D. H. JONES.

Air-Carbureting Apparatus for Railroad-Cars.

No. 221,680. Patented Nov. 18, 1879.

Fig. 1.

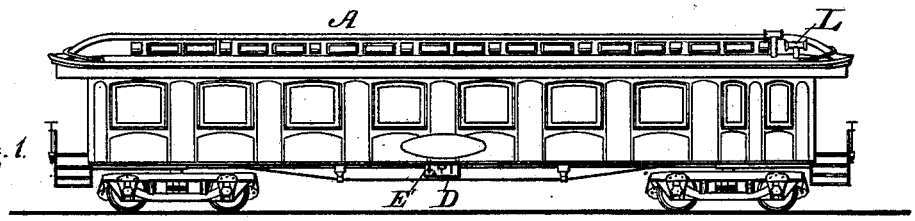


Fig. 2.

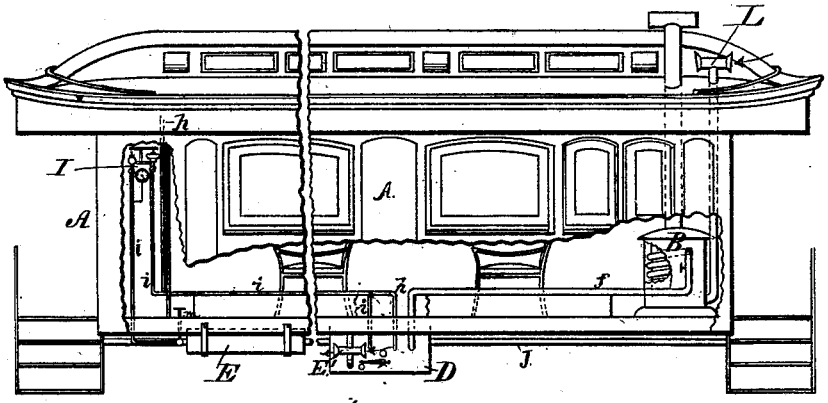


Fig. 3.

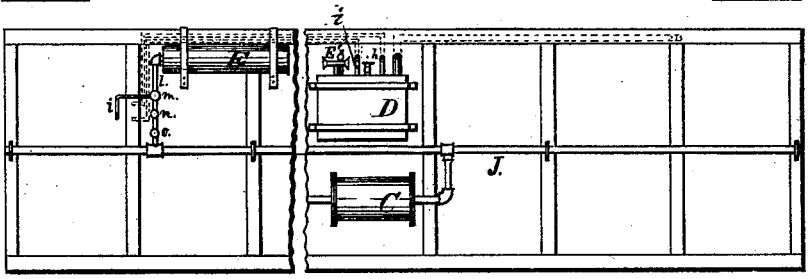


Fig. 4.

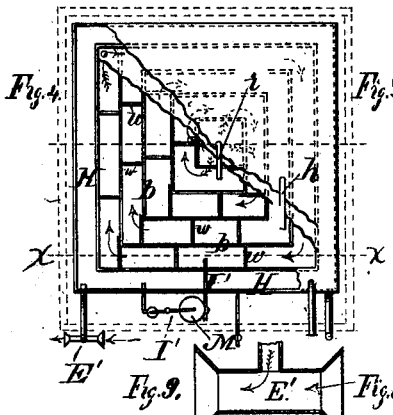


Fig. 5.

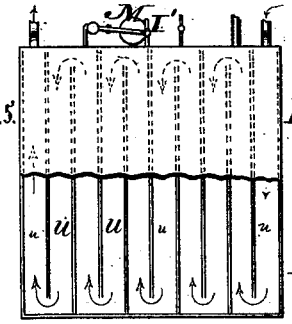


Fig. 6.

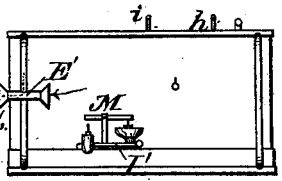


Fig. 7.

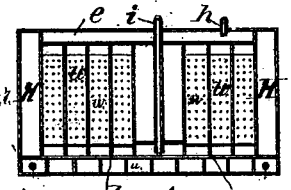


Fig. 8.

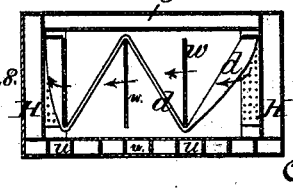
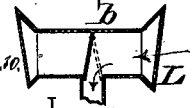


Fig. 9.

Fig. 10.



Witnesses

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DAVID H. JONES, OF BELLEVIEW, PENNSYLVANIA.

IMPROVEMENT IN AIR-CARBURETING APPARATUS FOR RAILROAD-CARS.

Specification forming part of Letters Patent No. **221,680**, dated November 18, 1879; application filed December 20, 1878.

To all whom it may concern:

Be it known that I, DAVID H. JONES, of Belleview, Allegheny county, Pennsylvania, have invented a new and useful Improvement in Air-Carbureting Apparatus for Railroad-Cars; which improvement is fully set forth in the following specification, reference being had to the accompanying drawings.

Similar letters of reference indicate corresponding parts.

My invention relates to a carbureting apparatus specially designed for use on railroad-cars, and to the manner of arranging and connecting the apparatus; and the invention consists in the combination, on a railway-car, of the ordinary stove or heater at one end, a carbureter located beneath the middle of the car and provided with a heating-flue, and a pipe extending from the heater to the carbureter; in the combination, on a railway-car, of a stove or heater, a carbureter having circuitous channels in its base, a heating-pipe, and hoods applied to cause a circulation of air through the heater, and thence through the carbureter-case; in a carbureter having a continuous winding passage with perforated diaphragms therein, and absorbent material passed through said passage alternately over and under the diaphragms; in constructing the carbureter with an oil-chamber in its base, and an air-space over its entire top, said chamber communicating with the oil-chamber at one corner only, and having an outlet at the opposite corner; and in an organized gas apparatus for railway-cars, consisting of a receiver connected with the air-brake, the carbureter connected with the receiver or reservoir through the medium of an automatic governor, and a heating-chamber connected with the ordinary heater of the car, said parts being constructed and arranged for joint operation, as hereinafter described.

Figure 1 represents a side elevation of a car provided with my improved apparatus; Fig. 2, an elevation, on an enlarged scale, with portions of the side of the car broken away to expose the apparatus to view; Fig. 3, a bottom plan view of the car; Fig. 4, a plan view of the carbureter with the top sheets broken away to show the interior; Fig. 5, a bottom plan view of the carbureter with the outside sheet broken away to show the passages of the heating-chamber; Fig. 6, a side elevation of the carbureter; Fig. 7, a central vertical cross-section of the carbureter, showing the perforated partitions therein; Fig. 8, a cross-section of the carbureter on the line *x x*, Fig. 4, showing the arrangement of the absorbent material; Figs. 9 and 10, views showing the construction of the devices employed to secure a circulation of air.

In the application of carbureters to railway-cars it is necessary that means shall be provided to secure a constant and uniform supply of oil to the carbureting-chamber; that the too violent agitation of the oil or gasoline shall be prevented; that the apparatus shall be kept moderately warm at all times, and the stoppage of the flow of gas by the dashing of the oil into the passages shall be guarded against; and it is to secure these ends on cars that are provided with air-brakes and heating apparatus that my invention is designed.

Referring to the drawings, A represents an ordinary Pullman or other railway car, provided with a heating-stove, B, and with the usual brake-cylinder C supplied with air under a high pressure from a pump on the engine, in accordance with the well-known Westinghouse system.

In applying my invention I locate the carbureter D, preferably of the construction hereinafter described, under the middle of the body and secure it firmly in place, and also secure under the body an air chamber or reservoir, E, connecting the same by a pipe, *l*, with the pipe J, which supplies air as usual to the cylinder, so that when air is admitted to the latter it will also pass into and fill the reservoir E.

In order to retain the air in the reservoir and maintain the pressure when the brakes are released, one or more check-valves are located in the pipe *l*, as shown. From the pipe *l*, between the reservoir and the check-valves, there extends a pipe, *i*, which passes along below the floor to one end of the car and thence upward therein to a pressure-regulator, I, and then downward through the car to the car-

bureter, as shown, for the purpose of conducting air from the reservoir to the carbureter.

The regulator I may be of any ordinary or suitable construction, provided that it delivers the air at a constant pressure regardless of the varying pressure at which the air enters it. By the use of this regulator the air is delivered to the carbureter uniformly, notwithstanding the frequent variations in the quantity and pressure of the air in the reservoir E and the pipe *l*.

A pipe, *h*, serves to conduct the carbureted air or gas from the carbureter into the car, where the ordinary burners will be applied.

In order to keep the carbureter and its contents at the proper temperature, I provide the carbureter under the bottom with a chamber divided by transverse partitions into a series of passages or channels, *u*, connected at alternate ends, so as to cause air entering at one end to follow a serpentine or zigzag course before escaping at the opposite end. At one end of this chamber I connect a hood or funnel, E′, of such form as to produce a suction or exhaust when the car is in motion, and to the opposite end I connect an air-pipe, *f*, leading to the stove or heater. When the heater is of the common form, having an air-jacket or chamber around it, the end of the pipe will be inserted into the chamber; but when the air-chamber is not used the pipe is coiled around the body of the stove, as shown, or otherwise applied to secure the heating of the air which may pass through it.

A hood or blower, L, of the form shown in Fig. 10, or other suitable form, arranged outside of the car, and provided with a conducting-pipe, will be used to force air into the drum of the heater or directly into the pipe *f*, as the case may be.

The air, entering the hood L, passes downward, and, after being heated to a sufficiently-high temperature, is forced through the pipe *f*, and thence through the passages in the base of the carbureter, whence it escapes through the funnel.

It will, of course, be understood that the passages *u* for the heated air have no communication or connection with the interior portion of the carbureter.

As shown in Figs. 4, 5, 6, 7, and 8, the interior of the carbureter, which is made of a square form, is divided, by a vertical continuous partition, *b*, into a long angular passage or channel, extending from the center to the outside of the body.

The air to be carbureted is admitted at the center through the pipe *i*, and, after passing through the entire length of the passage, escapes at the outer end of same through pipe *h*.

A large number of perforated vertical partitions, *w*, are arranged across the passage or channel at short distances apart, and serve to prevent the oil from being dashed too violently about by the motion of the car, while at the same time they permit the free circulation of the air.

The perforated partitions have a small space left above and below their ends to admit a continuous strip of wicking or other porous absorbent material, *d*, which is extended through the whole, or nearly the whole, length of the passage or channel, alternately over and under the partitions, as clearly shown in Fig. 8.

This arrangement is very cheap and simple, and presents a very large surface to the action of the air during its passage through the apparatus.

In order to prevent the oil from being dashed into the mouth of the outlet or gas-pipe, so as to check the flow of gas, as frequently happens in other forms of apparatus, I provide a chamber, *e*, extending over the entire top of the carbureter, and connect this chamber with the interior of the carbureter at one corner and with the delivery-pipe *h* at the opposite corner. This chamber not only contains at all times a considerable quantity of gas to supply the pipe *h*, but it effectually prevents the oil from reaching the mouth of said pipe.

A temporary or momentary stoppage of the communication between the chamber *e* and the interior of the carbureter is of no moment, since the gas will meanwhile continue to flow from the chamber.

In order that the interior passage of the carbureter may be constantly and automatically supplied with oil without danger of the supply being too great, I surround the interior portion of the body by a chamber or reservoir, H, communicating with the interior by a pipe, I′, to which there is applied an automatic regulator or governor, M, which may be of any approved construction, and which serves to maintain a uniform height and pressure of oil in the interior of the carbureter, notwithstanding variations of its height in the reservoir H.

While the governor or regulator M, and also the regulator I, may be, as stated, of any suitable construction, it is preferred to construct them in accordance with the patent heretofore granted to J. F. Bennett, for the reason that there will then be no danger of the pressure being gradually equalized on opposite sides, as is liable to occur when other forms of governor are used.

A hand-pump may be connected with or provided for application to the air-receiver for use in case of emergency, as, for example, in the event of an express or mail car being detached and left for a considerable time on a siding.

A filling-pipe and also a drain-pipe, together with a gage-cock, will be applied to the carbureter.

I am aware that carbureters have been heated by special means for the purpose; that pressure-regulators have been used in connection with carbureters; that winding passages have been employed in carbureters, and that carbureters have been used on railway-cars in connection with receivers containing compressed

air, and these features, separately considered, I do not claim.

Having thus described my invention, what I claim is—

1. On a railway-car, the combination of the ordinary stove or heater at one end of the same, a carbureter located beneath the middle of the car and provided with a special heating flue or chamber, and a heating-pipe extending from the heater to the carbureter, substantially as shown, whereby the carbureter is heated without the employment of a special heater, and without being located in dangerous proximity to the fire.

2. Upon a railway-car, A, the combination of a stove or heater, B, a carbureter, C, having circuitous channels or passages *u* in its base, a heating-pipe, *f*, and a hood or hoods applied substantially as shown, to cause a circulation of air through or past the heater B, and thence through the carbureter-case.

3. In a carbureter, a continuous winding passage, perforated transverse partitions in said passage, and a strip of absorbent material passed lengthwise through the passage alternately over and under the partitions, as shown and described.

4. The carbureter D, having the oil-chamber in its base and the air-space *e* over its entire top, said chamber communicating with the oil-chamber at one corner only, and having an outlet at the opposite corner.

5. An organized gas apparatus for railway-cars consisting of the receiver connected with the air-brake, the carbureter connected with the receiver or reservoir through the medium of an automatic governor, and the heating-chamber connected with the ordinary heater of the car, said parts being constructed and arranged for joint operation, as described and shown.

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