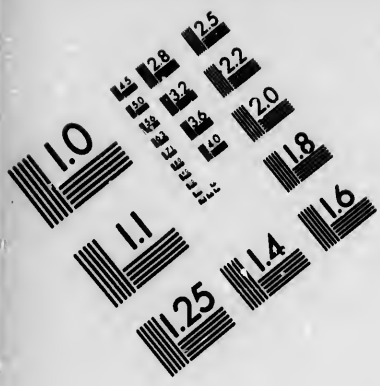

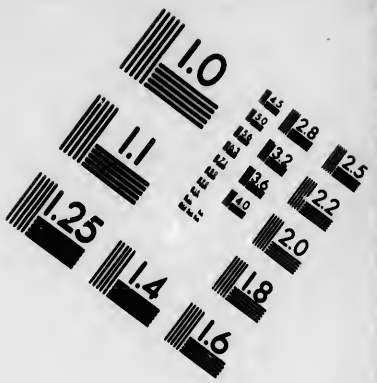

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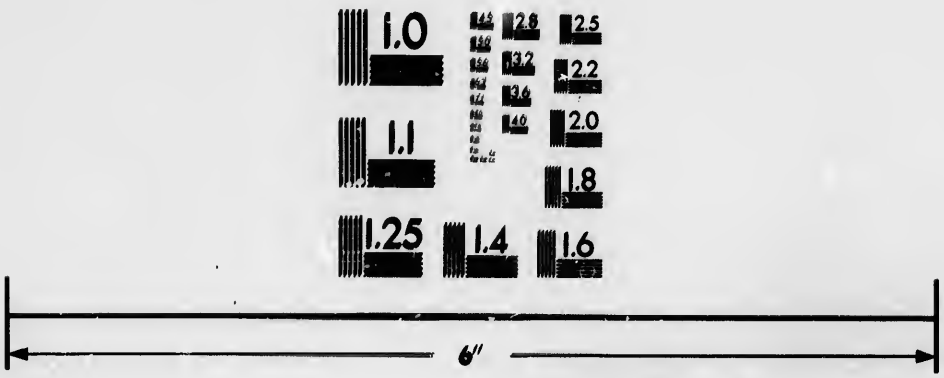

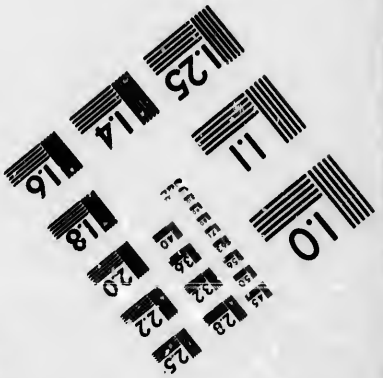

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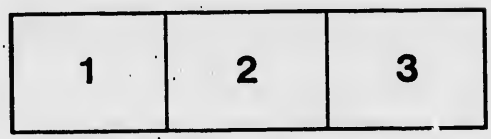
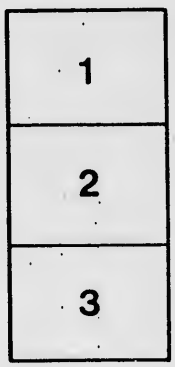
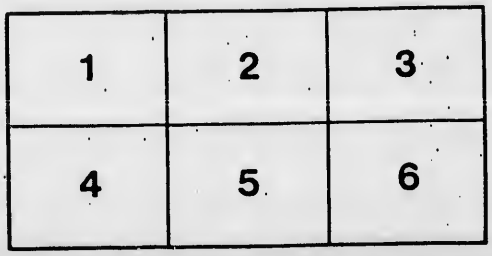


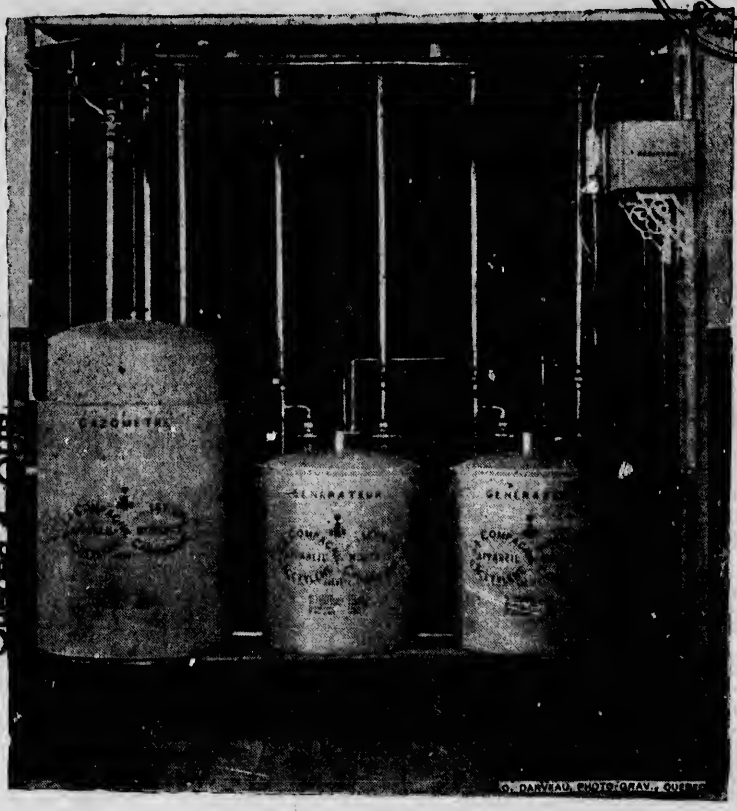




ACETYLENE LIGHT

AND

MORENCY'S APPARATUS



BY

THE CANADIAN ACETYLENE COMPANY

PRINTED AT "LA SEMAINE COMMERCIALE"

1898

The Canadian Acetylene Company

(LIMITED).

Incorporated by letters patent dated 22nd March, 1898

CAPITAL 50,000.00

MANAGER: THE HON. P. LANDRY.

HEAD OFFICE: FRASER STREET, LEVIS.

The Canadian Acetylene Company (Limited) was formed for the purpose of putting on the market the best known apparatus for utilizing, without the slightest danger, the new gas called *acetylene.*

The comparatively low price at which calcium carbide is now sold has practically resolved the problem of its usefulness, as an illuminant, a heat producer and motive power.

The undisputed superiority of this gas over the ordinary illuminating gas, coal oil and electric light, the extreme facility of its production, which enables it to be used to advantage even as a motive power, the completeness and simplicity of the apparatus furnished by this company, the absolute immu-

nity of this apparatus from danger, and the constant and growing demand for it—all these furnish an immmense field for the operations of the company and every prospect of success in its enterprise to give to the public a cheaper illuminant than even coal oil.

To show the incontestable superiority of this new gas, we give some details.

CARBIDE CALCIUM

Is a chemical compound prepared specially by the trade for the production of acetylene. When brought into contact with water, it decomposes the water and at the same time becomes decomposed itself.

This double decomposition generates acetylene gas, and leaves as a residuum hydrate of lime.

The gas is collected and then utilized, either as an illuminant, heat producer, or motive power.

ACETYLENE GAS AS ILLUMINANT.

For the present, we simply wish to point out the advantage of acetylene as an illuminating gas.

It is the illuminant above all others, the illuminant par excellence.

Here is what a distinguished French writer, Mr Pellissier, says of it :—

" It gives a briliant white flame and a glowing pleasant light, very welcome to the eye, of remarkable steadiness, and possessing the valuable quality of not affecting shades of color. Its flame emits very little heat. You can without danger hold your hand over the flame at a very slight distance—a distance at which certainly it would be burnt, if held over an ordinary gas burner. And finally the combustion of acetylene does not produce, as does the use of other illuminants, solid or liquid,

that fine coal dust which penetrates everywhere and blackens ceilings, walls and paintings."

It is besides

A VERY CHEAP LIGHT.

One pound of calcium carbide sells to-day at four cents. As a matter of fact, one pound produces 5.89 cubic feet of gas, or in round numbers five feet.

An ordinary burner, giving light equal to that given by twenty five candles, consumes one half of a cubic foot of acetylene per hour. That means that it will take ten hours to consume the gas produced by one pound of carbide.

A burner that gives a sixteen candle light, which is equal to that given by ordinary illuminating gas or an incandescent electric lamp, will consume 0.32 feet per hour of acetylene, and it will require therefore $15\frac{5}{8}$ hours, or in round numbers sixteen hours, to consume the gas product of one pound of carbide.

If the burner gives but the light of six candles, which is equal to that of an ordinary lamp with a wick an inch wide, it will take $41\frac{2}{3}$ hours to consume the product of a pound of carbide, the consumption of acetylene being not more than 0.12 feet per hour.

A pound of calcium carbide then, since it gives 5 feet of gas and only costs 4 cents, can supply a burner of 25 candle capacity during ten hours, a burner of sixteen candle capacity during $15\frac{5}{8}$ hours, and a burner of 6 candle capacity during $41\frac{2}{3}$ hours.

The evident conclusion, therefore, is this :—

Ten hours of light from a burner of 25 candle power will cost four cents ; ten hours of light from a sixteen candle

burner will cost 2½ cents; and ten hours of light from a 6 candle burner will cost 0.0096 (96/100 of a cent).

In order to be convinced that acetylene is the cheapest illuminant known, we have only to compare it with the others, namely, candles, ordinary lighting gas, electric lamps, and coal oil.

Compare it, in the first place, with

STEARIC CANDLES.

It takes 6 of those candles to weigh a pound, and there are 16 ounces in a pound. They cost 2⅔ cents a piece or sixteen cents for the 6. One of these candles therefore, costing 2⅔ cents and weighing 2⅔ ounces, is consumed in 7½ hours, so that ten hours of this light consumes 1⅓ candle and costs $0.0357 or 3½ cents.

An acetylene light equal only to that of one candle, would cost for the same period of ten hours 0.0016, as the gas is only consumed at the rate of 0.02 foot per hour, or 0.20 foot in 10 hours. The consumption of acetylene, therefore, bears the same ratio to that of one candle as 16 to 357, that is to say, an acetylene light equal to that of a candle, costs 22 times less.

Now compare it with

LIGHTING GAS.

The comparison of acetylene with the ordinary lighting gas is also completely to the advantage of the former.

Gas is sold at $1.50 per thousand feet. An ordinary gas burner, which gives light equal to that of sixteen candles, consumes five cubic feet of gas per hour. It takes, therefore, 200 hours to consume a thousand cubic feet of ordinary gas.

But a jet of acetylene, which gives the same brilliancy as sixteen candles, is consumed at the rate of 0.32 feet per hour. That is to say, only 64 cubic feet of acetylene are consumed during 200 hours; now, 64 cubic feet of acetylene are the product of 12 pounds of calcium carbide and costs but 48 cents, or only one third the cost of ordinary lighting gas.

Next compare it with

ELECTRIC LIGHT.

And the comparison will be found equally favorable.

Electric light is sold at the rate of $\frac{3}{4}$ of a cent per hour, as furnished by an incandescent lamp of 16 candle power. We have shown that with a light of equal intensity, that is with a light equal to 16 candles, acetylene is consumed at the rate of 0.32 foot per hour, and costs \$0.0025 or $\frac{1}{4}$ of a cent per hour. Thus, acetylene costs three times less than electric light.

Finally compare it with

COAL OIL.

In this case also, the acetylene gas does not fear comparison.

An ordinary coal oil lamp, with a wick an inch wide, gives a light equal to that given by 6 candles, and consumes 12 ounces of oil in ten hours.

A gallon of coal oil contains 128 fluid ounces, and costs, in the case of astral oil, at least 25 cents, which makes the cost of ten hours consumption of astral oil, namely, 12 ounces, \$0.234 or $2\frac{1}{3}$ cents.

An acetylene jet, on the other hand, which gives an equal light, consumes in an hour 12/100 of a cubic foot of acetylene, and thus costs only \$0.0096 for the ten hours.

That gives us as comparative values :—

Astral oil at 25 cents	234
Acetylene	96

Thus acetylene is to astral oil, as 16 is to 39.

If, instead of astral oil, we take ordinary coal oil, and compare it with acetylene, we find the comparison comes out as follows, on the basis of a ten hours consumption :—

Oil at 18 cents	$0.0169
Oil at 16 cents	0.0150
Oil at 15 cents	0.0141
Acetylene	0.0096

That is to say, the cost of acetylene is to that of oil as 19 is to 24 (taking oil at 18 cents), or as 19 is to 25 (taking oil at 16 cents), or as 19 is to 23½ (taking oil at 15 cents), which shows that all the advantage is on the side of acetylene.

COMPARATIVE STATEMENT.

To make the comparison more striking and get rid of fractions, let us take as unit of intensity the light from an ordinary lamp having a wick one inch wide, which gives the light of 6 candles, and ten hours as the unit of time. The following table gives the consumption in each case—coal oil, electricity, ordinary lighting gas, stearic candles and acetylene gas :—

Oil at 15 cents per gallon	$0.13
Oil at 16 cents per gallon	0.15
Oil at 18 cents per gallon	0.17
Oil at 20 cents per gallon	0.19
Astral oil at 25 cents per gallon	0.23
Lighting gas at $1.50 per 1000 feet	0.28
Electricity at ¾ of a cent per hour	0.23
Stearic candles at 16 cents per pound	2.13⅓
Acetylene	0.09⅓

That establishes beyond doubt the cheapness of acetylene light as compared with the others.

Three remains the question of

THE CHOICE OF AN APPARATUS.

The apparatus for generating acetylene may be divided into two classes :—

First—those which produce acetylene in a gaseous form ; second—those which produce acetylene in a liquid form.

We shall not discuss the latter, because they are absolutely rejected by insurance companies, acetylene in liquid form being a dangerous and explosive product.

As regards the apparatus of the first class, they may be subdivided into two groups, namely, those which give the gas at a pressure a little greater than that of the atmosphere, and those which furnish it at a high pressure.

Compressed acetylene is not dangerous like liquid acetylene ; but if the pressure to which it is submitted exceeds that of two atmospheres, the gas thus compressed becomes, in certain conditions, explosive, and therefore presents in its handling inconveniences that may be completely avoided by employing an apparatus which produces the gas at a low pressure.

A low pressure apparatus affords all the guarantees desirable, from the point of view of safety, and it is an apparatus of that description which the Canadian Acetylene Company has selected. The company might have chosen an apparatus still less expensive than the one it offers for sale, but which would have been just as unsafe as it would be cheap. And the company has no desire to deceive the public. The apparatus which it offers for sale is one really scientific in design, and which will meet all the requirements of continual daily use,

That apparatus is the Morency's apparatus, patented in Canada, the United States, England, France and Belgium, and is the result of two years study and constant experiment.

It it a scientific apparatus, which the most unskilled and ignorant may operate without any possibility of danger. Carelessness, neglect, omissions, errors may therefore occur without danger of any evil consequences.

Everything has been foreseen, and its operation, even by the most unskilled hand, is free from all danger of accident. and gives every guarantee of the most absolute safety.

From that point of view, the Morency's apparatus is certainly the least costly, because an apparatus which is not perfectly safe is always too dear, no matter how cheap may be its price.

The Canadian Fire Underwritters' Association, after a thorough study of this apparatus and after repeated trials, has shown the most complete confidence in its efficiency and perfect safety by granting, without any reserve, to the Canadian Acetylene Company authority to put it up in buildings insured against fire.

The following is the

CERTIFICATE OF THE CANADIAN FIRE UNDERWRITTERS ASSOCIATION.

Canadian Fire Underwritters Association.

Montreal, 4th February, 1898.

The Hon. P. Landry,

Manager of the Canadian Acetylene Company, Levis.

Dear Sir,

That is to certify that after examination by our Inspector the Morency's apparatus for the production of gas as manu-

factured by the Canadian Acetylene Company, at Levis, P. Q., in accordance with the plans and specifications filed in this office, has been accepted as fully complying with the standard requirements of this association.

Yours truly.

(Sgd) ALF. HADRILL,
Secretary.

P. S.—The present certificate will be recognized through the provinces of Quebec, Ontario, Manitoba, and in the North West Territories.

LIST OF PRICES.

The Canadian Acetylene Company offers for sale apparatus of three different sizes.

1. Twenty five lights apparatus. That comprises: A gazometer, two generators, three carbide vessels, a water reservoir with ball cock, and a receiver for the syphons. Selling price —$75, payable $40 cash and the balance in one month without interest, or one year with interest at 6%.

2. Fifty lights apparatus. That comprises: A larger gazometer, three generators, four carbide vessels, a water reservoir with ball cock and a receiver for the syphons. Selling prices —$110, payable $55 in cash and the balance in one month without interest, or one year with interest at 6%.

3. Apparatus for more than fifty lights:—

Special arrangements may be made by those requiring apparatus capable of furnishing a determined quantity of burners beyond 50. The company will agree to reasonable terms. Such application ought to specify the quantity of burners required and the height of the apartment where the apparatus is to be put up.

THE REGULATION OF PRESSURE.

Besides the apparatus the above described, the company offers for sale, at an a additional price of $5, a governor which will secure a uniform pressure.

No matter what number of burners may be used at once, this regulator keeps the pressure always the same, and the acetylene jet is not in the slightest degree influenced by the variations in pressure which the dome of the gazometer may experience under the play of the counterweight.

ELECTRIC ALARM.

A useful but not essential addition—one without which the machine is still complete—is an electric alarm that rings a set of bells when the stock of carbide is nearly exhausted, and the apparatus is on the point of ceasing to operate. The eleetric bells may be put up in the most convenient place in the house, in order that they may give effective and immediate warning.

The cost of this alarm is but $3.00.

APPAREIL MORENCY " POUR GAZ ACÉTYLÈNE

MANUFACTURÉ PAR

LA COMPAGNIE CANADIENNE D'ACÉTYLÈNE

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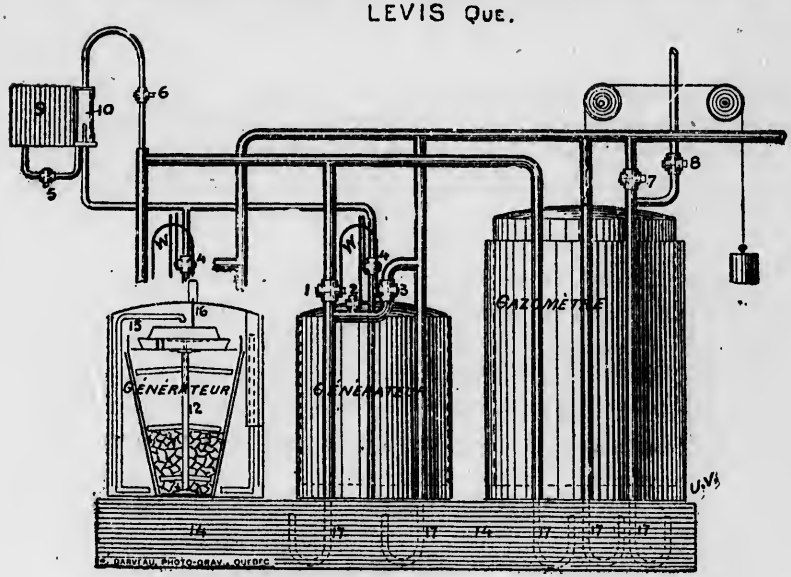


DESCRIPTION

1. *Gas cock.*
2. *Air cock.*
3. *Safety tube escape cock.*
4. *Water feed pipe cock.*
5. *Pressure Indicator cock.*
6. *Gas conductor cock.*
7. *Safety pipe cock.*
8. *Gas distributor cock.*
9. *Water reservoir at uniform level.*
10. *Pressure indicator.*
11. *Floater.*
12. *Water distributor.*
13. *Carbide bucket.*
14. *Syphon reservoir at uniform level.*
15. *Movable portion of water feed pipe.*
16. *Indicating rod.*
17. *Syphon.*

W. Keys of the stop cocks, 1, 2, 3 and 4.

HOW THE APPARATUS WORKS.

Its operation is most simple. A uniform level is required in the water reservoir (No 9), and that is obtained by using a ball cock.

The water in the reservoir connects with a glass cylinder (No 10) which, at the same time, registers the pressure exerted on the gas by the weight of the dome of the gazometer. When there is no pressure, the water in this cylinder (No 10) is at the same level as that in the reservoir.

When the gas is under pressure in the dome of the gazometer, this pressure being communicated to the glass cylinder by a tube which connects the top of the cylinder with the gas pipes, lowers the surface of the water in it. The depression of the water is in proportion to the pressure of the gas, If the pressure of the gas exceeds three inches, that is to say if it is sufficiently strong to lower the level of the water more than three inches, the water then descends below the mouth of the tube which conducts it to the carbide and inevitably prevents its escape.

If the pressure of the gas diminishes, the water rises in the glass cylinder, and the moment it rises above the mouth of the feed pipe, the water rushes in to attack the carbide.

The gas thus formed raises the dome of the gasometer, which thus becomes heavier because it is rid of the counterweight which balanced it and which falls to its rest. Being heavier, the dome exerts a stronger pressure, sufficient to prevent the flow of water into the feed pipe, because it depresses the water below the mouth of the feed pipe.

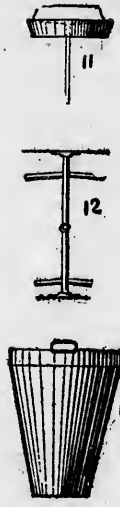
Hence it is the production of the gas which stops the flow of water. According as this production becomes consumed by use, the dome falls until checked by the counterweight, which it then raises. The water then rises again to its level in the

glass cylinder, since the dome, having become lighter, no longer exerts sufficient pressure to depress the water below the mouth of the feed pipe. The feed pipe then operates again, and a new generation of gas takes place which, in its turn, stops the flow of water.

The whole process is automatic, extremely sensitive, and perfect in its regularity. Just leave it alone, and it will do its work. The only labor required is that of emptying the generators and refilling them with carbide.

FEEDING THE GENERATORS.

The work of filling the generators is done as follows :— As soon as the indicating rod (No 16) rises an inch in the little phial on the lid of the generator, that indicates that the quantity of carbide is exhausted and a new provision required.



First open the generator and remove its lid. In order to do this, it is necessary to raise to a perpendicular position the semi-circular plate (W) which lies on the lid, and this raises, at the same time, the straight rod which works the feed pipe cock (No 4). The moment this rod is put in a vertical position, it closes the cock of the pipe, which carries water to the carbide. The semi-circular plate, put in a vertical position, closes the connection between the gasometer and the generator, thus preventing any return of gas from the gasometer to the generator. It connects, at the same time, the generator and the escape pipe, and causes the escape of what little gas may remain in the generator.

These three operations are done by the one movement.

Then the last obstacle remaining on the lid of the generator is removed in making likewise the last rod take a vertical position which thus opens the air cock (No 3).

The lid of the generator, having previously been unhooked, is then raised, *slowly*, so as to permit the air from outside to penetrate beneath the lid.

By a half circular movement push the movable part (No 15) of the water feed pipe against the inner sides of the outside vessel of the generator. Remove the floater (No 11), then the carbide bucket (No 13) and replace the carbide bucket by another, on which lay again the floater (No 11). Bring back above the centre of the floater the moveable part of the water feed pipe (No 15). Replace the lid of the generator in such a way that the line of its rivets will coincide with the line of the rivets of the outside vessel. When the lid is back in place fasten it there by closing its flaps.

Then bring back the semi-circular plate to a horizontal position by resting it on the lid of the generator. Finally, but only when the other generator has exhausted its supply of carbide, lower the rod of the water cock to the lid, and this will allow the water to begin its work.

The carbide bucket should contain a quantity of carbide sufficient to reach the second cross of the perforated pipes of the water distributor.

The carbide vessel ought to be perfectly clean and dry, and the water distributor carefully cleaned before putting in the carbide, and that carbide ought only to be put in at the moment of changing the one vessel for the other.

COST OF INSTALLATION.

The expenses of setting up the apparatus are very slight.

They are simply the expense of putting it up in a convenient place and the subsequent laying of the pipes through the rooms required to be lighted.

As the machine when sold is at once ready for operation, its setting up takes comparatively little time. The company

charges for this work a reasonable price per hour per workman and the expenses of removal. It charges the same price for laying the pipes.

The pipes required being small ($\frac{1}{8}$ and $\frac{1}{4}$ of an inch in diameter), their cost may be estimated from 3 to 5 cents per foot. The gazeliers are, of course, more or less expensive, according to the taste of the purchaser.

SOME SUGGESTIONS.

Never clean a burner with a wire or pin. A tooth brush is the best instrument for this purpose. Clean the burner by inserting the hairs of the brush into its crevices.

Never screw a burner into place with the fingers as that will surely put it out of order by twisting the branches, but use the gas plyers, seizing the burner only by the lower socket and never by its branches.

The vessel in which are placed the syphons (No 17) ought always to have sufficient water in it to cover the free part of these syphons.