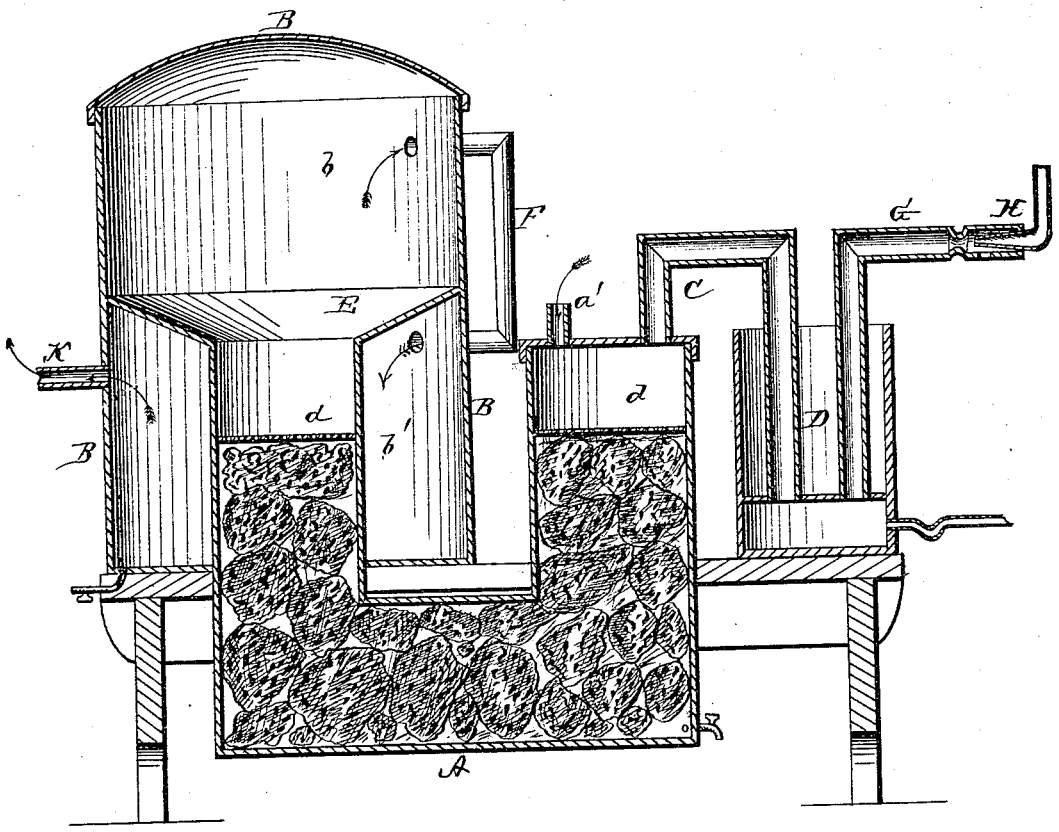
C. M. GEARING.

Carbureting Apparatus.

No. 166,602. Patented Aug. 10, 1875.



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CHARLES M. GEARING, OF PITTSBURG, PENNSYLVANIA.

IMPROVEMENT IN CARBURETING APPARATUS.

Specification forming part of Letters Patent No. **166,602**, dated August 10, 1875; application filed April 17, 1875.

To all whom it may concern:

Be it known that I, CHARLES M. GEARING, of Pittsburg, in the county of Allegheny and in the State of Pennsylvania, have invented certain new and useful Improvements in Carbureting Apparatus; and do hereby declare that the following is a full, clear, and exact description thereof, reference being had to the accompanying drawings, and to the letters of reference marked thereon, making a part of this specification.

This invention relates to certain improvements in apparatus for the manufacture of illuminating-gas from benzine, gasoline, or other hydrocarbon fluids by charging or saturating air with the vapor of the same in such manner as to thoroughly carburet it, substantially as hereinafter more fully set forth.

The invention consists in an improved carbureting-chamber, consisting of a U-shaped vessel containing suitable packing, one leg of which vessel extends upward into a cylindrical chamber, and is connected with its walls, midway between its top and bottom, by means of a funnel-shaped diaphragm dividing the chamber into two compartments connected by means of a pipe, the other leg being connected with the air-supply pipe, and provided with an inlet for filling, all of which will be more fully hereinafter described.

The drawing represents a vertical section of my improved apparatus, the letter A indicating the U-shaped carbureting-chamber, and B the cylindrical chamber, into which one leg of the same extends. The chamber A is filled with sponge or other suitable absorbent packing, which is secured in place by means of foraminous diaphragms in each leg of the vessel, as indicated by the letters *d d*. The outside leg of the chamber A is closed, with the exception of an aperture, *a'*, for filling, and an aperture into which a tube, C, from the cooler D extends. The leg extending into the cylindrical chamber B is formed with an open end, which is connected with an annular funnel-shaped diaphragm, E, extending to the walls of the chamber B, forming a partition therein, dividing said chamber into two compartments, *b b'*, which communicate with each other by means of a connecting-pipe, F. To the lower parts of both the chambers A and B are secured cocks for drawing off any naphtha that may settle or become condensed in the same. The tube C, as above stated, serves to connect the vessel A with the condenser or cooler D, through which the blast of air and steam is forced previous to entering the carbureter in order to condense the steam and deprive the air of all moisture. Said condenser consists of a cylindrical vessel with a horizontal partition near the bottom, forming a compartment connected with the blast-tube G and exit-tube D, said tubes forming cooling or condensing passages, as will be perceived. The compartment in the lower part of the cooler is provided with a trap-pipe for the escape of condensed water, which acts as a seal to prevent the escape of the air. H represents a steam-blast at the end of the tube G, consisting of a jet-pipe entering the end of the pipe G, leaving an annular passage for the admission of the air, which is drawn in with the current of steam forced into said tube.

Great difficulty is ordinarily experienced in the manufacture of gas by carbureting air, owing to the tendency of the vapor with which the air is charged to condense immediately after leaving the carbureting-chamber, filling the pipes and obstructing the passage of the carbureted air, and this my invention is designed to obviate. To this end I extend a cylindrical carbureting-chamber into a larger cylindrical chamber, terminating the same with a funnel-shaped mouth extending to and connected with the sides of said larger chamber. This forms a condensing-chamber in the upper part of the cylinder B, through which the carbureted air has to pass after leaving the carbureter on its way to the pipes. In this any surplus vapor that is carried over by the air will be condensed and returned by the funnel to the carbureter, to be again subjected to the action of the air, thus preventing condensation in the pipes, and saving a large amount of hydrocarbon which has hitherto been wasted.

The operation of the apparatus will be readily understood from the foregoing description. The chamber A being properly charged with hydrocarbon fluid through the aperture *a*, which is afterward closed, a jet of steam is

blown into the pipe G, carrying into its open end a current of air, and forcing the same through the cooler to the carbureter. In the cooler the steam is condensed and the dry air alone proceeds to the U-shaped chamber, passing through the saturated packing therein, and becoming thoroughly charged with hydrocarbon-vapor, in which condition it enters the compartment *b* of the chamber B. Here any superfluous vapor is condensed, and falls back into the carbureting-chamber, the gas continuing through the connecting-pipe to the chamber *b'* below, which deprives it finally of any condensed vapor that may be carried over by any possibility from the former chamber. From said chamber it passes into the service-pipe *k*, and from thence to the burners.

Having described my invention, what I claim, and desire to secure by Letters Patent, is—

The combination of the carbureting-chamber A, extending into the cylindrical chamber B, and provided with a funnel-shaped mouth, E, serving as a diaphragm across the chamber B, and forming a condenser above the carbureting-chamber in which any surplus vapor will be condensed and returned to the same, substantially as herein set forth.

In testimony that I claim the foregoing I have hereunto set my hand this 31st day of March, 1875.

CHARLES M. GEARING.

Witnesses:

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C. M. ROBINSON.