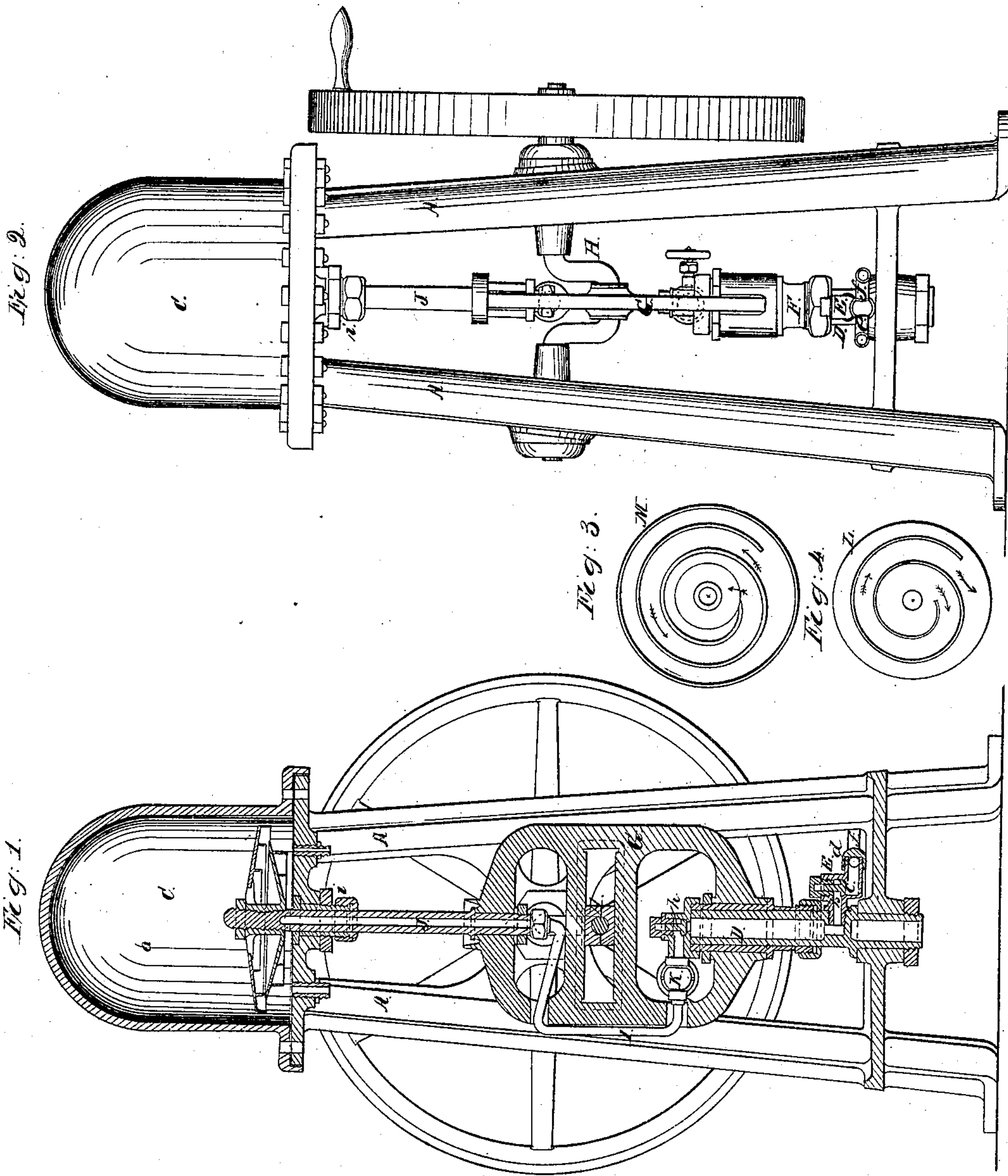


J. Matthews, Jr.

Charging Soda Fountains.

Nº 68,375.

Patented Sep. 3, 1867.



Witnesses:

M. Comby
W. Reed

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John Matthews Jr.

United States Patent Office.

JOHN MATTHEWS, JR., OF NEW YORK, N. Y.

Letters Patent No. 68,375, dated September 3, 1867.

IMPROVED APPARATUS FOR THE MANUFACTURE OF SODA-WATER, AND FOR AERATING LIQUIDS.

The Schedule referred to in these Letters Patent and making part of the same.

TO ALL WHOM IT MAY CONCERN:

Be it known that I, JOHN MATTHEWS, JR., of the city, county, and State of New York, have invented a new and useful improvement on Apparatus for the Manufacture of Soda-Water and for other Purposes of Aeration, of which the following is a full, clear, and exact description, reference being had to the accompanying drawing, forming part of this specification.

This invention consists in so constructing an apparatus for the manufacture of soda-water and for other purposes of aeration, but which will here be described for manufacturing soda-water, as that the pump-feed and agitator to the condenser may be connected therewith without the establishment of joints to the latter, above the average level of the water therein, by operating the feed and agitator through the base or lower portion of the condenser; likewise in running the discharge or feed pipe from the pump into the condenser, and giving a reciprocating action therein, by or with the pump, in such manner as that the pressure of gas or liquid in the condenser is made to assist the pump, in its discharging or feeding stroke to the condenser, by acting upon the exposed end of said discharge pipe or devices connected therewith; also in combining with the reservoir or condenser a pump for charging and keeping up the supply to the latter, having for its constituent parts a lower stationary hollow plunger and reciprocating cylinder, with suitable inlet and delivery valves and upper reciprocating discharge or feed pipe, whereby great simplicity of working parts is effected, and a steady guiding action secured to the pump; and furthermore, said invention consists in arranging, on the end or portion of the discharge pipe which projects into the condenser from below, one or more volutes or their equivalents, constructed so as in the reciprocating action of the pump to catch and distribute the gas in the water, and to agitate the latter within the condenser for the purpose of effecting a thorough mixing of the gas and water. Referring to the accompanying drawing, in which—

Figure 1 represents a sectional elevation of an apparatus constructed according to this invention applicable to the manufacture of and dispensing of soda-water.

Figure 2, an outside elevation of the same, seen at right angles to fig. 1; and

Figures 3 and 4, inverted plans of reciprocating volutes used for mixing the gas and water in the reservoir or condenser.

A A are uprights or portions of the general frame, the same being suitably braced or connected, and carrying a table, B, at their top, on which is secured the condenser or reservoir C for holding the carbonic acid gas and water mixed therein, and which reservoir, by the present improvement, is or may be free from all joints below its water line, the average level of the latter being indicated, say, by the line *a* in fig. 1. Inserted through the table B may be tubes for attachment of the usual bottling-nipple and pressure-gauge or safety-valve. Connected with the frame, at or near its base, is a stationary hollow plunger, D, communicating below by a branch, *b*, with a valve-box, E, the valve *e* of which is arranged to open upwards, and controls the suction by a passage, *d*, with or through branches *e f*, the one of which serves as the induction pipe for the water, and the other for the carbonic acid gas from any suitable reservoirs or vessels. F is the working cylinder, which plays up and down over or outside of the stationary plunger D, and is connected to so as to be operated by a reciprocating yoke, G, driven, say, by any suitable power through a crank, H, having play in an oblong slot of the yoke. This cylinder F is provided, at its upper end or portion, with a delivery-valve, *h*, which, in the descent of the cylinder, allows of the gas and water entering in the up stroke of said cylinder through or beneath the valve C, the plunger D to be forcibly expelled through a branch, I, and vertical discharge pipe J, by perforations S into the reservoir C. The plunger D and cylinder F act as a guide below to this reciprocating arrangement, while the pipe J, working through a stuffing-box, *i*, in the table B or base of the reservoir C, operates as an upper guide thereto. K is a cock or valve for shutting off communication between the pump and reservoir C, when necessary for repair of the valves or otherwise, while said reservoir is full or under pressure. The gas and water forced out through the perforations S, in or during the action of the pump, it is preferred to admit into the reservoir C, or water contained therein, and to effect the mixture of the gas and water by means of any desired number of volutes L M, carried by the reciprocating discharge pipe J where it projects within the reservoir C, the one volute L, say, causing the gas as it rises to work spirally outwards, and, passing up into or under the upper and larger reverse volute M, to be worked in an opposite direction or spirally inwards, and

finally escaping by a central orifice. In this way an effectual agitation is kept up and thorough mixing of the gas with the water produced by the volutes as they are worked up and down within the reservoir C. Any other suitable description of agitator, however, if preferred, may be employed in connection with the arrangement or combination of parts hereinbefore described, or certain of them; and here it may be observed, that in some cases, instead of the gas being forced into the reservoir C by the pump, along with the water, the gas may be separately admitted under pressure to said reservoir from its generator, and the water only be forced in by the pump.

Among the advantages which are claimed for the improvement here described may be mentioned, dispensing with all joints above the water level in the reservoir C, the importance of which will be readily understood, when the great pressure of the gas contained in the reservoir is considered, and the difficulty that consequently exists to making a joint above the water-level tight against escape of gas; likewise that the pump is aided in its descent or discharging stroke into the reservoir C by the pressure of the gas or gas and water contained therein acting on the head of the discharge pipe or agitator reciprocating within said reservoir; thus the pump is aided in producing further compression or condensation by the pressure previously effected by it, or, where the pump is merely used to force in the water, the same is assisted in supplying the reservoir C by the pressure of the gas separately admitted thereto.

In addition to these advantages may be mentioned the great simplicity of the working parts and steadiness of action, as produced by the reciprocating cylinder F on the plunger D and discharge pipe J, into and through the bottom of the reservoir, the distance apart of the guides to the pump aiding in this result, and the reciprocating action of the pipe or connection J in a longitudinal direction being preferable to a rotary one for working the agitator, as offering greater security against leakage at the stuffing-box. Here it may be repeated, however, that any suitable agitator may be employed, and such need not necessarily be worked by the discharge tube of the pump; thus a rod might be substituted for the pipe J to work the agitator, and the pump-feed to the condenser be established by a flexible tube connecting at a different point with the condenser, either directly through its bottom or through its side near the bottom, below the water level, such lateral arrangement also, if desired, being adopted for operating a suitable agitator. It is preferable, however, to make one stuffing-box or joint serve both for the working of the agitator and pump-discharge into the condenser. Instead of a stationary hollow plunger a working one and stationary cylinder may be substituted for the pump-arrangement shown in the drawing, with like effect in many respects at least, in which case, if desired, the discharge pipe J may connect so as to reciprocate with the plunger instead of the cylinder, suitable communication being established through said plunger with the pipe J.

What I claim as my invention, and desire to secure by Letters Patent, is—

1. A soda-water or other aerating apparatus, having its pump-feed and agitator or mixer, so arranged in relation to its condenser or reservoir, as that all joints in the latter above its average water level may be dispensed with, as herein specified.

2. In soda-water or other aerating apparatus, the combination with the reservoir or condenser C of a reciprocating discharge pipe or tube J to the pump, substantially as and for the purpose or purposes herein set forth.

2. The combination of the stationary hollow plunger D, reciprocating pump-cylinder F, reciprocating discharge pipe J connected therewith, receiving and delivery-valves, and reservoir or condenser C, essentially as specified.

4. The volutes L M, or their equivalents, acting as agitators or mixers, arranged on the reciprocating pump-discharge pipe where it projects into the reservoir C, or otherwise similarly driven for action therein, as set forth.

5. The combination with the pump, for direct action thereby, of an agitator or agitators within the condenser.

JOHN MATTHEWS, JR.

Witnesses:

J. W. COOMBS,

G. W. REED.