

THE GAS AND GASOLINE ENGINES OF THE GLOBE GAS ENGINE COMPANY, OF PHILADELPHIA, PA.

The gas engine has been recognized by engineers as affording one of the most efficient prime motors known. The steam engine is far more wasteful of the energy received from its fuel when steadily running. Irrespective of this fact, a further source of waste, which may be of still greater degree, is that for intermittent power much of the fuel in a steam boiler furnace may be burned uselessly. When a steam engine is not running, the boiler fires may go on burning fuel almost as fast as when the engine is in operation. It is only in cases of prolonged stoppage that it is practicable to draw the fires or to bank them.

With the gas engine it is different. The gas is turned off when the engine is to stop, and none is used until it is wanted. The steam engine is stopped by shutting off steam; the gas engine is stopped by shutting off fuel. This is a radical distinction.

We illustrate in this issue two of the several types of engines manufactured by the Globe Gas Engine Company, of No. 53 North Seventh Street, Philadelphia, Pa. The horizontal is called the Union, and is intended for stationary use. The vertical engines are of both single and double cylinder types; the former being the Pacific and the latter being the Union engine. The vertical single cylinder engines are used for both stationary and marine purposes, while the double cylinder engines are only for marine uses, and receive an impulse for revolution, each cylinder acting alternately as single engines.

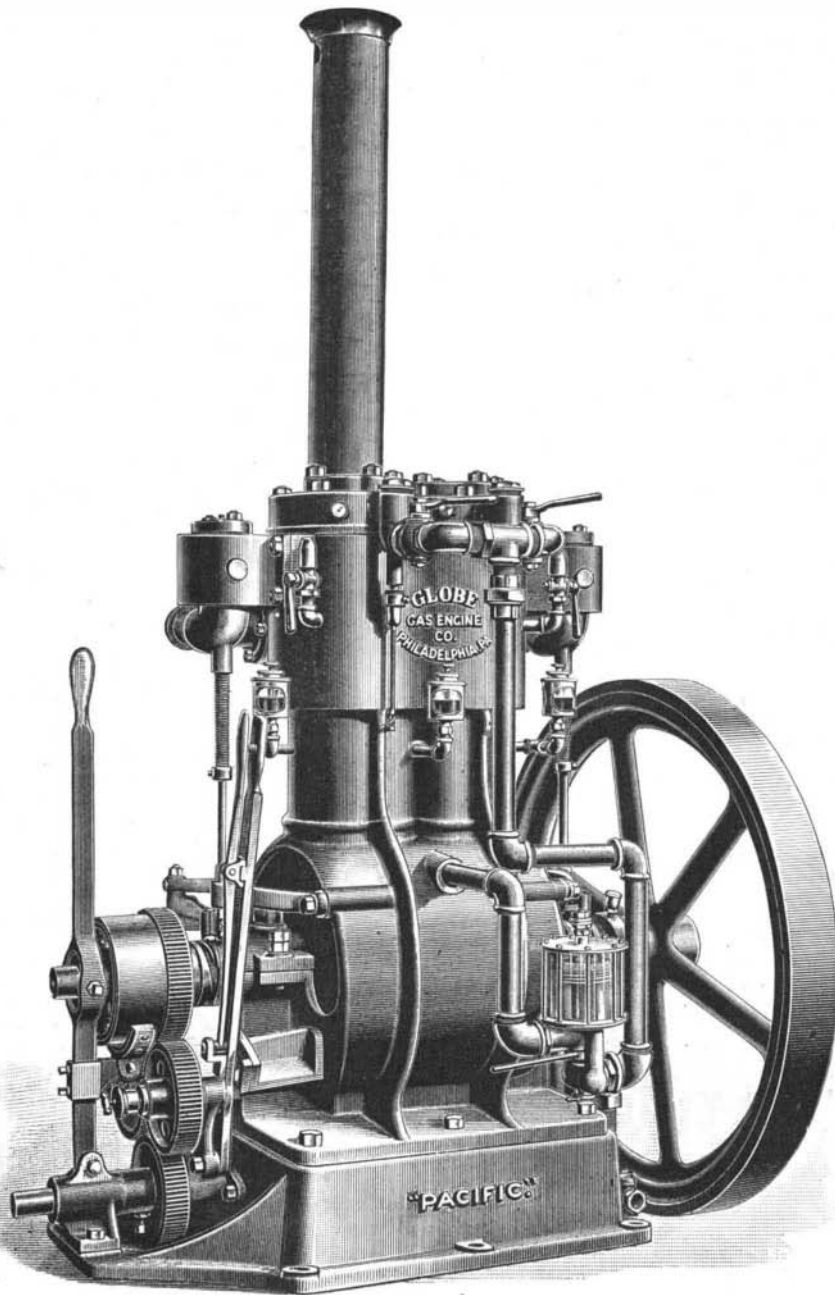
The Globe Gas Engine Company's engines are built to work with both gas and gasoline. Its perfect adaptation to the latter kind of fuel was shown in an experiment in which an engine was run for a long time with kerosene oil in place of gasoline. The fuel is vaporized before burning, simple atomization not being relied on, and no heat is required for the purpose.

As the energy of all engines is heat—emphatically so of internal combustion engines—extensive experiments were made in the summer of 1892 by the Union Gas Engine Company, of San Francisco, Cal., who also manufacture the Pacific and Union engines, with a view of saving this hitherto wasted power, and the result proved very successful, especially with the oil engines. After the engine has been running a short time the air for combustion is automatically heated by extracting the heat from the exhaust. Thus the fresh charge is brought into the engine in a heated state, and increased economy is the result of the recuperation. This is one of the features of these engines.

The governing device is twofold in action. It not only shuts off and admits fuel, but regulates the exhaust valve so as to prevent wasteful cushioning. The mixture of air and gas or vapor is ignited by an electric spark. This is a peculiarly valuable feature, as it does away with the hot and rapidly corroded ignition tube used in some gas engines. A great deal of trouble has resulted from the use of these tubes. Again, the electric spark is produced within the engine, so that it runs absolutely without any external fire.

The marine engines below 6 h. p. are single cylinder; from 6 to 75 h. p., are double cylinder. By a combination of friction clutch, brake, and reversing train, this engine can be thrown off the propeller shaft and recoupled for reverse motion without jar. The reversing mechanism is simple, is controlled by one handle, and is very rapid in operation. A great many marine engines are in use on pleasure

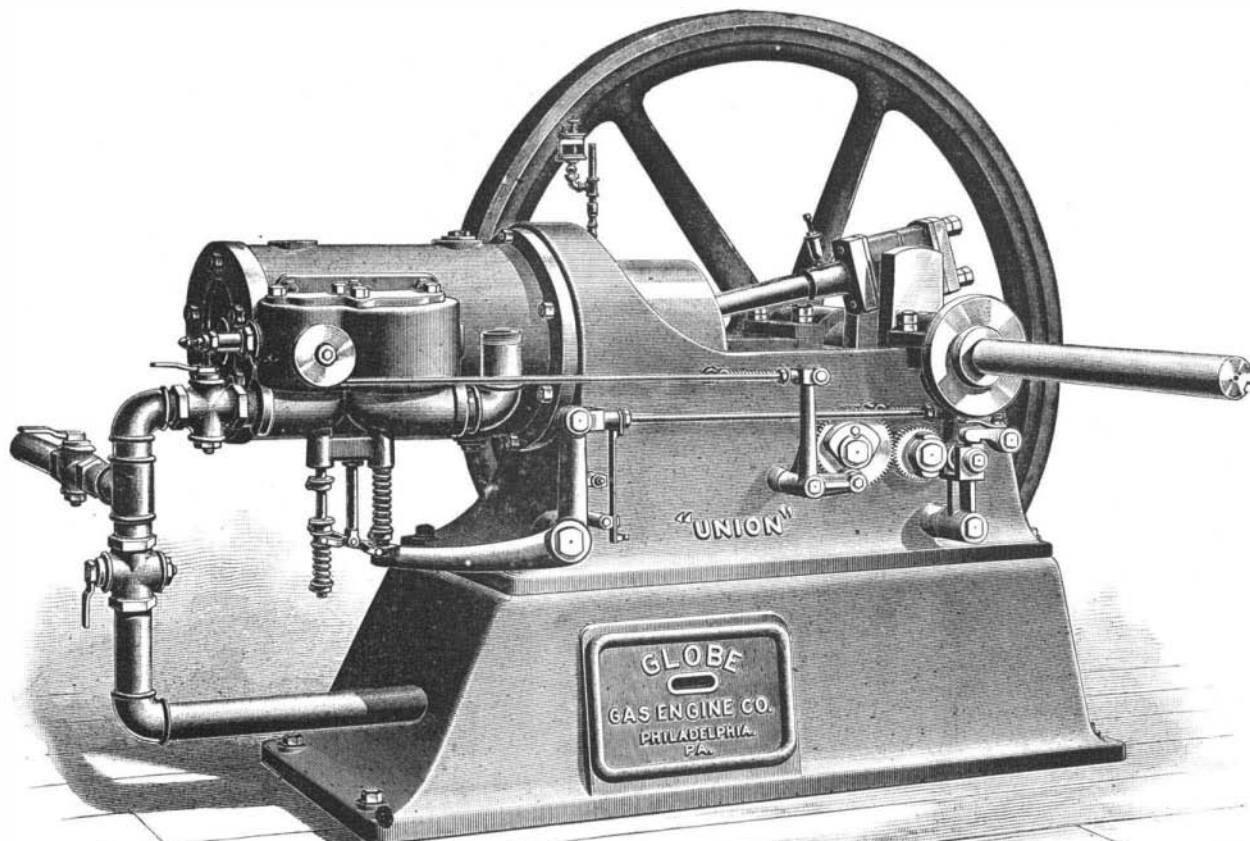
launches, while a number are used on actual working boats. Of these vessels some are of quite good dimensions, one being 90 feet long with 45 h. p. (actual), and a 75 h. p. is now being built for the same party for a larger boat. The engines are adapted for all types of



MARINE GASOLINE ENGINE OF THE GLOBE GAS ENGINE CO.

wheels, side wheels, stern wheels, or screws. The gas consumption per horse power hour is put at 21 cubic feet; one-eighth to one-sixth gallon of gasoline does the same service. No engineer is required, explosion is impossible, and there is no fire risk. The double cylinder engine for low power can be run on a single cylinder. These marine engines are throttled the same as steam engines, and can be handled to perfection.

DENMARK'S dikes are over seven centuries old.



SINGLE CYLINDER GAS AND GASOLINE ENGINE OF THE GLOBE GAS ENGINE CO.

A Tower for Copenhagen.

It has been decided to build a tower, on somewhat similar lines to the Eiffel tower, in a park outside Copenhagen, on an elevated spot, from whence there will be an exceptionally fine view over the city, the surrounding picturesque country, the sound, and a long distance into Sweden. It will be built exclusively of iron and steel, and the foundation will be cement concrete. The height will be considerably more modest than the towers of Blackpool and Paris, viz., only 430 feet, but then the locality is some 90 feet above the level of the sea. The diameter of the base will be 160 feet, and there will be three platforms, at respectively 100 feet, 200 feet, and 350 feet. The lowest platform will rest on a structure of the shape of an even sixteen-sided pyramid, and will itself be octagonal, each side being 46 feet. This platform will have in its central portion an octagonal pavilion for restaurant, etc. In the upper portion of this pavilion will be access to staircase and elevator to the upper platforms. The access to the lower platform will be by two staircases and two elevators; the capacity of the latter will be about a dozen passengers each, and their maximum speed 1½ feet per second. It has not yet been decided whether they will be worked by hydraulic power or electricity. The second and third platforms will also be octagonal, fitting into circles of respectively 54 feet and 31 feet in diameter. These will have stone floors, and the access to them from the lower platform will be by means of two staircases and two eight-passenger elevators, round which the staircases are placed. The top structure, which will be double, will, in its lower portion, be 19 feet in diameter and 31 feet high; 10 feet above the third platform there will be a floor, intended for military and other observations. The upper portion will be 9 feet wide and 16 feet high, and there will here be placed a powerful electric light. The whole structure will be lighted by electricity, but gas will also be laid on as a reserve. The cost is calculated at \$165,000.

Russet Oranges.

A little item in the New York *Confectioners' Journal*, in which golden russets and small dark russets are incidentally stated to be the best keeping oranges, has called to our mind a very general experience which we have never seen referred to in print. We buy for our own table consumption russet oranges in preference to bright oranges, and yet in our official work we are in constant receipt of requests from orange growers for methods of destroying the rust mite. The hardening of the skin of the orange from the work of the rust mite undoubtedly keeps them juicy, improves them for shipment, and retards decay. The selection of bright oranges was a fad among growers and wholesale buyers which did not last. The time has come when russet oranges for shipment command higher prices and when remedial treatment for the rust mite is only necessary for a great excess of this Acarid. The change in public opinion in this matter shows that utility governs even sentiment.—*Insect Life.*

Cycling in Russia.

The bicycle is but little encouraged in St. Petersburg. Wheelmen there are restricted to the use of certain streets, which are for the most part so wretchedly paved as to make riding through them almost impossible. No person under the age of eighteen may enjoy the privilege of cycling, and no very high machines are allowed in the streets. Another order provides that after dark no cycles of any sort shall be permitted.