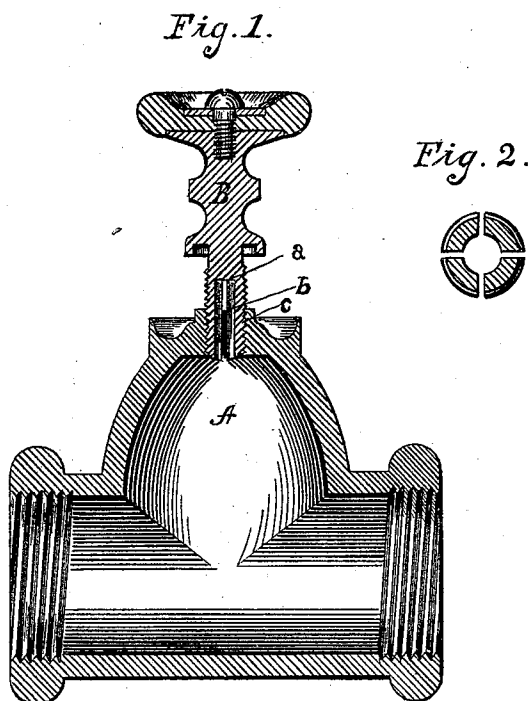
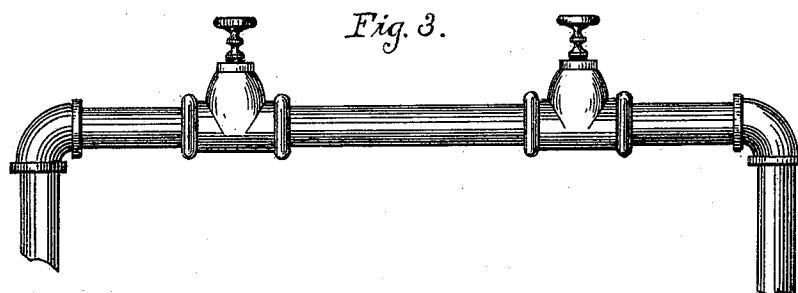


(No Model.)

C. H. CUSHMAN.
STEAM VAPORIZER.

No. 499,190.

Patented June 6, 1893.



Witnesses

D. W. Carroll
A. G. Hill

Inventor
Cephas H. Cushman

By *E. S. Merrill*

Attorney

UNITED STATES PATENT OFFICE.

CEPHAS H. CUSHMAN, OF AUBURN, MAINE.

STEAM-VAPORIZER.

SPECIFICATION forming part of Letters Patent No. 499,190, dated June 6, 1893.

Application filed May 18, 1892. Serial No. 433,480. (No model.)

To all whom it may concern:

Be it known that I, CEPHAS H. CUSHMAN, a citizen of the United States of America, residing at Auburn, in the county of Androscoggin and State of Maine, have invented certain new and useful Improvements in Steam-Vaporizers, of which the following is a specification, reference being had therein to the accompanying drawings.

The object of my invention is to furnish a device by means of which to equally circulate the moisture throughout the rooms of factories, and other places where desirable, to prevent the stock and materials in process of manufacture from becoming dry. To this end I have constructed a vaporizer in which the steam is introduced into the room at "boiler pressure," thus obviating the unequal condensation of steam about the vaporizer, resulting in a dripping of water from the same, and the overmoistening of materials in its more immediate vicinity, a disadvantage heretofore experienced in vaporizers adapted for this purpose.

In the accompanying drawings, Figure 1 is a vertical sectional view of my steam vaporizer, in which "A" is a hollow pyramidal or dome-shaped accumulator. *b* represents my longitudinally slotted, hollow escape valve. Fig. 2 shows the cross section of the escape valve. Fig. 3 represents two of my vaporizers attached to a line of pipe in which manner they are adapted to be distributed about the room as needed.

The escape valve is located at the apex of the accumulator, as the inevitable tendency of the condensation product is to run down the walls of the accumulator away from the apex as it would not from any other point. This feature together with the other special details of construction, are essential to effect my object, viz: to permit the escape of the steam with the minimum of condensation. I wish to present as little obstruction to the free flow of the steam as possible and have therefore placed the valve at the point of final escape of the steam, and have also used a plug that will offer scarcely any resistance until the very final exit of the steam into the room. The steam comes in an uninterrupted course directly from the boiler to the apex of

the accumulator where it meets the first check in the roof *a* of the hollow escape valve.

Chamber B is made dome-shaped because it is found in practice that angular chambers and those offering jetting obstructions or tortuous ways for the passage of the steam cause more condensation of the steam; and this condensed steam increases the humidity of the escaping steam. It is also found that more condensation will take place at one vaporizer than at another along the line. In order to reduce these disadvantages to a minimum, I have invented the dome-shaped chamber, arranged as shown in Fig. 1, which experience proves not only to cause less condensation than others, but also to gather in or accumulate (as I term it for want of a better word) the steam, so that it does not carry along with it, to be diffused in the room, so large a percentage of the condensed product. This construction also reduces to a minimum the uneven condensation that inevitably takes place, comparing one vaporizer with another.

It will be readily seen that when the escape-valve *b* is in position, as in Fig. 1, the amount of escaping steam is simply what will be forced out through the four narrow openings above the nipple "*c*," and this amount becomes constantly less as the screw is turned down, until as the point "*a*" passes below "*c*" it is entirely cut off. But it is important to note that the quality of the steam emitted is precisely the same from the wide open position down to the almost closed position. So that a cubic foot of steam emitted in a fine thread contains exactly the same amount of moisture that the same quantity contains when emitted in a large stream. It is thereby practicable to gage, to a nicety, the amount of moisture that will be admitted into the room in a given time by adjusting the escape valves B to predetermined points. This is attained in my invention mainly because there is no interruption between the escape vents *b* and the live steam directly from the boiler. In other vaporizers, with which I am familiar, the quality of the steam is varied as the amount emitted varies, which is due to the fact that the regulating valve is so arranged as to decrease the pressure of the steam before it is emitted from the vaporizer,

thereby diffusing and condensing the steam prior to its escape into the room. Also in such vaporizers, the quality of the steam emitted does not vary in any fixed ratio, owing to the shape of the disseminating chambers and the location of the escape valves. But the gist of my invention lies in the arrangement which allows the steam uninterrupted course to the escape vent and the location of the regulating valve at the point of final escape of the steam.

In a very large stock-room, the best results can be obtained by placing the vaporizers at frequent intervals along the net-work of the steam pipes, to be provided for that purpose. The valves will all be graduated to the same height; that is, so that the distance from *c* to *a* will be uniform in all the vaporizers, and the stock is then sure to be kept in the same condition in all parts of the room.

The vaporizer is simple and inexpensive in construction, neat, and readily adjusted and repaired.

What I claim as my invention, and desire to secure by Letters Patent, is—

1. In a steam vaporizer, the combination with a dome-shaped accumulator of an adjustable escape valve situated at the apex of said accumulator, so arranged as to permit the escape of the steam with a minimum of condensation, substantially as and for the purposes set forth.

2. In a steam vaporizer, the combination with a dome-shaped accumulator, of an ex-

ternally adjustable escape valve situated at the apex of said accumulator, so arranged as to permit the escape of the steam with a minimum of condensation, substantially as and for the purposes set forth.

3. The combination in a steam vaporizer of an external, longitudinally slotted, hollow screw escape-valve, with a dome-shaped accumulator, substantially as and for the purposes set forth.

4. As an article of manufacture, a steam pipe joint, provided with a dome-shaped accumulator having a screw-threaded nipple provided at its apex, in combination with an adjustable escape-valve, adapted to operate in said nipple, substantially as and for the purposes set forth.

5. A steam vaporizer system, consisting of vaporizers attached at suitable intervals to pipes, having uninterrupted communication from the boiler to the escape vent at the point of final exit of the steam into the outside air, for the purpose of securing uniform effects of vaporization by the regulable emission from said vaporizers of live steam at boiler pressure, substantially as and for the purposes set forth.

In testimony whereof I affix my signature in presence of two witnesses.

CEPHAS H. CUSHMAN.

Witnesses:

ARTHUR A. GARCELON,

ALBERT E. VERRILL.