

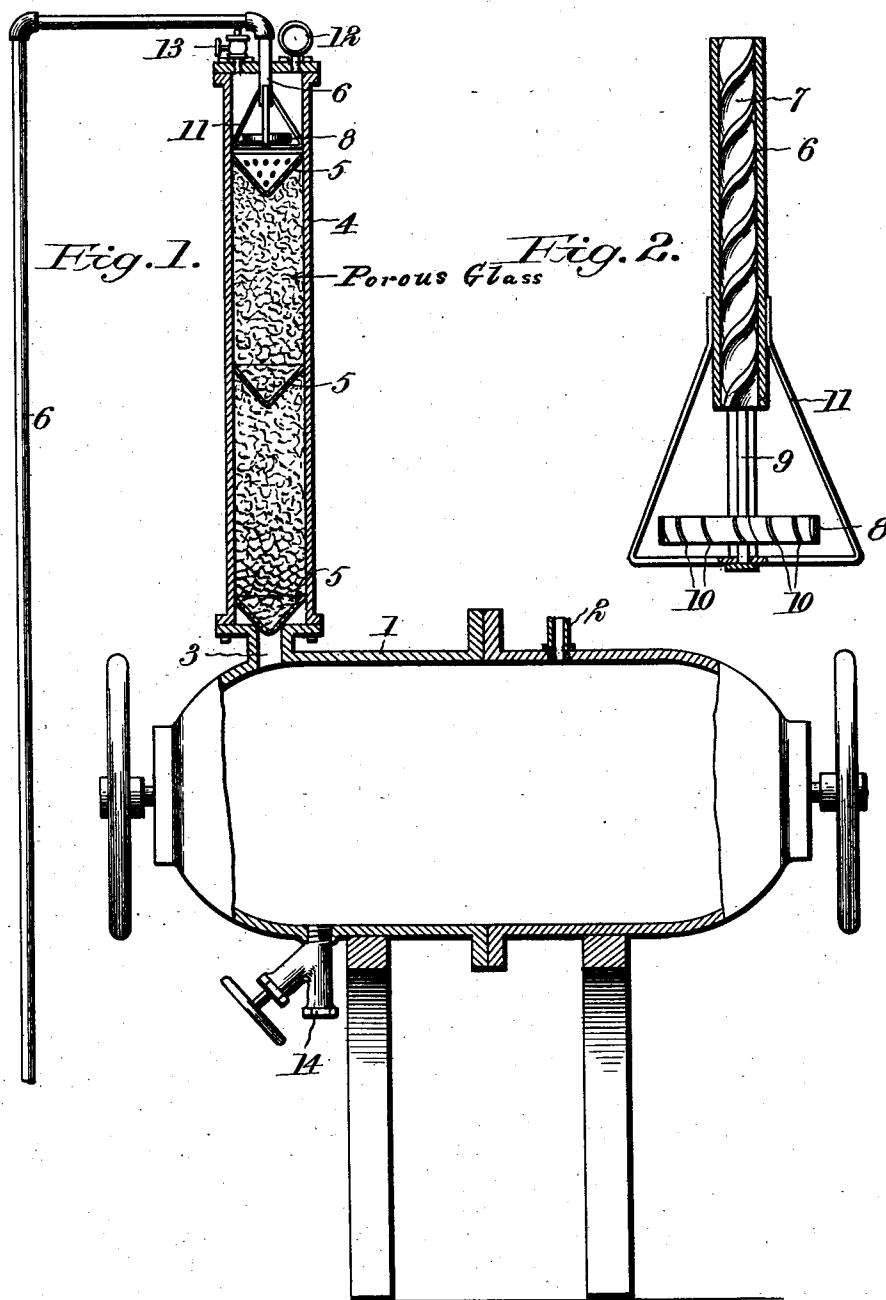
No. 758,403.

PATENTED APR. 26, 1904.

J. F. & D. YOUNGBLOOD.  
APPARATUS FOR CARBONATING LIQUIDS.

APPLICATION FILED MAR. 26, 1903.

NO MODEL.



Witnesses

G. H. Walker  
H. C. Parker.

Inventors

John F. Youngblood  
and  
David Youngblood,  
By  
H. E. Sturman,

Attorney

## UNITED STATES PATENT OFFICE.

JOHN FRANKLIN YOUNGBLOOD AND DAVID YOUNGBLOOD, OF TROY,  
ALABAMA.

## APPARATUS FOR CARBONATING LIQUIDS.

SPECIFICATION forming part of Letters Patent No. 758,403, dated April 26, 1904.

Application filed March 26, 1903. Serial No. 149,645. (No model.)

*To all whom it may concern:*

Be it known that we, JOHN FRANKLIN YOUNGBLOOD and DAVID YOUNGBLOOD, citizens of the United States, residing at Troy, in the county of Pike and State of Alabama, have invented certain new and useful Improvements in Apparatus for Carbonating Liquids; and we do declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it appertains to make and use the same, reference being had to the accompanying drawings, and to the figures of reference marked thereon, which form a part of this specification.

This invention relates to an apparatus for carbonating liquids; and it has for its object to provide a carbonating attachment adapted to be connected with a carbonating-liquid reservoir of any appropriate type, the attachment to serve as the means for delivering the liquid in a carbonated state or condition to the carbonated-liquid reservoir; and it has, further, for its object to provide improved features of construction in the carbonating attachment whereby the liquid will be thoroughly impregnated with the gas in its passage through the attachment.

To the accomplishment of the foregoing and such other objects as may hereinafter appear the invention consists in the construction and in the combination of parts hereinafter particularly described and then sought to be clearly defined by the claims, reference being had to the accompanying drawings, forming a part hereof, and in which—

Figure 1 is a vertical section through the carbonated-liquid cylinder and the carbonating attachment, and Fig. 2 is a detail view of the spraying device which forms a part of the carbonating attachment with part of the liquid-supply pipe in section.

In the accompanying drawings the numeral 1 designates a cylinder of a well-known type provided with a pipe 2 for the inlet of gas, and 3 represents the inlet for the liquid to be carbonated under methods in use, but having

the ordinary closing cap or cover omitted, so as to provide for the attachment of the carbonating attachment under the present invention. To the inlet 3 is attached under the present invention the carbonating attachment, which consists of a dome 4, to be designated as the "carbonating-dome." This dome has located within it at suitable intervals apart funnel-shaped or inverted-cone-shaped cups or partitions 5, which preferably are perforated, the purpose thereof being to direct the downflowing liquid toward the center of the dome, thus taking the liquid away from the sides of the dome, and consequently exposing a greater surface thereof to the gas coming in contact with the liquid. The spaces between the several partitions are filled with particles of honeycombed coral or glass, so that the liquid in passing from the top to the bottom of the dome will pass through the pores of the broken particles of material, and thus be broken up or divided into atoms, comparatively speaking, so that a greater surface of the liquid will be exposed to the contact of the gas which rises from the reservoir and passes up through the dome, and thus a more thorough impregnation or mixing of the gas and liquid obtained. This honeycombed body of material also impedes the passage of the liquid through the dome, so as to afford a greater opportunity for the thorough carbonating of the liquid, and at the same time the porous material serves to filter the liquid, so that it will pass into the cylinder deprived of a greater quantity of impurities than otherwise would be the case. The liquid as it passes through the porous material is diffused throughout the body thereof, and the portion which spreads through the material toward the sides of the dome is then directed by the funnel-shaped partitions toward the center of the dome, so that the liquid in passing through the next compartment or chamber is given an opportunity to again spread toward the sides of the dome, and thus the liquid in passing from top to bottom of the dome is caused to traverse a tortuous course,

all of which tends to effect a more thorough carbonating of the liquid. The liquid to be carbonated is brought from a source of supply and forced by a pump (not shown) through a pipe 6, from which it is delivered into the top of the dome, the pipe where it delivers into the dome being provided with a spiral passage-way or channel 7, down which the liquid passes into the dome. As the liquid passes from the spiral channel 7 it is divided into a spray by a suitable spraying device—for instance, by a wheel 8, mounted loosely upon a shaft 9, so as to revolve thereon, the wheel being provided with curved blades 10, so that the liquid discharged from the spiral in a spirally-directed stream will strike against the blades in a spirally-impelled direction and cause the wheel to rotate, so as to spray the liquid, which then passes through the top perforated cup-shaped partition and thence down through the dome, as previously described. The spirally-directed stream of liquid not only gives a rotary movement to the stream as it enters the dome, but also strikes against the blades of the rotary sprayer in a direction to forcibly rotate the sprayer, so that the sprayer is rotated by the impact of the liquid against it and the liquid is broken up and being struck by the blades, is divided into a fine spray, which, together with the gas at the top of the dome, is given a circulation which insures the more thorough mixing of the liquid and gas and at the same time distributes the mixed gas and liquid, so that it will spread more uniformly across the dome-chamber, and hence more completely cover the porous filling material, so as to pursue a more extended course in a finely-divided state, and thus more thoroughly take up the gas ascending through the dome. The wheel 8 may fit within an open frame 11, as illustrated, which frame will permit a slight vertical movement of the wheel, so as to aid the better to divide the liquid into a fine spray. The dome will be provided with a regulating pressure-gage 12 and with a valve 13 to let air out of the carbonator attachment when desired.

It will be observed that the gas for impregnating the liquid is taken from the carbonated-liquid cylinder 1 and passes up through the carbonating-dome from the bottom to the top and that it meets the liquid coming from the opposite direction—that is, from the top to the bottom of the dome—which liquid is so diffused by the means described that the gas comes in contact with practically all parts thereof, so that by the time the liquid is delivered into the receiving-cylinder 1 it is thoroughly carbonated. This obviates the necessity of carbonating the liquid after its introduction into the cylinder 1. It will further be observed that the receiving-cylinder 1 contains

the gas which is to carbonate the liquid in the carbonating-dome. This carbonating attachment can be attached to carbonating-cylinders of different types already in use, it being only necessary to screw or otherwise attach the attachment to the inlet ordinarily employed for the introduction of liquid into the cylinder preparatory to the liquid being carbonated under the method practiced in the cylinders referred to and already in use. In some of the types of cylinders referred to there are within the cylinder blades for agitating the liquid for the purpose of impregnating the liquid with the gas in the same cylinder. These agitators are not necessary under our construction and attachment; but it is obvious that the dome can be connected up to such cylinders whether the cylinders have agitating-blades or not. The cylinder 1 will be provided, as usual, with a valved outlet-pipe 14 for the withdrawal of the carbonated liquid, as usual.

There has been illustrated and described with particularity the preferred details of construction of the carbonating-dome, as such features of construction have been found to give the best results; but some features of the invention can be employed even though the details of such referred-to parts be somewhat changed.

Having described our invention and set forth its merits, what we claim is—

1. In an apparatus for carbonating liquids, the combination with a cylinder having an inlet for gas and an inlet for liquid, of a carbonating-dome attached to the liquid-inlet and in communication with the cylinder, said dome being provided with inverted-cone-shaped perforated partitions, and a liquid diffusing and filtering honeycombed material between the partitions, whereby the downflowing liquid will be directed by the partitions from the walls of the dome toward the center thereof and the honeycombed material will filter and diffuse the liquid for intimate contact therewith of the gas passing from the cylinder up through the dome, substantially as described.

2. In an apparatus for carbonating liquids, a carbonating-dome provided with perforated partitions separated by a liquid diffusing and filtering material, and having at its upper portion a liquid-supply pipe formed with a spiral channel through which the liquid is delivered to the dome in a spirally-directed flow, and a spray device comprising blades against which the liquid is directed in a spirally-directed course or flow for spraying and distributing the liquid within the upper portion of the dome above the filtering material, substantially as described.

3. In an apparatus for carbonating liquids, a carbonating-dome containing a liquid diffusing and filtering material and provided

within its upper portion with a rotatable spraying device, and a liquid-supply pipe formed with a spiral channel for spirally directing the liquid against the rotatable sprayer for  
5 rotating the same to spray the liquid within the upper portion of the dome above the filtering material, substantially as described.

In testimony whereof we affix our signatures in presence of two witnesses.

JOHN FRANKLIN YOUNGBLOOD,  
DAVID YOUNGBLOOD.

Witnesses:

J. D. GAFFORD,  
S. M. REEVES.