

No. 736,521.

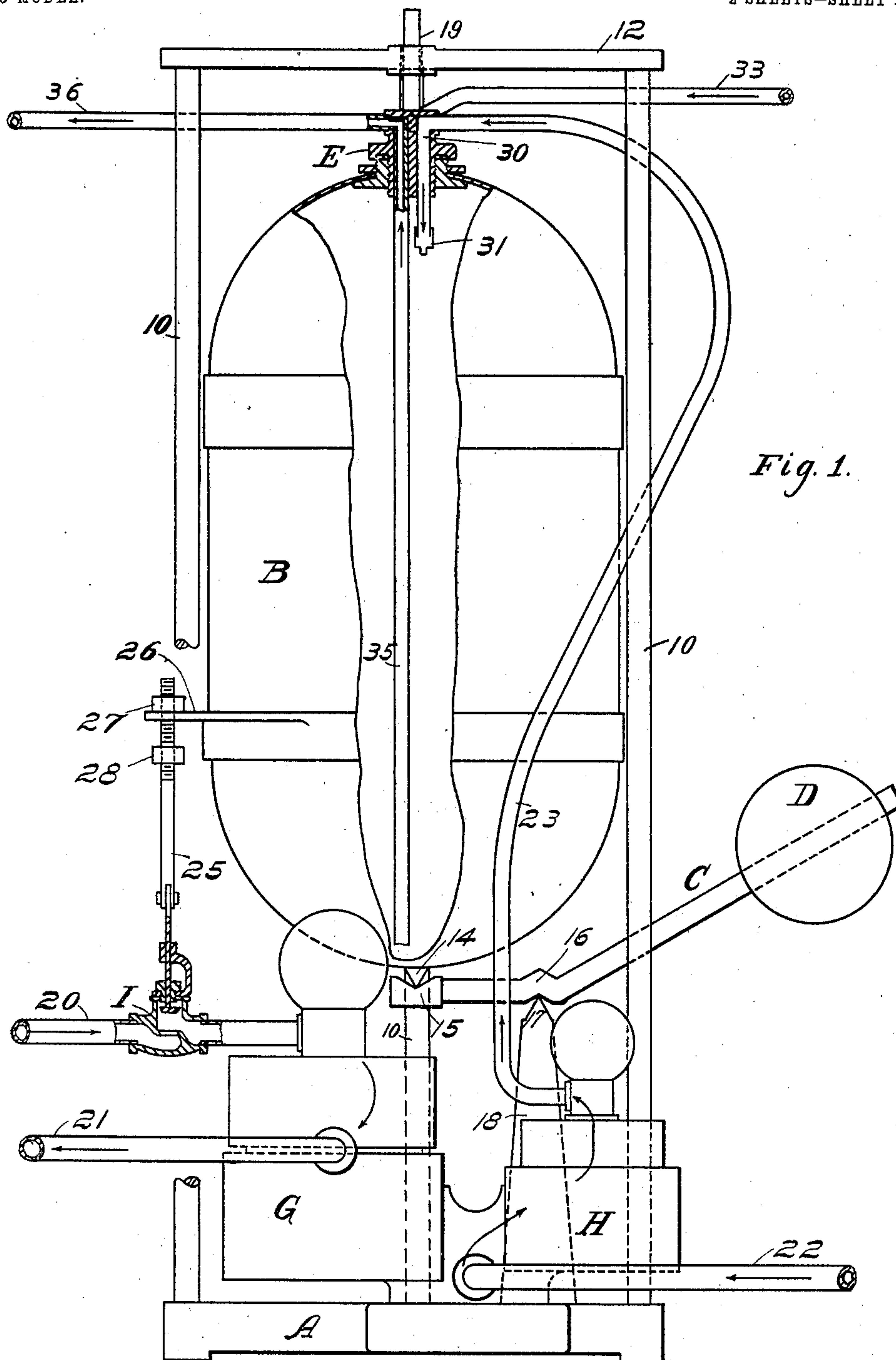
PATENTED AUG. 18, 1903.

H. A. HOPKINS.
CARBONATING APPARATUS.

APPLICATION FILED APR. 18, 1903.

NO MODEL.

2 SHEETS—SHEET 1.



Witnesses.
F. B. Spaulding
Geo H. Prisk

Inventor.
Hobert A. Hopkins
by J. E. Schumacher

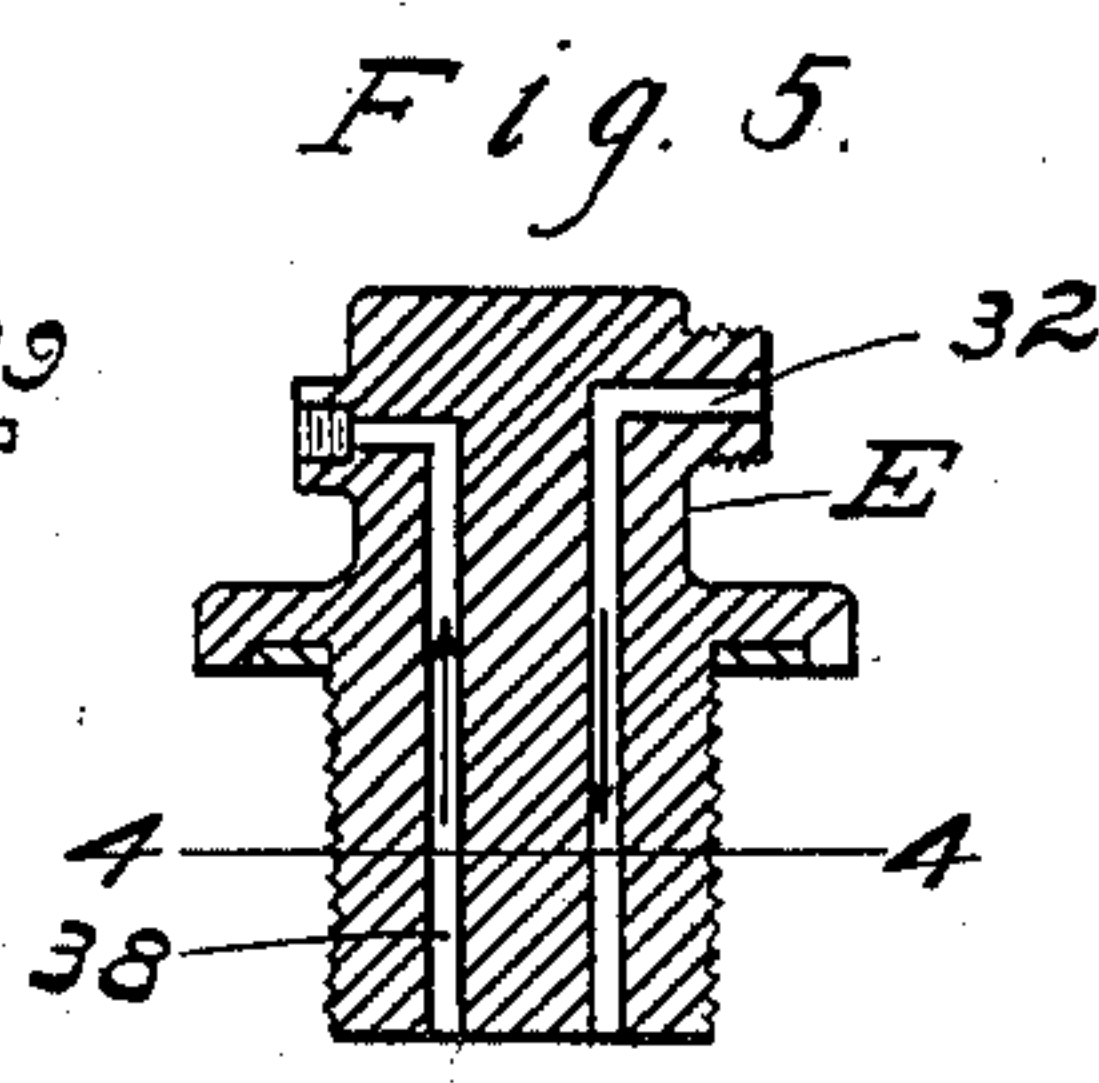
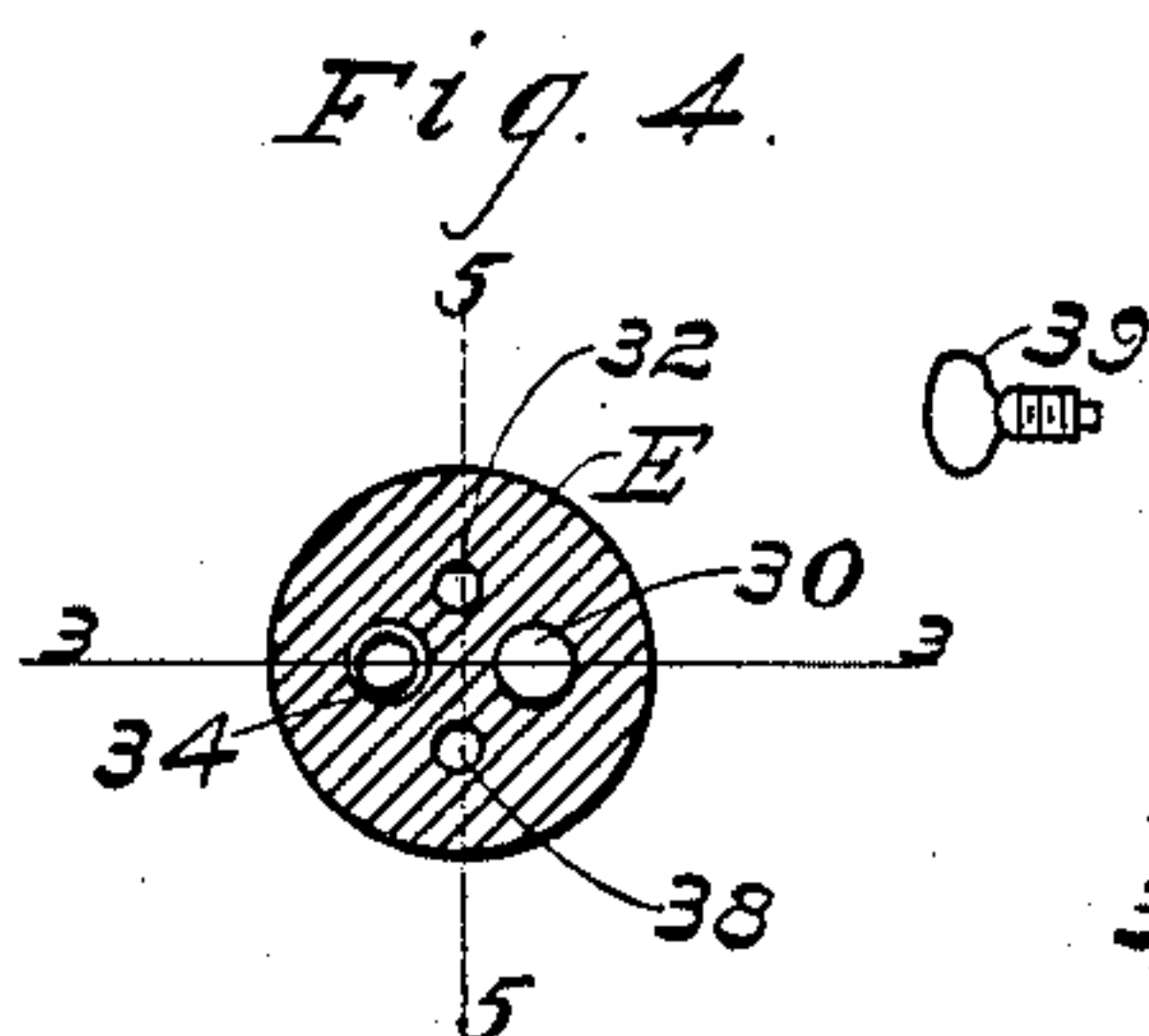
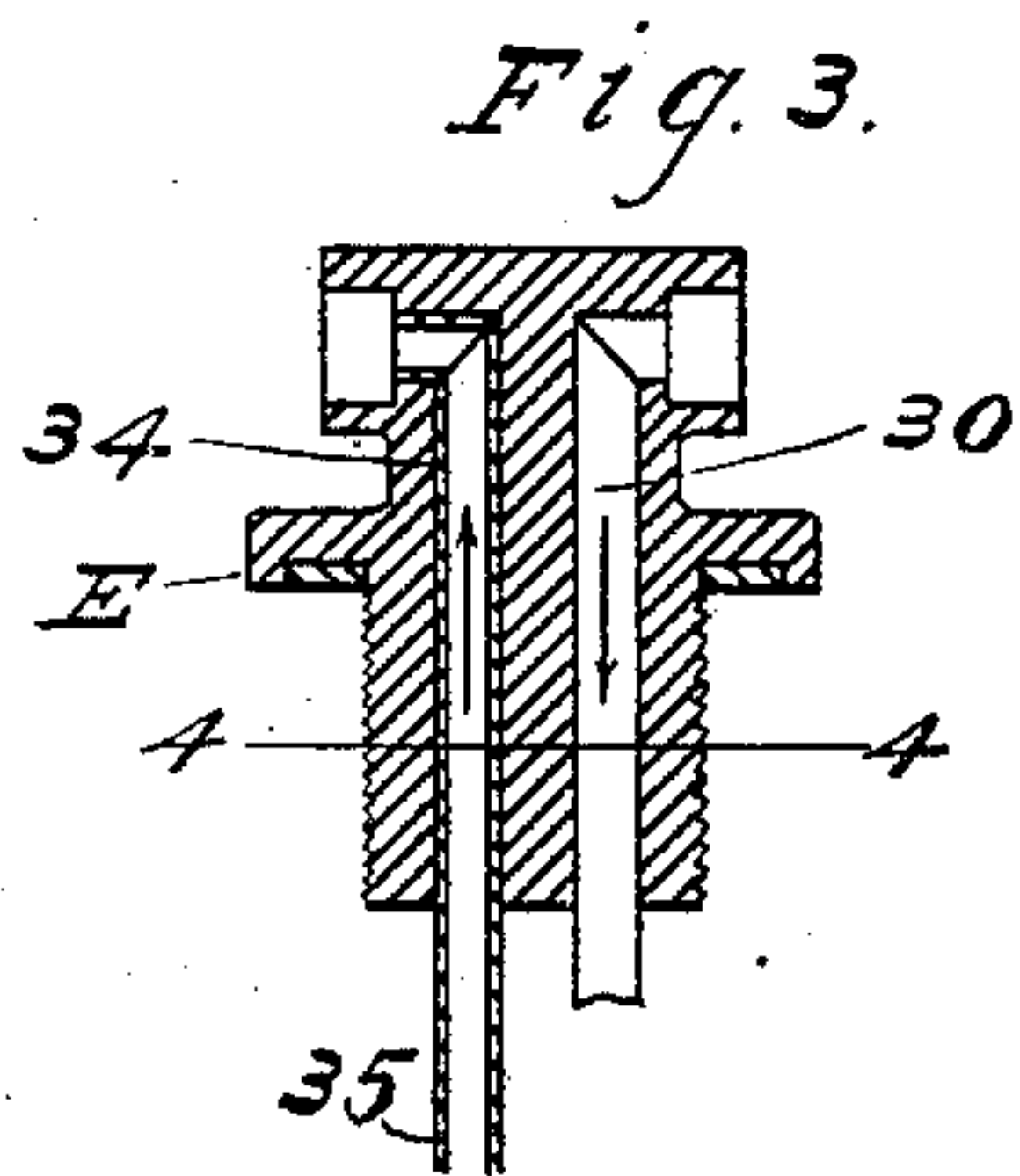
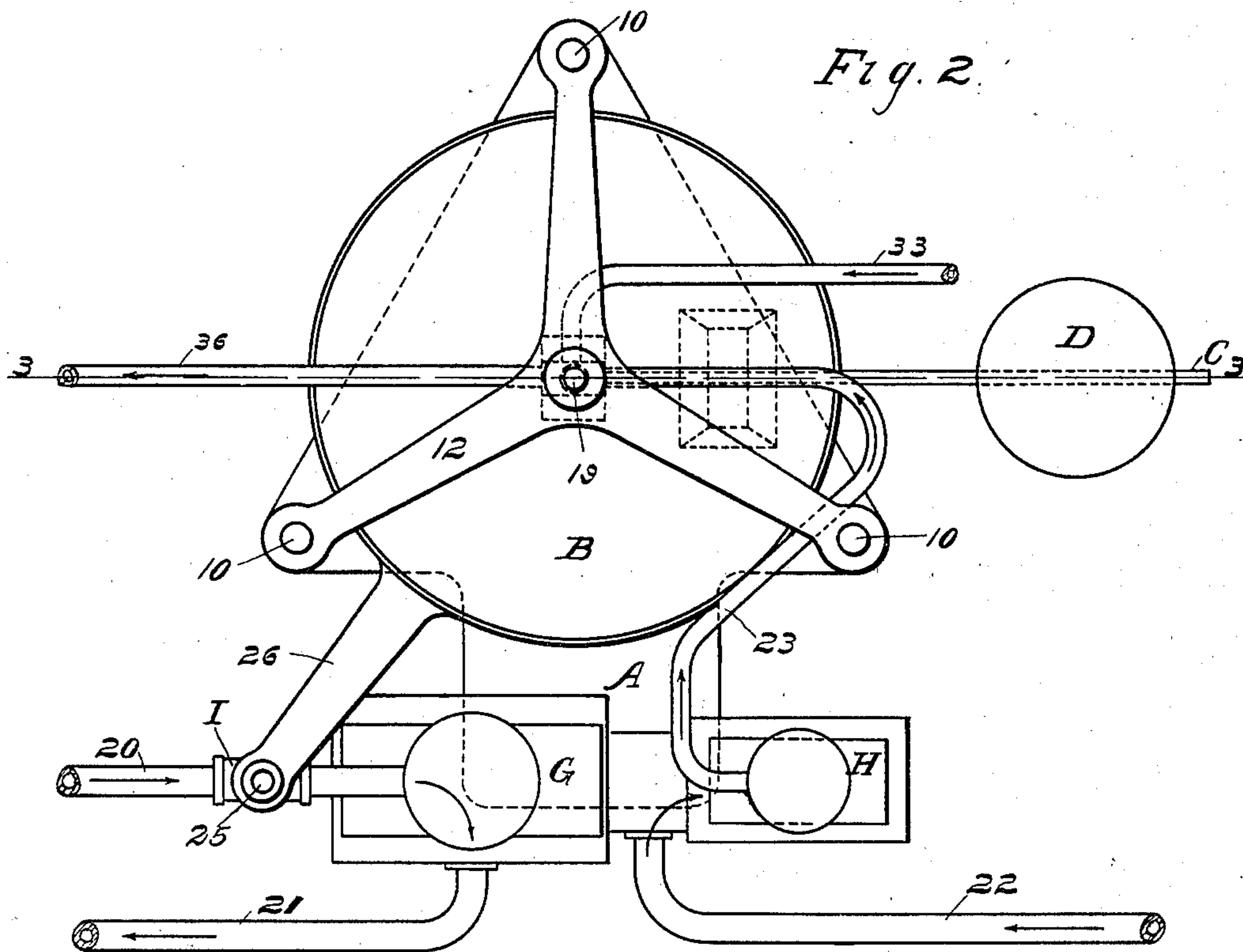
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NO MODEL.

2 SHEETS—SHEET 2.



Witnesses.
F. B. Spaulding
Geo. H. Priest.

Inventor:
Heber A. Hopkins
by P. E. Teschmacher
Atty

UNITED STATES PATENT OFFICE.

HEBER A. HOPKINS, OF CAMBRIDGE, MASSACHUSETTS, ASSIGNOR TO AMERICAN SODA FOUNTAIN COMPANY, OF JERSEY CITY, NEW JERSEY, A CORPORATION OF NEW JERSEY.

CARBONATING APPARATUS.

SPECIFICATION forming part of Letters Patent No. 736,521, dated August 18, 1903.

Application filed April 18, 1903. Serial No. 153,327. (No model.)

To all whom it may concern:

Be it known that I, HEBER A. HOPKINS, a citizen of the United States, residing at Cambridge, in the county of Middlesex and State of Massachusetts, have invented certain new and useful Improvements in Carbonating Apparatus, of which the following is a specification.

My invention has for its object to simplify and improve the construction of carbonating apparatus for manufacturing soda-water for drug stores, bottling establishments, and the like; and to this end my invention consists in certain novel features and combinations of parts hereinafter described and claimed.

In the accompanying drawings, Figure 1 is a sectional side elevation of my improved carbonating apparatus, a portion of the mixing vessel being broken away to show the parts within. Fig. 2 is a plan view of the same. Fig. 3 is an enlarged section of the plug of the mixing vessel on the line 3 3 of Fig. 2. Fig. 4 is a horizontal section on the line 4 4 of Figs. 3 and 5. Fig. 5 is a vertical section on the line 5 5 of Fig. 4.

In the said drawings, A, Fig. 1, represents the base of the apparatus, from which rises a frame composed of three rods 10, connected at their upper ends by a spider 12, having three arms, one for each rod. Within this frame is placed a vertically-movable receiver or mixing vessel B, provided at its bottom with a knife-edge 14, which rests in a V-shaped notch or bearing 15, formed in the short arm of a supporting-lever C, fulcrumed at 16 on a knife-edge 17 at the upper end of a post 18 and provided with a counterbalance-weight D, adjustable thereon. From the plug E at the center of the top of the mixing vessel B projects a vertical pin 19, which passes up through a guide-aperture at the center of the spider 12, whereby the mixing vessel supported by the lever C is steadied and held in its proper vertical position as it rises and falls by reason of variations in the weight of its contents, as hereinafter described.

A hydraulic motor G, with a pump H, is mounted on the base A. Water under pressure is supplied from the street-main or other

suitable source of supply by means of a pipe 20, the waste water from the motor being discharged into the sewer or elsewhere through a pipe 21.

Pure water from a tank or other source is supplied to the pump through an inlet-pipe 22, the water discharged by the pump passing by a pipe 23 to the mixing vessel B, said pipe 23 being provided, as usual, with a check-valve. (Not shown.) The pipe 20, through which the water is supplied to the motor, is provided with a valve I, having a vertical stem 25, the upper threaded portion of which passes loosely through an aperture in an arm 26, secured to and projecting horizontally from the mixing vessel B, and above and below this arm on the threaded portion of the valve-stem are two collars 27 28, which are so adjusted that the alternate rise and fall of the vertically-movable mixing vessel B will cause the arm 26 to be brought alternately into contact with these collars, and thereby actuate the valve-stem to open and close the valve I, and thus regulate the water-supply to the motor.

The plug E at the top of the mixing vessel is provided with four passages, as shown in Figs. 3, 4, and 5. One of these passages, 30, is connected with the supply-pipe 23, through which the liquid is introduced into the mixing vessel from the pump, the lower end of this passage being connected with a suitable spraying head or device 31, by means of which the liquid is broken up or atomized into an exceedingly fine spray, which falls to the bottom of the mixing vessel through the carbonic-acid gas under pressure, which is introduced through another passage, 32, connected with a pipe 33, by which the carbonic-acid gas is conducted from the generator or other source of supply.

The supply-pipe 33 is connected, as usual, with an equalizing-valve and pressure-gage, (not shown,) by which the pressure of the gas is regulated in a well-known manner. Either liquefied gas or gas from a generator may be used, as desired. The passage 34 in the plug E is provided with a discharge-pipe 35 for the carbonated liquid, said pipe extending to near the bottom of the mixing ves-

sel, as shown in Fig. 1, and to the upper end of this passage 34 is connected the draft-pipe 36, leading to the dispensing apparatus or bottling-table. The plug E also has a vent-opening 38 for the escape of the air, said opening being controlled by a thumb-screw valve 39.

In operating the apparatus the gas is first admitted to the mixing vessel B, and as soon as the desired pressure has been reached the water from the street-main is turned on and the apparatus is ready for the operation of charging water with gas. At the commencement of the operation the mixing vessel, which then contains no liquid, is raised to its highest position by the counterbalance-weight D on the supporting-lever C, the arm 26, projecting from the mixing vessel, by its contact with the upper collar 27 on the valve-stem 25, holding the induction-valve I open to allow the water to pass to the motor, which then operates the pump, causing the latter to draft water or liquid to be charged with gas through the inlet-pipe 22 and force the same through the pipe 23 into the mixing vessel B, the water being atomized and descending to the bottom of the mixing vessel, receiving in its descent carbonic-acid gas to the amount desired, and thus becoming fully charged or saturated. The charged water gradually rises in the mixing vessel until the supply reaches a point where the weight of the vessel and its contents will overcome that of the counterbalance-weight D, when the vessel will descend, causing its arm 26 to slide down over the valve-stem 25 and be brought into contact with the lower collar 28 thereon, thus depressing the valve-stem and closing the valve I, which thus stops the action of the motor and pump and shuts off the supply of water or liquid to the mixing vessel.

The withdrawal from the mixing vessel of the charged liquid at the dispensing apparatus or bottling-table lessens the quantity in the mixing vessel, and when a sufficient quantity has been withdrawn to allow the weight D to overbalance the weight of the mixing vessel and its contents the said vertically-guided vessel will be raised by the counterbalance-weight and the arm 26 will act on the upper collar 27 of the valve-stem to raise the same and open the valve I, when the motor and pump will again start, thus causing a fresh supply of liquid to be forced into the mixing vessel. This alternate stopping and starting of the pump occurs with each filling of the mixing vessel to its limit and each discharge therefrom to the extent necessary to cause the counterbalance-weight to overcome that of the vessel and its contents.

The supply of gas to the mixing vessel is automatic after the first starting and through the equalizing-valve (not shown) is regulated to the pressure desired. The supply of liquid to the mixing vessel is also automatic by the operation of the controlling-valve I, above

described, and the result is that the supply of both gas and liquid is at all times automatically controlled and regulated, never requiring the attention of an operator after the first starting, and securing uniformity in the product.

The above-described apparatus may be used for charging mineral or other waters or beverages, it being merely necessary to connect the supply-pipe of the pump with a tank containing the mineral or other water or liquid which it is desired to charge with gas.

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

1. In a carbonating apparatus, the combination of a vertically-movable mixing vessel, means for vertically guiding the same, a weighted counterbalance-lever forming a pivotal support or rest for the lower end of the mixing vessel, a stationary motor and pump, means for introducing water from the pump to the mixing vessel, and means automatically operated by the vertical movement of the mixing vessel for starting and stopping the pump.

2. In a carbonating apparatus, the combination of a vertically-movable mixing vessel, a counterbalance-lever, one arm of which forms a pivotal support for the mixing vessel and the other arm being provided with a counterbalance-weight, a stationary motor and pump, means for introducing water from the pump into the mixing vessel, means for supplying gas to the mixing vessel, and means automatically operated by the vertical movement of the mixing vessel for starting and stopping the pump.

3. In a carbonating apparatus, the combination of a vertically-movable mixing vessel, a counterbalance-lever, one arm of which forms a pivotal support for the mixing vessel and the other arm being provided with a counterbalance-weight, means for supplying gas to the mixing vessel, a stationary motor and pump, means for introducing water from the pump into the mixing vessel, a valve for controlling the supply of water to the motor, and means automatically operated by the vertical movement of the mixing vessel for actuating said valve to thereby start and stop the pump.

4. In a carbonating apparatus, the combination of a vertically-movable mixing vessel having a knife-edge at its bottom and a guide at its upper end, a counterbalance-lever forming a pivotal support for said mixing vessel, one arm of said lever being provided with a bearing for the knife-edge of the mixing vessel and the other arm having a counterbalance-weight, a pipe for supplying gas to the mixing vessel, a stationary motor and pump, means for introducing water from the pump into the mixing vessel, a valve for controlling the supply of water to the motor, and means automatically operated by the vertical movement of the mixing vessel for actuating said valve to thereby start and stop the pump.

5. In a carbonating apparatus, the combi-

5 nation of a vertically-movable mixing vessel provided at its upper end with a guide, a weighted counterbalance-lever forming a pivotal support for said mixing vessel, a stationary hydraulic motor and pump, a pipe leading from the pump for supplying water to the mixing vessel, a spraying device within the mixing vessel, a pipe for supplying gas to the mixing vessel, a valve for controlling the supply of water to the motor, said valve having a vertical stem provided with collars adjustable thereon, and an arm projecting horizontally from the mixing vessel and encircling the valve-stem between said adjustable collars and adapted to be alternately brought into contact therewith by the vertical movements of the mixing vessel to actuate the valve-stem and valve and thereby start and stop the pump.

20 6. In a carbonating apparatus, the combi-

nation of a vertically-movable mixing vessel provided with a guide, a weighted counterbalance-lever forming a pivotal support for the bottom of said vessel, a stationary hydraulic motor and pump, pipes for supplying water and gas to the mixing vessel, a pipe for supplying liquid to the pump, mechanism automatically operated by the vertical movement of the mixing vessel to control the supply of water and thereby start and stop the motor and pump, and a draft-pipe leading from the mixing vessel to the dispensing apparatus or bottling-table.

Witness my hand this 14th day of April, A. D. 1903.

HEBER A. HOPKINS.

In presence of—

P. E. TESCHEMACHER,
F. B. SPAULDING.