(No Model.)

W. MAYNARD.

APPARATUS FOR CHARGING LIQUIDS WITH GAS.

No. 309,968. Patented Dec. 30, 1884.

Fig. 1.

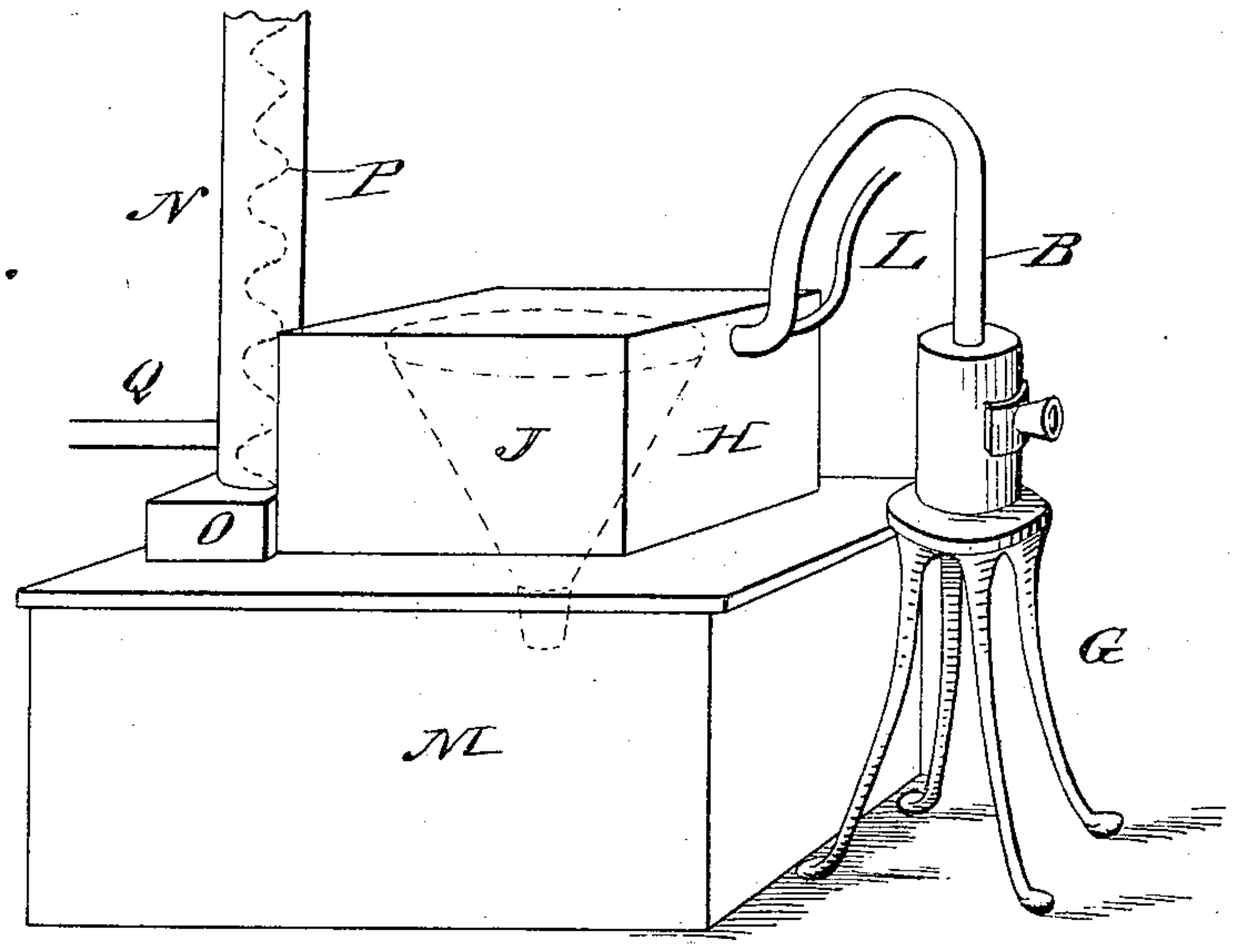


Fig. 3.

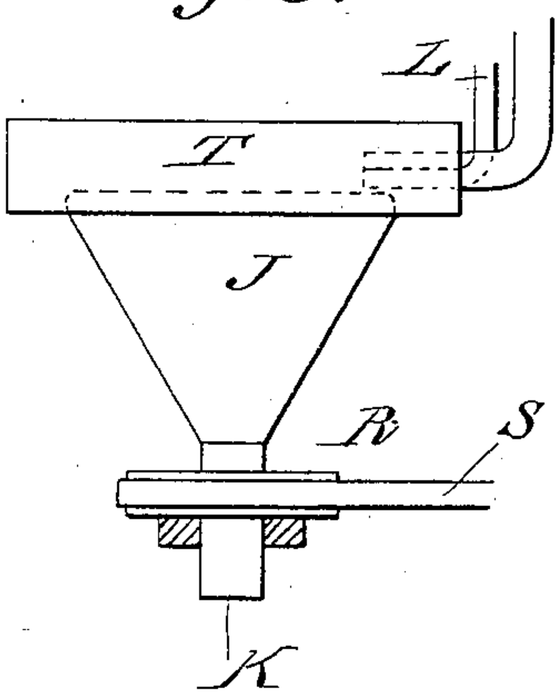


Fig. 2.

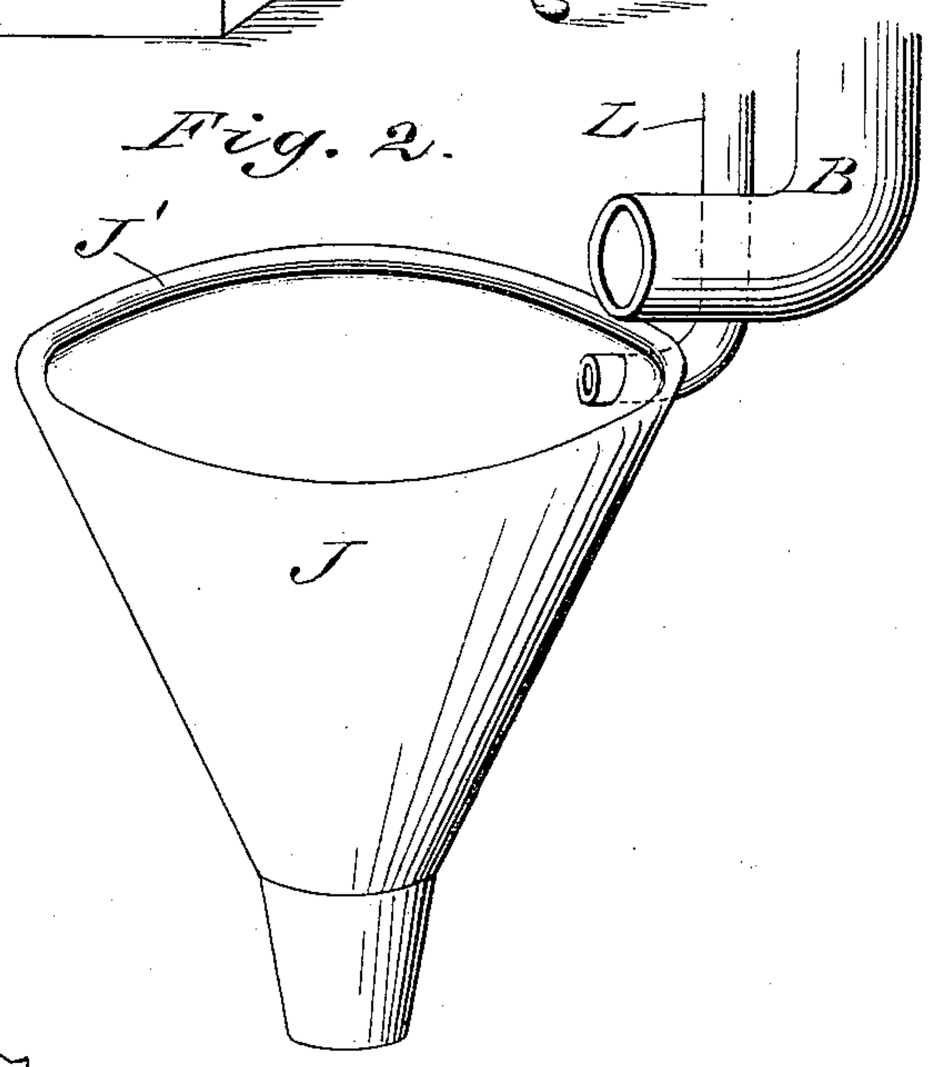
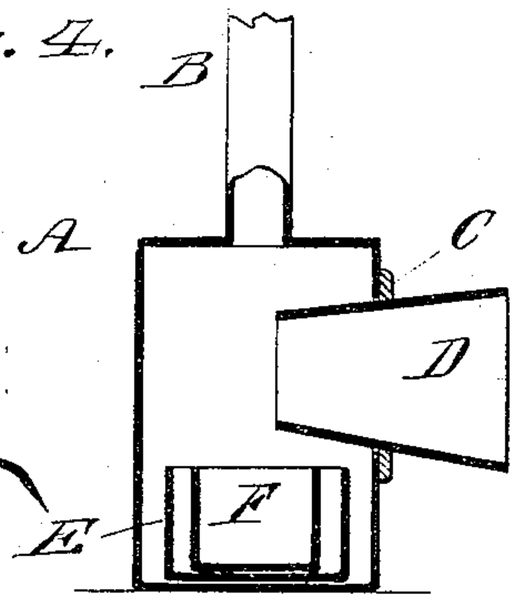


Fig. 4.



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APPARATUS FOR CHARGING LIQUIDS WITH GAS.

SPECIFICATION forming part of Letters Patent No. 309,968, dated December 30, 1884.

Application filed April 16, 1884. (No model.)

To all whom it may concern:

Be it known that I, WILLIAM MAYNARD, of the city, county, and State of New York, have invented a new and Improved Gas-Purifier and Hydrator, of which the following is a full, clear, and exact description.

This invention relates to certain new and useful improvements in apparatus for generating and hydrating sulphur dioxide and like gases and vapors, and also for purifying gases insoluble in water—such as illuminating-gas, &c.

The invention consists in the combination, with a furnace for producing fumes or gases, of a funnel provided with pipes for conducting gas and water into the said funnel, in which the water gyrates along the sides very rapidly, thus hydrating or purifying the gas, and drawing it downward into a gas-receiver placed below the box.

The invention also consists in parts and details and combinations of the same, as will be fully described and set forth hereinafter.

Reference is to be had to the accompanying drawings, forming part of this specification, in which similar letters of reference indicate corresponding parts in all the figures.

Figure 1 is a perspective view of my improved gas purifier and hydrator. Fig. 2 is a perspective view of the funnel and the water and gas inlet pipes. Fig. 3 is a side view of a modification of the same in which the funnel is arranged to revolve. Fig. 4 is a longitudinal sectional view of the furnace for burning sulphur or other material, and the aspirator in the same.

The furnace A consists of a cylindrical vessel, into the top of which a goose-neck pipe, B, projects. The furnace A is provided in its front with a hinged door, C, in which an aspirator, D, is held, which aspirator consists of a funnel projecting into the interior of the furnace, the outer end of the funnel having a larger diameter than the inner end. In the bottom of the furnace A the sulphur-burning cups or pans E and F are located, one within the other. Either cup can be used for burning the sulphur. If a large quantity of sulphur is to be burned, the inner cup is removed. If a smaller quantity of sulphur is to be burned, it is placed in the inner cup, F; and if a still smaller quantity is to be burned, it is placed in the space between the two cups. The air passing into the furnace through the aspirator produces a uniform and constant current, which carries the fumes upward into the goose-neck B, and prevents them from condensing in the top of the furnace. The air entering into the furnace comes in direct contact with the fumes, and all damaging currents of air which would so disarrange the gas or vapor as to retard its passage upward and forward in a steady uniform manner are avoided. The furnace is placed on a suitable stand, G. In a box, H, a funnel, J, is held, which is provided at its lower narrow end with a neck, K. The end of the goose-neck B passes through the box H, and the end of the said goose-neck is held above the top of the funnel J. A water-inlet pipe, L, enters the funnel J directly below the rim. The funnel is provided at its top with an inwardly-projecting flange, J′, which is grooved on the under side. The water entering through the pipe L sweeps around the sides of the funnel and downward, thus forming a vortex in the neck K. The velocity of the water is regulated by the pressure. The gyration of the water draws along the fumes entering through the pipe B, whereby the said fumes are drawn down through the funnel and through the vortex formed in the neck of the same, whereby the fumes are continually condensed.

Below the box H and the funnel J a receiver, M, for the hydrated gas is arranged, into which the hydrated gas is conducted from the neck K. From this receiver M the hydrated gas is drawn off as may be desired. The reservoir or receptacle M is provided with a pipe, N, for the escape of nitrogen and other insoluble gases. Near the base of the pipe N a box, O, is provided, in which box is placed a sieve or screen, on which soda, potash, lime, or other alkalies are placed for the purpose of absorbing any kind of soluble gases that may remain free or in chemical combination with the azotized air. If it should be necessary to oxidize the separated gases to any greater extent, arrangements could be made in the reservoir M by which atmospheric air or pure oxygen might be admitted in such quantities as would produce the desired result.

The pipe N, for carrying away the azotized

air or insoluble gases and for purifying the same to the greatest possible extent from such gases as sulphur dioxide, &c., is provided with a piece of canvas or other fibrous material, P, arranged in a zigzag line, which canvas is moistened, and by which canvas the soluble gases are held. I cause a jet of steam to be admitted into the pipe N through a pipe, Q, to create the desired humidity in the pipe N.

The apparatus can be made of wood, porcelain, earthenware, or any other material that is not attacked by acids. In some cases the pressure of the water will not be sufficient to cause sufficient rapidity of revolution in the funnel J to draw the vaporous gases and fumes downward.

In order to increase the speed of the water and insure rapid operation, the neck K of the funnel J is provided with a pulley, R, over which a belt, S, passes, for revolving the said funnel. In this case the upper end edge of the funnel must be held to revolve within a fixed piece, T, into which the goose-neck B and the pipe L pass. The outer diameter of the aspirator-funnel D is preferably made the same as the outer cup or pan, E, of the sulphur-burner.

Having thus described my invention, I claim as new and desire to secure by Letters Patent—

1. In a gas purifier and hydrator, the combination, with a furnace for burning the material to produce the gas, of a funnel provided with a water-inlet pipe and with a pipe for conducting the gas into the said funnel, and of a receiver for the purified and hydrated gas, substantially as herein shown and described.

2. In a gas purifier and hydrator, the combination, with a furnace for producing the gas or fumes, of a funnel, a pipe for conducting the fumes to the funnel, a pipe for conducting the water to the top of the funnel, a gas-receiver, and a pipe extending upward from the same, substantially as herein shown and described.

3. In a gas purifier and hydrator, the combination, with a funnel adapted to receive the gas at the top, of a pipe for conducting water into the top of the funnel, a gas-receiver, an outlet-pipe for the receiver, and a box arranged below the outlet-pipe and adapted to contain an alkali, substantially as herein shown and described.

4. In a gas purifier and hydrator, the combination, with a funnel provided with pipes for conducting gas and water into the top of the said funnel, of a gas-receiver below the funnel, and an outlet-pipe extending upward from the gas-receiver, in which pipe canvas or other fibrous material is arranged, a pipe for conducting steam into the said outlet-pipe, and a box arranged below the outlet-pipe, which box is adapted to receive an alkali, substantially as herein shown and described.

5. In a gas purifier and hydrator, the combination, with a revolving funnel, of a fixed rim, into which the gas and water conducting pipes project, and of a gas-receiver connected with the funnel, substantially as herein shown and described.

6. In a gas purifier and hydrator, the combination, with the furnace A, of two concentric cups, E and F, substantially as herein shown and described.

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