(No Model.)

# E. D. KENDALL.

## SODA WATER APPARATUS.

No. 302,262. Patented July 22, 1884.

Fig. 1.

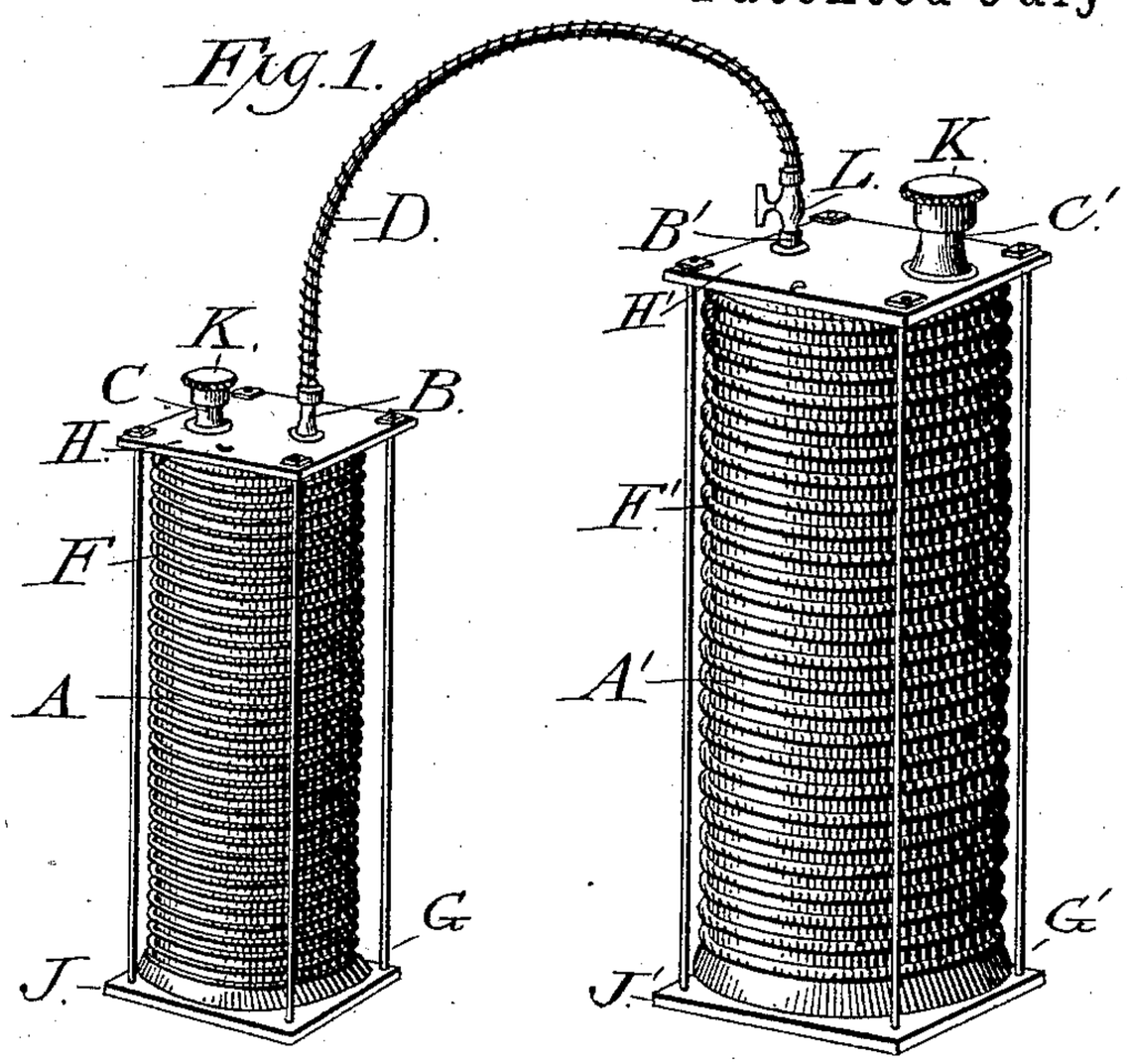


Fig. 7.


Fig. 2.

Fig. 3.

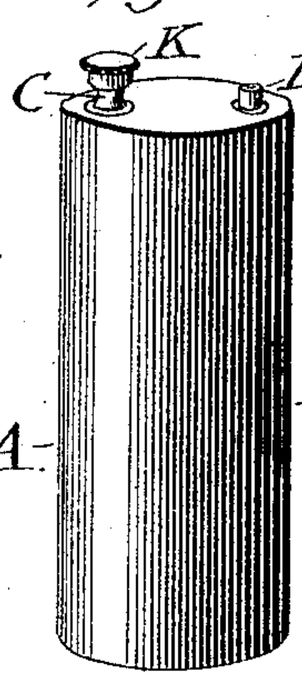


Fig. 4.

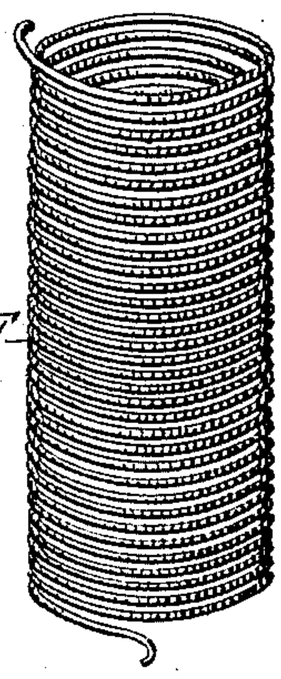


Fig. 5.

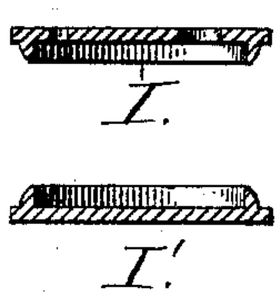


Fig. 6.

Witnesses;
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# UNITED STATES PATENT OFFICE.

EDWARD D. KENDALL, OF BROOKLYN, NEW YORK.

## SODA-WATER APPARATUS.

SPECIFICATION forming part of Letters Patent No. 302,262, dated July 22, 1884.

Application filed July 13, 1883. (No model.)

*To all whom it may concern:*

Be it known that I, EDWARD D. KENDALL, of the city of Brooklyn, in the county of Kings and State of New York, have invented a new and useful Improvement in Portable Soda-Water Apparatus, or apparatus for charging water with carbon dioxide, usually called "carbonic-acid gas," which improvement is fully set forth in the following specification and accompanying drawings, in which—

Figure 1 is a perspective view of the apparatus as it appears when in operation. Fig. 2 is a sectional view of a part of the apparatus which is to contain the water to be charged with the gas. Fig. 3 is a perspective view of a similar part of the apparatus, which is to contain the chemicals for generating the gas. Figs. 4, 5, and 6 are separate parts of the apparatus, fully described in the specification. Fig. 7 is a pipe for delivering the soda-water.

The object of my invention is to provide a safe and simple apparatus for impregnating water with carbonic-acid gas evolved from a mixture of any suitable chemicals, and it is particularly adapted for use by families and aboard ship.

In the drawings, Figs. 2 and 3, A and A′ are vessels made of caoutchouc vulcanized or in the natural condition. In their construction the caoutchouc may be used alone, or it may be first spread on cloth or canvas, in which case the cloth or canvas forms the outside of the vessels. In Fig. 1 these caoutchouc vessels are indicated by A and A′, but are not visible, being surrounded by helices of wire, as will be presently herein described. The vessels A and A′ differ only in size—A, which receives the gas-generating chemicals, having, preferably, about half the capacity of A′, which contains the water that is to be impregnated with gas. They may be made of comparatively thin material, provided they are surrounded by one wrapping of thick paper or cloth or thin sheet metal, to prevent abrasion and to secure an equal distribution of pressure on the exterior of the said vessels. Each of the vessels has two necks, B and B′ small, and C and C′ larger. In the necks B and B′ are fastened, by cement and wiring, suitable brass connections or couplings. In the neck C and C′ are similarly fastened short brass tubes, preferably expanded or flanged at their lower ends. The upper end of each of the said tubes is threaded to receive a screw-cap, K, Fig. 2, which contains a disk of vulcanized caoutchouc to close the tube gas-tight.

D in Fig. 1 is a short piece of rubber tube surrounded by a spiral of wire to prevent bursting, while retaining flexibility. It is terminated at each end by suitable parts of couplings to form connections, as shown, with the smaller necks, B and B′, of the vessels A and A′. This tube is intended to convey gas from the generator A to the vessel A′. It may be of different construction and material. Ordinary lead or block-tin pipe may be used.

In Figs. 1 and 2 a stop-cock, L, is shown interposed between one end of the said tube or pipe and the neck B′.

At E, Fig. 2, is indicated a tube, preferably of glass or block-tin, connected with the neck B′ of the vessel A′, and reaching nearly to the bottom of the latter. It serves as a continuation of the tube or pipe D, to conduct and deliver the gas.

F and F′ are closely-wound helices of iron, steel, or brass wire, (one of which is shown separately in Fig. 4,) which surround the caoutchouc vessels A and A′, to resist lateral bursting pressure. These helices may be formed of flattened wire or ribbons of metal instead of ordinary wire.

G and G′ indicate two strong frames of metal, which contain the caoutchouc vessels A and A′, with their surrounding helices, and serve to resist longitudinal bursting pressure. These frames are constructed as follows:

H and H′ are square plates of metal, each having two openings to receive the necks of the aforesaid caoutchouc vessels. In Fig. 5, I is a sectional view of one of these plates in a line with the center of the two said openings. J and J′ are corresponding square plates of metal without the said openings. In Fig. 5, I′ is a sectional view of one of these plates in a line with the center of two opposite edges. It will be seen that each plate is formed with a circular projection or rim, which is intended to receive and surround one end of a helix. Four strong rods or bolts (one of which is shown in Fig. 6) are screwed into the four corners of each bottom plate, and are fastened into the corners of each upper plate by screw-

nuts. When the apparatus is put together, the upper end of the wire of each helix is fastened into a small hole bored near one edge of an upper plate, and the lower end is fastened in the same way to the corresponding lower plate, each caoutchouc vessel having previously been placed within its respective helix.

To use the above-described apparatus, the vessels A and A′ being connected by the tube D and the stop-cock L being open, a small quantity of water is to be poured into the vessel A through the tube C, and the required quantity of water to be charged with carbonic-acid gas is to be introduced into the vessel A′ through the tube C′. Suitable chemicals, in due proportion, (for example, weighed quantities of bicarbonate of soda and tartaric acid,) are then put into the vessel A through the tube C, which tube is then to be closed by its screw-cap. The gas forms in A, and, driving before it the contained common air, passes through the tube D and the tube E into the vessel A′. After several minutes carbonic-acid gas will issue from the tube C′, as indicated by the extinguishment of a lighted match held at the opening, after which this tube also is to be closed by its screw-cap. Occasional agitation of the vessel A′ facilitates the absorption of the gas. When a sufficient time has elapsed, as determined by experience, to sufficiently charge the water in A′ with gas, the stop-cock L is to be closed, the tube D disconnected, and the curved pipe M, Fig. 7, screwed on the stop-cock, through which pipe the soda-water may be discharged for consumption.

Having thus described my invention, what I claim as new, and desire to secure by Letters Patent, is—

In an apparatus for charging water with carbonic-acid gas, an elastic or expansible vessel for generating the gas, sustained or surrounded by a helical coil of metal as a supporting agent, and a similar expansible vessel for holding water and receiving the gas, also supported by a surrounding metallic coil or helix, all constructed, arranged, and operating in the manner and for the purposes substantially as set forth and shown.

In testimony whereof I have hereunto set my hand and affixed my seal this 21st day of May, 1883.

EDWARD D. KENDALL. [L. S.]

Witnesses:
LOUIS F. BALLARD,
S. LINCOLN HUTCHINSON.