

No. 641,417.

Patented Jan. 16, 1900.

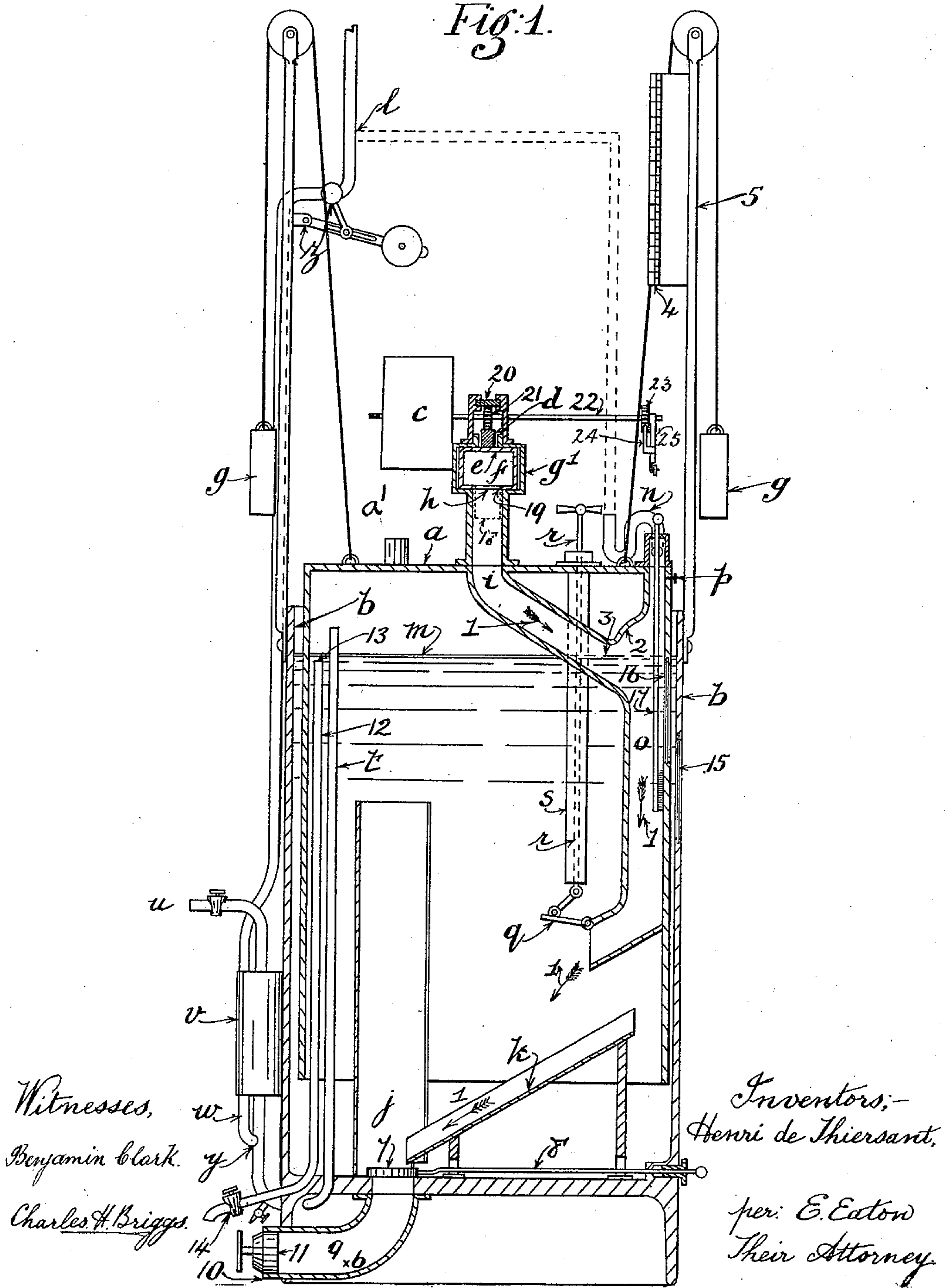
H. DE THIERSANT.  
ACETYLENE GAS APPARATUS.

(Application filed Sept. 6, 1898.)

(No Model.)

3 Sheets—Sheet 1.

Fig. 1.



Witnesses,  
Benjamin Clark.  
Charles H. Briggs.

Inventors,  
Henri de Thiersant,  
per: E. Eaton  
Their Attorney.



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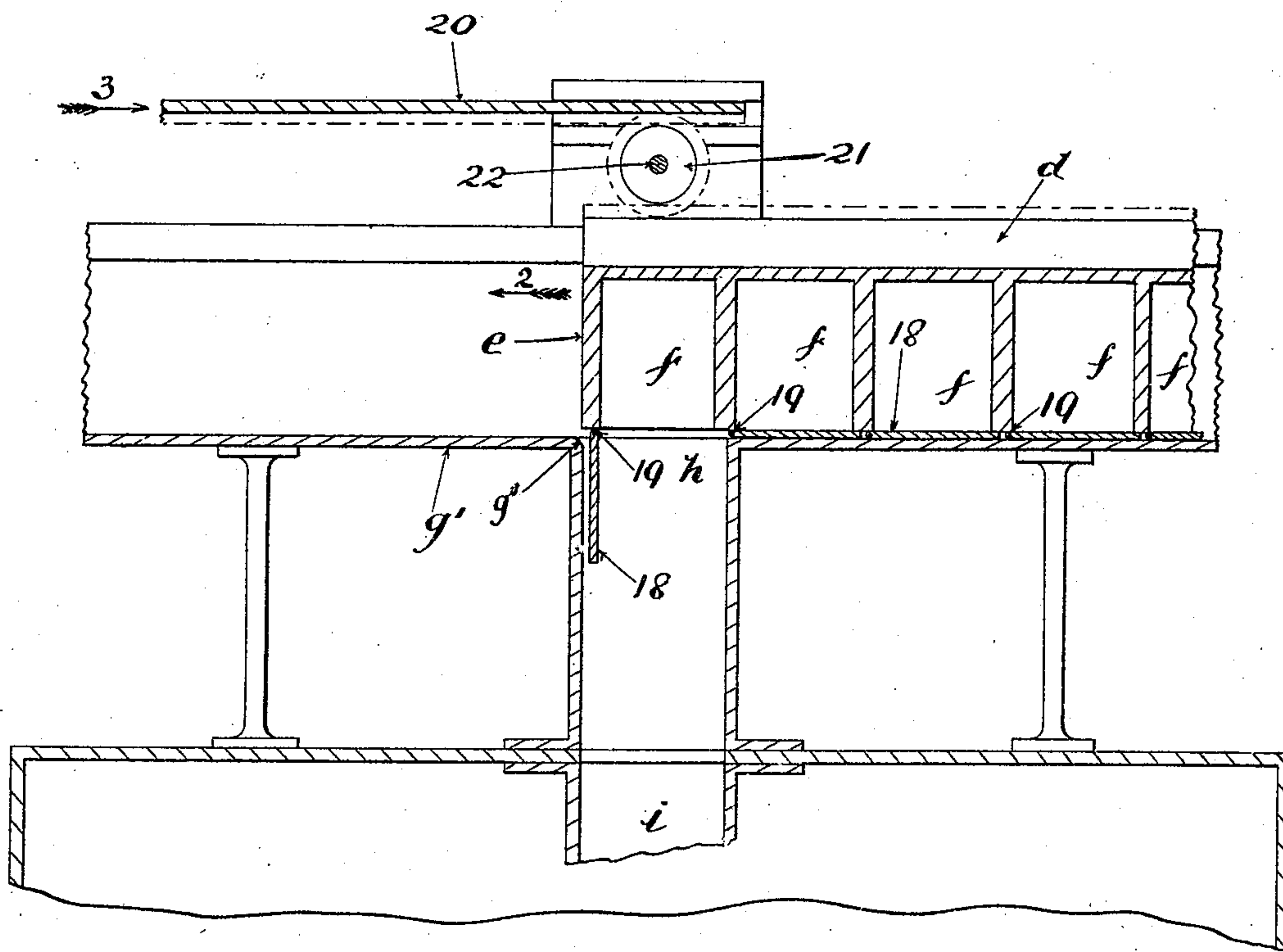
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(No Model.)

3 Sheets—Sheet 3.

*Fig: 3.*



Witnesses,  
*Benjamin Clark*  
*Charles H. Briggs.*

*Inventor*  
*Henri de Thiersant.*  
*per, E. Eaton.*  
*His Attorney.*



# UNITED STATES PATENT OFFICE.

HENRI DE THIERSANT, OF LONDON, ENGLAND.

## ACETYLENE-GAS APPARATUS.

SPECIFICATION forming part of Letters Patent No. 641,417, dated January 16, 1900.

Application filed September 6, 1898. Serial No. 690,285. (No model.)

*To all whom it may concern:*

Be it known that I, HENRI DE THIERSANT, a subject of the Queen of Great Britain, and a resident of London, England, have invented certain new and useful Improvements in Acetylene-Gas Apparatus, (for which I have applied for a patent in Great Britain, No. 4,129, dated February 18, 1898,) of which the following is a full, clear, and exact specification.

This invention relates to a new or improved apparatus for the generation of acetylene gas, the object being to enable the supply of gas generated to be automatically controlled and also to provide a means by which the carbide of calcium may be delivered as required, the delivery apparatus being so constructed as to prevent the entrance of extraneous air to the carbide of calcium during its delivery.

For the purposes of illustration I will now refer to the annexed drawings, in which—

Figure 1 is a sectional side elevation of an apparatus constructed according to my invention; Fig. 2, a plan view of same; Fig. 3, an enlarged sectional side elevation of the feeding arrangement.

*a* is a holder or gasometer which is carried in the tank *b*, being supported or counterbalanced by means of weights *g* and cords or other such suitable arrangement. The holder or gasometer *a* carries the train of clockwheels *c*, geared to the rack *d*, which is carried upon the feeder *e*. This feeder is divided into a required number of compartments *f* and slides in the guide or casing *g'*. This feeder may be provided with a suitable cover for the purpose of preventing the external air or moisture coming into contact with the carbide charges in the various compartments. The compartments *f* are for the purpose of containing carbide of calcium, the object being that when one of the compartments *f* is over the aperture *h* a charge of carbide will fall into the tube *i* and following the direction of the arrows 1 will be deposited at the bottom of the split cylinder *j* (carried upon the bottom of the tank *b*) through the medium of the slide or chute *k*. The tank is filled with water to about the level *m*. The bent or U tube *n* is in communication with the passage *o*, and the inlet *p* is for the insertion of oil or such suitable fluid, which is

poured therein in a quantity sufficient to form a layer, through which the carbide must pass before it comes into contact with the water. Of course owing to the lighter specific gravity of the oil it will remain at the highest point. The end of the passage *o* through which the carbide passes may be closed in any suitable manner, such as by a hinged door *q*, which is operated by the rod *r*, passing through the sleeve *s*, carried in the holder or gasometer *a*. The use of this door is to enable the water in the tank to be withdrawn when required without the necessity of the withdrawal of the oil. The pipe *t* for the outlet of the gas when required is placed at or about the height shown and communicates with an outlet *u* after passing through the filtering-chamber *v*, which may contain any suitable filtering material. The pipe *w* is connected to the outlet-pipe *t* at *y*, but does not pass through the filtering-chamber, but is carried to a suitable height, being provided with a valve *z*, so arranged that when the gasometer or holder has risen to a certain height a catch-piece *a'* will come into contact with this valve, and so allow any excess of gas to escape to the open air or other convenient absorber. The bent or U tube *n* may contain oil or other suitable liquid and is in communication with the escape-tube *w* at 1, so that any gas which may be generated in the passage *o* will pass thereup and may escape through the bent or U tube *n* or to the open air as soon as the pressure rises sufficiently for this purpose. The passage *o* is shaped, as shown at 2, so that any ascending gas-bubbles will tend to pass up to the bent or U tube and not through the pipe *i*.

The operation is as follows: The train of clockwork-wheels, which may be of any suitable construction, being in motion causes the feeder to travel in the required direction, thus delivering the carbide to the pipe *i*, whence it passes through the layer of oil 3 and thence to the split cylinder *j*, thus generating the acetylene gas in its contact with the water, and as this gas is generated the gasometer will rise until a sufficient amount of gas is contained therein. A stop-plate or the like 4 (which may be graduated so as to indicate the amount of gas in the gasometer) is carried at a suitable part of the frame 5, so arranged



that when the holder or gasometer has risen to the required distance the stop-rod 25, which is rotated by the spindle 22, will come into contact with the bar 4, and so arrest the motion of the clockwork, thus preventing the further delivery of the carbid from the compartments *f* in the feeder *e*. The stop-rod 25 is carried by the spindle 22, being connected to the ratchet-wheel 23 through the medium of the spring-pawl 24. By this arrangement it will be seen that the stop-rod may be rotated independently of the clockwork for the purpose of delivering the carbid more readily than would be the case if the escapement of the clockwork alone were employed, as this spindle is connected to the clockwork through the medium of a ratchet-wheel and pawl or any other suitable and well-known form of effecting this object—namely, to allow the spindle to be rotated independently of the clockwork and at the same time so arranged as to be driven by the clockwork in one direction. After sufficient gas has been withdrawn from the gasometer to allow it to fall the clockwork mechanism will be released from the stop-piece 4 and so again operate the feeder. If required, a supplementary catch or stopping piece may be provided, which will resist the motion of the clockwork when at its lowest or required intermediate positions. Any suitable form of escape may be employed, such as a pendulum or a fan-wheel or such like, and the clockwork mechanism may be arranged in any suitable and well-known manner, so that when in motion the compartments in the feeder are brought into their discharging position by a series of intermittent movements instead of one continuous movement.

The oil performs a very important function, inasmuch as the carbid by passing through the oil and being coated with it is prevented from coming into direct contact with the water immediately it touches the surface, and thus the gas to all intents and purposes is not generated in any objectionable quantity until it reaches its destination—namely, at the point 6.

7 is a slide or shutter operated by the rod 8 for enabling the outlet or passage 9 to be closed when required, and then by opening the passage 9 at the point 10 by means of a suitable door or shutter 11 the residue of the carbid and product of decomposition may be readily removed without the necessity of emptying the tank *b*. The door or shutter 11 is then closed and the shutter 7 closed, when the generation of gas will proceed as before. It will be seen that when the carbid of calcium has passed through the layer of oil it will be coated with a certain amount of this oil, which will collect at or about the surface of the water in the gasometer or holder *a*, and in order to remove this oil when a sufficient quantity has collected a pipe 12 is provided, the inlet end 13 of which is a sufficient distance below the water, so that the layer of oil

which collects may be drawn off through the medium of the tap or outlet 14 as required. The sides of the tank *b* and the holder or gasometer *a* are provided, as shown, when required with transparent plates 15 and 16 for the purpose of enabling the amount and condition of the oil to be viewed as required, 17 being a rod carrying a brush or other suitable surface by means of which the interior of the transparent plate 15 may be cleaned at intervals, as required, by operating the rod 17.

Referring to Fig. 3, the compartments *f* in the feeder are closed when required by the doors or flaps 18, hinged or pivoted to the feeder *e* at or about 19, each door or flap thus closing one of the compartments in which the carbid is carried. It will be seen that when the feeder moves in the direction of the arrow 2 when a door or flap 18 is over the aperture *h* the flap will fall, as shown, and allow the carbid to pass down the aperture or channel *h* into the passage *i* and thence through the oil into the interior of the apparatus, as indicated by the arrows. The continued movement of the feeder will raise or close the flap 18 owing to its engaging upon the rounded corner or shoulder *g*<sup>2</sup>, and the following flap will again open during its passage across the aperture *h* and be similarly closed. The rack 20 (shown in Figs. 1 and 2) is operated in the direction of the arrow 3 by the pinion 21 of the spindle 22 and will move in an opposite direction to that of the feeder *e* and may be so graduated or marked as to indicate the number of compartments from which the carbid has been discharged; but it will be understood that although I have shown this form of indicator as an illustration there are many well-known and convenient arrangements by which the same result may be obtained. Of course the number of compartments into which the feeder is divided may be varied as required, according to the size of apparatus and the conditions under which it is used, the number of compartments determining the length of the feeder.

Of course, although I have described one particular construction and arrangement of the various parts of my invention, it will be seen that the shape and location of their positions may be varied according to required circumstances without departing from the essential feature of my invention.

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

In apparatus for the production of acetylene gas in combination; an outer tank or holder for water, and an inner holder or gasometer adapted to move in said outer tank through the medium of suitable guides and counterpoises; a passage or tube in said gasometer containing a layer of oil; a flap operated by a rod or handle for closing said passage when required; a feeder consisting of a series of compartments closed by flaps and operated by clockwork mechanism for the



purpose of delivering carbid as required; a  
slide or guide in the interior of said outer  
casing for delivering the carbid to the re-  
quired position; a casing or split cylinder  
5 into which the carbid is delivered; a passage  
in said outer casing closed by a sliding door  
operated from the exterior and closed upon  
the exterior by a door or stopper, said pas-  
sage being for the removal of the products;  
10 a filter through which the gas generated passes  
before consumption; an escape-tube operated  
by a valve through the medium of stop-piece  
upon the gasometer; a graduated slide upon  
which a rotating stop-piece upon the clock-  
15 work-spindle engages in order to cause the

stoppage of the clockwork mechanism; a slid-  
ing rod provided with a brush and adapted  
for the purpose of cleaning a transparent sur-  
face carried in the gasometer; a transparent  
surface carried in the outer casing so ar- 20  
ranged as to correspond therewith when the  
gasometer is at or about the lower position in  
the gasometer.

In testimony that I claim the foregoing I  
have hereunto set my hand this 14th day of 25  
June, 1898.

H. DE THIERSANT.

Witnesses:

JAMES FLEMING,  
PERCY READ SOLDRINE.