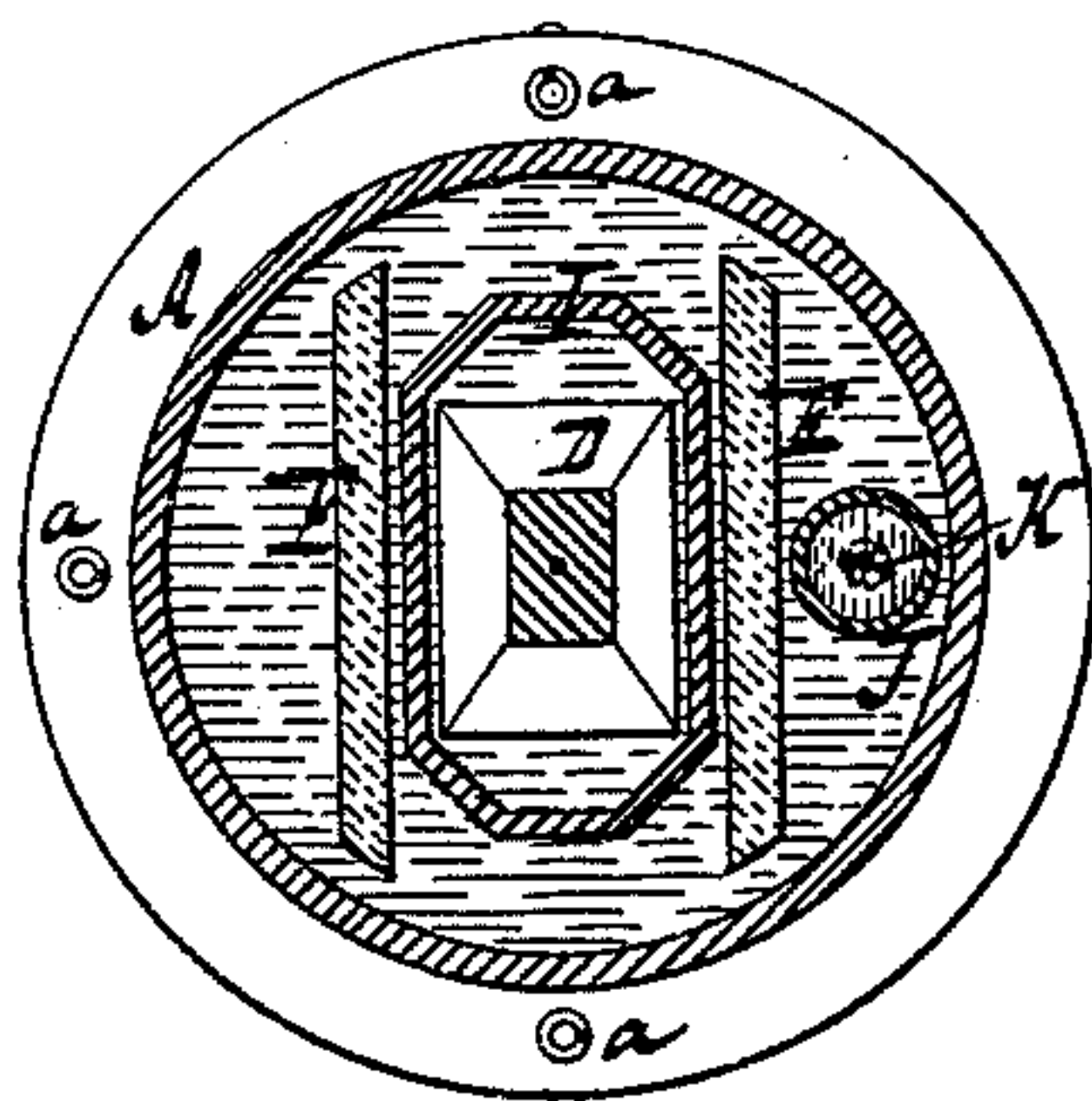


Fig. 2.



Witnesses
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UNITED STATES PATENT OFFICE.

THIMOLÉON CAILTEAU, OF NEW YORK, N. Y.

ELECTRIC GAS-LIGHTING DEVICE.

SPECIFICATION forming part of Letters Patent No. 223,578, dated January 13, 1880.

Application filed November 18, 1879.

To all whom it may concern :

Be it known that I, THIMOLÉON CAILTEAU, of the city, county, and State of New York, have invented a new and useful Improvement in Apparatus for Producing Light, which improvement is fully set forth in the following specification, reference being had to the accompanying drawings, in which—

Figure 1 represents a vertical cross-section of my apparatus. Fig. 2 is a horizontal section thereof in the line *x x*, Fig. 1.

Similar letters indicate corresponding parts.

My invention consists in an apparatus in which an electric spark is produced simultaneously with the generation of hydrogen gas for lighting the gas, as hereinafter fully described, and pointed out in the claims.

The letter A designates a jar, of glass or the like, which is held between a base, B, and a top, C, both of wood or other material which is a non-conductor of electricity, by spring-rods *a*, connecting the base and top; or other suitable means. This jar A is supplied with sulphuric acid and water, as indicated, and a piece of zinc, D, is arranged to dip therein, whereby there is obtained a generator of hydrogen gas.

The zinc element D is attached to the lower end of a vertical slide-rod, *b*, having a head, *c*, at its upper end and working in a tube, *d*, of glass or the like. This tube *d* serves to insulate the slide-rod *b* from a metallic annular head, E, secured to the inside of the jar-top C, and it also forms an outlet for the gas.

The head E is shaped to project up into a central hole, *e*, in the jar-top C, and it supports a galvanic element, F, which has a different electrical quality from the metal used for generating hydrogen gas, and which consists, in this example, of two pieces of carbon. This carbon element F is permanently immersed in the solution in the jar A.

The tube *d* projects above the head E, and on the upper or projecting portion thereof is fitted and slides a metallic sleeve, G, carrying a cup or screen, *h*, the latter having air-inlet holes *i* in its lower part.

The sleeve G projects up into the cup *h*, where it has gas-escape holes *l*, and where it carries a piece, *o*, of platinum wire, constituting an electrode. Around the sleeve G is a coiled

spring, *p*, which rests on the head E, and which bears on the cup *h* with a tendency to force the sleeve in an upward direction.

At its upper end the sleeve G encircles the head *c* of the slide-rod *b*, the same being, however, insulated therefrom by a glass ring, *n*, or other suitable means; and by this arrangement the slide-rod and the sleeve are caused to move in unison.

When either the sleeve G or the rod *b* is depressed against the action of the spring *p*, the zinc element D dips into the solution in the jar A, and the hydrogen gas thus generated discharges into the tube *d*, whence it passes into and through the sleeve to the escape-holes *l*, while at the same time the sleeve G is brought into metallic contact with the head E, and an electric current passes from the carbon element F, through the head and the sleeve, to the electrode *o*, thereby producing a spark for lighting the gas discharging from the generator.

The zinc element D is inclosed by a wall, I, of glass or the like, which is suspended from the head E and dips into the solution in the jar A. This wall I forms a chamber to collect the hydrogen gas as it is generated and to supply the same to the tube or outlet *d*, while it also serves to insulate the carbon element F from the zinc element D.

To the upper end of the zinc element D is attached a disk, *q*, forming a valve, and at the lower end of the tube *d* is a ring, *r*, forming a seat for such valve. When the zinc element D is permitted to rise from the solution in the jar A the valve *q* closes against its seat, and is there held by the action of the spring *p*, so as to automatically check the outflow of gas. The ring *r* is secured in the head E, but is insulated therefrom.

Into a suitable part of the jar-top C is sunken a cup, J, which forms a reservoir for alcohol or other inflammable fluid, and also forms a receptacle for a torch or lighter, K. This torch K has a rigid stem, and is constructed with a head, *s*, which is fitted into the upper end of the cup and serves to close the same.

By placing the stem of the torch K into the cup *h* surrounding the electrode, the parts may be thereby depressed for the purpose of gen-

erating and lighting the gas, as before stated, whereupon the torch, by reason of its position, is caused to take fire.

What I claim as new, and desire to secure by Letters Patent, is—

1. The combination, with the zinc block of a Döbereiner apparatus, of a galvanic element of different electrical quality from that of the zinc, said element being insulated from the zinc block and fastened in the interior of the jar of the Döbereiner apparatus, so as to dip into the acid contained therein, and of an electrode, *o*, which, when brought in metallic contact with the galvanic element while the zinc block is depressed into the acid, produces an electric spark for igniting the hydrogen gas produced by the action of the zinc on the acid, substantially as set forth.

2. The combination, in an apparatus for producing light, of a hydrogen-gas generator working with zinc, sulphuric acid, and water, a carbon element secured in the interior of the jar of the hydrogen-gas generator and dipping into the acid contained therein, and means, substantially as described, for simultaneously

depressing the zinc element so as to dip into the acid, and for producing an electric spark to ignite the gas discharging from the generator.

3. The combination of the cup or screen *h*, sleeve *G*, and spring *p* with the sliding rod *b* and zinc block *D*, all adapted to operate substantially as described.

4. The combination of the cup or screen *h*, sleeve *G*, and spring *p* with the sliding rod *b*, zinc block *D*, and valve *q* secured to the zinc block, all constructed and adapted to operate substantially as and for the purpose set forth.

5. The combination, with the jar-top *C*, of a cup, *J*, extending from each jar-top into the interior of the jar, and a torch, *K*, contained in said cup, all constructed and adapted to operate substantially as described.

In testimony that I claim the foregoing I have hereunto set my hand and seal this 5th day of November, 1879.

THIMOLÉON CAILTEAU. [L. S.]

Witnesses:

W. HAUFF,

CHAS. WAHLERS.