A. S. CASTELLANO.

GAS GENERATING JAR.

APPLICATION FILED MAR. 20, 1917.

1,257,314. Patented Feb. 26, 1918.

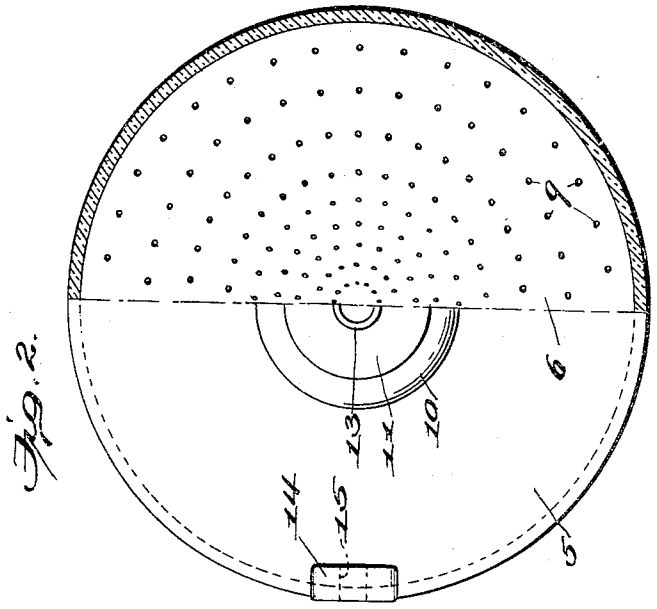


Fig. 2.

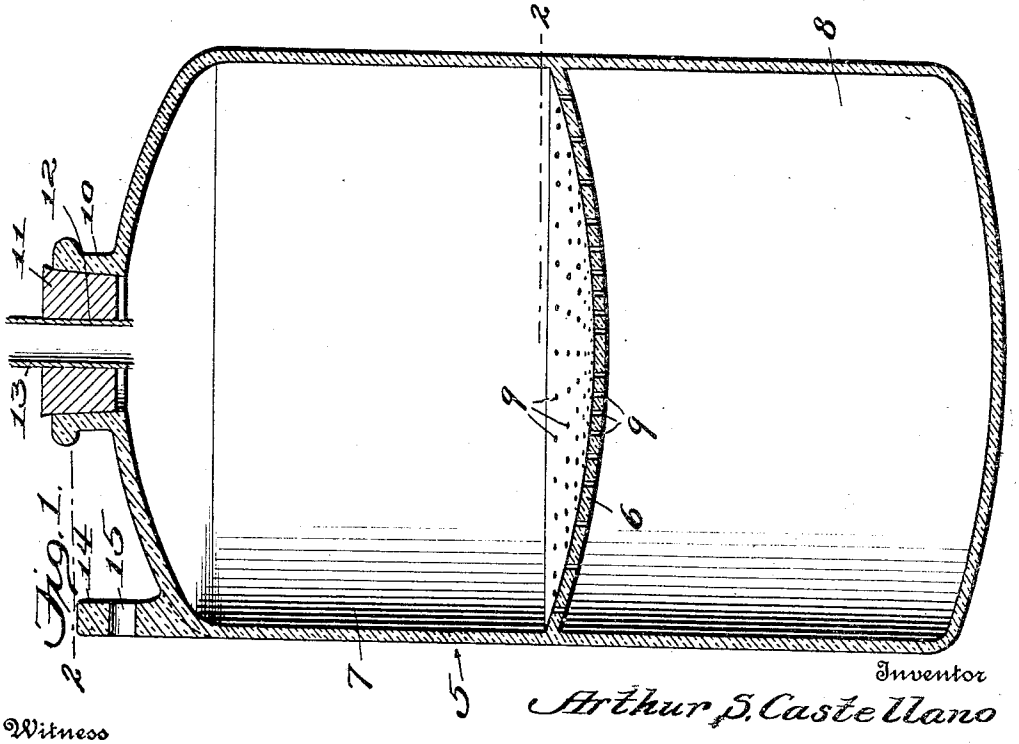


Fig. 1.

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GAS-GENERATING JAR.

1,257,314. Specification of Letters Patent. Patented Feb. 26, 1918.

Application filed March 20, 1917. Serial No. 156,229.

To all whom it may concern:

Be it known that I, ARTHUR STEFANO CASTELLANO, a subject of the King of Italy, residing at Jacksonville, in the county of Duval and State of Florida, U. S. A., have invented certain new and useful Improvements in Gas-Generating Jars, of which the following is a specification.

The present invention relates to improvements in jars and it comprehends, briefly, an improved article of the class or character indicated, which is designed to be used for gas-generating purposes, more especially for the generation of gas intermittently or at irregular intervals as required.

According to the invention, the jar, bottle or like receptacle is charged with the desired chemicals whose co-action is utilized to produce the gas, one of such chemicals being equipped in a solid state and the other in a liquid state; but these chemicals, instead of being permitted to come into contact with each other, are normally kept separated by means of an interior partition which forms a support for the solid chemical, and are brought into combination only at the time when the resultant gas is to be used. This partition constitutes an important feature, if not indeed the most important feature of the invention, because of the fact that it provides for the actual combination of the two chemicals, for which purpose it is formed with a series of apertures through which the liquid chemical is permitted to flow into the other compartment whenever the receptacle is inverted, and to return to its own compartment when the receptacle is restored to upright position. In this way, the generating operation may be repeated indefinitely until the entire charge of solid chemical is exhausted, and may be terminated in each instance, whenever desired, in contradistinction to the conventional type of portable or hand generator wherein the charge of solid chemical is deposited at one time in the liquid, thus requiring that the device be charged anew after each operation.

The invention further contemplates the provision of a gas-generating jar as above specified, which is equipped with a stopper having a tube mounted therein and projecting into the interior of the jar, so as to discharge the gas, as it is generated.

Other features of improvement will appear as the description proceeds.

In the accompanying drawing:

Figure 1 is a vertical sectional view, and Fig. 2 is a view partly in plan and partly in horizontal section on line 2—2, Fig. 1.

Referring to said drawing, the receptacle 5 therein shown has the form of a glass jar or carboy of more or less conventional shape and of such dimensions as may be found desirable.

Intermediate its top and bottom, the jar is formed with a transverse partition 6, which is blown or otherwise constructed integral with the jar during its process of manufacture, and is downwardly curved or dished. This partition, as will be apparent, thus divides the interior of the jar into upper and lower compartments 7 and 8, designed to respectively contain the solid and liquid chemicals to be utilized in the production or generation of the gas, communication between said compartments being effected by means of apertures 9 pierced through the partition. Any desired number of apertures may be provided, and they may be arranged in any suitable manner, for instance, in concentric circular rows, as shown. Their size may vary within certain limits: that is, they must be large enough to permit the liquid in the lower compartment to flow freely therethrough into the upper compartment when the jar is tilted over and allowed to rest upon its side, but too small to permit the particles of solid chemical contained in the upper compartment to fall through them into the lower compartment when the jar is in its normal, upright position.

To provide for inserting the charge of solid and liquid chemicals into the jar, the latter is formed at its top with a neck 10, in which is fitted a stopper 11, preferably constructed of rubber; and this stopper, in turn, is formed with an axial opening 12, through which is inserted a glass tube 13, the lower end of which projects into the interior of the jar. This tube is designed for use in delivering or discharging the gas, for use as it is generated, as will be understood. The jar is also formed, by preference, with an integral hanger, by means of which it may be suspended from a hook or other support of like character, (not shown), said hanger comprising an upstanding lug or ear 14 having a central, transverse aperture 15.

The particular chemicals employed depend, of course, upon the particular gas de-

sired, and the use to which it is to be put. As an example, it may be assumed that hydrogen sulfid gas is to be generated for laboratory or other use, and in such case the lower compartment is filled to the proper level with hydrochloric acid, and the upper compartment with ferrous sulfid. When the gas is to be used, it is merely necessary to tilt the vessel over upon its side, whereupon the acid will flow through the perforations 9 in the partition 6 and come into contact with the particles of ferrous sulfid, the reaction between the two chemicals immediately resulting in the generation of the hydrogen sulfid gas, which is discharged from the jar through the tube 13 and consumed as desired. When sufficient gas has been produced, the jar is restored to upright position by suspending it from its supporting hook, thus immediately terminating generation, since the acid instantly flows back into the lower compartment through the aforesaid perforations, the same procedure being followed where other chemicals are employed. The latter step is greatly facilitated by the dished formation of the partition, since this construction enables all of the acid or other liquid chemical to pass into its compartment practically at once, it being understood that the chemicals employed are preferably of such a nature that reaction between them ceases immediately their separation is brought about. The operation may then be repeated as often and at as frequent intervals as may be necessary, until the charge is completely exhausted.

It is to be observed that under ordinary circumstances only a small portion of the charge is used up at each operation, whereas in the more usual form of portable or hand generators, especially such as are utilized as fire-extinguishers, most, if not all, of the solid chemical contained in the receptacle is dropped into, or otherwise brought into contact with, the liquid at once and, hence, is consumed thereby, so that the receptacle must be re-charged after each operation. It is also to be noted that the actual use of the device entails no damage whatever to the jar itself; that is to say, the intermingling of the two chemicals does not depend upon, and is not produced by, the breaking of either the jar, or a part thereof, as is the case with some forms of analogous device now in use. Consequently, the jar may be said to have practically an indefinite life, subject, of course, to accidental breakage, because it is capable not only of being repeatedly used until its contents are completely exhausted, but also of being re-charged as often as necessary, the transparency of the jar rendering the state of its contents to be visible at all times. Finally, the arrangement of the hanger 14 is such that the device may be readily suspended, by means thereof, from a hook, nail or the like in its upright position, thereby avoiding accidental intermingling of the chemicals; and in this connection it is to be noted that the bottom of the jar, instead of being flat, is rounded to such an extent as not to present a supporting surface on which the jar can stand upright, so that it is necessary to suspend the jar from the above-mentioned hook or the like when not in actual use.

I claim as my invention—

1. A gas-generating apparatus consisting, in its entirety, of a jar, having an internal horizontal partition which divides its interior into separate upper and lower compartments adapted to respectively receive solid and liquid substances, and having also, at its top, an open-ended charging neck directly communicating with the upper compartment; and a removable closure for said neck; said partition being provided with a plurality of relatively-small apertures which permit unrestricted passage of the liquid therethrough, but which prevent the passage of the solid substance from one compartment into the other.

2. A gas-generating apparatus, consisting, in its entirety, of a jar, having an internal horizontal partition which divides its interior into separate upper and lower compartments adapted to respectively receive solid and liquid substances, and having also, at its top, an open-ended charging neck directly communicating with the upper compartment; a stopper removably fitted in said neck and formed with a vertical opening therethrough; and a tube fitted in said vertical opening and communicating at its lower end with said upper compartment; said partition being provided with a plurality of relatively-small apertures which permit unrestricted passage of the liquid therethrough, but which prevent the passage of the solid substance from one compartment into the other.

3. A gas-generating apparatus, consisting, in its entirety, of a jar, having an internal, dished, horizontal partition which divides its interior into separate upper and lower compartments adapted to respectively receive solid and liquid substances, said partition being provided with a plurality of relatively-small apertures which permit unrestricted passage of the liquid therethrough, but which prevent the passage of the solid substance.

4. A gas-generating apparatus, consisting, in its entirety, of a jar, having an internal horizontal partition which divides its interior into separate upper and lower compartments adapted to respectively receive solid and liquid substances and having also, at its top, an open-ended charging neck directly communicated with the upper com-

partment; a removable closure for said neck; said partition being provided with a plurality of relatively-small apertures which permit unrestricted passage of the liquid therethrough, but which prevent the passage of the solid substance, said jar having a convex bottom to prevent it from standing upright thereon; and an apertured hanger formed on the upper portion of the jar for suspending the jar bodily in upright position.

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

ARTHUR STEFANO CASTELLANO.

Witnesses:
J. A. BOYER,
A. B. COTTRELL.

Copies of this patent may be obtained for five cents each, by addressing the "Commissioner of Patents, Washington, D. C."