

MAKING GAS FROM CRUDE PETROLEUM.

Petroleum has long been looked upon by the scientific and industrial world as one of the best materials from which to obtain light and heat, and, as time passes, the assertion that in the future it will do all that coal now does is received with a steadily increasing confidence.

This belief is strengthened by the many peculiarities which characterize both the product and its surroundings; when properly treated it is one of the best known illuminants and possesses great heating power, and it can be brought at a minimum expense from those vast reservoirs in which Dame Nature has kindly placed it in inexhaustible quantities. But the proper purification of the crude material, the elimination of all those constituents which decrease the effects following combustion, has proved to be an obstacle of no mean importance, since, heretofore, the accomplishment of this object could only be attained at a cost that was practically prohibitory.

Although we have for many years been dependent upon mineral oil for a large portion of our light, yet gas made from this source has not, until recently, been introduced upon an extensive scale, mainly because of the difficulties attending its manufacture and its poor quality. It is a simple matter to place oil in a retort, and by the aid of a little fire obtain a gas; but to so purify that gas that it will contain no element except those which promote combustion is a part of the problem which has been long studied unsuccessfully.

The North American Petroleum Gas Company, of 145 Broadway, this city, has produced an apparatus by which a gas having superior heating and lighting qualities is generated at a small cost comparatively from crude petroleum. The apparatus is simple in all its parts, requires but little attention, being almost automatic in operation, and from it arise none of those odors which are so conducive toward rendering the ordinary gas works a nuisance in any neighborhood. Our engraving shows a petroleum gas works built by this company at Brighton Beach, Coney Island.

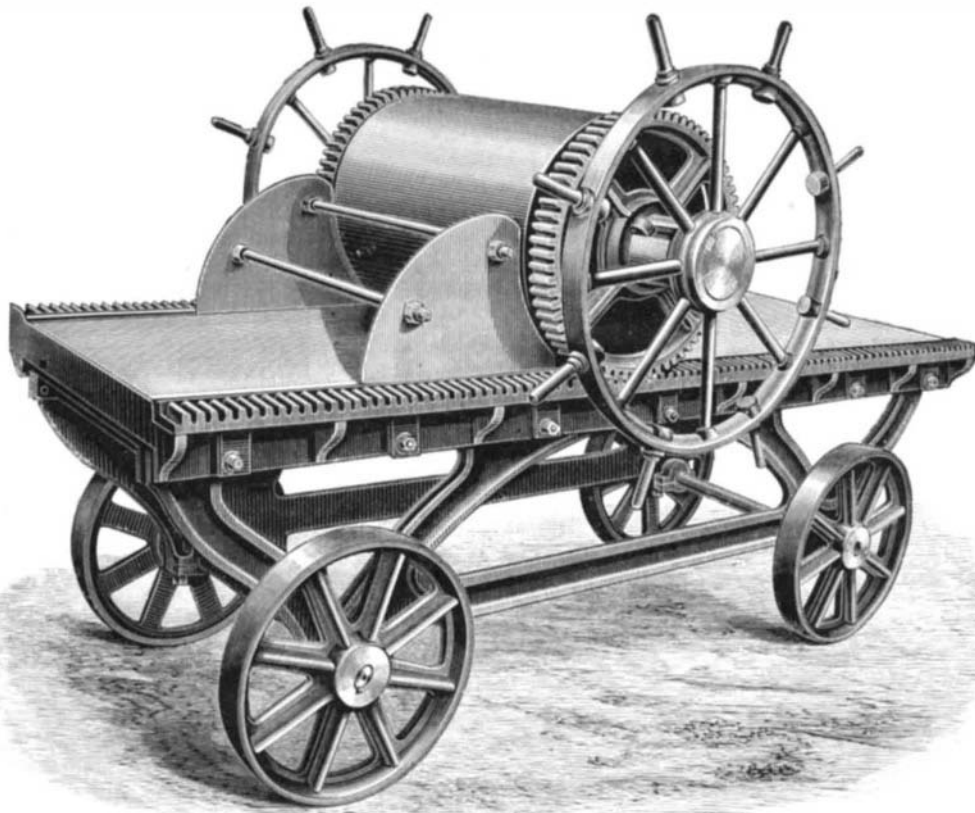
The oil, in the same condition as when it left the well, is raised by means of a small hand pump from a barrel placed outside of the building to a small tank located in a room adjoining the retort room. This tank is placed at such an elevation that the oil will flow to the retort, which it enters through the dome, spreading and falling to the bottom of the upper compartment, the floor of which, though at a cherry red heat, is covered with a substance which prevents "spluttering," and at the same time removes the heavier impurities. The gas here generated then passes through other chambers, arranged vertically, in which any remaining impurities are detained, and finally issues from the retort through a pipe which conducts it to a partitioned water box placed alongside of the retort. Here the gas is separated to insure each particle coming in contact with the water. The gas is then led to the condenser, consisting of a series of vertically arranged pipes, coupled in pairs and placed so that their lower ends enter the water contained in a closed box. This gas is so rich that before it can be used for ordinary purposes it must be mixed with about 40 per cent of air. This is accomplished by the mixer shown in the foreground of the engraving.

The furnace is placed in the center of the retort, immediately beneath the chambers, and the grate dumps into a long water trough. The heat is so distributed and utilized in its passage through the retort that all parts are subjected to just the right degree, while the consumption of coal is reduced to the lowest point. By means of flues and dampers the heat in any particular section can be controlled at will. The dome of any retort can be readily raised by the aid of a traveling block and tackle, thereby exposing the interior, which can then be cleaned, and the substance collecting the

impurities renewed. So slight is the attention required that a man and boy can easily take care of ten retorts.

This apparatus generates from 80 to 100 feet of gas from one gallon of crude petroleum, which costs four cents; and each retort yields from 150 to 250 feet per hour. The gas is a fixed gas, being unaffected by either cold or great pressure.

Since it mixes readily with coal gas, an inferior quality of the latter can be raised to any desired standard of illuminating power by the addition of a small amount of petroleum gas. It can be mixed with coal gas either by



IMPROVED GLASS ROLLING TABLE.

passing both together through the purifiers, or by passing the petroleum gas directly into the holder, thus forming a thorough mixture; the latter is the preferable method. The company claims that one barrel of crude petroleum will produce gas greater in amount of illuminating value than the coal gas produced from two tons of the best Pennsylvania gas coal; less fuel being required, no lime, and the handling of material being greatly reduced. A comparison—made by the chemist A. T. Schuessler—of this gas with ordinary coal gas shows that the former is 4.90 times superior in illuminating power, and therefore one cubic foot of the former will give almost as much light as five cubic feet of the latter.

Through the courtesy of the president of the company, Mr. Isaac D. Guyer, we recently had an opportunity of comparing the illuminating power of petroleum

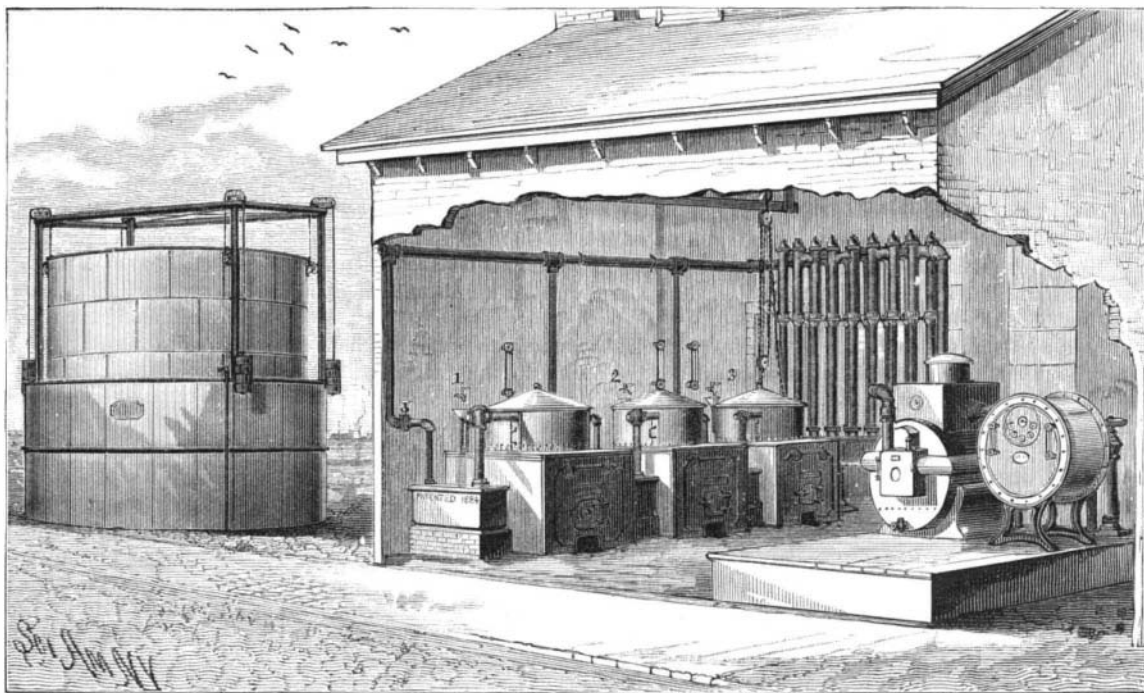
wants protection for his "Paradisina" perfume or his "Tiberius" relish. This is much more useful to him than mere protection of a certain design which he may print on his labels. The public buy the perfume or the relish, and do not trouble themselves about the presence or absence of an anchor, a crown, or a cross-keys on the labels.

So the government granted this power of registering fancy words as trade marks, and the result is now beginning to appear. Last month we published, says the *Chemist and Druggist* (London), some correspondence which had passed between Mr. Haydon, of Birmingham, and the Registrar of Trade Marks. Mr. Haydon seems to have directed attention to the registration of the terms "Domestic Tea" and "Mitre Tea," and to have asked on what principle such titles are admitted to registration. The answer of the Registrar showed that the subject had been considered, and it can easily be seen that to draw the line fairly is a task of extreme delicacy. The act says he may register as a trade mark any distinctive impression of the name of the firm, or the signature of a firm, or "a distinctive device, mark, brand, heading, label, ticket, or fancy word or words not in common use."

The Registrar decided—fairly enough, the editor thinks—that he ought to regard as a fancy word, not necessarily an absolutely new word or meaningless combination of letters, but any word used outside of its ordinary significance. The term "Mitre," as applied to tea, seems to be, on that interpretation, quite a fancy word, but the adjective "Domestic" almost approaches description. The Registrar, however points out that the combination of words "Domestic Tea" is not a combination of "words in common use," like "Souchong Tea" or "Green Tea," which, as such, would clearly be excluded.

The Salvation Army's Trade Mark.

The *Official Trade Mark Journal*, London, in its issue of August 20, publishes an application from "William Booth, General of the Salvation Army and Minister of the Gospel," to be registered, as the proprietor of a trade mark, in which the design of a cross and crown and the words "blood and fire" form the principal part.



APPARATUS FOR MAKING GAS FROM CRUDE PETROLEUM.

gas with water gas, issuing from burners of the same size. The petroleum gas was under a pressure of one inch, while the other was two and a half inches. The petroleum gas flame was much larger, more brilliant, and of a purer color than the other.

An important advantage possessed by this gas arises from the fact that the plant necessary for its manufacture upon a large scale can be erected at a cost much less than that required by the ordinary gas works; and in addition, the space occupied is small in comparison.