

**ACETYLENE GAS GENERATOR.**

A SIMPLE, SAFE AND INEXPENSIVE APPARATUS THAT MAY BE CONSTRUCTED AT HOME.

Acetylene gas as developed thus far is practically new, although the gas and the calcium carbide from which it is produced have been known to chemists for sometime, but the cost of the carbide has been so high it was beyond commercial use until about two years ago, when improved methods of making it from coke and lime by an electric process brought the price within a reasonable figure.

The gas is produced by wetting calcium carbide with water. When carbide is immersed in water, the gas will be seen to rise in bubbles through the water and pass off into the air. The calcium carbide, which is in the form of irregular lumps, can be purchased for about fifteen cents a pound. It is non-explosive and is inactive except when submitted to the action of water. To obtain the gas for use it will be necessary to make a generator. The one shown in the illustration is in the form of a small gas tank in which the gas can be made and contained, and from which it may be drawn for use through pipes and rubber tubes.

The generator is made of galvanized sheet iron and is provided with legs as shown.

This work will necessarily have to be done by a tinsmith, some one handy with soldering iron. It can be laid out by the aid of the sectional view.

The cylinder forming the tank is eighteen inches high and twelve inches in diameter, with a strong watertight bottom soldered on it. Around the top there is a flaring collar four inches high. Another cylinder is made nineteen inches high and eleven inches and a half in diameter, with a gastight top soldered to it. With these two cylinders, one to fit within the other, the generator can be made. A piece of three-eighths inch brass pipe twenty inches long, another one ten inches long, and still another one four inches long, and two short pieces each an inch long are required.

These pieces of pipe should be threaded at both ends to fit other connections. Three elbows, one stopcock to receive a pipe at both ends, another with a hose end on it, and still another one that may be plain are required. A watertight cylinder eight inches in diameter and six inches high is necessary. This is soldered fast to the middle of the bottom in the tank by means of three short legs which will allow the water to pass under it as shown in Fig. 1. This cylinder occupies the position shown at C and is the gas cooler. A hole is made in the bottom of the tank an inch from the edge and through it is passed the long pipe, A, having at the bottom the pet cock, B. A small pipe passes up through the bottom and into the washing bottle. These parts are all well soldered bottom.

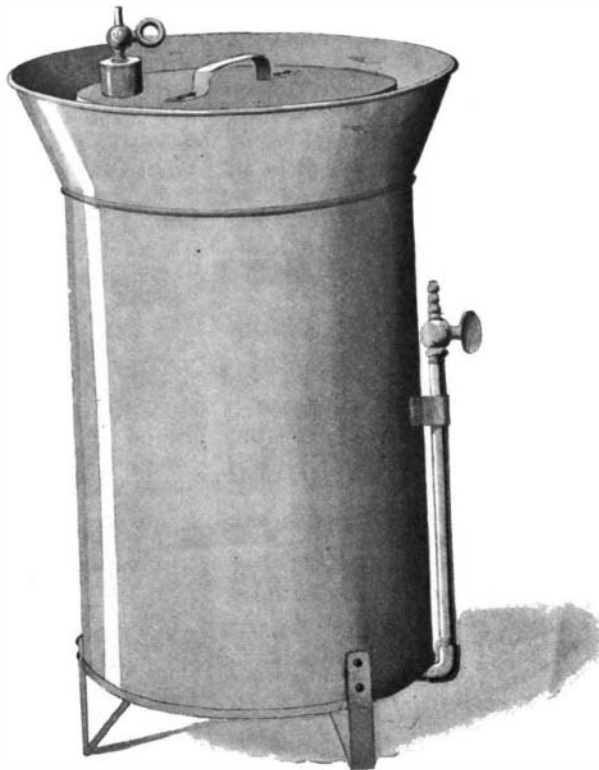
A short piece of pipe extends from the bottom of the cooler at the opposite side and connects with an elbow attached to the 4 inch length. The short piece of pipe is connected by another elbow to the 10-inch standing pipe, D, that extends up the outside of the tank, and is

provided at the top with the pet cock, E, to which the hose is attached. The stand pipe, F, should be braced near the top by a metal strap soldered fast to the side of the tank. Three angle legs, three or four inches high, are soldered fast to the bottom of the tank, as shown.

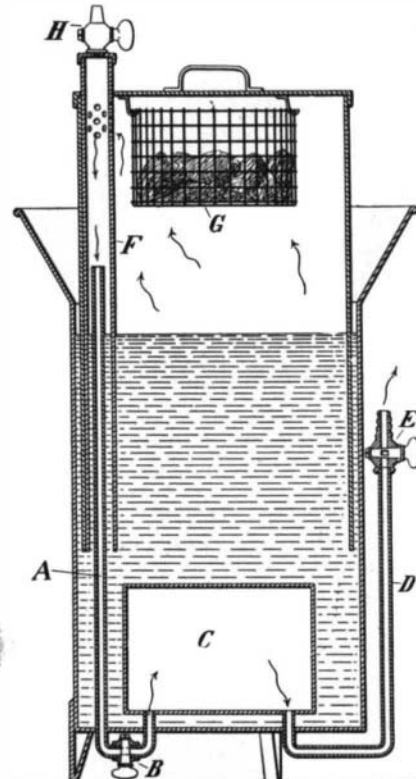
In the top of the movable or inside cylinder at the edge, a hole two inches in diameter is cut, through which passes a piece of two-inch galvanized leader pipe,

closed and the movable cylinder is inserted in the tank in such a position that the pipe, F, will fit over the stand pipe, A. Open the pet cock, H, at the top of pipe, F, and the cylinder will slowly sink in the water as the inclosed air escapes through the pet cock, H, and when the carbide touches the water, gas will immediately begin to generate, when the movable cylinder rises.

If the pet cock, H, is closed and the pet cock, B, is opened, the gas will then go down the stand pipe, A, into the cooler, C, and be ready to escape through pipe, D, as soon as pet cock, E, is opened. The object of the cooler, C, is to cool the gas before it passes through the gas tips, as cool gas gives a better and clearer light than warm gas. This generator, while seemingly intricate, is quite a simple affair, as will be found when it is complete. JOSEPH H. ADAMS.



**SIMPLE ACETYLENE GAS GENERATOR.**



**SECTION OF ACETYLENE GAS GENERATOR.**

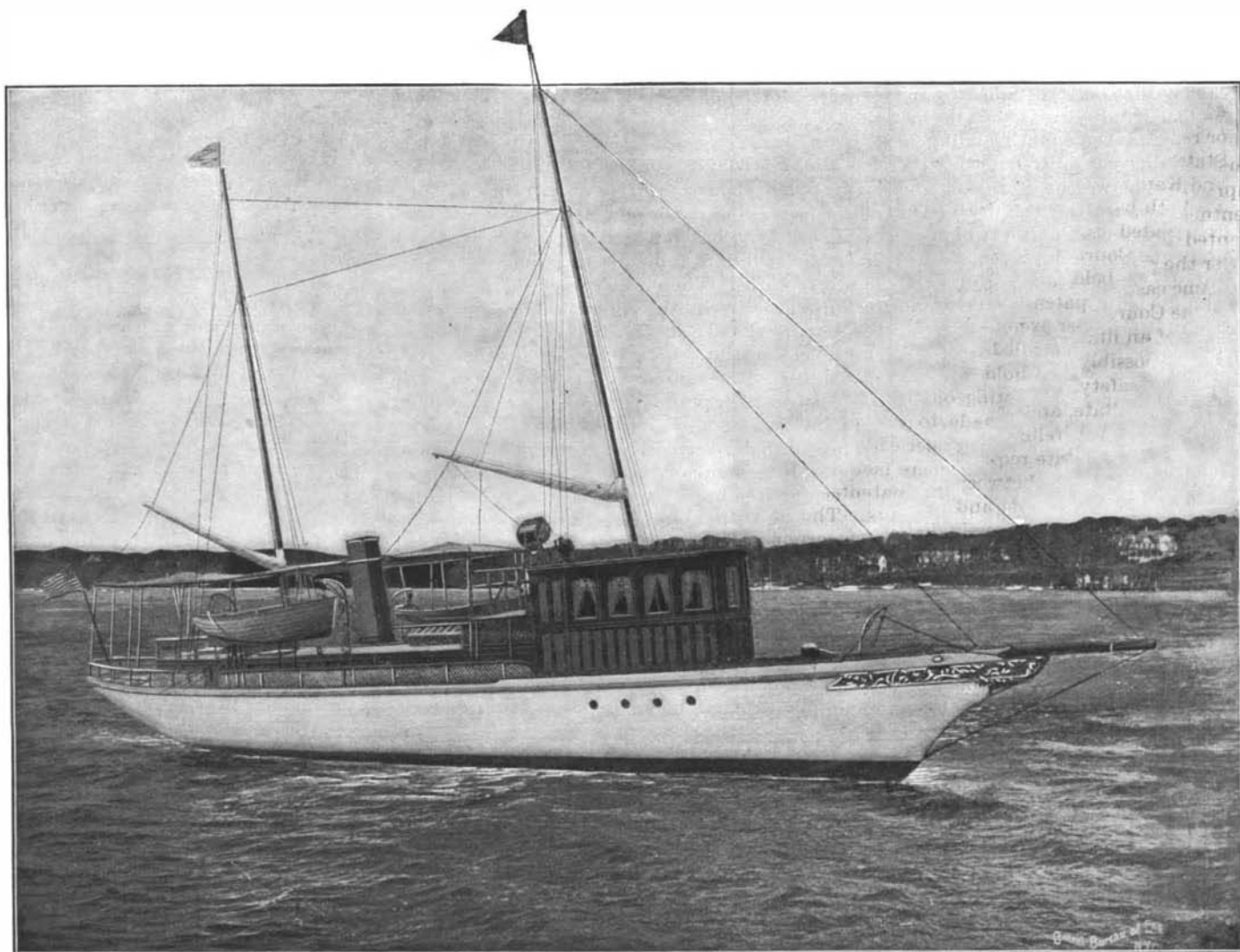
F, which extends three inches above the top, and at the upper end of the two-inch pipe a cap is soldered. In the center of this cap a pet cock, H, is inserted and soldered. This two-inch pipe is soldered to the movable cylinder, and directly under the top of the movable cylinder are punched a number of small holes to let the gas through.

On the top of the movable cylinder a handle is soldered, and from hooks projecting from the under side of the top is suspended a basket, G, made of galvanized screen wire. The calcium carbide is held in the basket, G. With several coats of enamel paint on both the inside and outside of the cylinders, the generator will then be ready for use.

To charge the generator a pound or two of calcium carbide is placed in the basket, which is hung on the hooks inside the top of the movable cylinder. The tank is filled with water. The cocks, B and E, are

motors consume only about five to six gallons of gasoline per hour, making the expense for fuel probably below fifty cents an hour. A two horse power stationary Daimler motor drives a dynamo which affords light for the whole yacht and a powerful search light.

The cabins are very elaborately finished, and the yacht has a fine pilot house, a main saloon, kitchen, fore-castle for the quarters of the crew, bathroom, engine room, smoking room, and three staterooms. It is designed to carry sufficient fuel for three hundred hours' actual run, and, there being no boilers and coal bunkers, considerable additional room is afforded as compared with that which can be utilized in a steam yacht of similar proportions. No government licensed engineer is required, and one man attends to all the machinery, thus reducing to a minimum the cost of running the yacht. Her owner intends to take her south in a few days, and to cruise on her throughout the year.



**THE GASOLINE YACHT "COYOTE."**

**A COMMODIOUS GASOLINE YACHT.**

The accompanying illustration represents a large, beautiful, and highly efficient gasoline yacht recently built by the Daimler Motor Company, of Long Island City, N. Y., for Mr. Eugene Peters, of Washington, D. C. Its length over all is 86 feet, beam 14 feet, and draught 4 feet, and it registers 36 tons. It is run by two 25 horse power Daimler motors, and has twin screws, improved reversing gear and carbureter, all of the latest design. The yacht made on her trial trip twelve and a half miles an hour, and it is expected that she will readily develop a speed of thirteen miles an hour or more. The cost of running is very low, as the two

**MARRIAGE,** according to Dr. Schwartz, of Berlin, is the most important factor in longevity. Of every 200 persons who reach the age of 40 years, 125 are married and 75 unmarried. At 60 years the proportions are 48 to 22; at 70 years, 27 to 11; and at 90 years, 9 to 3. Fifty centenarians had all been married. The doctor asserts that the rate of mortality for husbands and wives between the ages of 30 and 45 years is 16 per cent, while that for unmarried persons is 28 per cent.