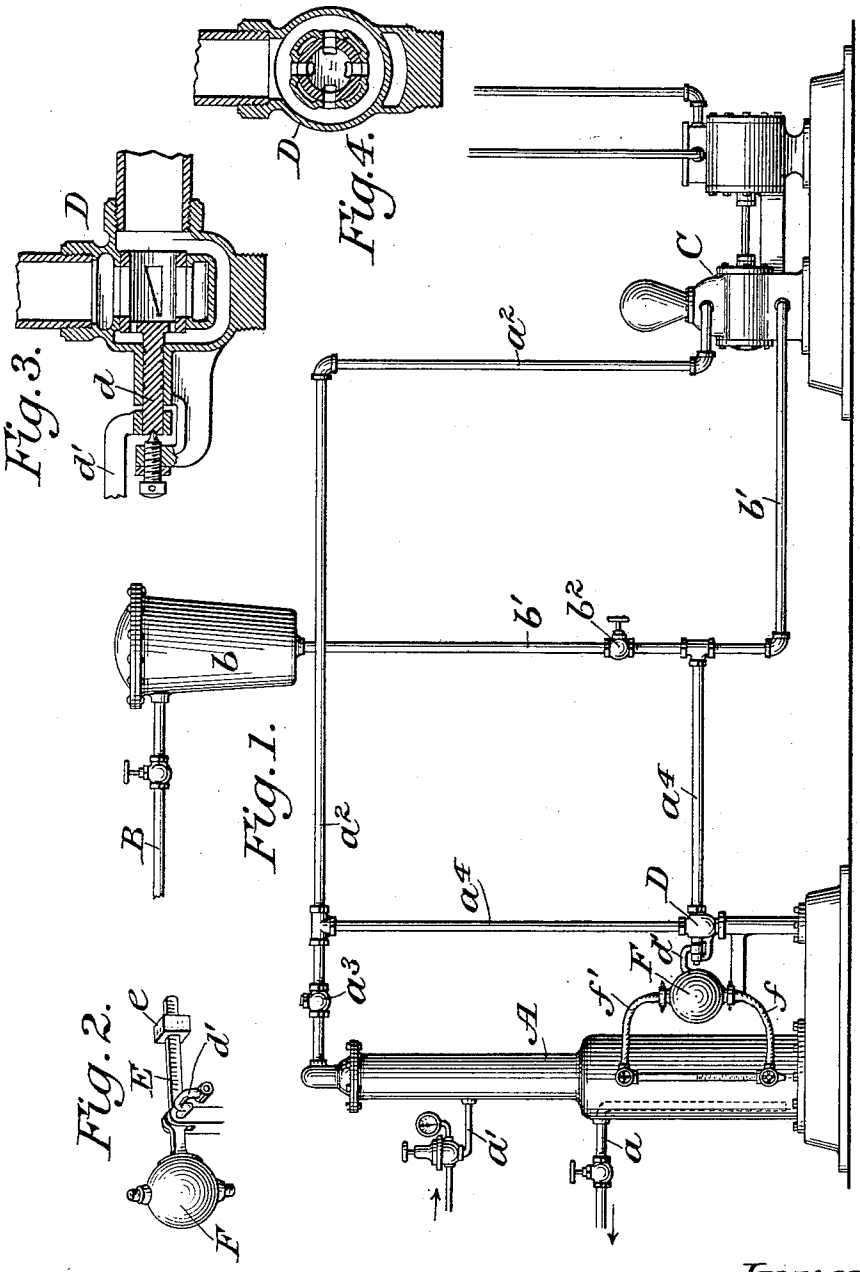
No. 655,378. Patented Aug. 7, 1900.

J. SCHNEIBLE.

APPARATUS FOR CHARGING LIQUIDS WITH GAS.

(Application filed Mar. 15, 1898.)

(No Model.)



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UNITED STATES PATENT OFFICE.

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APPARATUS FOR CHARGING LIQUIDS WITH GAS.

SPECIFICATION forming part of Letters Patent No. 655,378, dated August 7, 1900.

Application filed March 15, 1898. Serial No. 673,926. (No model.)

To all whom it may concern:

Be it known that I, JOSEPH SCHNEIBLE, a citizen of the United States, residing in the city of New York, in the county and State of New York, have invented certain new and useful Improvements in Apparatus for Charging Liquids with Gas, of which the following is a specification, reference being had to the accompanying drawings, forming a part hereof.

This invention has for its object to produce an improved apparatus for the charging of liquids with gas, as the charging of water and other beverages with carbonic-acid gas, whereby the charging of the liquid to a uniform degree shall be assured, notwithstanding variations in the withdrawing of the liquid from the charger. The application of the invention is independent of the character of the source of supply, but its advantages are particularly apparent wherever it is necessary to employ a pump of any kind in the delivery of the liquid to the charging apparatus, or rather to the charger, as it permits the pump to be run at a uniform rate of speed and therefore obviates altogether the unsteadiness and occasional complete stoppages of the operation of the apparatus which occur whenever it is attempted to vary the speed of the pump in accordance with variations in the delivery of the charged liquid from the charger. In accordance with this invention the quantity of liquid delivered to the charger is varied at a point between the charger and the pump or other source of supply in proportion to the quantity of charged liquid withdrawn from the charger.

It will be obvious that the invention can be embodied in various forms of apparatus; but for the purpose of explaining the invention and enabling its nature to be clearly understood it will be sufficient to describe herein a single form of apparatus which has been chosen for illustration in the drawings as a convenient and practical embodiment of the invention.

In the drawings, Figure 1 is a conventional representation, in side elevation, of an apparatus which embodies the invention and in which a pump is employed in the delivery of the liquid to the charger. Fig. 2 is a detail view in perspective of a portion of the apparatus shown in Fig. 1; and Figs. 3 and 4 are detail views, in longitudinal section and transverse section, respectively, of a valve which may be employed in the apparatus.

In the apparatus represented in the drawings a charger in which the carbonic-acid gas or other gas is mixed with the water or other liquid to be charged is indicated at A and may be of any usual or suitable character or construction. A delivery-pipe for the charged liquid is indicated at a and is represented as entering the charger at a point considerably above the bottom and as extended downward within the charger nearly to the bottom. The gas-supply connection is indicated at a', suitable regulators to control the delivery of the gas being employed, as is usual in apparatus of this general character. The liquid to be charged may be delivered to the charger from a source of supply of any character, a pipe a^2 being represented in the drawings as conducting the liquid to the charger and as being provided, preferably near the charger, with a check-valve a^3. In the present instance the source of supply may be represented by a pipe B, from which the liquid passes through a filter b and a pipe b', which is provided with a stop-valve b^2, to a pump C of any usual or suitable character. The pump may be employed for the purpose of maintaining a supply of liquid to the charger under a sufficient pressure and may itself be regarded as the source of supply, it being immaterial, so far as the present invention is concerned, how the liquid to be charged is supplied to the charger, provided a sufficient pressure is maintained to keep the supply up to the maximum withdrawal from the charger.

It will be obvious that with a given supply of gas, a given supply of liquid, and a given withdrawal of liquid the pressure in the charger and the height of liquid in the charger will remain the same and that in order to produce a uniform result, notwithstanding variations in the withdrawal of charged liquid and possibly in the supply of gas, it is necessary to effect the proper relative variations in the quantity of uncharged liquid delivered to the charger. The particular object in view in the present case is to enable this to be done independently of the source of supply, or, in other words, while a constant

supply is maintained, to vary at some point between the supply and the charger, but independently of the supply, the quantity of liquid delivered to the charger. For this purpose in the apparatus shown a device is connected to the charger which is itself operated by the changing conditions within the charger—that is to say, by a change of level of the liquid in the charger—to control as to quantity the supply of liquid to the charger, and thereby to restore the normal conditions within the charger and to control the height of liquid in the charger. In the arrangement shown in the drawings the pipe a^2, which delivers the liquid from the pump to the charger, is connected at a convenient point between the pump and the charger, but wholly independent of the pump, by a branch a^4 back to the main supply-pipe b' before it reaches the pump, forming a by-pass or relief, through which a portion of the constant supply which would otherwise reach the charger is discharged or turned aside. At a suitable point in said branch is a valve D, which is operatively connected with the charger, so that with the varying conditions in the charger it opens or closes this relief or discharge more or less. As represented in the drawings, the stem d of the valve is connected, as by a dog d', with a beam E, which is pivotally mounted on a suitable support and on one arm carries an adjustable weight e, while on the other arm it carries a vessel F, which is connected by a flexible pipe f with the charger near the bottom thereof, while on the other side it is connected by a like flexible pipe f' with the charger at a point above the level of the liquid in the charger, the vessel F normally standing with its middle point at the height of the liquid in the charger. It will be understood that as the liquid rises in the charger a larger quantity of liquid will be contained in the vessel, the weight of the vessel will increase, and by the described connection with the valve-stem the valve will be partially opened to permit a portion of the constant supply of liquid to escape through the relief, while if the level of the liquid in the charger falls the relief will be correspondingly reduced and a larger quantity of liquid be delivered to the charger, these several actions taking place independently of the pump or other source of supply of the liquid.

The mode of operation of the invention having now been explained, the advantages which follow from its use, especially over any construction in which an attempt is made to regulate the action of the pump, will be readily apparent. It will also be understood that the invention is not limited to the precise construction and arrangement of parts shown and described herein, as the principle of the invention is clearly capable of embodiment in other forms and arrangements.

I claim as my invention—

1. In an apparatus for charging liquids with gas, the combination of a charger, a pump to deliver liquid to said charger, a by-pass from the connection between the pump and the charger to the intake of the pump, a valve to control said by-pass and a device operatively connected with the charger and directly with said valve to open and close said valve as the height of the liquid in the charger varies, substantially as shown and described.

2. In an apparatus for charging liquids with gas, the combination with a charger, a pump to deliver liquid to the charger, a by-pass from the connection between the pump and the charger to the intake of the pump and a valve to control said by-pass, of a weighted lever operatively connected by its axis with said valve, and a vessel on said lever having connection with the charger above and below its liquid-level, substantially as described.

This specification signed and witnessed this 9th day of March, A. D. 1898.

JOSEPH SCHNEIBLE.

In presence of—
A. N. JESBERA,
F. M. EGGLESTON.