(No Model.)

3 Sheets—Sheet 1.

S. MARCUS.

CARBURETING APPARATUS.

No. 500,772. Patented July 4, 1893.

Fig. 1.

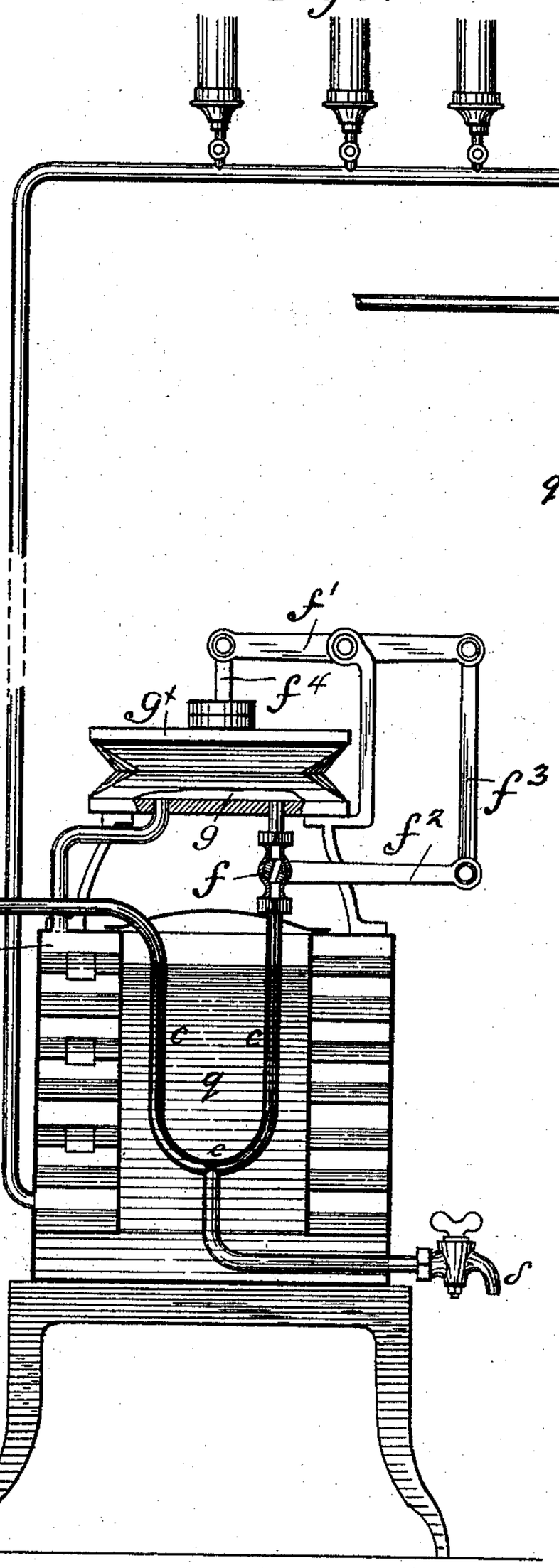
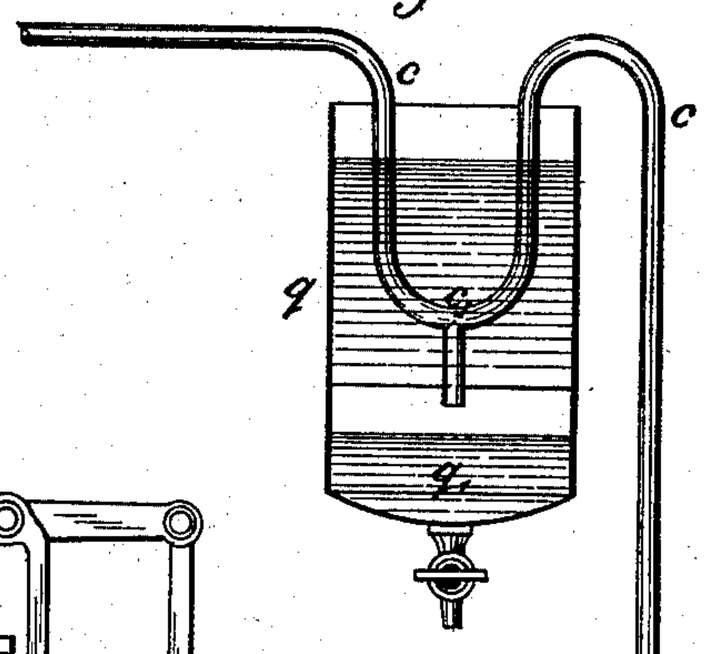


Fig. 1a.



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(No Model.)

3 Sheets—Sheet 2.

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CARBURETING APPARATUS.

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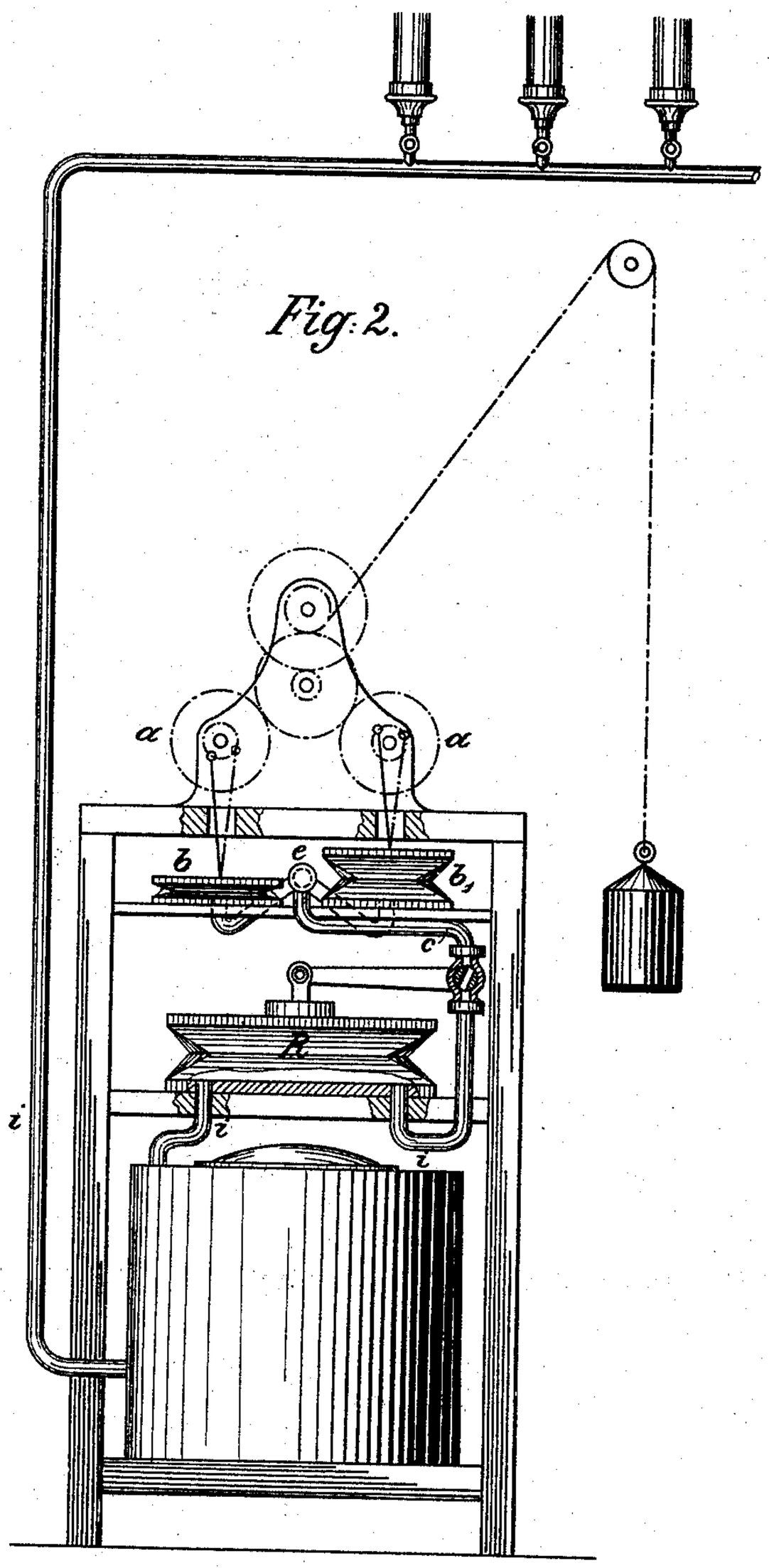
Fig. 2.



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(No Model.) 3 Sheets—Sheet 3.

S. MARCUS.

CARBURETING APPARATUS.

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Fig. 3.

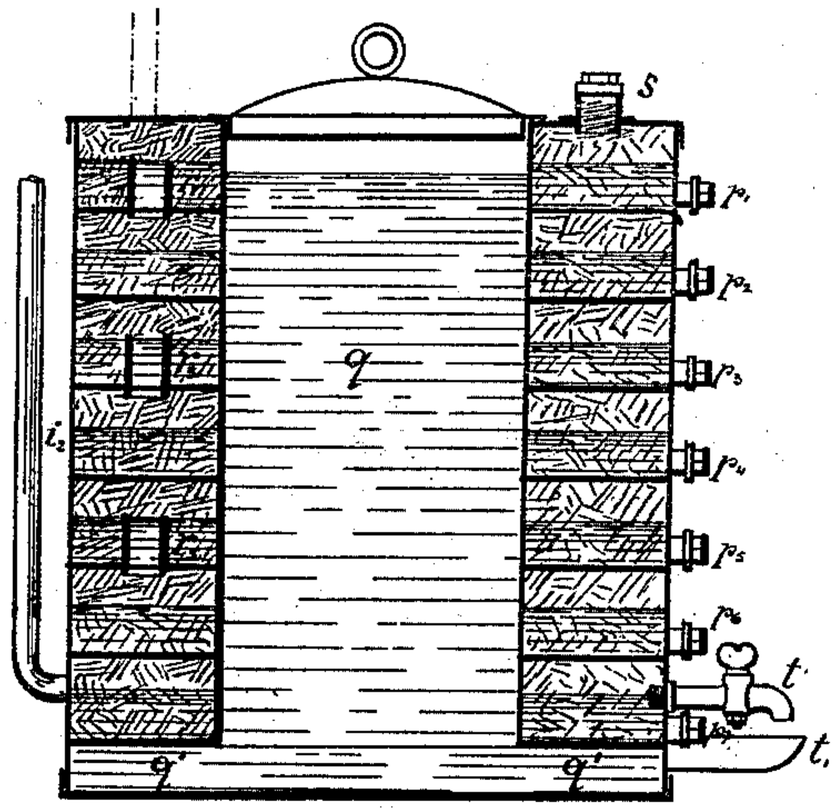


Fig. 4

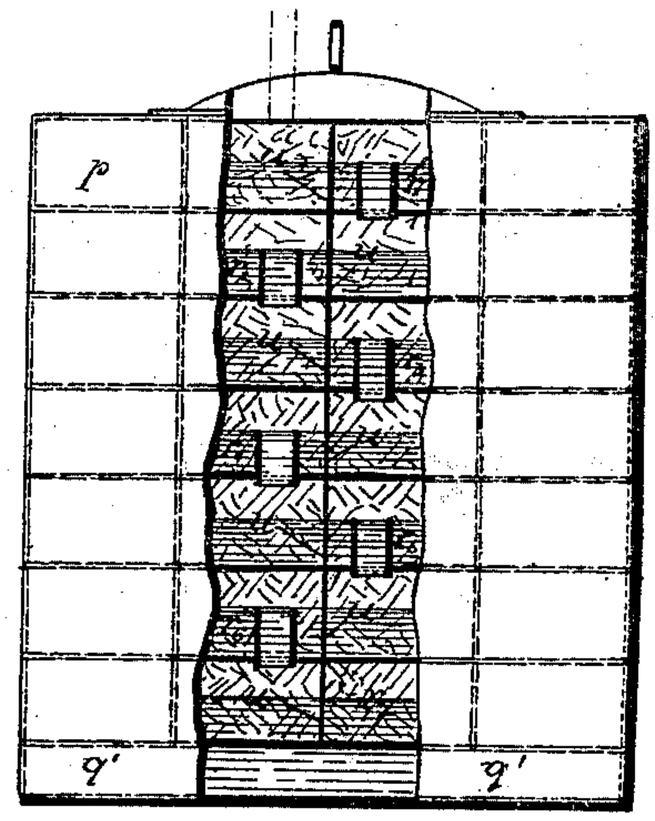
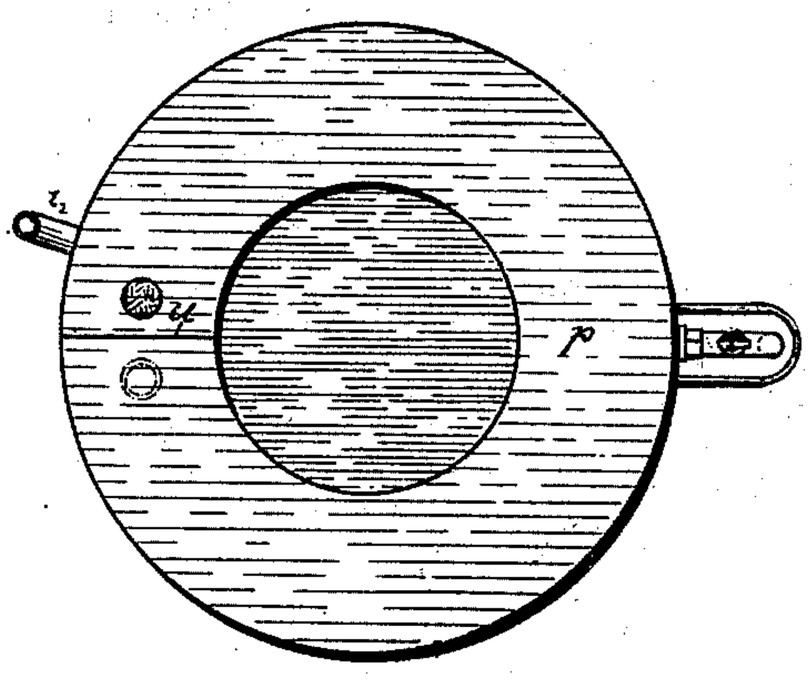


Fig 5.



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UNITED STATES PATENT OFFICE.

SIEGFRIED MARCUS, OF VIENNA, AUSTRIA-HUNGARY.

CARBURETING APPARATUS.

SPECIFICATION forming part of Letters Patent No. 500,772, dated July 4, 1893.

Application filed November 8, 1892. Serial No. 451,316. (No model.)

To all whom it may concern:

Be it known that I, SIEGFRIED MARCUS, engineer, a subject of the Emperor of Austria-Hungary, residing at 37 Mariahilferstrasse, Vienna, in the Province of Lower Austria and Empire of Austria-Hungary, have invented new and useful Improvements in Carbureting Apparatus for Air and Gas, of which the following is a full, clear, and exact description.

This invention relates to improvements in carbonizing (carbureting) apparatus for air and gas.

It is well known that most of the air carbureting apparatus consist of the following three main parts:—the blower the regulator and the carburetor. The subject matter of the present invention relates to improvements on the above named three main parts.

The known methods of producing the requisite current of air consist generally of a water blower, that is a drum with worm or spiral wings which rotate in water and alternately take up air and water, or drive out the same; or, of a rapidly rotating ventilator which of course requires to be driven by motive power. For this purpose I employ a peculiar steam blower consisting of the combination of a kind of injector with a steam condenser.

Figure 1, is a sectional view of the entire apparatus partly in side elevation, and Fig. 1ª is a modified arrangement of same. Fig. 2, is a side view with parts in section of a slightly modified form. Fig. 3, is a vertical section of the carburetor chamber. Fig. 4, is a side view of the same partly broken away, and Fig. 5, is a sectional plan view.

L is a water receptacle or a small steam boiler with gage glass, manometer, safety valve and outlet tuyere β, above which at short distance a tube c is arranged, through which the steam flows. In escaping the steam carries atmospheric air derived from any suitable inlet along the tube c, thus forming a compound of water and air, which passes into the condenser q which is preferably arranged in the interior of the carburetor, which consists of a water receptacle for this purpose.

As represented in Fig. 1, the steam pipe is led through the cooling water so that the steam is condensed and for this purpose the pipe c is coiled or made in serpentine form in order to attain the necessary cooling surface. The water of condensation drops into a vessel (from whence it is periodically let off) by means of a cock or valve s the air on the other hand free from water being forced on so that after passing the regulator chamber g the same will reach the first carburetor chamber r'. By arranging the condenser in the carburetor, the reduction of the temperature produced by the evaporation of the volatile oil in the carburetor is compensated for by the heat imparted during the condensation of the steam. If less importance is laid on the uniformity of the carbureting the condensation can be effected outside the carburetor as shown in Fig. 1ª. The steam pipe c runs through a special cooling water vessel q, beneath which a vessel q' for receiving the water of condensation is arranged which can be let off by means of a cock. In order to compensate for trifling inequalities in the tension of the current of air so produced, the same enters the peculiarly constructed regulator which can be applied to like good effect for air and gas. This regulator as shown in Fig. 1, consists of a bellows like chamber g, interposed in the inlet pipe and having its movable top $g^{\times}$ connected with the cock f, in the inlet pipe by the levers and links f', f^2, f^3, f^4, so that this valve will be controlled accordingly as the fluctuations in the pressure cause the movable top $g^{\times}$ to be set in motion.

The regulator just described is used with the carbureting apparatus as represented in Fig. 1. The regulated current of air now passes into the carburetor consisting, as shown by Figs. 3, 4, 5, of a number of shallow, annular hollow spaces p', p^2, p^3, &c., arranged one above the other and intercommunicating by means of the tubes r', r^2, r^3, &c. Within the carburetor is a further hollow space extending at q' beneath the basis of the annular system, and serving to receive water for the purpose as aforenamed. All the annular hollow spaces are filled with capillary material, preferably wood wool.

As will be evident from the drawings, the tubes r', r^2, r^3, &c., reach somewhat beyond the center of each annular body in order that when the carburetor is charged with fluid hydro-carbon (benzine, gasoline, ligroine, &c.)

each of the annular vessels will be charged to somewhat above the half with the said hydro-carbon. The hydro-carbon is filled into the upper vessel p' through the opening s which is closed by a screw plug until it reaches the tube r' from whence the hydrocarbon flows through the tube r' into the second vessel p^2 until it reaches the tube r^2 when it will overflow into the next vessel and so on until the lower vessel is charged. As soon as the apparatus is fully charged, fluid will drop from the drop cock t into the vessel t' whereupon the screw s is closed and also the cock t.

Between the communicating tubes r', r^2 is a partition u (Figs. 7 and 8) which perfectly closes the annular spaces on the one side. If air is now admitted through a tube into the upper annular body p' the same must pass through the entire ring, and flows through the communicating tube r' into the vessel p^2. The same now passes the second tube r^2, flows into the annular space p^3 and so on through all the annular vessels.

From the foregoing it will be seen, that the air has to travel a long distance before it reaches the service pipe i^2. The capillary material being fully saturated with petroleum benzine, &c., the air passing through the same will become more and more saturated with the vapors of these volatile hydro-carbons, until it is at last so thoroughly saturated, that the same can be used as light gas. If bellows or another blower is used for producing the air current, the space q in the interior of the carburetor is preferably filled with water in order, to prevent any essential lowering of the temperature by the water giving a part of its warmth to the carburetor, thus preventing all considerable reduction of the light.

As shown in Fig. 2 the air may be supplied to the apparatus by a series of bellows b, b', instead of the steam injector; in this case each bellows is worked by a crank wheel a, and both connected with the pipe c, through the junction e.

Having now particularly described and ascertained the nature of this invention and the manner in which the same is to be performed, I declare that what I claim, and wish to secure by Letters Patent, is—

1. In combination, in a carburetor, the casing divided horizontally into a number of compartments, the central water reservoir, said compartments being in combination with each other, the outlet pipe for the carbureted air and the inlet pipe passing through the central water reservoir and thence into the casing, substantially as described.

2. In combination, the casing having a central water reservoir and a series of horizontal partitions extending therefrom to form horizontal compartments, said compartments being in combination with each other and the vertical partition extending on one side of the central water reservoir between the same and the wall of the casing and between the conduits or passages, substantially as described.

3. In combination, the carbureting chamber having a central water reservoir therein, the air inlet pipe passing through the same, and connecting with the carbureting chamber and the regulator interposed in said inlet pipe between the reservoir and the said chamber said regulator comprising a bellows and a valve in the inlet pipe connected thereto, substantially as described.

In witness whereof I hereunto set my hand in presence of two witnesses.

SIEGFRIED MARCUS.

Witnesses:
W. B. MURPHY,
JOSEF ZEHETNER.