Aug. 15, 1933. H. WENDTLAND 1,922,649

ACETYLENE GENERATOR

Filed April 18, 1931

Fig.1

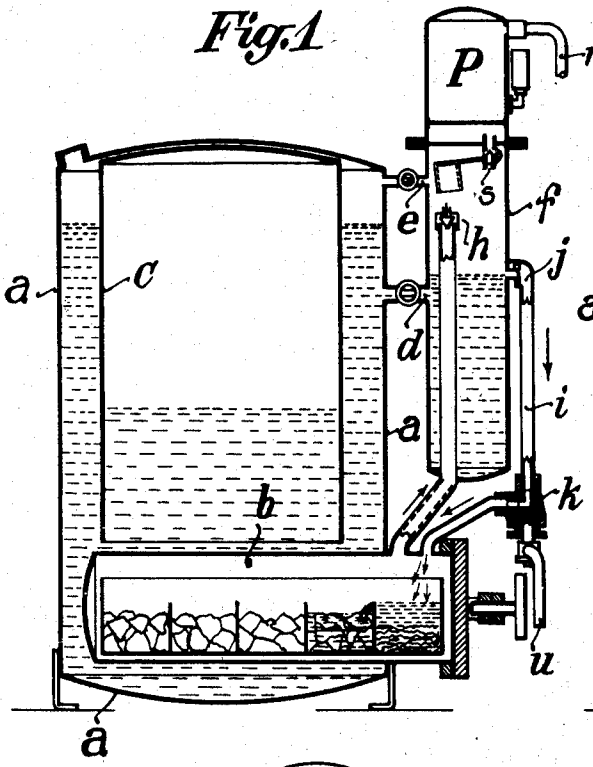


Fig.3

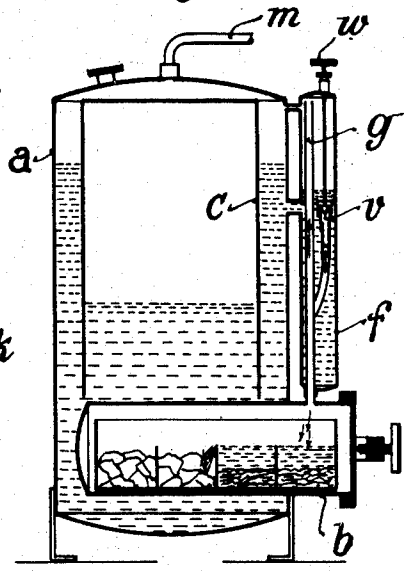


Fig.2

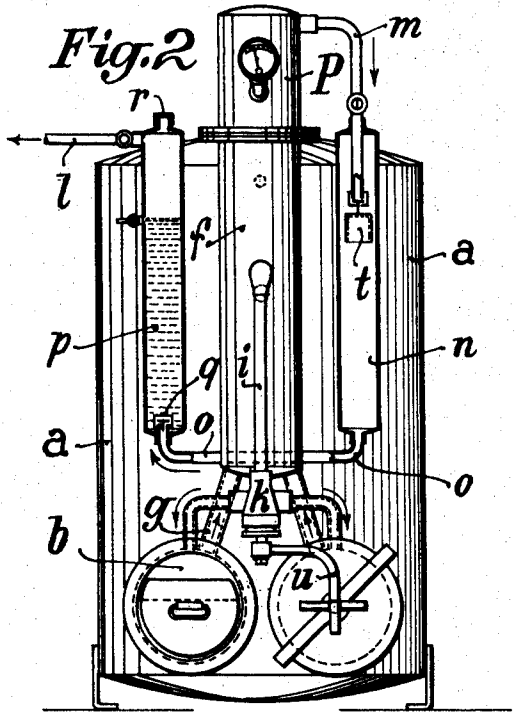
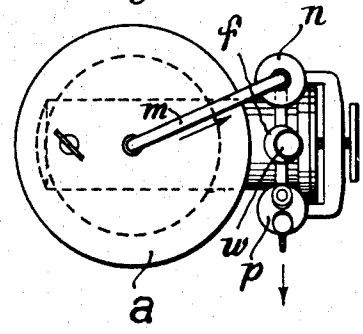


Fig.4



Inventor:
Heinz Wendtland
by
S. Lokal, attorney.

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ACETYLENE GENERATOR

Heinz Wendtland, Altona, Germany

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7 Claims. (Cl. 48—4)

The present invention relates to high pressure acetylene generators and particularly to generators of this kind operating with a sliding container or drawer for the reception of the carbide, and is characterized in that the device serving for the regulation of the water supply is arranged in a separate tubular container located outside of the principal container, the said first-named container being connected by means of connecting members or pipes of any desired length with the gas and water chambers of the generator or gas container. By this means a very comprehensive arrangement is obtained together with a more rapid regulation of the water supply at the water level of smaller area. In addition to this a greater degree of reliability is obtained, inasmuch as between the gas container and the water lock a tubular container is provided which comes into operation if the latter fails to act and thereby renders the generator entirely free from the danger of explosion. All the operations for the regulating and ensuring against danger of the high pressure acetylene generator are effected in tubular containers of small diameter.

As a result of the arrangement of the regulating container in the manner set forth, a rapid descent of the water level in the regulating container upon the shutting off of the gas discharge valve is obtained inasmuch as the gas depresses the water level of smaller area existing in the said regulating container more rapidly than in the large principal container, and furthermore, as the water pipe leading to the retorts is branched off from the regulating container, the supply of water to the retorts is interrupted immediately after the shutting off of the gas withdrawal pipe. The arrangement of the regulating container outside of the principal container according to the invention offers the advantage that all the pipes and valves serving for regulation can be clearly observed and are easily accessible and further that if shut-off valves are provided in the pipes leading to the regulating container, the latter can be opened independently of the principal container, i. e. without giving rise to losses of gas. The principal containers according to the invention are of very simple construction inasmuch as they serve only for the storing of the acetylene, and the counter-pressure air and cooling and generating water.

In the case of large acetylene generating plants in which separate counter-pressure containers are provided, or in apparatus in which the retorts are located in separate cooling tanks, the regulating safety containers according to the present invention likewise offer considerable advantages.

Two preferred constructional forms of a high pressure acetylene generator provided with an externally arranged regulating container according to the invention are illustrated by way of example on the accompanying drawing, in which:

Fig. 1 shows an acetylene generator according to the invention in longitudinal section,

Fig. 2 is a front elevation of the said acetylene generator,

Fig. 3 shows a modified simpler constructional form of an acetylene generator according to the invention, and

Fig. 4 is a plan corresponding to Fig. 3.

Referring to the drawing the generator consists of a closed container *a* into which one or more retorts or generating chambers *b* are built at the bottom, whilst the counter-pressure or equalizing container consists of an open bell *c* which is fixed concentrically within the container *a*. From the water and gas chamber of the high pressure container the connectors or pipes *d* and *e* lead to a closed regulating container *f* in which the same water level exists as that in the principal container. In addition to this gas pipes *g* lead from the retorts or generating chambers *b* to the container *f*, which pipes open into the gas space of said last-named container and are provided with non-return valves *h*, in order to prevent an escape of gas when the retort is open. A water supply pipe *i* leading to the retorts is branched off from the container *f* at the height of the normal water level. A non-return flap valve *j* provided in the said pipe prevents the ascent of gas through the pipe and thereby ensures that a water supply exactly corresponding to the gas consumption is obtained under all working conditions. This arrangement of the water supply pipe also renders it possible without any further difficulty to build into the apparatus a distributing cock *k* when it is desired to feed two retorts which are not intended to operate simultaneously.

In order to obtain a water supply which corresponds exactly to the consumption of gas, the bore of the pipe *e* is made considerably smaller than that of the pipe *d*, as a result of which, on the shutting off of the gas withdrawal pipe *l*, the gas does not pass so rapidly through the bore of the said pipe *e* into the principal container but first depresses the water level in the

container *f* very rapidly. As a consequence of this the discharge of water through the pipe *i* is interrupted before the water level in the principal container *a* has descended to a corresponding extent.

In the constructional example illustrated in Figs. 1 and 2 a purifying device *b* is arranged above the container *f*, which device is connected by means of a pipe *m* with a tubular safety container *n*, from which at the bottom a pipe *o* leads to the water sealing device or lock *p*. This latter is provided at the bottom with a non-return valve *q* and at the top in the gas chamber or in the filling closure a bursting diaphragm *r* is arranged. The pipe *m* of the container *n* is provided at its opening with a float valve *t* which is adapted to shut it off, if in the case of non-operation of the non-return valve *q* the locking water flows back from the water lock into the safety container. The locking water is therefore not pressed back into the principal container as was hitherto the case in known devices, and in addition to this the water lock is ready for use again immediately after the occurrence of a stoppage of this sort, inasmuch as the locking water is not lost but is always pressed back again into the water lock.

The acetylene can be withdrawn and passed onward in any desired manner from the container *f* and it is also not absolutely essential that the purifying device *p* should be arranged at the top of the container *f* as it can also, for example, be arranged as a separate container side by side with the generator. It is, however, essential that the discharge pipe connection of the container *f* is capable of being shut off by means of a float valve *s*, which valve comes into operation if the water after the gas in the retorts has been completely exhausted is sucked up by the oxygen of a burner which may have been left connected to the generator. The float valve *s* then prevents any passage of the water into the container *n*.

The manner of manipulating the generator will be clear from the drawing without further explanation. In Figure 1 of the drawing the retort on the right-hand side is shown in the operative position and the retort on the left-hand side is shown in the open position in which it is placed for the purpose of interchanging the carbide tray or drawer. The handle *u* of the distribution cock *k* rests in this position in front of the closure of the retort which is in operation, so that the latter cannot be opened during the generation of gas.

In the case of small apparatus having only one retort, the water supply pipe *i* can be united with the gas pipe *g* as shown in Fig. 3. The water supply pipe is provided in the interior in the container *f* with a shut-off member *v* which can be operated from outside by means of a manipulating member *w*. The gas pipe *m* in the case of small apparatus of this kind is branched off from the principal container *a*, but the arrangement of the safety container *n* and the water lock *p* is the same as that employed in larger apparatus.

I claim:

1. In a high pressure acetylene generator, the combination of: a compressed acetylene container comprising a gas chamber and a water chamber; a counter pressure container arranged within said compressed acetylene container so as to form an intervening space between said two containers constituting the gas chamber and part of the water chamber thereof; a separate tubular water supply regulating container arranged entirely externally of said two first-named containers and only connected therewith by means of pipes; a pipe directly connecting said regulating container with the water chamber of said acetylene container; and a second pipe of smaller bore than said first-named pipe, directly connecting said regulating container with the gas chamber of said acetylene container, substantially as described.

2. In a high pressure acetylene generator the combination of: a compressed acetylene container; a counter pressure container arranged within said compressed acetylene container so as to form an intervening space between itself and the latter; a generating chamber arranged within said acetylene container below said counter pressure container and separate therefrom; a gas chamber in said acetylene container; a water chamber in said acetylene container partly comprising the intervening space between said containers; a separate tubular water supply regulating container arranged adjacent to said acetylene container, but spaced away therefrom; a pipe directly connecting said regulating container with said water chamber; a pipe of smaller bore than said first-named pipe, directly connecting said regulating container with said gas chamber; a water supply pipe directly connecting said regulating container with said generating chamber; and a gas pipe directly connecting said generating chamber with said regulating container, substantially as described.

3. In a high pressure acetylene generator, the combination of: a compressed acetylene container; a counter pressure container arranged within said acetylene container with intervening space constituting a gas chamber and also forming with said acetylene container a water chamber; a generating chamber; a tubular regulating container located adjacent to, but spaced away from said first-named containers, and regulating the water supply to said generating chamber; a water chamber in said regulating container; a pipe connecting said last-named water chamber with the water chamber of said acetylene container; a gas chamber in said regulating container; a pipe of smaller bore than said first-named pipe connecting said last-named gas chamber with the gas chamber of said acetylene container; a gas pipe leading from said generating chamber to the gas chamber of said tubular container; and a water supply pipe leading from the water chamber of said tubular container at a point near the water level thereof to said generating chamber, substantially as described.

4. In a high pressure acetylene generator, the combination of: a compressed acetylene container comprising a gas chamber and a water chamber; a counter pressure container arranged within said compressed acetylene container so as to form an intervening space between said two containers constituting the gas chamber and part of the water chamber thereof; a separate tubular water supply regulating container arranged entirely externally of said two first-named containers and only connected therewith by means of pipes; a pipe directly connecting said regulating container with the water chamber of said acetylene container; a second pipe of smaller bore than said first-named pipe, directly

connecting said regulating container with the gas chamber of said acetylene container; and shut-off members in said connecting pipes, substantially as described.

5. In a high pressure acetylene generator the combination of: a compressed acetylene container; a counter pressure container arranged concentrically within said compressed acetylene container so as to form an annular intervening space between itself and the latter; a generating chamber arranged within said acetylene container below said counter pressure container and separate therefrom; a gas chamber in said acetylene container; a water chamber in said acetylene container partly comprising the intervening space between said containers; a separate tubular water supply regulating container arranged adjacent to said acetylene container, but spaced away therefrom; a pipe directly connecting said regulating container with said water chamber; a pipe of smaller bore than said first-named pipe, directly connecting said regulating container with said gas chamber; a water supply pipe directly connecting said regulating container with said generating chamber; and a gas pipe directly connecting said generating chamber with said regulating container, substantially as described.

6. In a high pressure acetylene generator, the combination of: horizontal compressed acetylene containers, each comprising a gas chamber and a water chamber; horizontal counter pressure containers each arranged within one of said compressed acetylene containers so as to form an intervening space between itself and the acetylene container, said space constituting the gas chamber and part of the water chamber; a separate vertical tubular water supply regulating container arranged entirely externally of said first-named containers and only connected therewith by means of pipes; pipes directly connecting said regulating container with the water chambers of said acetylene containers; and pipes of smaller bore than said first-named pipes, directly connecting said regulating container with the gas chambers of said acetylene containers, substantially as described.

7. In a high pressure acetylene generator, the combination of: a compressed acetylene container; a counter pressure container arranged within said compressed acetylene container so as to form an intervening space between itself and the latter; a generating chamber arranged within said acetylene container below said counter pressure container and separate therefrom; a gas chamber in said acetylene container; a water chamber in said acetylene container partly comprising the intervening space between said containers; a separate tubular water supply regulating container arranged adjacent to said acetylene container, but spaced away therefrom; a gas chamber in said regulating container; a water chamber in said regulating container; a pipe directly connecting the water chambers of said regulating container and said acetylene container; a pipe of smaller bore than said first-named pipe, directly connecting the gas chambers of said regulating container and said acetylene container; a gas pipe leading from the gas chamber of said regulating container to said generating chamber; a water supply pipe arranged within said regulating container and united with said gas pipe leading to said generating chamber; a shut-off member controlling said water supply pipe within said regulating container; and a manipulating member co-operating with said shut-off member and located outside of said regulating container, substantially as described.

HEINZ WENDTLAND.