

H. KNAPP.
PURIFYING APPARATUS FOR ACETYLENE GAS,
APPLICATION FILED MAY 23, 1910.

1,004,661.

Patented Oct. 3, 1911.

Fig. 1.

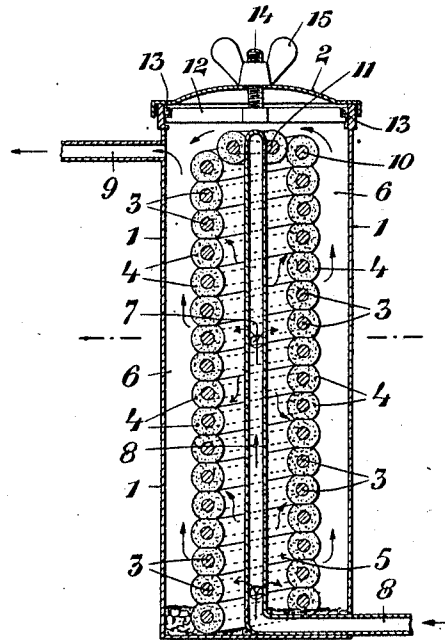
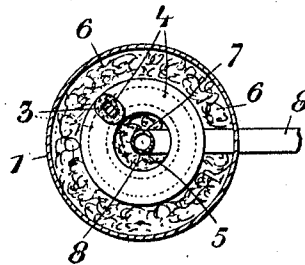


Fig. 2.



Witnesses:

[Signature]
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Inventor

Heinrich Knapp

By *[Signature]*
Att'y

UNITED STATES PATENT OFFICE.

HEINRICH KNAPP, OF WEIMAR, GERMANY.

PURIFYING APPARATUS FOR ACETYLENE GAS.

1,004,661.

Specification of Letters Patent.

Patented Oct. 3, 1911.

Application filed May 23, 1910. Serial No. 562,894.

To all whom it may concern:

Be it known that I, HEINRICH KNAPP, a subject of the German Emperor, residing at Weimar, Grand Duchy of Saxe-Weimar-Eisenach, Germany, have invented certain new and useful Improvements in Purifying Apparatus for Acetylene Gas, of which the following is a specification.

This invention relates to improvements in purifying apparatus for acetylene gas, of that type in which the centrally introduced gas passes outwardly through a purifying layer or wall.

The objects of the invention are to provide for a more facile purifying operation, and for an easier cleaning and renewal of the purifying medium. Accordingly the invention proposes, in contemplation of the first object, a container in which two chambers are separated by a frame which carries the porous purifying material and, in contemplation of the second object, a longitudinally extensible and contractible frame, preferably a spiral spring upon which the purifying material is secured.

The invention is illustrated in the accompanying drawings, wherein—

Figure 1 is a vertical central section; and Fig. 2 is a horizontal section.

Similar characters of reference designate corresponding parts throughout the views.

The apparatus embodies a vessel 1 permanently closed at its bottom and closed at its upper end by a removable lid 2. The interior of the vessel 1 is divided into two separated chambers 5 and 6, the gas being introduced into the chamber 5 and passing from thence to the chamber 6, which it leaves by way of the outlet pipe 9. The chambers 5 and 6 are preferably concentrically related and are separated by a porous wall which consists of a frame 3, preferably a spiral spring as shown, and porous purifying material 4, *e. g.*, infusorial earth or asbestos, which in the present example is formed as a sheathing and surrounds the coils of the frame.

The gas introduction pipe 8 is located coaxially in the chamber 5 and, as compared with said chamber, is of relatively small diameter. The pipe 8 is provided at suitable intervals with openings 7 through which the gas passes into the chamber 5. In order that the separation of the latter and the chamber 6 may be complete the upper coil 11 of the frame 3 is constricted and is so arranged that its porous sheathing contacts

both with the pipe 8 and with the sheathing of the adjacent coil 11.

The lid 2 hermetically closes the upper end of the vessel 1 and is secured in position by a cross brace 12, the ends of which are formed to engage in bayonet slots provided at opposite points in the upper edge portion of the cylinder 1. The brace 12 carries a screw stem 14 which projects through the lid and upon which a wing nut 15 is mounted, the object of the nut 15 and screw stem 14 being to tighten said brace to the lid and thus insure the firm retention of the latter and of the airtight closure of the container 1, it being of course understood that suitable packing is employed in connection with the lid.

The gas is introduced into the chamber 5 and travels through a certain degree of intermediate space before reaching the purifying wall. During this period a material percentage of the suspended impurities fall to the bottom of the chamber 5. After traversing the preliminary space inclosed by the purifying wall, the gas passes through the interstices of the wall and into the chamber 6. If it be desired the outer chamber 6, between the sheathed coil spring and the vessel 1, can be filled or partially filled with a mixture of calcium carbide and of pumice stone saturated with copper sulfate for removing the sulfid of hydrogen and arseniureted hydrogen. The chamber 6 can also be filled with a mixture known commercially as "puratilen" which will retain both ammonia and phosphureted hydrogen.

It will be noted that the outer chamber 6 is of such extent that the gas can collect therein and consequently pass through the porous wall at a low rate of speed. This is of advantage in that it allows of sufficient time for the accumulation of a deposit in the chamber 5 and for the mere deposit of impurities on the surface of the porous sheathing. The expression "mere deposit" is used with reference to a deposit which is essentially on the surface, as distinguished from a deposit in the nature of an impregnation, that is, where the particles penetrate into the porous material, and which would result from a rapid passage of the gas through the porous wall.

Since the deposit of impurities is on the surface only, it is possible to clean the wall in a simple and efficient manner. In order to clean the apparatus the lid is removed

and the spiral frame is withdrawn from the container. Thereupon the frame is manipulated, that is, it is alternately extended and contracted in the manner of playing an accordion, an act which produces deformations of the surface of the porous layers and consequently causes the impurities deposited on the layers to be mechanically thrown into space.

10 It is of course apparent that the degree of separation of the spiral coils and the consequent compactness of the intermediate layers of sheathing may be regulated by any suitable means, *e. g.*, a weight.

15 Having fully described my invention, I claim:

1. A gas purifier consisting of a container, a porous purifying wall dividing the container into separate chambers, the purifying wall embodying a longitudinally extensible and contractible frame and porous purifying material secured by the frame, and a gas inlet pipe disposed in one of the chambers and at a distance from the wall, the other chamber having a gas outlet pipe.

2. A gas purifier consisting of a container,

a porous wall of annular cross section dividing the container into separate chambers, the wall comprising a spiral spring frame and a porous sheathing fitted on the frame, and a gas inlet pipe disposed coaxially in the inner chamber at a distance from the wall, the other chamber having a gas outlet pipe.

3. A gas purifier consisting of a container having gas inlet and outlet means and a purifying wall disposed within the container and embodying a longitudinally extensible and contractible frame and porous purifying material secured by the frame.

4. A gas purifier consisting of a container having gas inlet and outlet means and a purifying wall disposed within the container and embodying a spiral spring frame and a porous sheathing fitted in the frame.

In testimony whereof I have hereunto set my hand in presence of two subscribing witnesses.

HEINRICH KNAPP.

Witnesses:

ERNST EBERHARDT,
CHAS. BOMGRABER.