J. J. & F. G. PALMER.

Carbureters.

No. 149,786. Patented April 14, 1874.

FIG. 1

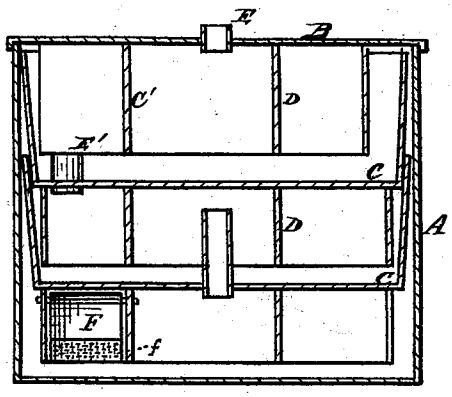


FIG. 4

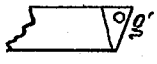


FIG. 2

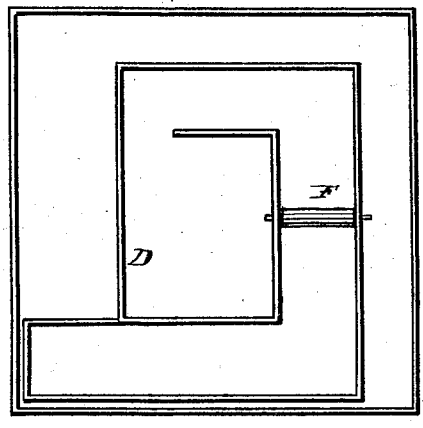
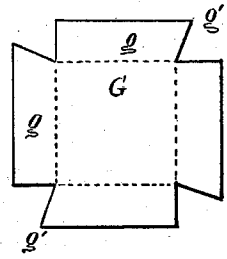


FIG. 3



Witnesses

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UNITED STATES PATENT OFFICE.

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IMPROVEMENT IN CARBURETERS.

Specification forming part of Letters Patent No. **149,786**, dated April 14, 1874; application filed March 19, 1874.

To all whom it may concern:

Be it known that we, J. J. PALMER and F. G. PALMER, both of the city of Pittsburg, county of Allegheny and State of Pennsylvania, have invented certain Improvements in Carbureting-Machines, of which the following is a specification:

Our invention relates to a new and improved apparatus for carbureting purposes, by means of which the air or gas may be thoroughly charged with hydrocarbon vapor throughout the entire operation of the apparatus; and it consists of a swinging door or partition, placed at any point in pan, with convolute passages, packed at the sides and provided with capillary strip at the lower edge, as will be more fully hereinafter described.

The pans are constructed from a square piece of sheet metal, as follows: A section of each corner is cut entirely out, so as to leave four lips, as shown. These lips are so adapted that when bent up nearly at right angles to the plane of the bottom or main part they will form the sides thereof. Each of these lips is so cut that a flange is provided, which will overlap the outside of the adjoining lip, and these parts may be riveted and soldered, or otherwise suitably fastened. Parallel to these sides, and at right angles to the plane of the bottom, is a tortuous or convolute strip, rigidly attached to the bottom of the pan thus formed, which forms the partitions of the channel; and it is bent at right angles with itself, each turn in the channel being a full turn of ninety degrees to the right or left. By this arrangement the current of air or gas meets at every turn an abrupt obstruction in the direction it is pursuing, and a reverberation or rolling is caused thereby before it seeks the changed direction of the channel. This constant moving of the air or gas is important, as it tends to allow a more thorough impregnation with the hydrocarbon gas.

As heretofore constructed, it has been difficult to prevent the leakage of the pans, caused by concussion in moving, handling, &c., because of the numerous places where they are soldered. This is a serious trouble, because it is as expensive to remove, repair, and replace an old pan as to manufacture a new one, and all flow of gas ceases during the time; and the pans may be transported hundreds of miles from the place of manufacture. In our construction, as shown, they are only fastened at the corners, and at these places in so simple and complete a manner that both material, expense, and labor are saved thereby, and a much less liability to be ruptured is attained, because of the less number of joints. Each pan is provided with a tube, alternately situated in one corner, and the center, on its upper side, extending up a proper distance from the bottom, and is open at both ends. The object is to allow the pans to hold a proper quantity of hydrocarbon fluid or gasoline, and any surplus is allowed to enter the pan below, through the medium of this tube.

In all carbureting-machines the gasoline is constantly becoming reduced in quantity and heavier in gravity during the operation of the machine, and, as a matter of course, the capillary partitions will take up less and less of the gasoline as it sinks in the pans and becomes heavier, in this manner reducing the brilliancy of the light, and causing the machine to act very imperfectly as the pans become empty, more or less. Our invention is designed to remedy this defect, and to this end we make the partitions of some material impervious to air, and hinge or pivot the same to the upper part of the air passages or channels, and cover them with fibrous or capillary material, extending the same to the sides of the swinging partition or door, so as to serve, in a manner, as a packing, and prevent the thoroughly-unimpregnated air from passing the sides of said swinging door or partition. The construction of this door is not material, the only important properties required being imperviability and pliability. Consequently we do not confine ourselves to the construction described. To the lower part of this swinging partition or door we attach a strip or sheet of capillary material, textile or fibrous wicking, the necessary qualities of the same being that it shall be capable of capillary attraction and allow the passage of air through its interstices. This wicking hangs at all times from the swinging partition, and dips itself into the hydrocarbon fluid or gasoline.

The partitions are so constructed and adapted that, when lightly pressed by the air, they will

swing forward sufficiently to bring the capillary strip at their lower edges to the surface of the gasoline, and allow the air to pass through the same between the lower edge of the impervious partition and the surface of the gasoline. It is obvious that, by this means, the capillary strip will be always saturated with the gasoline, as the swinging partitions will always adapt themselves automatically to the height of the gasoline or hydrocarbon fluid in the pans, and hold the capillary strip at all times so that it shall be a connecting medium between the swinging door and the gasoline. It is further obvious that, as the strip is certain, from its capillary attraction, to be thoroughly saturated with the gasoline, and as the current of air or gas can only pass through this wicking or capillary strip, the carbureting must be complete; and this will remain true as long as there is any gasoline in the pans, and the flow of gas will allow of the same brilliancy of light whether the gasoline in the pans be high or low, the hereinbefore-described mechanism insuring an automatic regulation of the parts, such as is necessary to that result.

In the drawings, Figure 1 is a transverse vertical section. Fig. 2 is a plan of the bottom of the upper cover. Fig. 3 shows the sheet of metal properly cut to form the pan. Fig. 4 shows one corner of the pan finished.

A represents the vessel, with a closely-fitting cover, B. C represents the pans, the formation of which will be hereafter described; and D, the tortuous or convolute strip attached to the bottom of the same. C′ represents the strip attached to the top or cover of the apparatus. E represents a pipe or tube, through the center of the top of the carbureter, leading into the center of the convolute partition formed by the strip C′, and E′ represents a pipe leading from one corner of the upper pan into the outer end of the convolute passage in the pan below. These pipes are arranged in the same order throughout the series, which may consist of any number of pans. In the drawing, we have shown but two, the bottom of the apparatus serving in the place of a third pan. G, in Fig. 3, represents a rectangular sheet of metal, cut at the corners, as shown, so as to form the lip *g*. This operation is such that each lip will be provided with a flange, *g′*, which, when these lips are bent up at nearly right angles to the plane of the bottom, will overlap the adjoining lip, to which it may be riveted and soldered, or otherwise suitably fastened, as shown in Fig. 4. It will be observed that this will form a pan with flaring sides, and the only joints therein will be at the corners. F represents a swinging door or partition, hinged or pivoted at its upper edge in the convolute air-passage at any convenient point, of which any number may be used. This partition may be made of metal, or other material impervious to air, and extends downward to about the level of the hydrocarbon fluid when the pan is full. We cover this partition with fibrous capillary material, extending the same around the sides of the partition, so as to serve as a packing to prevent the air from passing between the sides thereof and sides of the passage. Any construction which serves this purpose we consider an equivalent, the object being to allow the air to pass only under the swinging partition. To the lower edge of this partition we attach a strip of pliable fibrous textile or capillary material, *f*, which hangs in the gasoline or hydrocarbon fluid in the pan. When lightly pressed by the air passing through the carbureter, the partition F will swing forward, lifting the strip *f*, and allowing the air to pass through it; and, as the partition always automatically adapts itself to the height of the gasoline in the pan, and allows the strip at all times to dip into the same, the air must be necessarily thoroughly carbureted throughout the entire operation of the machine, as the strip *f*, through which it is obliged to pass, is constantly saturated.

Having fully described our invention, what we claim is—

1. The swinging partition F, provided with capillary strip *f*, arranged and constructed and operated as shown and specified.

2. The convolute right-angled strip D, forming the air-passage, in combination with the swinging partition F and capillary strip *f*, as shown and specified.

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