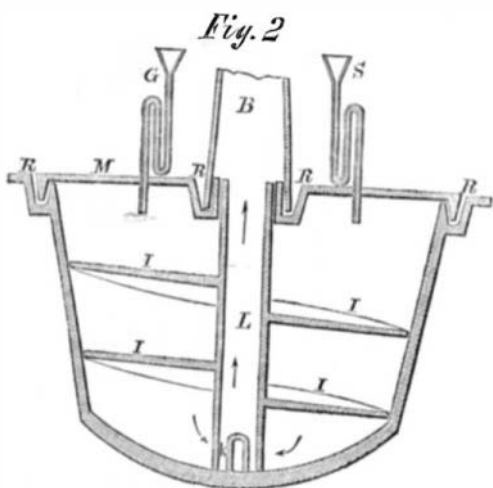


IMPROVED GAS APPARATUS.

Gas is the most beautiful and convenient agent of artificial illumination. It can be made from any of the hydro-carbon substances, but some of these are much better suited than others for this purpose. Resin oils and coal are the most common materials used; the two former for villages, public buildings, factories and houses; coal for cities. On a large scale, the common apparatus for making coal-gas is very perfect; and is entirely different from that required to make gas from resin or oils. Most coals contain ammonia and sulphur, which have all to be removed from the gas by absorbents; therefore, in making coal-gas, lime purifiers and other agencies involving elaborate apparatus are required. The gas made from resin or resin oil is more dense than that of coal, and one cubic foot of it affords as much light as two feet of the other. As it contains no sulphur, no lime purifiers, &c., are required in the apparatus, and it is therefore more simple, compact and suitable for villages, public buildings and houses. Its more general adoption, however, has been prevented by several defects in apparatus which has been employed, two of which we may mention. The first is a difficulty in keeping the retort clean from the adhering of hard carbon to its surfaces; the second consists in the passing over of a light condensable vapor of a very disagreeable odor, which is liable to become fluid in pipes and meters. By the gas apparatus illustrated in the accompanying engravings these evils are obviated and a more brilliant light from the gas secured; because a chemical liquid is gradually fed into the retort, which keeps it clean by preventing the adherence of the hard carbon to its surfaces, and also because all the vapor which is usually condensed in the pipes is converted into a permanent gas of a high illuminating power, from which it has received the name of "sunlight gas."

This apparatus is adapted for making the gas from

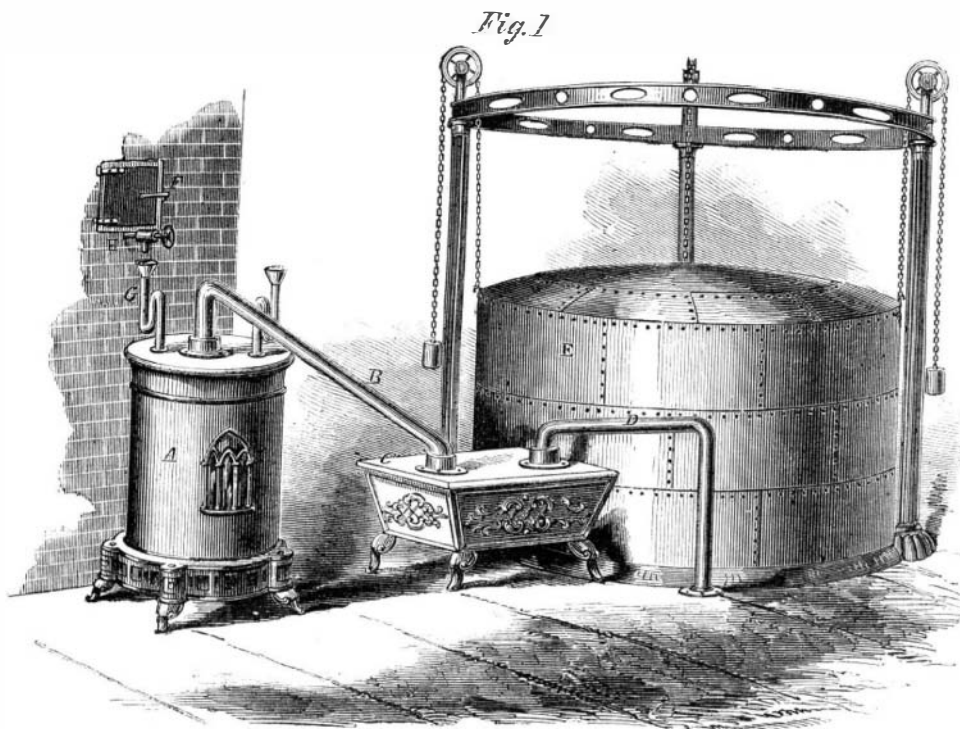


resin, resin oils, tallow or refuse grease; but it is specially designed for resin because it is the cheapest, the most cleanly and convenient substance which can be used. This much we have stated, by way of introduction, to convey a clear idea of the nature of the objects of the improved apparatus; and the following description of the figures will explain the offices and construction of the various parts.

Fig. 1 is a perspective view of an apparatus suitable for a private house; Fig. 2 is a vertical section of the improved retort, and Fig. 3 a view of a bench of retorts for making gas for a village or large factory.

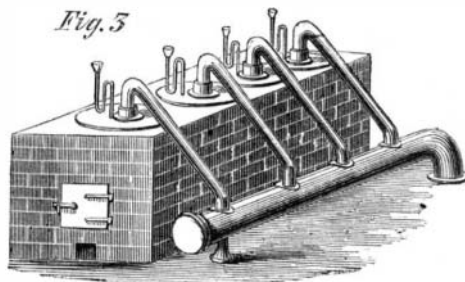
A is a stove to which the retort is applied for generating the gas. B is a pipe from which the generated gas

is conducted to the cooler, C, which contains water. D is a pipe from which the washed gas is conducted to the gasholder, E, from which it is conveyed by suitable pipes to the house for burning in the usual manner. The resin is heated in a receiver placed in the chimney at F, and converted into a fluid state, and from this it is suffered to drop regularly into the siphon, G, in the retort by the graduated faucet, h. The interior of the retort is formed with a series of inclined or spiral surfaces, I I, and the melted resin falls on the first or top



MARSH'S GAS APPARATUS.

one where the heat is lowest, then it spreads and passes down over the whole inclined surfaces, and in its progress it becomes exposed to higher degrees of heat, thus subjecting the gas as it is formed to a very elevated temperature—a necessary condition. It then passes out to the conducting tube, L, by the opening, k, of which there is one on each side of the pipe. By this operation the gas is exposed at last to the very highest temperature in the retort at the bottom, and all the volatile matter is converted into permanent gas. From the retort pipe, L, the gas is conveyed by pipe, B, to the cooler, C, Fig. 1, thence to the receiver for distribution. The chemical liquid for preventing the carbon adhering to the surfaces of the retort, and thus tending to keep it clean, is allowed



to drop into it by the siphon, S. The lid is made with a flange or rim which is retained in a receptacle, R, containing molten lead; and the pipe, B, is retained in a recess of the same kind. The other end of this pipe is retained in a water-joint in the cooler, C. The latter joint can sustain a pressure of six pounds, the joints of the retorts sustain a pressure of two pounds. Not a screw or bolt is used in forming the joints, yet the whole are so tight that no escape of gas is permitted.

A single coal fire, as in a coal stove, melts the resin, and effectually heats the retort so as to make the gas. A small retort, costing \$10, it is stated, will make as much gas as the common kind, costing \$60. One of these apparatus is used by Mr. R. D. Cook, at the Montegale Hotel, Niagara Falls, and he says it embraces the principle of keeping itself clean so perfectly that he can run it until it is burned up, making at the rate of 300 cubic feet of gas per hour, and it is never obstructed by

residuum. A retort of the form represented by Fig. 2, only 15 by 14 inches in size, will make 300 cubic feet of gas in one hour. In other retorts bricks and other substances are packed to expose the resin oil and gas to an extensive heating surface. The inclined shelves in this one obviate this kind of packing and secure better results. By this apparatus as much gas is obtained from a barrel of resin as from a barrel of resin oil; the former costs from \$1.75 to \$2, the latter from \$5 to \$7. For villages, factories, hotels and other public buildings, also private dwellings, this simple gas apparatus seems to be well adapted in every respect, both in regard to the simplicity, durability, cost and compactness. The patent for the retort was issued in August, 1858; and since then patents have been secured, through the Scientific American Patent Agency, in England and France, and other European countries. Other retorts for making gas from resin require to be cleaned every few hours because of the carbonaceous matter that adheres to the surface, which prevents the heat from acting on fresh resin. The advantages secured by having one which does not require such trouble to operate it are self-evident.

For further information address Alfred Marsh & Co., No. 241 Broadway, New York, where the working apparatus may be seen. The proprietors are experienced in the manufacture of all

kinds of gas apparatus—coal as well as resin and oil—and contract for the same.

PRESENT STATE OF THE PATENT OFFICE.

The long lists of patents which appear under the proper head in our paper from week to week evince a most commendable activity in the Patent Office. All persons who have business to transact with the Office, or who feel an interest in the progress of improvements in this country, must rejoice at the efficient manner in which this public bureau has been conducted for the last five years. Inventors especially have cause for congratulation in the fact that they can secure for so small a sum, and with so little trouble, that protection to their ingenuity which is extended to them by the existing statutes, and the liberal construction which is given them. Within our recollection, a patentee was looked down upon as a pitiable, crack-brained being, who was too lazy to earn his daily bread at an honest avocation, or as one who was endeavoring to cheat a living out of the public by his superior wits. But within a few years a wonderful change has come over the public mind in regard to patent property and inventors, and now there is no class of the community more highly esteemed. They receive a double respect—that which is commanded by genius, and that which is obtained by wealth; for many inventors have, of late years, grown rich out of their inventions. We could name scores of men who have made large fortunes from their patents within the last six years, and hundreds of mechanics, each of whom has realized a handsome competence already, and who has made his patent the means of establishing a large and prosperous business. The change in public feeling of which we speak is practically shown in the increased facility with which patents are sold. If an invention is good, if it has an actual money value, there is no difficulty in finding a purchaser.

Inventors would do well to secure the products of their ingenuity to themselves while the machinery of the Patent Bureau is in such good working order. We have, almost daily to listen to the tale of some poor inventor, who laments that he had not, years ago, taken out a patent for a certain invention, "as such or such a person has since realized a fortune for the same idea." In patent matters, delays are always dangerous.