

(No Model.)

E. JONES. Gas Scrubber.

No. 237,542.

Patented Feb. 8, 1881.

Fig. 1.

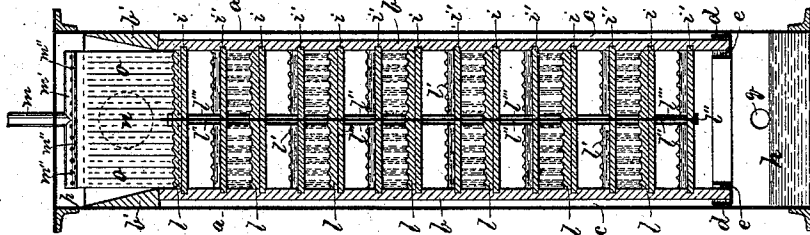


Fig. 2.

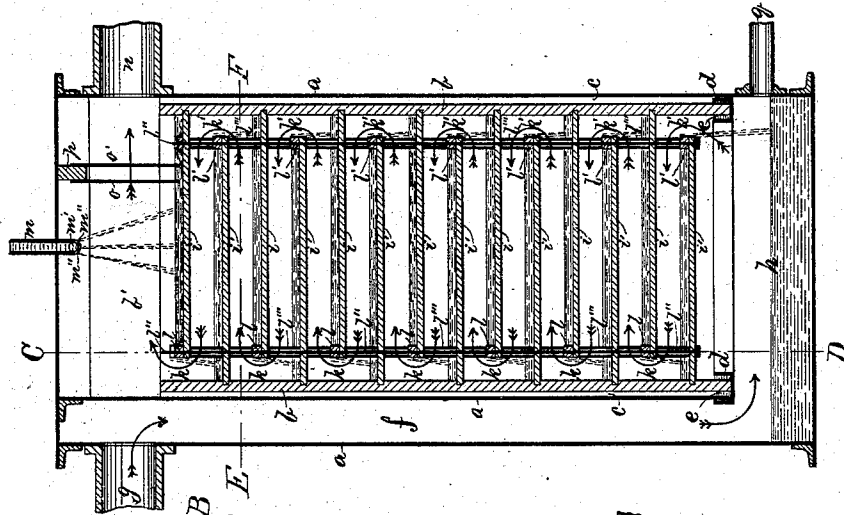


Fig. 3.

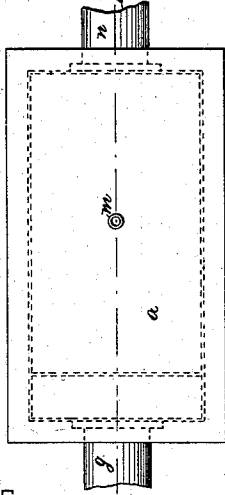
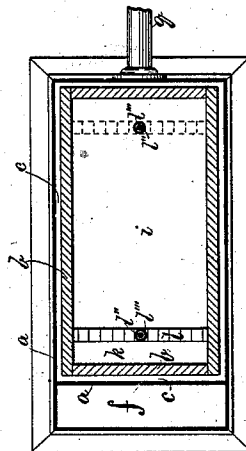


Fig. 4.



Witnesses.

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EDWARD JONES, OF SOUTH BOSTON, MASSACHUSETTS.

GAS-SCRUBBER.

SPECIFICATION forming part of Letters Patent No. 237,542, dated February 8, 1881.

Application filed July 31, 1880. (No model.)

To all whom it may concern:

Be it known that I, EDWARD JONES, a citizen of the United States, residing at South Boston, in the county of Suffolk and State of Massachusetts, have invented new and useful Improvements in Gas-Scrubbers, of which the following is a specification.

This invention relates to improvements in gas-scrubbers for the purpose of condensing the heavy hydrocarbon vapors carried over with the gas, and especially for the purpose of separating and extracting ammonia and other deleterious compounds from the gas; and this I accomplish in the manner and by the means as will hereinafter be more fully shown and described, reference being had to the accompanying drawings, on which—

Figure 1 represents a plan view of my improved scrubber. Fig. 2 represents a longitudinal section on the line A B shown in Fig. 1. Fig. 3 represents a vertical section on the line C D shown in Fig. 2, and Fig. 4 represents a cross-section on the line E F shown in Fig. 2.

Similar letters refer to similar parts wherever they occur on the different parts of the drawings.

The apparatus consists of an outer casing, *a*, made of sheet-iron or cast metal, and an inner casing, *b*, made of wood or other material. Between the casings *a* and *b* is made a space or chamber, *c*, as shown, that contains gas, and serves as a non-conducting medium to prevent the heat of the surrounding atmosphere from being conducted to the inner casing, *b*.

b' *b'* represent beveled plank, to prevent the water from the T *m* entering the gas-chamber *c*.

The lower end of the inner casing, *b*, rests in the cup *d*, which is filled with tar or other liquid, *e*, that constitutes a liquid-seal at the bottom of the inner and outer casings, *a* *b*, and thus preventing the gas from escaping unwashed through the gas-space *c*.

On one side of the outer casing, *a*, is a conduit, *f*, through which the gas is forced downward from the inlet *g*, as shown by the arrows, until the lower water-receptacle, *h*, is reached, when it is deflected and conducted

upward through the inner casing, *b*, as will be further described.

Said inner casing, *b*, is provided with a number of horizontal shelves, *i* *i'* *i''*, the edges of which fit on three sides against the inside of the inner casing, *b*, leaving alternate spaces *k* *k'* *k''*, as shown. The open end of each shelf *i* *i'* is provided with a lip, *l* *l'*, that serves as a dam for containing a proper amount of water on said shelves.

l'' *l'''* represent rods or bolts passing through the shelves *i* *i'* from top to bottom, as shown; and *l'''* *l'''* *l'''* represent pieces of tubing surrounding the bolts *l''* *l''* between the shelves, to keep the shelves in place.

At the top of the outer casing, *a*, is located a water-supply pipe, *m*, that extends within said casing as a perforated T, *m'*, having perforations *m''* *m''*, through which a sheet or spray of water is conducted downward upon the uppermost shelf, *i*, as shown, by which said shelf is filled with water to a depth equal to its lip or dam *l*, and by continuing the flow of water through the T-pipe *m* *m'* each of the shelves *i* *i'* is filled with water, that flows from one shelf to the next one below in a spray or sheet over the respective lips or dams *l* *l'*, as shown. The upper edges of the said lips *l* *l'* are notched or serrated, as shown in Fig. 3, and the notches or serrations of one lip are made to alternate with the corresponding notches or serrations of the succeeding lip above and below, as shown, so as to bring the gas in a more intimate contact with the streams or sprays of water flowing over the said lips *l* *l'* during the upward flow of the gas, as shown by the arrows. Before the gas is allowed to escape through the upper outlet, *n*, it has to pass through strips of cotton cloth *o* *o'* or other porous, textile, or absorbent materials, the upper part of which is fastened to the board or rod *p*, and having its lower part dipping into the liquid retained on the upper shelf, as shown, by which arrangement the said strips *o* *o'* are continually charged by capillary attraction with fresh water, through which the gas is passed previous to going out through the outlet *n*.

At the bottom of the casing *a* is the receptacle *h*, in open communication with the con-

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duit *f* and the inner casing, *b*, as shown, into which the surplus water and condensed matters flow from the said inner casing, and are conducted away through the overflow-pipe *g*, as shown.

The shelves *i i'* may be made plane or corrugated. In the latter case they may be used for a dry scrubber, if desired.

The operation is as follows: The gas is conducted from the inlet-pipe *g* downward through the conduit *f* to the lower receptacle, *h*, and in so passing it comes in contact with the casing *a*, that is kept cool by the gas-chamber *c* and the running water within the scrubber *b*, causing all of the ammonia and a portion of the other impurities to be condensed and conveyed to the lower receptacle, *h*. The gas is afterward conducted upward through the sprays or sheets of water that run over the lips *l l'* and also over the water contained on the shelves *i i' i'*, thus causing the gas to be brought in close and intimate contact with a large body of fresh water running in direct opposition to the flow of the gas, by which the object sought to be attained is accomplished in a quick and effective manner.

What I wish to secure by Letters Patent, and claim, is—

1. The herein-described gas-scrubber, consisting of the outer casing, *a a*, the inner casing, *b*, forming non-conducting chambers *c*, in combination with shelves *i i'*, having serrated lips *l l'*, the conduit *f*, liquid cup seal *d*, and water-supply pipe *m m' m''*, as and for the purpose set forth.

2. In combination with the outer casing, *a*, and inner casing *b*, with its shelves, as described, the porous absorbent sheet or fibers *o o'*, secured to the board or rod *p*, as and for the purpose set forth.

3. In combination with the outer casing, *a a*, the inner casing, *b*, with its alternate shelves, having serrated edges or lips *l l'*, non-conducting chamber *c*, the conduit *f*, inlet *g*, outlet *n*, lower receptacle, *h*, and overflow-pipe *g*, as and for the purpose set forth.

In testimony whereof I have hereunto affixed my name in the presence of two witnesses.

EDWARD JONES.

Witnesses:

HENRY CHADBOURN,
F. ALLEN.