

J. C. KENNEDY.

Apparatus for Charging Soda-Fountains.

No. 145,503.

Patented Dec. 16, 1873.

Fig. 1.

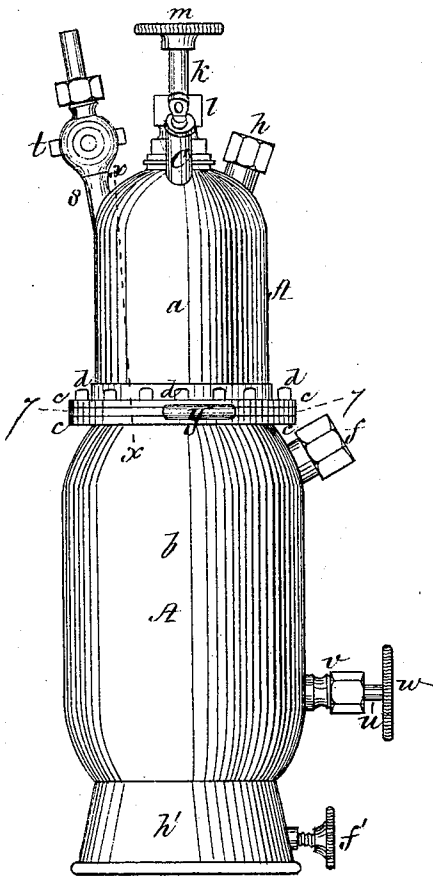


Fig. 2.

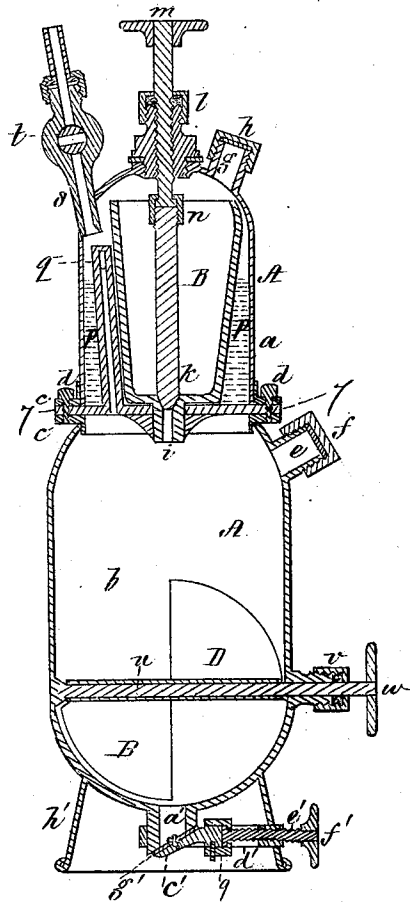


Fig. 3.

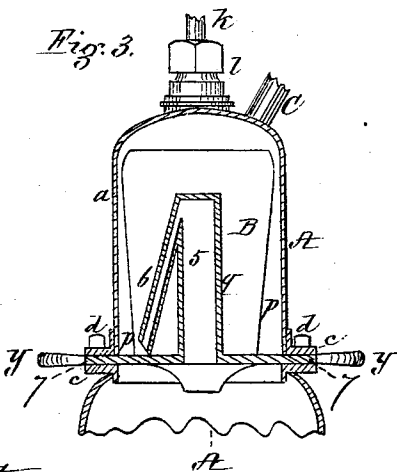
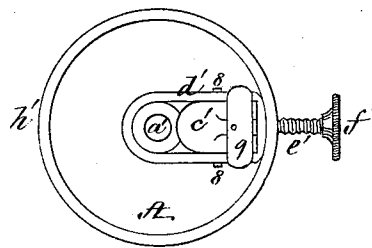


Fig. 4.



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UNITED STATES PATENT OFFICE.

JOHN C. KENNEDY, OF TOLEDO, OHIO, ASSIGNOR TO JAMES W. TUFTS, OF
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IMPROVEMENT IN APPARATUS FOR CHARGING SODA-FOUNTAINS.

Specification forming part of Letters Patent No. **145,503**, dated December 16, 1873; application filed
November 20, 1873.

To all whom it may concern:

Be it known that I, JOHN C. KENNEDY, of Toledo, in the county of Lucas and State of Ohio, have invented certain Improvements in Apparatus for Generating Carbonic-Acid Gas for Charging Soda and Mineral Water Fountains, and for other purposes, of which the following is a full, clear, and exact description, reference being had to the accompanying drawings, making part of this specification, in which—

Figure 1 is an elevation of my improved generator. Fig. 2 is a vertical section through the center of the same. Fig. 3 is a vertical section through the upper portion of the generator on the line *x x* of Fig. 1. Fig. 4 is a plan of the under side of the generator.

In apparatus for generating carbonic-acid gas, as heretofore constructed, the "purifier," consisting of a vessel containing water, through which the gas is made to pass, has been placed outside the generator, and connected therewith by a suitable pipe.

The first part of my invention has for its object to save the cost of this additional vessel, (which is expensive, as it requires to be made of great strength to withstand the pressure of the gas,) and at the same time economize the space occupied thereby, so as to render the apparatus more compact and easy to handle; and consists in arranging the purifier within the casing of the generator, a tight space or chamber for containing water being formed between the acid-vessel and the casing, the gas being conducted to the bottom of the purifier by a bent tube or passage, and rising through the water to the top of the generator, from which it escapes through a suitable pipe. The second part of my invention relates to the construction of the valve, through which the contents of the generator are discharged at its bottom.

An ordinary stop-cock will not answer for this purpose, as the action of the acid will soon corrode the metal and cause leakage; consequently, a valve has been used of that class in which a plug provided with a packing is forced directly against a seat. Valves of this description are, however, objectionable, as they do not afford a straight passage or outlet

for the discharge of the thick or solid contents of the generator, and are consequently liable to become obstructed thereby. An opening in the bottom of the generator, closed by an ordinary cap, has also been used; but this is objectionable, as it necessitates the supporting of the apparatus on legs, while it is inconvenient to remove the cap on account of the heat evolved in generating the gas.

This portion of my invention has for its object to overcome these difficulties; and consists in a sliding plug or stop having an inclined face, which is forced directly against the correspondingly-inclined bottom of the outlet-pipe, which construction affords a straight and unobstructed outlet, through which the contents of the generator can be discharged, while the valve can be readily operated from the side of the apparatus, and can be cleaned with great facility of any crystallized sulphate which may accumulate thereon.

To enable others skilled in the art to understand and use my invention, I will proceed to describe the manner in which I have carried it out.

In the said drawings, A represents the casing of the generator, which is composed of two portions, *a b*, secured together by means of flanges *c* and bolts *d*. In the lower portion *b* is placed the alkali, which is introduced through an opening, *e*, closed by a cap, *f*; and within the upper portion *a* is placed the acid-vessel B, which is composed of lead, and is provided with a flange, *g*, which is confined between the two flanges *c*, by which it is held in place. The acid is introduced into the vessel B through an opening, *h*, closed by a cap, and at the bottom of the acid-vessel is an opening or passage, *i*, through which the acid passes down into and mixes with the alkali in the alkali-chamber, for the purpose of producing carbonic-acid gas. The passage *i* is closed by the lower end of a vertical spindle or valve, *k*, which is made conical to fit the flaring mouth of the passage. This spindle passes through a stuffing-box, *l*, and is provided with a screw-thread, which fits into a corresponding thread in the top of the apparatus, and thus, as the spindle is turned by means of the head *m*, its conical end is raised or low-

ered to open or close the passage *i*. The spindle is provided with a swivel, *n*, whereby its lower end is prevented from turning upon and wearing the valve-seat, and I am thus enabled to effectually prevent this valve from leaking, which would soon occur if the swivel was not employed. Between the exterior of the acid-vessel and the interior surface of the portion *a* of the generator is a space or chamber, *p*, which contains water, and forms the purifier, by which the gas is cleansed before passing out of the apparatus. The gas, as it is generated, passes up from the alkali-chamber, through the larger portion 5 of a tube, *q*, closed at its upper end, and thence down, through its smaller portion 6, to the bottom of the space *p*, whence it passes up through the water contained therein, and by which it is purified, into the upper part of the portion *a*, from which it escapes through a pipe, *s*, provided with a stop-cock, *t*. It will be seen that, by the employment of the bent tube *q*, the gas is allowed to pass freely into the purifier, while the water is prevented from descending into the alkali-chamber, and, by thus arranging the purifier within the generator itself, the expense of a separate purifier placed outside the generator, as heretofore, and which must be made of great strength to withstand the pressure of the gas, is avoided; and I am thus enabled to make a considerable reduction in the cost of the apparatus, and at the same time render it much more compact and easy to handle—advantages of no small importance in apparatus of this description. C is a safety-valve, which is applied to the top of the generator, to prevent liability of explosion from an undue pressure of gas. D is a stirrer, by which the contents of the alkali-chamber are agitated during the formation of the gas. This stirrer is operated by a horizontal shaft, *u*, which projects through a stuffing-box, *v*, and is provided with a head, *w*, by which it is revolved. *y y* are handles which are attached to the sides of the apparatus to facilitate its transportation from place to place. At the bottom of the generator is a straight discharge-pipe, *a'*, through which the alkali-chamber is emptied of its contents. This pipe is chamfered or beveled off on one side so as to leave an inclined face, against which fits a correspondingly-inclined plug or stop, *c'*, which slides in a direction at right angles to the pipe

a' in a guide-frame, *d'*, and is operated by a screw, *e'*, which is attached to the plug by a swivel-joint, and extends out on one side of the apparatus, being provided with a head, *f*, by which it is turned. On the upper side of the plug *c'* are two lugs or projections, 8, which slide on the upper side of the frame *d'*, and on the under side of the plug is a plate, 9, this plate, in connection with the lugs 8, serving to hold it in place within the frame; and thus, as the plug *c'* is advanced by the screw, the inclined face, which is provided with a packing, *g'*, of leather or other suitable yielding or elastic material, is forced against the inclined face of the outlet-pipe, closing it tightly, and effectually preventing leakage.

By this construction, a straight and unobstructed outlet is afforded for the discharge of the contents of the alkali-chamber, while the working parts of the valve, not being inclosed in a casing, are exposed, and consequently any crystallized sulphate or other substance which may accumulate thereon can be easily removed, while the packing *g'* can be readily renewed when worn out. Another great advantage is that the valve can be operated from the side of the apparatus when standing on its base *h'*, which admits of its being placed, when under pressure, over any suitable box or other receptacle for receiving the contents of the alkali-chamber, and avoids the necessity of mounting the apparatus on legs, as heretofore, thus rendering it more compact and still further reducing its cost.

I claim—

1. The chamber *p*, between the acid-vessel and the casing of the generator, for containing water for purifying the gas, in combination with the bent tube *q*, through which the gas is admitted, substantially as described.

2. The discharge-pipe *a'*, with its inclined face, in combination with the sliding plug *c'*, correspondingly inclined, and operated by a screw, *e'*, when applied to a carbonic-acid-gas generator, substantially as and for the purpose set forth.

Witness my hand this 14th day of November, 1873.

JOHN C. KENNEDY.

In presence of—

OTTO REIDEMEISTER,
W. O. MCCARON.