

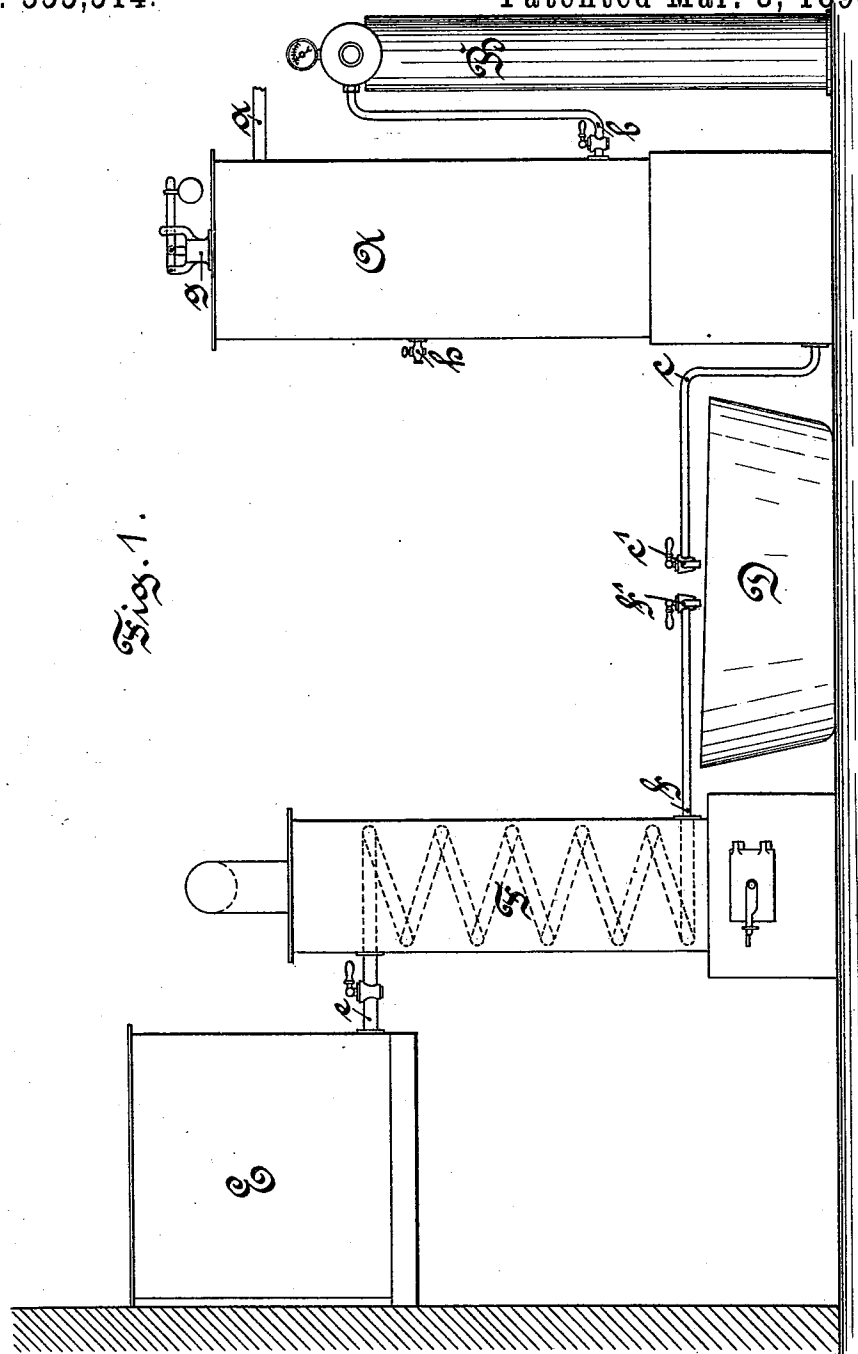
(No Model.)

2 Sheets—Sheet 1.

F. A. J. KAISER.  
CARBONATOR.

No. 555,514.

Patented Mar. 3, 1896.



Witnesses:

*Otto Koch*  
*Aug. Summer*

Inventor:

*Friedrich A. J. Kaiser*  
by *Wm. C. Souther*, attorney

(No Model.)

2 Sheets—Sheet 2.

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Fig. 2.

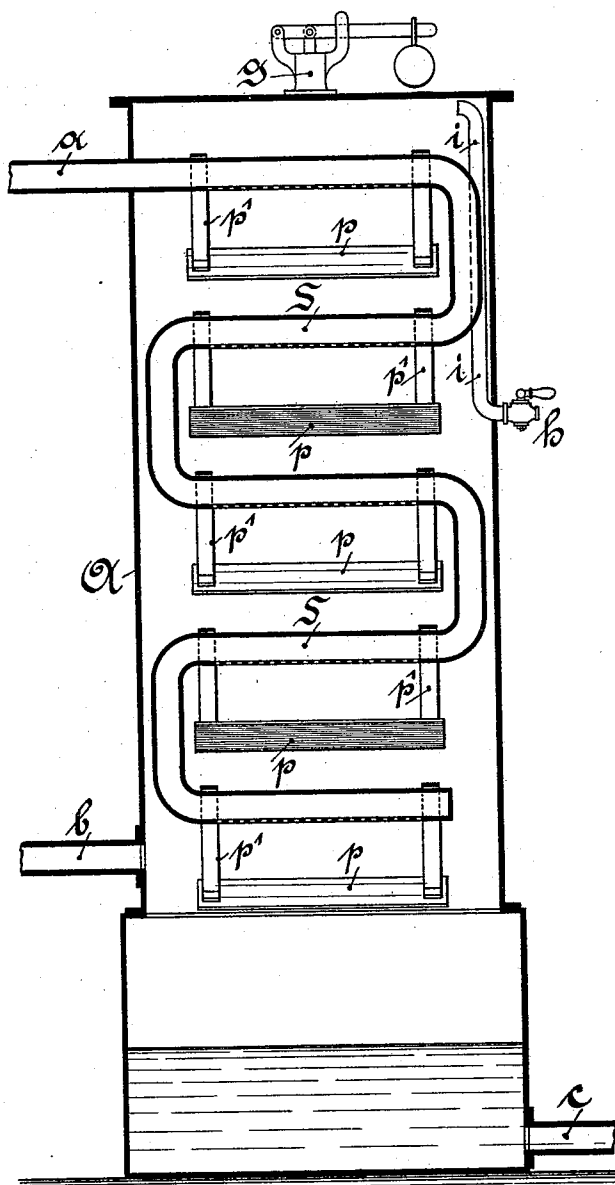
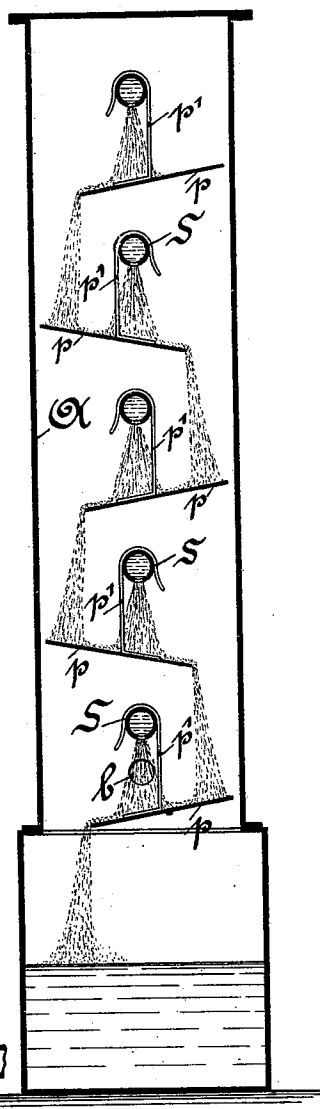


Fig. 3.



Witnesses:

Otto Hoff  
H. J. Mueller

Inventor:

Friedrich A. J. Kaiser  
by Wm. E. Souther, attorney

# UNITED STATES PATENT OFFICE.

FRIEDRICH AUGUST JOSEPH KAISER, OF DRESDEN, GERMANY.

## CARBONATOR.

SPECIFICATION forming part of Letters Patent No. 555,514, dated March 3, 1896.

Application filed January 12, 1894. Serial No. 496,657. (No model.)

*To all whom it may concern:*

Be it known that I, FRIEDRICH AUGUST JOSEPH KAISER, a subject of the King of Saxony, residing at Dresden, in the Kingdom of Saxony, German Empire, have invented certain new and useful Improvements in Carbonators, of which the following is a specification.

My invention has relation to carbonators, and among the objects in view is to provide a simple and convenient apparatus wherein the bathing-water may be readily prepared, such water being composed of two different waters—*i. e.*, a neutral water impregnated when cold with carbonic-acid gas and a hot water in which the desired minerals are dissolved, separately prepared and separately conveyed to the bath and therein for the first time commingled.

A further object is to provide, in connection with my apparatus, a sprinkling device for impregnating the water with carbonic-acid gas instead of the saturator hitherto used, whereby the water to which the gas is to be added is divided minutely, and thus promote to the utmost the commingling of the gas and water.

Other objects and advantages of the invention will appear hereinafter.

In the accompanying drawings, Figure 1 is an elevation of an apparatus for the preparation of the bath-water, including the bath itself. Figs. 2 and 3 are vertical sections taken at right angles to each other of the specially-arranged sprinkling and distributing device for the saturation of the water with carbonic-acid gas, which device is only assumed but not shown in Fig. 1.

The following is the description of the preparation of the cold water charged with carbonic-acid gas.

A indicates the sprinkling or distributing device. The cold water is supplied to the upper part of A through the pipe *a*, under pressure, either by means of a force-pump or a suitable head of water, in order to be intimately commingled with the carbonic-acid gas supplied by the pipe *b* from the bottle or cylinder B, also forced in under pressure. The water impregnated with carbonic-acid gas is conveyed to the bath by the pipe *c*, the inflow being regulated and stopped by the cock *c'*.

The preparation of the second portion of the bath—the hot water holding mineral substances in solution—is effected as follows: The water, either in a cold state or heated, has the mineral ingredients added to it (salts, metals, or earths) in the receiving-vessel E. In order the better to be enabled to regulate the heat at will, it is preferable that the mixture in vessel E should be made with cold water, and it is then admitted, through the pipe *e* to the heater F, which may be of any convenient and suitable kind, whereby it is heated and conveyed finally, through the pipe *f* fitted with the cock *f'* to the bath D. By duly regulating the supply from the two cocks *c'* and *f'* any desired admixture of the prepared waters can be obtained in the bath D. In this manner the water charged with carbonic-acid gas is for the first time heated, so that no antecedent development or giving off of the gas is possible.

For the impregnation of the water I preferably employ the sprinkling device shown in Figs. 2 and 3. This device is so arranged that the weight of the water to be impregnated is utilized inside the apparatus in order to generate movement which will effect the greatest possible subdivision of the water itself.

The vessel A, as already explained, is filled with compressed carbonic-acid gas by the pipe *b*. The absorption of the gas is promoted by increase of pressure and decrease of temperature. The water to be impregnated is introduced under correspondingly increased pressure through the pipe *a*, which inside the vessel is worm-shaped, as shown by S. The horizontal sections of this worm are finely perforated on their under side, from which the water streams forth in the form of a fine rain, and so falls through the vessel filled with carbonic-acid gas, whereby the water becomes saturated with the gas. In order to prolong to the utmost possible degree the flow of the water in contact with the gas, as well as to subdivide and agitate it as much as possible, a series of swinging or oscillating plates *p p* is added to the apparatus. These plates are either suspended from the said horizontal pipe-sections by means of hooks *p'*, as shown in the drawings, Fig. 2, or arranged to swing on special axes. These plates not only break the free fall of the water parti-

cles but also act as splash-boards to scatter and sprinkle the falling water, with the result of keeping it in rapid and continuous motion. As will be seen in Fig. 3, the water falling from the uppermost plate is cast on one side of the next plate in succession with a certain shock from the weight of the water which sets the plate swinging. The same occurs with all the plates in succession, so that the whole series is kept in perpetual oscillation. Consequently the water, in its descent through the vessel, is continually splashed about and finely subdivided, so that all its particles are brought into intimate contact with the carbonic-acid gas.

As already explained, the water saturated with gas is drawn off for use by the pipe *c*. *g* is a safety-valve. By means of the cock *h* and pipe *i*, which latter is carried up to the top of the apparatus, the air, which, owing to its lighter specific gravity, rises above the carbonic-acid gas, may from time to time be drawn off.

I claim—

1. In an apparatus of the character described, the combination with a vessel or receiver adapted to contain a solution of water and carbonic-acid gas, of a water-supply pipe leading into and extending through the said

receiver and provided with perforations, a gas-holder in communication with said receiver, a series of plates arranged beneath the perforations of the water-pipe and adapted to be struck and oscillated by the sprayed water, and a discharge-pipe for the said receiver, as and for the purpose specified.

2. In an apparatus of the character described, the combination with a vessel or receiver adapted to contain a solution of water and carbonic-acid gas, of a water-supply pipe leading into and extending through the said receiver and provided with perforations, a gas-holder in communication with the said receiver, a series of plates arranged beneath the perforations in the water-pipe and adapted to be struck and oscillated by the sprayed water, a series of hooks secured to the said plates and engaging the water-pipe to support the plates in position, and a discharge-pipe for the said receiver, as and for the purpose specified.

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

FRIEDRICH AUGUST JOSEPH KAISER.

Witnesses:

OTTO WOLFF,  
HUGO GUMMER.