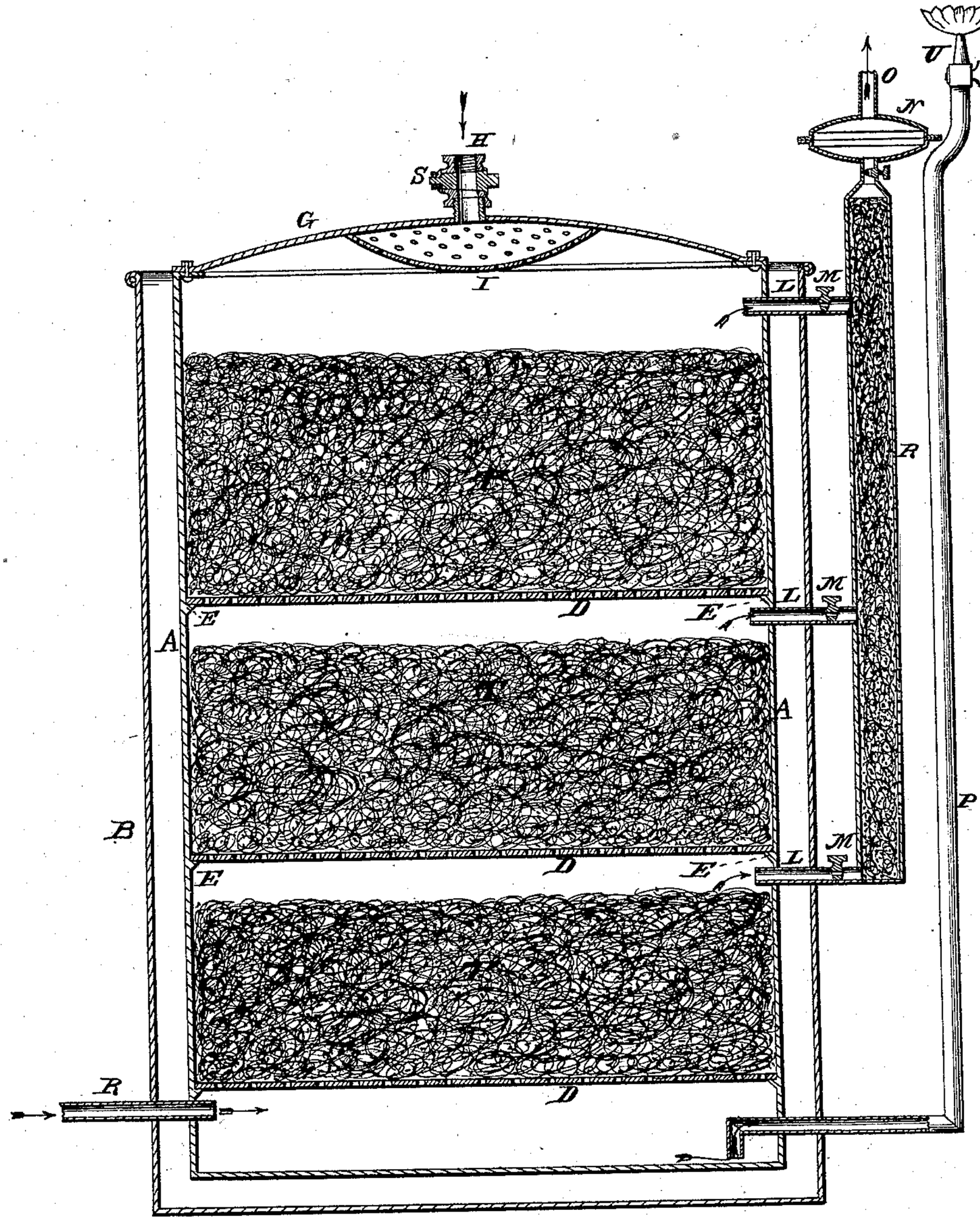
B. SLOPER.

Carbureter.

No. 203,505. Patented May 7, 1878.



WITNESSES

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IMPROVEMENT IN CARBURETERS.

Specification forming part of Letters Patent No. **203,505**, dated May 7, 1878; application filed April 25, 1878.

To all whom it may concern:

Be it known that I, BYRON SLOPER, of New York, in the county of New York and State of New York, have invented certain new and useful Improvements in Apparatus for Carbureting Air and Gas; and I do hereby declare that the following is a full, clear, and exact description thereof, which will enable others skilled in the art to which it appertains to make and use the same, reference being had to the accompanying drawings, and to letters of reference marked thereon, which form a part of this specification.

This invention relates to certain improvements in apparatus for carbureting air and gas; and it has for its object to provide a carbureter in which the hydrocarbon liquid may be held by absorption, so that the vapor thereof will be taken up by the air or gas passing through the absorbent material, whereby the danger attendant upon other machines in which a body of the liquid hydrocarbon is held in the carbureter is wholly avoided, and the air or gas is more thoroughly and uniformly carbureted.

My invention also has for its object to provide in a single vessel a series of compartments, through one or more of which the gas to be carbureted may be passed in order to carburet it uniformly throughout the entire operation of the apparatus, whereby I am enabled to dispense with the series of independent carbureters, connected together by means of pipes, heretofore employed for the purpose.

To this end my invention consists in a carbureter having within it a series of removable perforated trays and intervening spaces, which are charged with sawdust thoroughly commingled with "excelsior," a space being left between the top of each packing and the bottom of the tray next above, forming a chamber for the collection of the gas, from which it will be distributed uniformly through the packing next above, and prevented from channeling through the packing at any one place, as would happen if the spaces between the trays were fully packed.

My invention also consists in an improved packing for a carbureter, consisting of sawdust and excelsior, the sawdust acting as an absorbent for the hydrocarbon, and the excelsior as an elastic support for the sawdust, to prevent it from becoming soggy and packing too closely in the carbureter.

My invention also consists in the combination, with the compartments of the carbureter having spaces below the trays, of a service or delivery pipe, communicating with the spaces in each compartment by means of horizontal division-pipes having stop-cocks, by which communication between the service or delivery pipe and the carbureter at any desired compartment may be established or cut off at will, whereby I am enabled to uniformly carburet the gas or air by cutting off the communication between the upper compartments of the carbureter at the commencement of the carbureting operation, when the apparatus is freshly and highly charged with the hydrocarbon, and by opening communication successively between the service or delivery pipe and the sections of the carbureter as the hydrocarbon becomes exhausted in the packing of the lower compartments.

My invention further consists in the combination, with the carbureter, of a small gas-pipe, extending from the bottom thereof, and terminating with a burner or burners, from which the gas may escape and be lighted, which serves as a "try-light," to indicate when sufficient hydrocarbon liquid has been filled into the apparatus, (and also to afford a vent for the confined gas when filling,) the surplus liquid, after the absorbent material has been saturated, collecting in the bottom of the carbureter and trapping the pipe, so as to extinguish the light, and thereby indicate when the carbureter is properly charged, without the employment of drip-cocks, which have been prohibited by insurance companies.

The drawing represents a vertical section of my improved invention, in which the letter A represents the carbureter, and B a jacket inclosing the same, leaving a space between the two, to be filled with a protecting medium, such as ashes or dry sand. This forms no part of my invention, but is simply employed to render the carbureter safe against accidents, and to comply with the requirements of insurance companies.

The letter D represents a series of removable perforated trays, resting upon lugs or shoul-

ders E on the inside of the carbureter, at suitable distances apart, the spaces F between the same forming the compartments of the carbureter. The letter G represents the top of the carbureter, which is flanged at its outer edge, and removably secured to a corresponding flange on the carbureter, in such manner that it may be readily removed in order to allow the trays and the packing in the carbureter to be taken out and replaced when the packing becomes foul from the impurities collected from the coal-gas.

Immediately below the filling-aperture H is secured a concavo-convex perforated disk, I, which serves as a rose jet or sprinkler, to distribute the hydrocarbon uniformly to the packing.

The letter K represents the scrubber, consisting of a vertical tube or cylinder, connected with the spaces in the compartments of the carbureter by means of a series of horizontal division-pipes, L, provided with the stop-cocks M. Said pipes are for the purpose of establishing communication between the scrubber and the different compartments of the carbureter at will, so that the gas may be directed through the lower compartment alone at the commencement of the operation, after the carbureter has been freshly filled, and when the packing throughout is fully saturated, and may be successively passed through the next succeeding compartments as the packing in the lower sections becomes dry, whereby a uniform carbureting of the gas or air throughout the entire working of a charge is effected.

To the upper end of the scrubber is secured a governor or regulator, N, which may be of any approved construction, but preferably of that kind known as the "mercury or set-screw regulator." The object of said regulator is to equalize the pressure at the burner and give a uniform flow of gas, especially when the gas or air to be carbureted is compressed in tanks, as might become necessary in railroad-cars, steamboats, and other places where it is required to hold the gas or air to be carbureted in a limited space.

From the top of the regulator extends the escape or service pipe O. The letter P represents a pipe extending from the bottom of the carbureter upward to any desired point. Said pipe is extended preferably through the space between the carbureter and its jacket. Upon its upper end is secured one or more burners, U, which serve as try-lights, by means of which may be indicated when the packing has taken up all the hydrocarbon that it is capable of holding by absorption, by lighting the escaping gas at said burner or burners at the commencement of the filling, the light continuing to burn until the liquid commences to accumulate at the bottom of the carbureter, when it covers the lower end of the pipe and traps it and extinguishes the light, showing that the packing has been fully saturated. By this means I am enabled to dispense with the drip-cocks usually employed for this purpose, which are objectionable to insurance companies.

The letter R represents the inlet-pipe for the gas or air to be carbureted, and S the cock for opening and closing the filling-opening.

The compartments of the carbureter are packed with a filling of sawdust and excelsior thoroughly commingled, the sawdust serving as an absorbent to hold the hydrocarbon, and the excelsior as a spring-support to hold up the sawdust and prevent it from sogging or packing too closely when saturated. The compartments are so packed as to leave a space between each packing and the tray next above, for the purpose of allowing the gas to collect and distribute itself uniformly through the packing without channeling at any one point, as is the case where the compartments are fully packed.

The scrubber is filled with excelsior and granulated charcoal, the excelsior serving as a scrubber for scrubbing the gas if it contains more vapor than it can carry, and returning it to the carbureter in a condensed condition, the charcoal serving to absorb any impurities that may be left in the gas previous to carbureting.

The operation of my invention will be readily understood in connection with the foregoing description. In filling the apparatus, a screw-threaded pipe is secured to the threads of the filling-aperture H, said pipe being connected to a hydrocarbon-reservoir at a sufficient height above to give pressure enough at the rose-sprinkler to discharge the hydrocarbon in all directions and distribute it uniformly to the packing. Before opening the cock S to admit the hydrocarbon the gas is ignited at the burner or burners of the try-light. The hydrocarbon is absorbed as it filters through the different compartments of the carbureter, the displaced gas escaping through the try-light tube and being consumed at the burner.

When the absorbent packing has become fully saturated, the surplus hydrocarbon collecting at the bottom will trap the pipe and extinguish the light, thus indicating that the carbureter has been sufficiently charged.

Having thus fully described my invention, what I claim is—

1. A carbureter provided with a series of removable perforated trays for supporting the packing, substantially as specified.

2. In a carbureter, a series of removable trays, in combination with the packing or filling between the trays, extending from one tray to near the bottom of the tray above, thus providing a space between each packing and the tray next above, substantially as and for the purposes specified.

3. In combination with a carbureter, the packing consisting of sawdust commingled with excelsior, the sawdust acting as an absorbent for the hydrocarbon and the excelsior as an elastic support for the sawdust, whereby the sawdust is prevented from becoming

soggy and packing too closely in the carbureter, substantially as specified.

4. In combination with a carbureter divided into a series of compartments by means of perforated trays, and the service or delivery pipe of the same, a series of division-pipes provided with cocks and communicating with the compartments of the carbureter and the delivery or service pipe, whereby the gas may be passed through one or more of the compartments, in order to uniformly carburet it throughout the operation of the apparatus.

5. In combination with a carbureter, an open-mouthed gas-pipe extending from the bottom of the carbureter to a point above and terminating in one or more burners, at which the gas may be lighted, whereby, when the carbureter has been properly filled, the surplus hydrocarbon, by trapping the pipe, will extinguish the light, thereby indicating that the carbureter has been sufficiently charged.

In testimony that I claim the foregoing as my own I affix my signature in presence of two witnesses.

BYRON SLOPER.

Witnesses:
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