

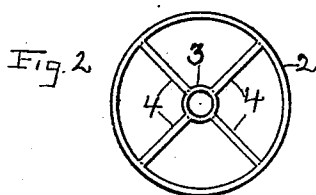
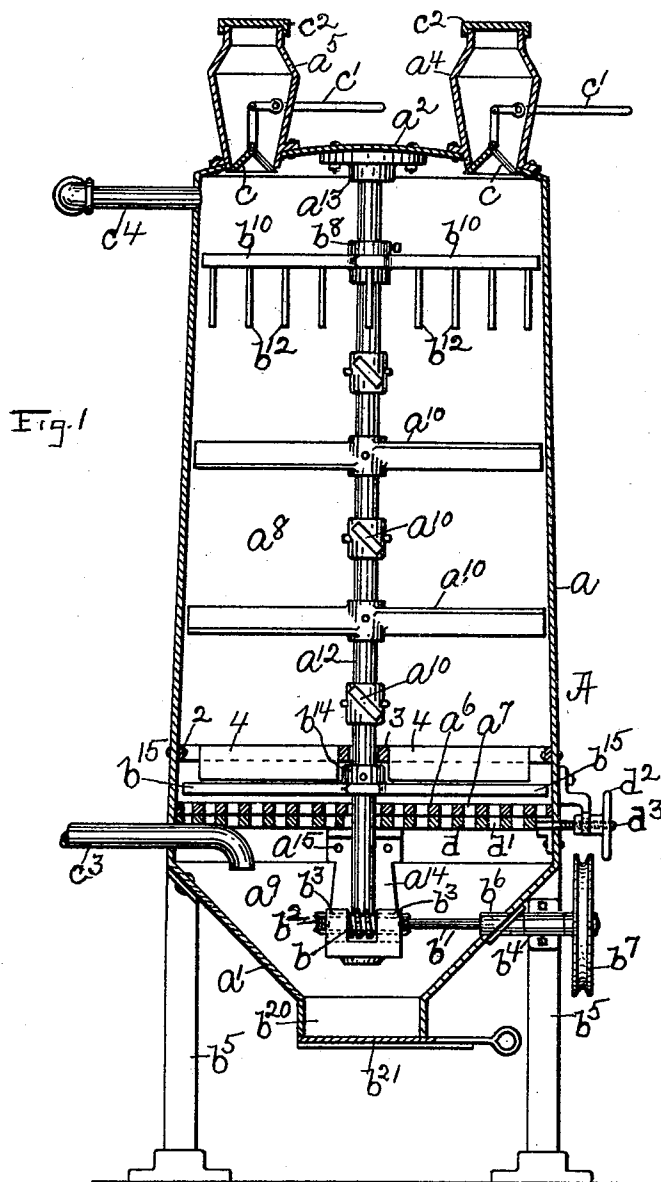
No. 620,925.

Patented Mar. 14, 1899.

L. J. HIRT.
GAS PURIFYING APPARATUS.

(Application filed Sept. 22, 1897.)

(No Model.)



WITNESSES:

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GAS-PURIFYING APPARATUS.

SPECIFICATION forming part of Letters Patent No. 620,925, dated March 14, 1899.

Application filed September 22, 1897. Serial No. 652,824. (No model.)

To all whom it may concern:

Be it known that I, LOUIS J. HIRT, residing in Brookline, in the county of Norfolk and State of Massachusetts, have invented an Improvement in Gas-Purifying Apparatus, of which the following description, in connection with the accompanying drawings, is a specification, like letters on the drawings representing like parts.

This invention relates to a purifying-tower for illuminating and other gas, and has for its object to provide a simple, inexpensive, and efficient apparatus for handling loose purifying material.

The particular features of my invention will be pointed out in the claims at the end of this specification.

Figure 1 is a vertical section of a purifying apparatus embodying this invention, and Fig. 2 a detail in plan to be referred to.

Referring to the drawings, A represents a shell or casing of metal or other suitable material which is preferably composed of oppositely-tapering sections a' , the upper section a' flaring from its top a^2 toward the lower section a' , so that the substantially dry purifying material admitted into the purifier through suitable hoppers a^4 a^5 may descend without liability of becoming clogged or lodging on the sides of the said purifier. The shell or casing A has secured to its inner walls, in any suitable manner, a perforated horizontal partition-wall or grate-surface a^6 , having slots or openings a^7 of any suitable or desired size, according to the nature of the purifying material used, the said partition or grate dividing the purifier-tower into an upper chamber a^8 and a lower chamber a^9 . The upper chamber a^8 contains an agitator for the purifying material, which is preferably made as herein shown and consists of a series of vertically-extended oblique arms a^{10} , fastened at suitable distances apart to a vertical shaft a^{12} , having bearings at its upper end in a boss or box a^{13} , secured to the under side of the top a^2 of the casing A and having its lower end stepped in a suitable hanger or frame a^{14} , secured, as by rivets or bolts a^{15} , to the walls of the chamber a^9 . The shaft a^{12} may be rotated by means of a worm b on a horizontally-extended shaft b' , engaging a worm-gear b^3 on the shaft a^{12} , the said worm-shaft having bearings in uprights b^3 , attached

to the hanger a^{14} , and in a box b^4 , attached to one of the supporting uprights or legs b^5 for the casing A, the said shaft being extended gas-tight through a suitable stuffing-box b^6 in the lower part of the casing A and provided, as shown, with a driving-pulley b^7 . The vertical shaft a^{12} , near its upper end, has secured to it a hub or sleeve b^8 , having extended from it radial arms b^{10} , provided with depending teeth b^{12} , and the said shaft, near the grate-surface a^6 , is provided with a collar b^{14} , having extended from it a series of radial arms b^{15} , which coöperate with a stationary frame attached to the casing A above the radial arms b^{15} and have the functions of what may be termed a "breaker." The stationary frame or breaker may and preferably will be made as herein shown, and consists of an outer ring 2, which is secured to the shell or casing A, an inner ring 3, encircling the vertical shaft a^{12} , and radial arms 4, which, as herein shown, extend close to the revolving arms b^{15} , so that in the rotation of the shaft a^{12} the arms b^{15} will carry the purifying material against the stationary arms 4 and serve to break up any large lumps or masses of the purifying material and reduce the same to substantially a powdered condition or to a sufficiently fine state to permit it to pass or be forced through the opening a^7 in the grate-surface into the hopper-shaped chamber a^9 , from which the said purifying material may be discharged through the mouth b^{20} , normally closed by a slide or valve b^{21} . The hoppers a^4 a^5 are each provided with a valve c to close the outlet-mouth of the hopper, which may be raised and lowered by a lever c' , and each hopper is provided with a removable cap or valve c^2 for the inlet-mouth of said hopper. The purifying-tower has connected to it a gas-inlet pipe c^3 , extended, as shown, into the chamber a^9 , and with a gas-outlet pipe c^4 , communicating with the chamber a^8 , near its upper end.

In practice the chamber a^8 of the purifier, is filled with substantially dry purifying material—such, for instance, as oxid of iron—and when substantially full the valves c are closed and the agitator set in motion. The teeth b^{12} serve to rake over and open up the top or freshest layer of purifying material, so as to expose the partially-purified gas as-

ending through the material to the most energetic action of the purifying material just previous to the said gas leaving the purifier, to thereby remove traces of the impurities in the gas. The purifying material is continuously fed down toward the bottom of the chamber a^8 and becomes progressively saturated with the impurities absorbed by it from the gas, so that where it is forced through the openings a^7 in the grate surface or bottom a^6 it is saturated with impurities.

In order to regulate the size of the openings a^7 in the grate-surface a^6 to the material used, the said grate-surface has coöperating with it a like surface d , provided with openings d' , and which is movable, as herein shown, by means of a hand-wheel d^2 on a screw-threaded rod d^3 , attached to the movable grate-surface d , which latter has the functions of a sliding valve to vary the size of the openings a^7 .

The worm b and worm-gear b^2 may in practice be covered with a suitable hood. (Not herein shown.)

I claim—

1. In a gas-purifying apparatus, the combination of the following instrumentalities,

viz: a tower provided with a transverse partition-wall forming a chamber above and below it and provided with openings through which the material passes from the upper to the lower chamber, an agitator in the upper chamber, and a breaker for the purifying material coöperating with said agitator, substantially as described.

2. In a gas-purifying apparatus, the combination of the following instrumentalities, viz: a tower provided with a transverse partition-wall forming a chamber above and below it and provided with openings through which the material passes from the upper to the lower chamber, a revolving agitator in said upper chamber, and a stationary breaker coöperating with said agitator, substantially as described.

In testimony whereof I have signed my name to this specification in the presence of two subscribing witnesses.

LOUIS J. HIRT.

Witnesses:

JAS. H. CHURCHILL,
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