P. Mihan,

Rotary Blower,

No. 48,772. Patented July 11, 1865.

Fig. 2

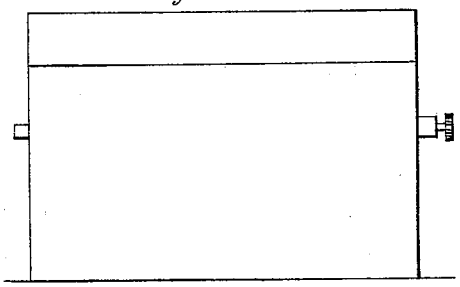


Fig. 1

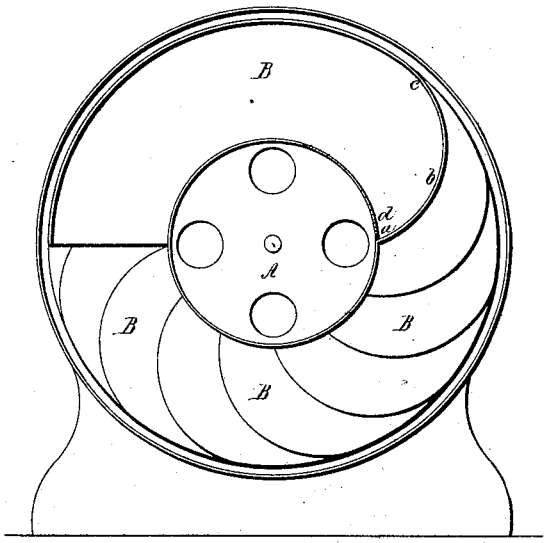
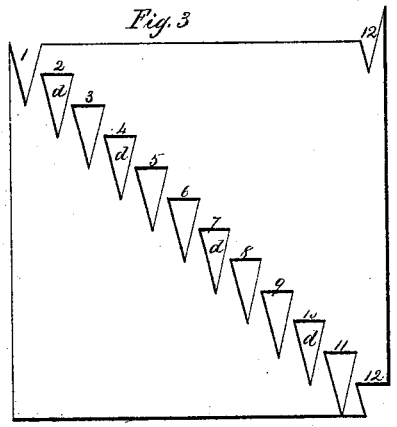


Fig. 3



Witnesses;
A. P. Hale Jr
G. H. Washburn

Inventor;
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by his attorney
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UNITED STATES PATENT OFFICE.

PATRICK MIHAN, OF BOSTON, MASSACHUSETTS, ASSIGNOR TO OLIVER P. DRAKE, OF SAME PLACE.

IMPROVED APPARATUS FOR CARBURETING AIR.

Specification forming part of Letters Patent No. **48,772**, dated July 11, 1865.

To all whom it may concern:

Be it known that I, PATRICK MIHAN, of Boston, in the county of Suffolk and State of Massachusetts, have made a new and useful invention of certain improvements having reference to Air-Carbureting Apparatus, or that part thereof by which air is introduced into the chamber of vaporization of such apparatus; and I do hereby declare the same to be fully described in the following specification and represented in the accompanying drawings, of which—

Figure 1 is a transverse section of an air-forcing apparatus containing my improvements. Fig. 2 is a side elevation of it. Fig. 3 exhibits the periphery of the hollow drum or cylinder with the bucket-openings thereof as spread out on a plane, the same being in order to illustrate not only the tapering or an angular form of each bucket-opening, but the arrangement of each of the said openings with reference to that or those next adjacent to it.

My invention has special reference to the kind of air-forcing apparatus such as described and represented in the specification of Letters Patent dated November 1, 1864, and numbered 44,883 of United States patents. Each of the buckets of such patented air-forcing apparatus, by means of a hole formed through the drum thereof, is made to communicate with the interior of such drum, such opening or passage prior to my invention being made either circular, square, or rectangular in area. As, while the air-forcing apparatus is in operation, the air within the drum becomes condensed to a greater extent than the air which may be outside of the drum, the water or fluid that may be within the drum will stand at a level lower than that of the water or fluid without the drum or in its buckets. In consequence of this it is found that when the air-discharging openings of a bucket come around so as to open into the air-space within the drum there is a sudden bubbling and rush of air out of such space and through the water and into the bucket. In this way the degree of condensation of the air in the drum suddenly becomes lessened and produces a quick depression of the flame of the burner or burners which may be connected with the air-carbureting apparatus and be in operation. From this cause, therefore, the flame becomes unsteady while the buckets are revolving. Another cause of unsteadiness of the flame results from the sudden reception in the air-space of the drum of air which may be left in a bucket after a descent of its discharging-opening into the water, such air during the descent of such opening into the water of the tank being caused to rush upward through the water in the drum and into the air-space of such drum. I avoid this latter difficulty by so forming the back of the bucket that it may make an angle more or less acute with the educt of the bucket or with that part of the periphery of the drum on which the educt of the bucket is situated, the same being as shown at *a* in Fig. 1, in which the back of the bucket is curved, as shown at *a b c*, the discharging opening or educt of the bucket being represented at *d*. With a bucket having its back so arranged with respect to the periphery of the drum and the opening *d* there can be no air left in the bucket during the descent of the said opening into the liquid, and consequently there can be no escape of any air from the bucket up through the fluid of the drum while the bucket-opening may be descending relatively to the fluid in the drum.

In the drawings, A denotes the drum, and B B B, &c., its buckets, arranged on its outer periphery side by side, and in a helix or spiral from one to the other extremity of the drum. Each bucket B is rectangular or square in cross-section, is open at its receiving end, and at its rear is provided with an eduction-opening, *d*, for discharging air from it into the drum, such opening *d* being made through the shell of the drum and to extend from the junction of the back of the bucket with such shell. Each opening *d*, I construct of a triangular or tapering form, the base of the opening being at the junction of the back of the bucket with the shell of the drum. These several openings I arrange on the curved surface of the drum in manner substantially as represented in Fig. 3 wherever the openings of the buckets are shown at 1 2 3 4, &c., in which case each bucket projects by or beyond that or those next adjacent to it. In consequence of this arrangement there will be no separation of the shell of the drum into two pieces, as would result were the openings to be square,

having the same basis and arrangement of basis and equal areas with the triangular openings shown in Fig. 3. In consequence of the taper of the bucket-opening from its apex toward its base, such apex being a point, the discharge of air from the air-space of the drum will be very gradual while the bucket-educt may be rising above the level of the water in the drum, and thus we are able to avoid the sudden lowering of the flame of the burners. Again, by the arrangement of the several bucket-educts as shown at Fig. 3—that is, so as to stand or lap by one another—we are not only enabled to make a stronger drum, as above mentioned, but we cause more than one of the buckets to be forcing air into the drum at one and the same time, while we are also able to keep up a continuous or uninterrupted passage of air into the drum, which cannot in most, if not all, cases be effected when the base of one bucket-educt is advanced any distance beyond the top of the next bucket in rear of it. The drum is to be closed at each of its ends and is to deliver air by means of a conduit leading axially from it and also from the air-space within the said drum and above the liquid contained in it while it may be in operation.

What I claim as my invention or improvements in the above-described air-forcing apparatus is—

1. The construction of each bucket-educt with the pointed triangular or tapering form, substantially as and so as to operate as described.

2. The arrangement of the back of each bucket relatively to the shell of the drum and the educt of the said bucket, the said back in such case springing from the base of the educt and being arranged at an acute angle, or substantially so, with such educt, the whole being as and for the purpose specified.

3. The arrangement of the several bucket-educts—viz., so that one may lap or extend by that or those next contiguous to it—substantially as and for the production of results as specified.

PATRICK MIHAN.

Witnesses:
R. H. EDDY,
F. P. HALE, Jr.