(No Model.)

C. E. AVERY.

BOTTLING GASOGENE.

No. 372,248. Patented Oct. 25, 1887.

Fig. 1.

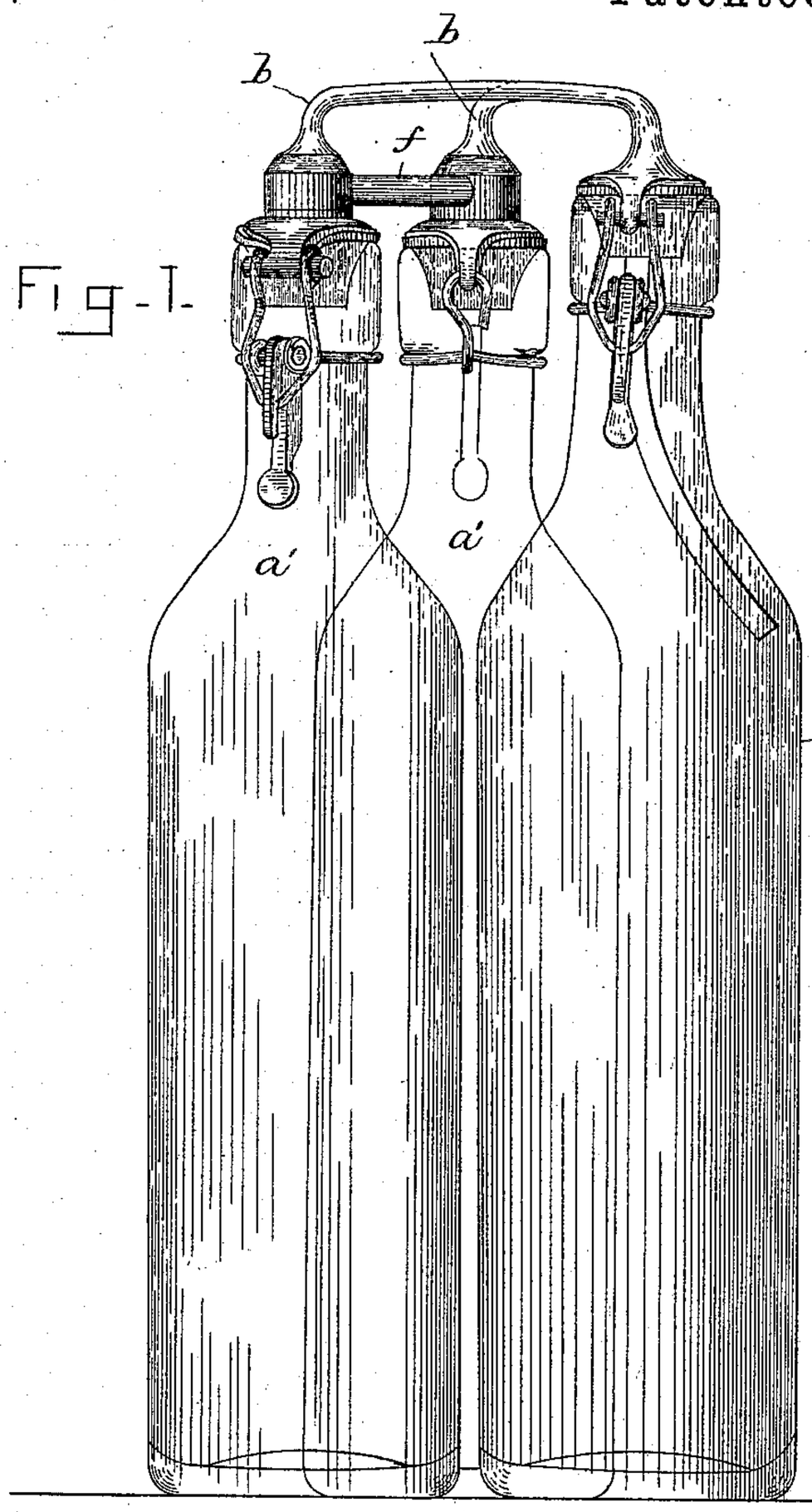


Fig. 3.

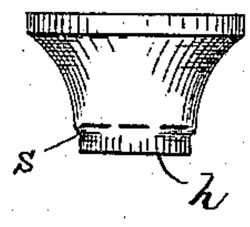
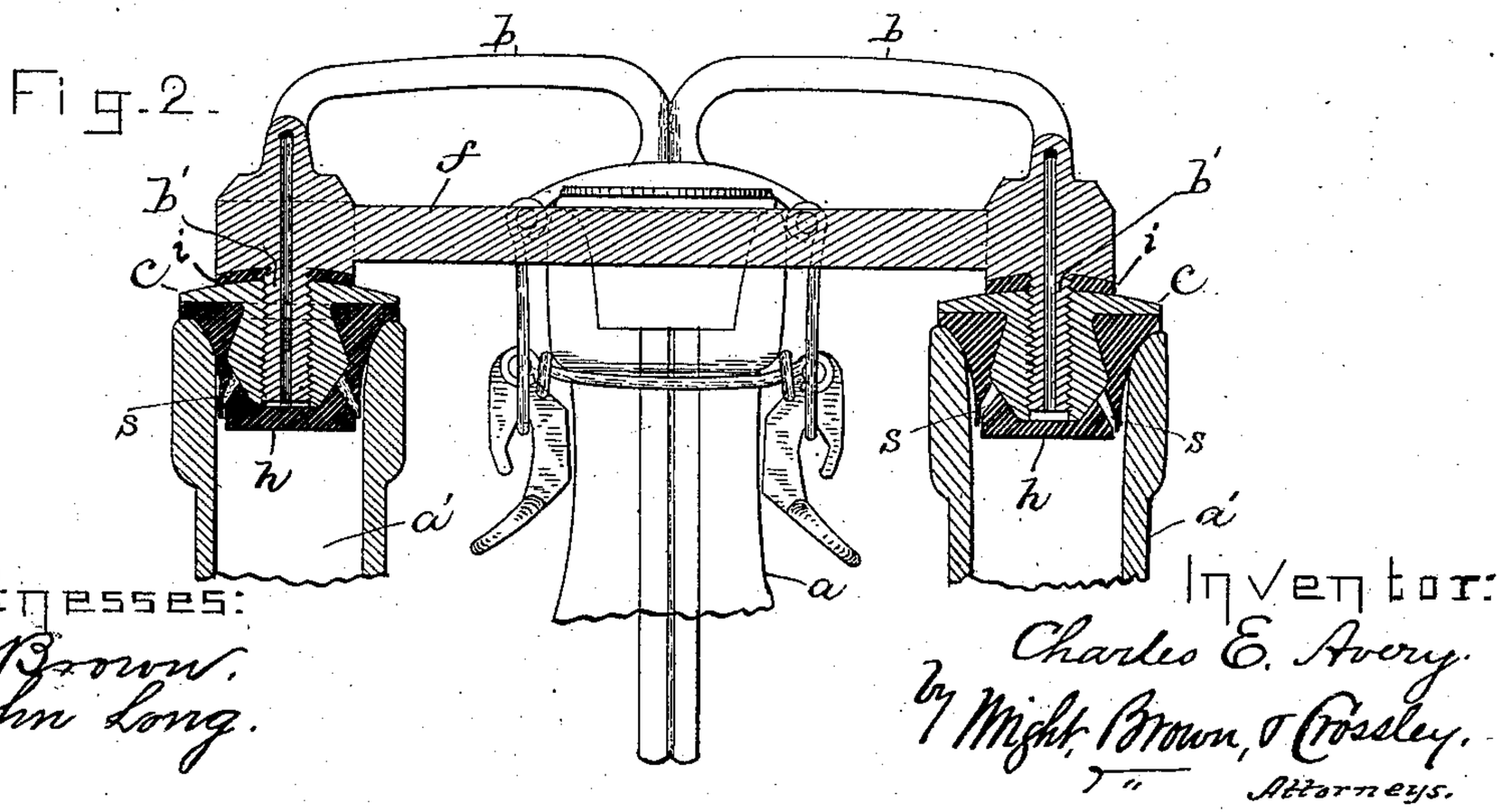


Fig. 2.



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UNITED STATES PATENT OFFICE.

CHARLES ELLERY AVERY, OF JACKSONVILLE, FLORIDA.

BOTTLING-GASOGENE.

SPECIFICATION forming part of Letters Patent No. 372,243, dated October 25, 1887.

Application filed August 28, 1886. Serial No. 212,073. (No model.)

To all whom it may concern:

Be it known that I, CHARLES ELLERY AVERY, of Jacksonville, in the county of Duval and State of Florida, have invented certain new and useful Improvements in Low-Pressure Bottling-Gasogenes, of which the following is a specification.

This invention has for its object to provide a safe, simple, and convenient apparatus or gasogene, adapted for household use, whereby water and other liquid beverages may be charged with gas.

The invention consists, as a whole, in the combination of two or more receptacles (preferably three,) one of which is a generator in which the charging gas is formed, while the other or others contain the liquid to be charged, a connecting head or fixture to which said receptacles are detachably secured, said fixture having a tube or tubes connecting the generator with the liquid receptacle or receptacles, and inwardly-opening valves in the liquid-receptacles, which yield to the pressure of the gas from the generator and permit the gas to enter the liquid-receptacles, but close either automatically or by the pressure of the gas within the liquid-receptacles, to prevent the escape of the charged liquid when the receptacles are removed from the connecting head or fixture.

The invention also consists in certain details of construction, all of which I will now proceed to describe and claim.

Of the accompanying drawings, forming a part of this specification, Figure 1 represents a side elevation of my improved gasogene. Fig. 2 represents a section lengthwise of the cross-bar *f*, the bottles being broken away. Fig. 3 represents a side elevation of the valve hereinafter referred to.

The same letters of reference indicate the same parts in all the figures.

In the drawings, *a a' a'* represent three elongated receptacles, preferably of glass, in the form of bottles. Each receptacle has a stopper and a fastening device therefor, said fastening devices being preferably like those commonly in use for stoppers of beer and soda-water bottles. The receptacle *a* constitutes a generator, in which gas may be evolved from a powder like that described in Letters Patent of the United States granted to me April 28, 1885, while the receptacles *a' a'* are intended to contain the beverage to be charged by said gas.

To the stopper of the generator *a* are affixed tubes *b b*, extending from the interior of the generator and terminating in screw-threaded nipples *b' b'*, upon which are screwed the stoppers *c c* of the receptacles *a' a'*, said stoppers having threaded sockets to receive said nipples.

f represents a rigid bar, which is provided with enlarged ends formed integral with the tubes *b b*, the nipples *b' b'* being preferably formed integral with said enlarged ends, and the whole—viz., the tubes, the stopper of the generator, the bar *f*, and the nipples *b' b'*—constituting a head or fixture whereby the generator and the receptacles are connected, the receptacles being detachable from said head or fixture by unscrewing them from the nipples.

The stoppers *c c* have apertures forming continuations of the tubes *b b*, and inwardly-opening valves *h h* for said apertures, whereby the gas from the generator is admitted to the receptacles *a' a'*, said valves being closed against the apertures in the stoppers, either automatically or by the pressure of the gas in the receptacles, so that when the receptacles are removed from the connecting head or fixture their contents cannot escape until the valves are pressed inwardly by a drawing-off tube or device inserted in the orifice of the stopper. I have shown the valve stoppers in this case constructed as described in Letters Patent No. 283,436, dated August 21, 1883; but I may use any other suitable stopper. The stopper here shown is composed of a metallic core, into which the nipple *b'* is screwed, and a yielding rubber covering on said core, composed in part of the valve *h*, which valve is normally held against the inner ends of the core to close the opening therethrough. The rubber covering is provided with slits *s*, through which gas can enter the bottle when the rubber covering is pushed by the gas-pressure away from the inner end of the core, the liquid being discharged through said slits, if desired, when the rubber covering is pressed inwardly by a drawing-off tube inserted in the stopper when the latter is removed from the nipple *b'*.

Washers *i i* are interposed between the ends of the bar *f* and the upper ends of the stop-

pers *c c*, the nipples *b' b'* passing through said washers. The upper ends of the stoppers are convex, and the corresponding surfaces of the bar *f* bearing on the washers are concave and have a more abrupt curvature than the upper ends of the stoppers, as shown in Fig. 2, so that the washers are more tightly compressed at their outer portions and are pressed inwardly against the nipples, thus forming gas-tight joints around the latter.

While the receptacles *a' a'* are being charged the generator and receptacles are placed horizontally, or substantially so, to seal the internal valves of the caps or stoppers *c c* with liquid, either by capillary attraction or by height of liquid.

The tubes *b b* within the generator are bent to one side of the latter, as shown in Fig. 1, so that when the receptacles and generator are horizontal and the valves of the receptacles are liquid-sealed the open inner ends of the pipes will be above the gas generating liquid in the generator, and said liquid will be thereby prevented from entering the receptacles *a' a'*.

The bar *f*, forming a part of the connecting head or fixture, not only stiffens said head and prevents the bottles *a' a'* from swinging and knocking against each other freely, but also serves as a handle, whereby the apparatus can be conveniently carried, and as a wrench, whereby the nipples *b' b'* may be screwed strongly into the stoppers of the receptacles *a' a'*.

It will be seen that the detachability of the receptacles *a' a'* and the self-closing valves of their stoppers enable said receptacles to be conveniently used or packed for transportation or placed on ice, each receptacle being interchangeable with others, so that the generator may be kept steadily in operation.

Since carbonic anhydride (CO_2) requires some hours to combine with water, (gas merely forced in and not combined at once escapes, leaving the liquor flat,) I find that the great pressure of other gasogenes are not required, and that at a pressure of seventy-five pounds, which my powder above referred to gives in summer temperature, the gas combines as it is slowly forced over.

In any ordinary gasogene the bottling would be useless, for though their initial pressures are high their resultant soda-water is rarely high charged, never enough to bear the weakened pressure consequent on discharge from a generator of small capacity of bottles.

I claim—

1. In a bottling-gasogene, the combination of a plurality of bottles located side by side, one of said bottles serving as a generator and the other as a receiver, a bent pipe extending from the interior of the generator and from a point which is below the ordinary water-level when the bottle is upright, but above the water-level when turned on the side and communicating with the receiver, and a stopper for said receiver fitted to be detachably connected with said pipe and provided with a valve which opens to admit gas to the receiver and closes to prevent the escape of gas and liquid therefrom, the whole constituting a portable apparatus, which may be placed in a horizontal position to form a liquid seal for the stoppers of the bottle by their liquid contents during the charging operation, as set forth.

2. In a bottling-gasogene, the combination of a bottle serving as a generator, one or more bottles for the liquid to be charged, having internally-valved stoppers with screw-threaded apertures, and a head or fixture connecting said generator and stoppers, said fixture comprising tubes which connect the generator and receptacles and terminate in screw-threaded nipples which engage the threaded apertures of the stoppers, as set forth.

3. In a bottling-gasogene, the combination of a generator, one or more bottles or receptacles for the liquid to be charged, having internally-valved apertured stoppers, and a head or fixture connecting said generator and receptacles, said fixture being composed of tubes *b b*, which connect the generator and the receptacles, screw-threaded nipples which engage the stoppers of said receptacles, and a rigid bar or handle secured to the tubes *b b*, as and for the purposes specified.

4. A generator for a bottling-gasogene having tubes *b b* attached to its stopper and bent within the generator toward one side thereof and formed at their opposite ends to be detachably connected to liquid-receptacles, as set forth.

5. A generator for a bottling-gasogene having tubes *b b* attached to its stopper and formed at their outer ends to be detachably connected to liquid-receptacles, and connected at said outer ends by a rigid bar or handle, as set forth.

6. In a gasogene, the combination of a generator and a gas-conducting tube passing from the interior of the generator and bent therein toward one side of the generator, whereby when the generator is placed in an approximately horizontal position the end of the tube is raised above the liquid therein, as set forth.

7. In a gasogene, the combination of a generator, a detachable stopper therein, and a tube for the escape of gas passing from the interior of the generator through said stopper and bent within the generator toward one side thereof, whereby when the generator is placed in an approximately horizontal position the end of the tube is raised above the liquid therein and the stopper is sealed by said liquid, as set forth.

In testimony whereof I have signed my name to this specification, in the presence of two subscribing witnesses, this 25th day of August, 1886.

CHARLES ELLERY AVERY.

Witnesses:

C. F. BROWN,

ARTHUR W. CROSSLEY.