

Spence & Towsley,

Carburetor.

No. 107,635.

Patented Sep. 20. 1879.

Fig. 1.

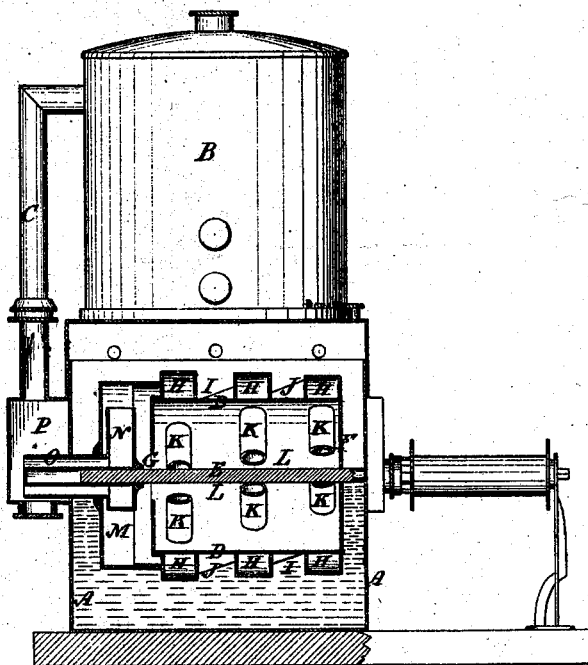


Fig. 2.

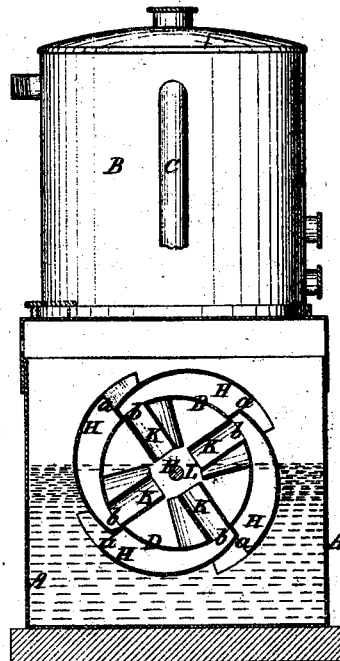
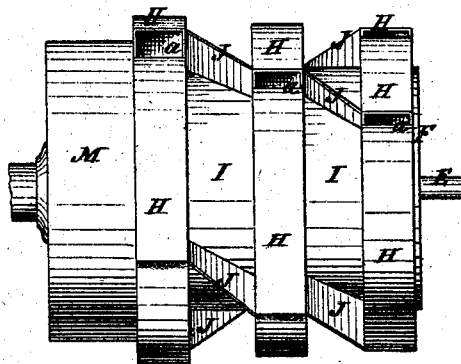


Fig. 3.



Witnesses.

Wm. Hamilton Johnson
Wm. A. Mix

James F. Spence, and
Levi D. Towsley, } *Inventors*
By their Attorneys
Upherman & Johnson.

United States Patent Office.

JAMES F. SPENCE, OF BROOKLYN, NEW YORK, AND LOVIAS D. TOWSLEY,
OF NEWARK, NEW JERSEY.

Letters Patent No. 107,635, dated September 20, 1870.

IMPROVEMENT IN ROTARY AIR-WHEELS FOR GAS-CARBURETERS.

The Schedule referred to in these Letters Patent and making part of the same.

To all whom it may concern:

Be it known that we, JAMES F. SPENCE, of Brooklyn, in the county of Kings and State of New York, and LOVIAS D. TOWSLEY, of Newark, in the county of Essex and State of New Jersey, have invented certain new and useful Improvements in Rotary Air-Wheels for Carbureters; and we do hereby declare that the following is a full, clear, and exact description thereof, reference being had to the accompanying drawing, which makes part of the same, and in which—

Figure 1 represents a vertical longitudinal section of a rotary air-wheel embracing our improvements, as applied to a carbureting apparatus, the latter being shown in elevation;

Figure 2 represents a vertical transverse section of the same; and

Figure 3, an elevation of the wheel, removed from its case.

Our improvement relates to the construction of a revolving wheel for supplying air to a carbureting apparatus; and

In the accompanying drawing—

A represents the case, within which the wheel is mounted, by being secured in suitable air-tight bearings, and which contains the water, or other fluid, within which the wheel revolves.

The carbureting apparatus B is of the construction represented in a patent granted to us on the 22d day of February, A. D. 1870, and is mounted upon the top of the inclosing-case A, in such manner as to be in communication with the air-wheel by means of a pipe, C.

The wheel consists of a cylinder, of tin or copper, D, secured upon an axial shaft, E, and has one of its ends closed by a solid head, F, while the other is only partially closed, having an axial opening, G, therein.

Upon the exterior of the cylinder D the buckets H are arranged, the ingress openings *a* of each commencing at a point near the delivering-openings *b* of the preceding bucket, and their outer sides, therefore, form curves, eccentric to the axis of the wheel.

They are arranged in parallel transverse lines on the outer surface of the cylinder D, so as to leave intervening annular channels or spaces, I, equal in depth to the projection of the buckets, and the receiving-openings *a* of the latter are arranged spirally or step-like, and are connected to each other by inclined partitions, J, which extend across and interrupt the continuity of said annular channels I, in such manner as to form inclined vanes or wings, leading from one ingress-opening to that of another, the object of which is to utilize the annular channels by directing the air therefrom obliquely into the buckets, while the chan-

nels themselves serve greatly to lessen the weight of the wheel, and the expense of its construction. These division-vanes J also serve to steady the wheel in its motion by coming in contact with the fluid as it revolves, thus constituting a series of circumferential brakes, to equalize the motion of the wheel, and, as the buckets H gather in a supply of air in their direct course, these oblique wings J gather and direct the air, also, into said buckets from the intervening air-channels.

The egress-openings *b* of the buckets communicate with the interior of the cylinder by means of radial tubes, K, extending from the cylinder to near the axis E thereof, so as to deliver the air continuously within a space or chamber, L, immediately surrounding said axis, and, when the cylinder is once charged, the air will be consolidated in said chamber L, and directed more readily through the axial opening G at the end of the cylinder. The air, therefore, received into the buckets H, is retained in them, and their communicating radial tubes K, and finally delivered at a point where its full force is obtained, without being scattered through the inner area of the cylinder.

The buckets H and their oblique connecting-vanes J, and the interior discharging-tubes K, are made of zinc, which has the effect of preventing the oxidization of the iron shaft and the tin cylinder, and greatly increases the strength and durability of the wheel, as well as improves the quality of the vapor.

The wheel is provided, at its discharging end, with the usual air-chamber M, which revolves with it, and which communicates, by means of the fixed chamber N, located therein, through an axial tube, O, with the exterior receiving and distributing-chamber P, from which latter the air is supplied, through the pipe C, to the carbureting apparatus.

The wheel is immersed in water or other fluid, to a line just above its axis, and the air is forced through the buckets and their communicating radial tubes by the water, or other fluid, in a manner common to air-wheels revolving in fluid.

Having thus described our invention,

We claim—

1. The cylinder of an air-wheel, constructed with buckets H, and intervening circumferential channels I, in the manner and for the purpose hereinbefore described.

2. The intervening circumferential channels I of the air-wheel, having their continuity interrupted by means of vanes, J, which serve as brakes, to equalize the motion of the wheel, substantially as herein described.

3. The ingress ends *a* of the air-buckets H, connected to each other by means of oblique vanes, J,

for the purpose of directing the air from the circumferential channels I into said buckets, thereby utilizing the intervening spaces, to increase the volume of air to the buckets, substantially as herein described.

4. The external curved buckets H, in combination with the interior radial discharging-tubes K, arranged upon and within a single cylinder, D, substantially as hereing described.

5. The arrangement of the radial air-tubes K, in such manner as to discharge the air in a space or chamber, L, immediately around the axis of the wheel, thereby increasing its volume directly in the line of the axial opening G in the discharging end of the cylinder, substantially as herein described.

6. The combination in a rotary air-wheel, of the

external curved buckets H, the circumferential intervening channels I, the oblique division and connecting-vanes J, and the interior radial discharging-tubes K, the several parts constructed, arranged, and operating substantially as herein described.

7. The cylinder of tin, prevented from oxidization by means of zinc receiving-buckets H and oblique vanes J, arranged on the exterior thereof, and radial discharging zinc tubes K on the interior thereof, as described.

JAMES F. SPENCE.
L. D. TOWSLEY.

Witnesses:

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THEO. HALL.