

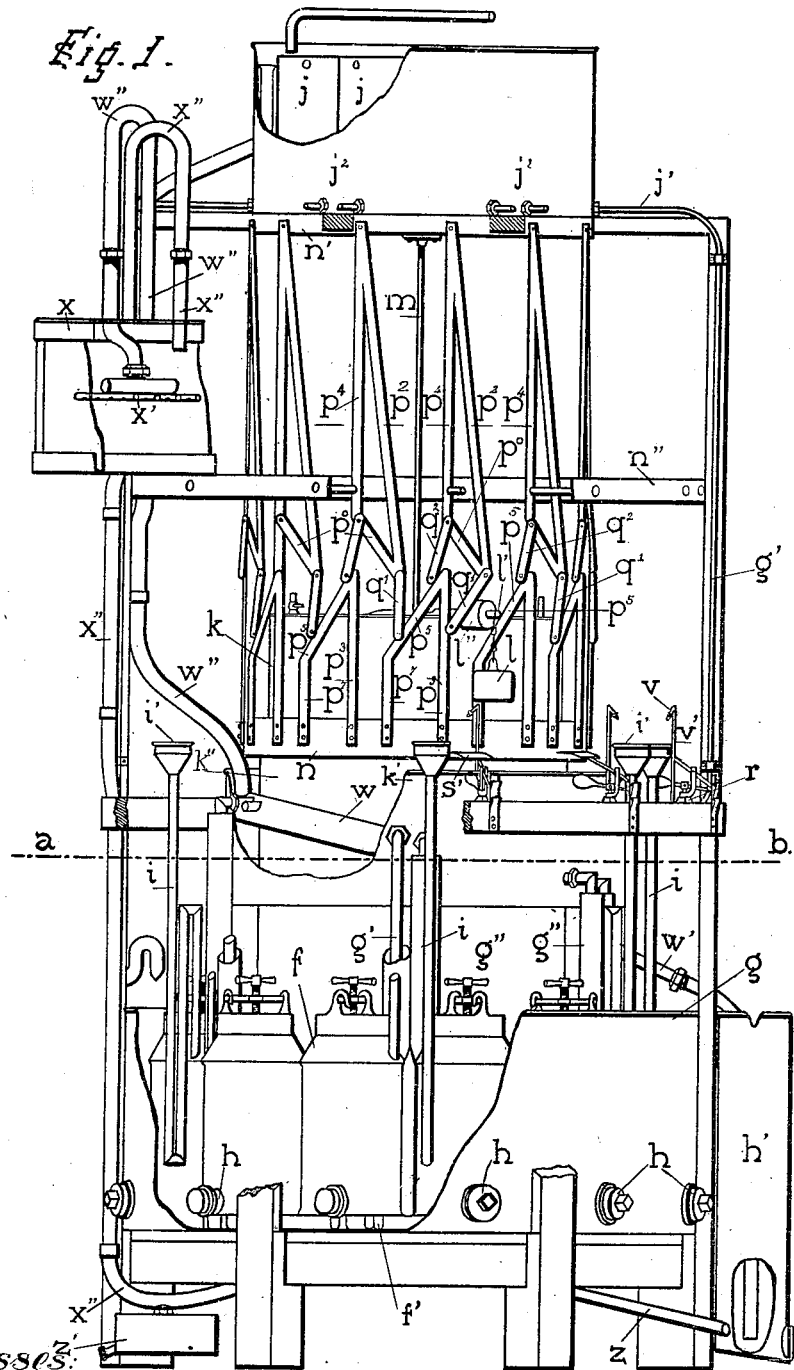
J. PONCES.

## ACETYLENE GAS APPARATUS.

(Application filed Oct. 9, 1899.)

(No Model.)

2 Sheets—Sheet 1.



Witnesses:

L. C. Mills.

John Andrew Wilson.

Inventor,

John Ponce.

By Wilkinson & Fisher  
Attys.

No. 648,787.

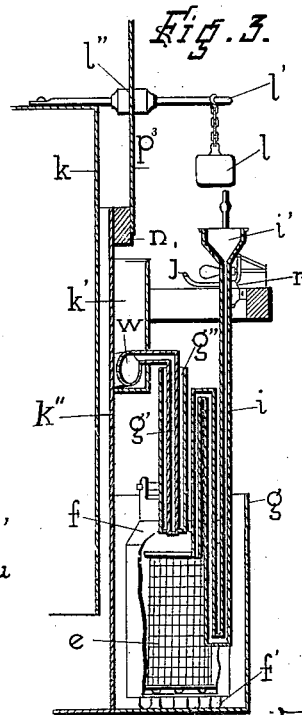
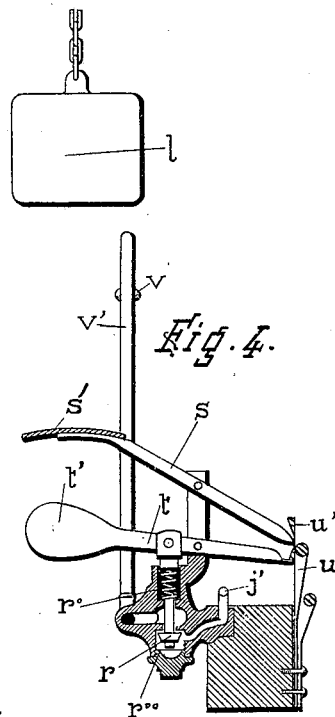
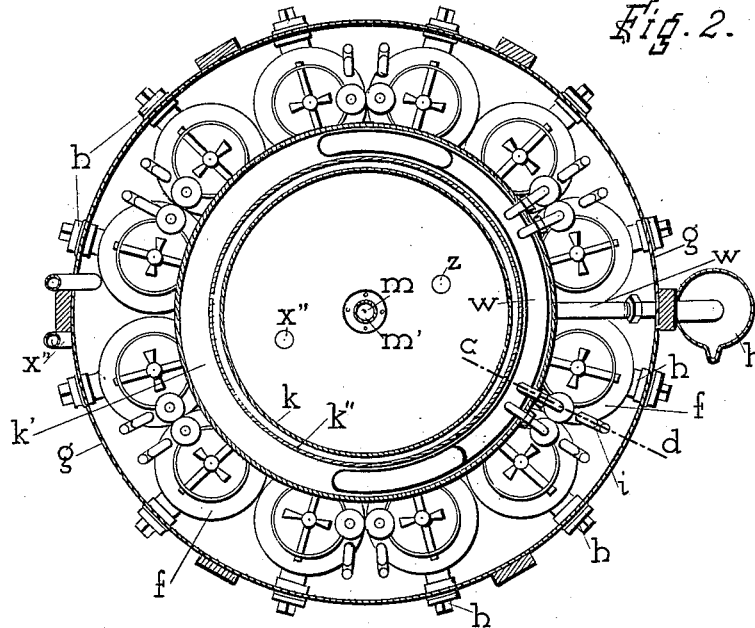
Patented May 1, 1900.

J. PONCES.  
ACETYLENE GAS APPARATUS.

(Application filed Oct. 9, 1899.)

(No Model.)

2 Sheets—Sheet 2.



Witnesses  
*L. C. Stiles*  
*John Chalness*

Inventor  
*Jose Ponce*  
by *Thompson & Lister*  
Attorneys

# UNITED STATES PATENT OFFICE.

JOSÉ PONCES. OF BARCELONA, SPAIN.

## ACETYLENE-GAS APPARATUS.

SPECIFICATION forming part of Letters Patent No. 648,787, dated May 1, 1900.

Application filed October 9, 1899. Serial No. 733,115. (No model.)

*To all whom it may concern:*

Be it known that I, JOSÉ PONCES, manufacturer, residing at Barcelona, in the Province of Barcelona, Spain, have invented certain new and useful Improvements in Apparatus for Producing Acetylene Gas; and I do hereby declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it appertains to make and use the same.

My invention relates to an apparatus for generating and producing acetylene gas, and more particularly to that class in which a plurality of generators are employed to charge a common reservoir or receiver. Instead of operating all of the generators simultaneously, as is sometimes done, the generators are automatically brought into action singly and *seriatim*, one of said generators commencing action immediately after the gas generated by the preceding one has been almost entirely consumed, until the entire series of generators have been used.

In order to more fully understand my said invention, reference will be had to the accompanying drawings, wherein—

Figure 1 represents an elevation of the apparatus. Fig. 2 represents a section along the line *ab* of Fig. 1. Fig. 3 represents a section along the line *cd*, Fig. 2, showing the construction of one of the generators; and Fig. 4 is a detail view, partly in section, showing the construction of one of the mechanisms for admitting water to a generator.

*f* designates the generators, each of which is adapted to contain a wire or gauze basket *c*, which is provided with feet or projections at the bottom, all of these generators being surrounded by an annular tank *g*. *h* represents an outlet, one of which is located in the bottom of each of the generators and passes through said tank *g*. These generators are each provided with a removable top adapted to be securely clamped down by means of the hand-screw upon the top of the vessel and are also provided with feet *f'*. Passing into each of these generators is a trap *i*, the lower end, which depends into the generator, being bent toward one side, the upper end of this pipe *i* having a funnel *i'* formed thereon. Located to one side of each of these funnels *i'* is

a pipe *c'*, the portion *c'* of which is directed toward the funnel.

*r* represents one of the valves adapted to admit water to the generator at the proper time. Attached to the plunger of these valves is a pivoted lever *t*, provided at one end with the weight *l*, the tendency of which is to open the valve, the other end of this lever engaging with a detent *u'* upon the spring *u*. This detent *u'* is secured upon the upper end of the spring *u*, the latter being reinforced by the additional springs, as shown in Fig. 4. The valves *r* and the corresponding springs *u* are mounted in any suitable manner upon a circular platform or support, which encircles the apparatus above the generators *f*. Around the stem of the valve *r* is coiled a spring *v'*, the tendency of which is to keep the valve closed, but not to prevent the opening of the valve by the weighted lever *t*. Pivoted upon an extension of the valve *r* above the lever *t* is a second lever *s*, provided with the flat plate *s'* at one end, the other end being adapted to press back the detent *u'* and release the end of the lever *t* when a force is applied at the end *s'*.

*j* is a pipe leading to the valve *r* from the water-tanks *j*, one of these tanks being provided for each of the valves *r* to supply one generator, the pipe *v'* being connected at the other side of the said valve.

Leading into the top of each of the generators *f* is a pipe *g'*, surrounded by the water-jacket *g''*. These pipes *g'* from each of the generators are connected to a circular conduit *w*, which is preferably elliptical in cross-section and is surrounded by an annular tank *k'*. Connected to this conduit by means of the pipe *w''* is a washing-tank *x*, tightly closed and adapted to contain water. At the end of the pipe *w''*, leading into the chamber from the top, is a perforated pipe *x'*, and at the top of this chamber the pipe *x''* leads to the purifying-chamber *z'* and finally upward beneath the receiver *k*, which floats within the tank *k''*. Leading from the tank *k'* is a drain-pipe *w'*, which empties into the receptacle *k'*.

Secured to the frame of the apparatus and passing through the center of the receiver *k* is a guide-rod *m*, the sleeve *m'* being secured

to the top of the receiver and extending downwardly therein, the receiver being adapted to revolve upon the said rod as an axis.

Secured upon the top of the receiver *k* is a  
5 projecting arm *l'*, provided with a roller *l''*  
and upon its end with a weight *l*, suspended  
so that when the receiver is revolved the  
weight will describe a circle, the circumfer-  
ence of which coincides with, but is normally  
10 above, the line of flat plates *s'* of the levers *s*.  
Mounted around the receiver upon the frame  
of the apparatus is a series of guide-tracks,  
comprising an upper set rigidly secured to  
the circular supports *n'* and *n''* and a lower  
15 set secured to the circular support *n*. The  
support *n* is rigidly secured upon the top of  
the tank *k'*. The support *n'* beneath the  
tank *j* and the support *n''* are composed of two  
metal rings supported by the uprights of the  
20 apparatus about midway of the supports *n*  
and *n'*. The number of pairs of these guides  
to be employed will be determined by the  
number of generators to be employed, as  
while I have shown twelve generators and  
25 twelve pairs of guides it is obvious that the  
number of generators may be varied to suit  
various requirements. The upper set of  
guides is composed of the triangular-shaped  
portions, having sides *p*<sup>2</sup> and *p*<sup>4</sup> substantially  
30 vertical and the inclined side *p*<sup>0</sup>. At the  
lower end of the side *p*<sup>2</sup> is loosely pivoted the  
link *q*<sup>1</sup>, and at the corresponding end of the  
side *p*<sup>4</sup> is also loosely pivoted the link *q*<sup>2</sup>.  
The lower set is composed of the guide hav-  
ing the uprights *p*<sup>3</sup> *p*<sup>7</sup> and the inclined side  
35 *p*<sup>5</sup>, the space between these guides being suf-  
ficient to allow the roller *l''* to pass freely.

The operation of the apparatus is as fol-  
lows: All of the baskets *e* within the genera-  
40 tors having been previously charged with cal-  
cium carbide and water supplied to each of  
the tanks *j* and also to the tank *k'*, surround-  
ing the receiver *k*, tank *k'*, surrounding the  
annular conduit *w*, tank *g*, surrounding the  
45 generators, washing-chamber *x*, and water-  
jackets *g''*, surrounding each of the gas-pipes  
*g'*, the apparatus is in condition to generate  
and produce a continuous supply of acetylene  
gas. As the receiver normally rests at its  
50 lowest point in the tank when not charged  
with gas, it will be necessary to prevent the  
weight *l* from resting upon one of the plates  
*s'* until it is desired to start the apparatus  
into operation. By applying a slight pres-  
55 sure upon the upper side of the plate *s'* the  
lever *s* causes the detent *u'* to spring back  
and release the end of the lever *t* and by rea-  
son of the weight *l'* will force the stem of the  
valve *v* down, thereby causing water from one  
60 of the tanks *j* through the pipes *j'* and *v* to  
be directed by the pipe *v'* into the funnel *i'*  
of the pipe *i*. The bottom end of this pipe *i*,  
as before stated, being bent to one side, causes  
the water to be directed upon the side of the  
65 generator, and falling to the bottom of the  
vessel gradually rises up from the bottom of

the carbide until one of the tanks *j* has been  
emptied. The addition of water causes the  
carbide to give off acetylene gas, which is pre-  
vented from escaping through the pipe *i* by  
70 reason of it being partially filled with water  
constantly, the pressure of the gas being in-  
sufficient to force the water out. The gas  
passes off up the pipe *g'*, where it is cooled by  
the water-jacket *g''*, and thence into the annu-  
75 lar conduit *w*, where the steam or aqueous  
vapor carried along by the gas is condensed  
by the water-tank *k'*, surrounding the con-  
duit. The gas then passes by means of the  
pipe *w''* to the washing-chamber *x*, where the  
80 gas is caused to pass in minute streams  
through the perforated pipe *x'*, submerged in  
the water, and rising to the surface is con-  
ducted by the pipe *x''* to the purifying-cham-  
ber *z'* (conventionally shown) and thence un-  
85 der the receiver, being now ready for use. The  
operation having once started it will auto-  
matically bring into operation one generator  
after another unless stopped intentionally  
(which may be done by preventing the weight  
90 *l* from depressing the next plate *s'* during the  
descent of the receiver) until the entire set  
of generators has been used.

The automatic operation of the valves *r*  
will be fully understood upon reference to the  
95 drawings. Supposing that one generator has  
exhausted its output of gas and the receiver  
is at its highest point of ascent, it is obvi-  
ous that the roller *l''* in rising from its lowest  
point passed vertically between the guides  
100 of the lower set until it encountered the in-  
clined side *p*<sup>0</sup> of the upper guide, when its  
course was deflected and caused the receiver  
to be rotated on its axis until it reached its  
highest point of ascent, at the same time re-  
105 leasing the link *q*<sup>2</sup>. Now when the receiver  
begins to descend the course of the roller *l''* is  
deflected by the link *q*<sup>2</sup> and the side *p*<sup>5</sup> of the  
lower guide until the link *q*<sup>1</sup> has dropped  
back in place after being pushed aside. The  
110 downward motion of the receiver continues  
until the supply of gas generated is nearly  
exhausted, when the weight *l* comes into con-  
tact with the next plate *s'*, starting the next  
generator into action. This cycle of opera-  
115 tion continues until the weight comes to the  
valve of the exhausted generator, when the  
action ceases.

Excessive heating of the generators is pre-  
vented by the annular tank *g*, which is kept  
120 filled with water and surrounds all the gen-  
erators.

The water of condensation from the pipe  
*w* runs down through the pipe *w'* into the re-  
125 ceptacle *h'*.

The purpose of having the pipes *v* to one  
side of the funnel is that while the generators  
are charged with carbide any leakage from the  
valves through the pipes *v* will not drip into  
the funnels and start the generators when  
130 not desired, but will drip into the tank *g* be-  
neath.

The gas may be conducted from the receiver to any desired point by means of the pipe *z*, which communicates with the gas-space beneath the receiver.

While I have shown one particular form of my invention, it is obvious that many changes may be made in the details and arrangement of my apparatus without departing from the spirit of my invention.

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

1. An apparatus for the manufacture of acetylene gas comprising a receiver, and a plurality of generators, guide-tracks, and valves for supplying water to said generators, an arm on said receiver with a roller on said arm adapted to engage said guide-tracks and partially rotate said receiver as it rises and falls, and a weight carried by said arm and adapted to open one of said valves at each descent of said receiver, and thus operate one of said generators, substantially as described.

2. An apparatus for the manufacture of acetylene gas comprising a receiver, a plurality of elevated water-tanks, and an equal number of generators supplied with water from said tanks, an arm carried by said receiver and opening the supply of water from one of said tanks to one of said generators at each fall of the receiver, and mechanism engaging said arm for partly rotating said receiver and thus causing it to operate the several generators *seriatim*, substantially as described.

3. An apparatus for the manufacture of acetylene gas, comprising a receiver, an arm on said receiver, a plurality of generators, upper and lower guide-tracks, the upper track being separated from the lower to allow the passage therebetween of said arm on said receiver, and switches located between said tracks, whereby the rising and falling of said

receiver controls the flow of water to said generators, substantially as described.

4. In an apparatus for the manufacture of acetylene gas, the combination of the valve *r*, the levers *s* and *t* with spring-detent therefor, means operated by the motion of the receiver for operating the lever *s*, traps with funnels thereon for receiving the water from said valve, and an outlet-pipe from said valve set at one side of but pointed toward said traps, and adapted to direct the flow of water into said traps when said valve is opened, but to cause any leakage to drip clear of said funnels, substantially as and for the purposes described.

5. An apparatus for the manufacture of acetylene gas, comprising a receiver and a plurality of generators, with valves for supplying water to said generators, an arm secured to said receiver, a weight suspended from said arm and actuating one of said valves at each descent of said receiver, and guide-tracks for said arm whereby said valves may be operated *seriatim*, substantially as described.

6. An apparatus for the manufacture of acetylene gas, comprising a receiver and a plurality of generators, with valves for supplying water to said generators, an arm secured to said receiver, a weight suspended from said arm and actuating one of said valves at each descent of said receiver, a roller on said arm, and guide-tracks for said roller whereby said receiver may be partially rotated as it rises and falls and said valves may be operated, substantially as described.

In testimony whereof I affix my signature in presence of two witnesses.

JOSÉ PONCES.

Witnesses:

ANTONIO GALLISSI,  
FRANCIS MARTS.