

No. 711,459.

Patented Oct. 21, 1902.

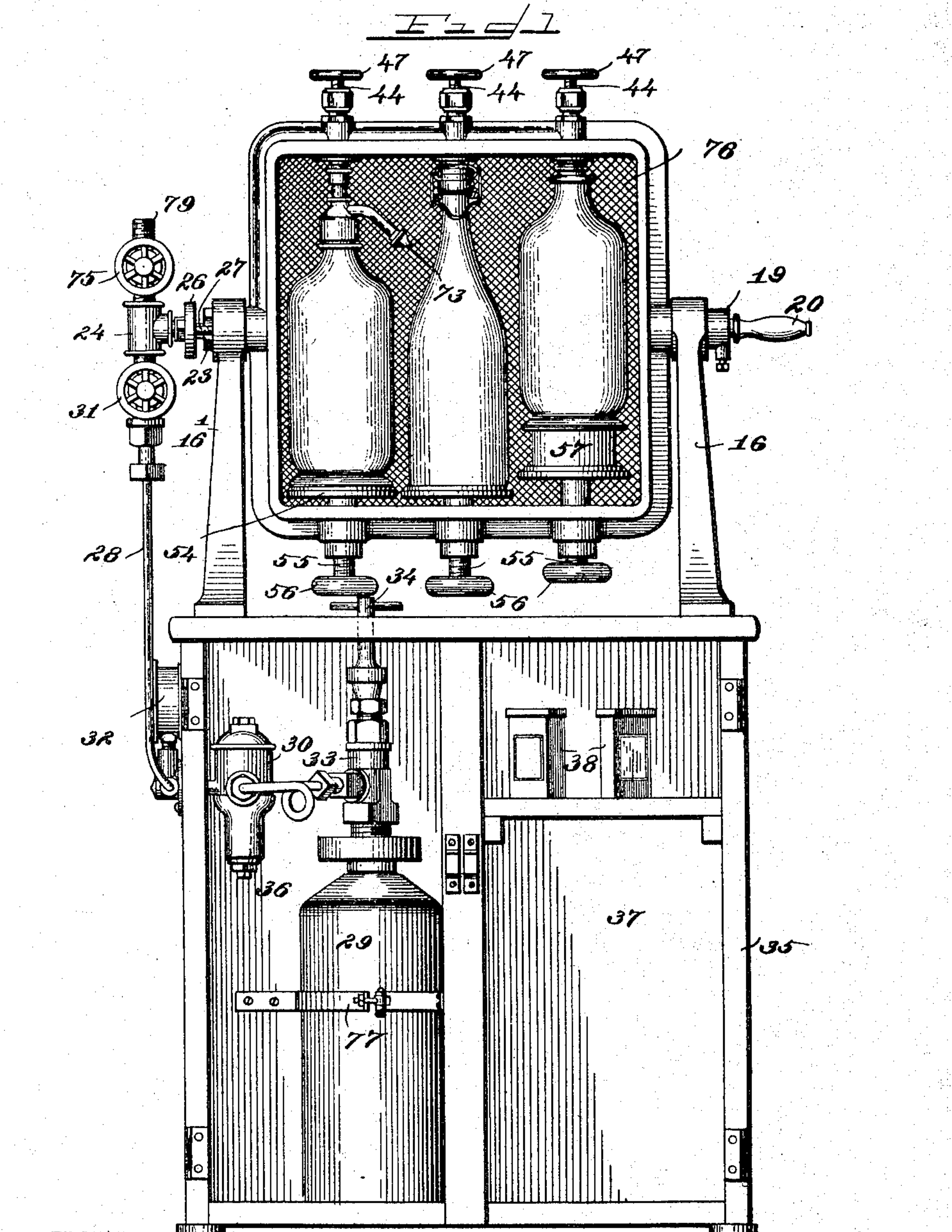
C. L. BASTIAN.

APPARATUS FOR CARBONATING LIQUIDS IN BOTTLES OR OTHER RECEPTACLES.

(Application filed Aug. 3, 1901.)

(No Model.)

4 Sheets—Sheet 1.



Witnesses.

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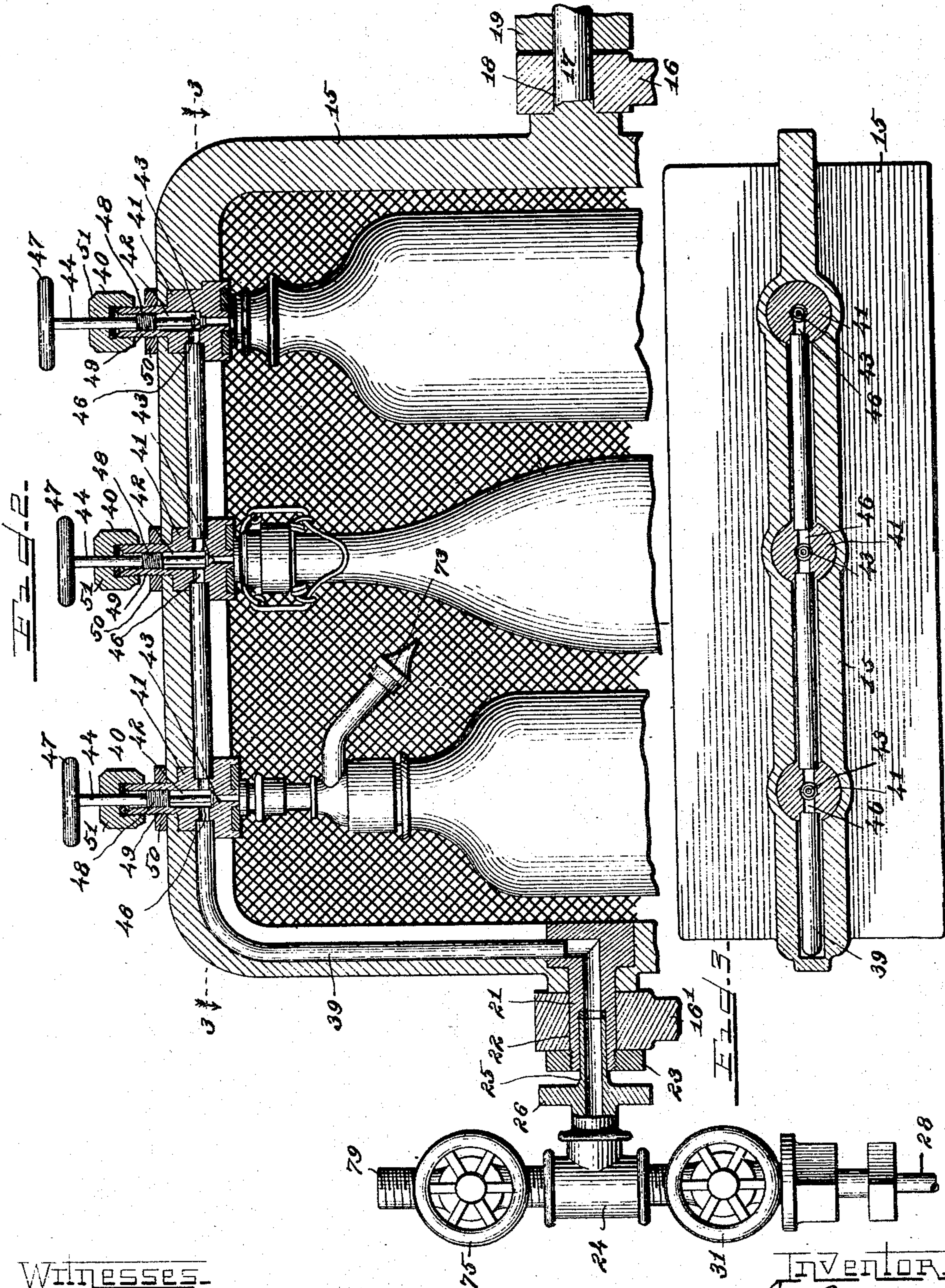
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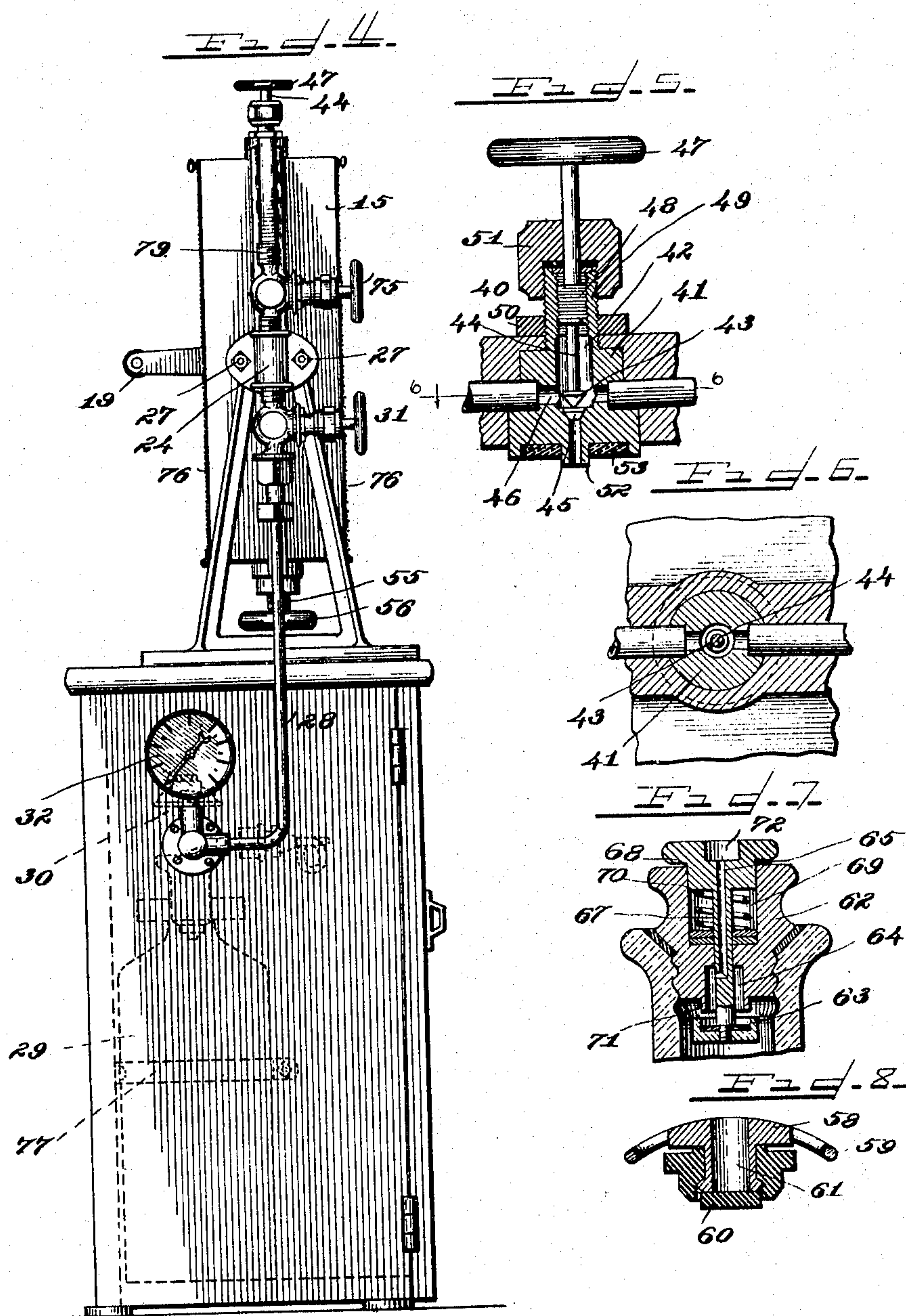
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(No Model.)

4 Sheets—Sheet 3.



Witnesses.

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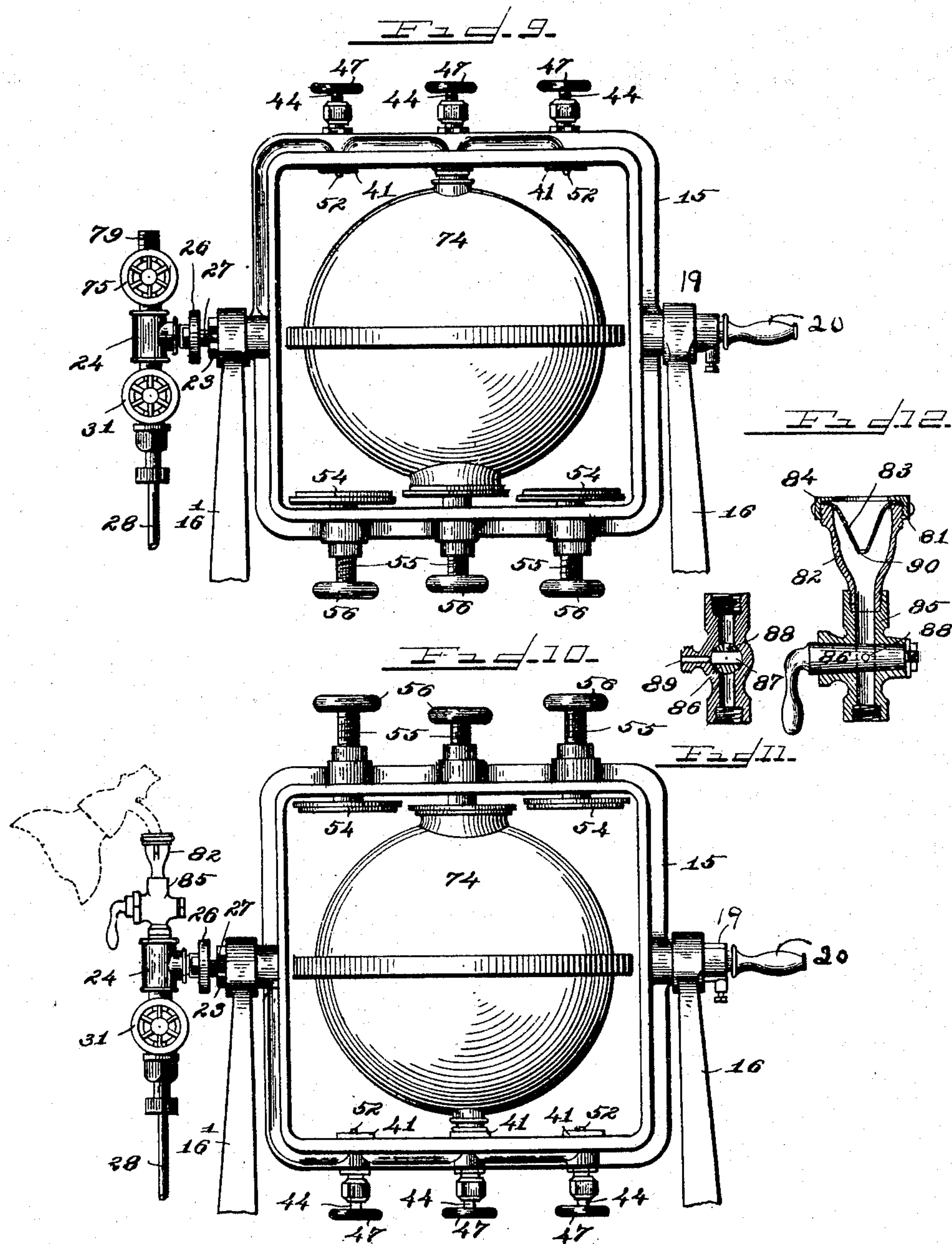
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(No Model.)

4 Sheets—Sheet 4.



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UNITED STATES PATENT OFFICE.

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APPARATUS FOR CARBONATING LIQUIDS IN BOTTLES OR OTHER RECEPTACLES.

SPECIFICATION forming part of Letters Patent No. 711,459, dated October 21, 1902.

Application filed August 3, 1901. Serial No. 70,769. (No model.)

To all whom it may concern:

Be it known that I, CHARLES L. BASTIAN, a citizen of the United States, residing at Chicago, in the county of Cook and State of Illinois, have invented certain new and useful Improvements in Apparatus for Carbonating Liquids in Bottles or other Receptacles, of which the following is a specification.

This invention relates to carbonating liquids, and has special reference to an apparatus for use in the household, clubs, restaurants, and other places for carbonating liquid directly in the receptacle from which it is to be served.

The primary object of the invention is to provide a simple and inexpensive apparatus which can be used with safety and without special skill for carbonating liquid in siphon or other bottles or tanks; and a further object of the invention is to provide an apparatus which can be used for carbonating liquid in siphon or other bottles which are removed from the apparatus for serving, or for carbonating liquid in tanks which remain in the apparatus while the liquid is being bottled or served, or for filling the bottles or tanks with liquid already carbonated.

The invention has other objects in view, which will appear more fully in the detailed description and claims.

In the accompanying drawings, Figure 1 is a front elevation of the apparatus with the doors of the cabinet and one guard-plate of the frame removed. Fig. 2 is an enlarged sectional view showing the upper half of the agitatable receptacle - holding frame, showing two of the charging-valves closed and the third open. Fig. 3 is a sectional view on the line 3 3 of Fig. 2. Fig. 4 is an end elevation. Fig. 5 is a vertical sectional view of one of the charging-valves. Fig. 6 is a horizontal sectional view on the line 6 6 of Fig. 5. Fig. 7 is a vertical sectional view of a screw-stopper for a bottle for use with my apparatus. Fig. 8 is a sectional view of a bail-stopper for a bottle which can be used in this apparatus. Fig. 9 shows a tank in the apparatus. Fig. 10 shows the tank in position for drawing the liquid therefrom. Figs. 11 and 12 are sectional views of the siphon-filling coupling.

Like numerals of reference designate similar parts in the several figures, and referring

thereto, 15 designates a frame for holding the receptacles, and it is adapted to be agitated during the carbonating process for effecting a complete saturation of the liquid with the gas. In the embodiment of the invention shown in the drawings the frame is substantially rectangular in shape and revolubly mounted in standards. The frame is provided with a trunnion 17, which is journaled in a bearing 18 in the standard 16 and carries a crank 19, having a handle 20, by means of which the frame can be revolved. On the opposite end of the frame is a hollow trunnion 21, journaled in a bearing 22 in the standard 16', and a locking-nut 23 is provided on the outer end of this trunnion for securing the parts together and holding them in proper relation. By means of the crank the frame can be revolved or rocked to agitate the liquid contained in the receptacles sufficiently to obtain a complete carbonation. The hollow trunnion 21 is connected with a T-joint 24 and provided with a stuffing-box 25, having a gland 26 and bolts 27, operating through the gland and screw-threaded in the standard 16', so that the gland may be adjusted as required to provide a tight joint at all times. The T-joint is connected by a pipe 28 with a gas-tank 29, and a regulating-valve 30 is arranged in the pipe, so that the gas-pressure may be regulated and controlled as desired. The pipe 28 is also provided with an operating-valve 31 and a pressure-gage 32, and the gas-tank has a valve 33 of some suitable construction, which is operated by a key-wrench 34. The frame is preferably mounted on a cabinet 35, which is provided with a compartment 36 to receive the gas-tank and the regulating-valve, and this compartment may be locked, so that access to the tank and valve will be prevented except to the proper persons. The regulating-valve is set to the predetermined pressure, and the gas-tank valve can be operated without opening this compartment 36 by means of the key-wrench, which normally rests upon the tank-valve and projects through an opening in the top of the cabinet, as shown in Fig. 1. Another compartment 37 is preferably provided for receiving bottles and packages, such as 38, containing various mineral salts or flavoring extracts, &c. The frame is provided with a pipe or passage 39, leading from the

hollow trunnion 21 and communicating with the charging-valves 40. Each of these charging-valves, Fig. 5, consists of a body 41, provided with a valve-chamber 42 and a valve-plug 43, carried by a stem 44 and provided with a seat 45. The chamber 42 is intersected by a transverse passage 46, which forms a continuation of the pipe or passage 39, whereby said pipe or passage is connected with each of the charging-valves and passes through each of said valves to the end valve, so that all of the valves are supplied by a single pipe or passage and can be used simultaneously or separately. The valve-plug is operated by means of a hand-wheel 47 on its stem, and it is guided by an enlarged threaded portion 48, operating in the interiorly-threaded upper portion 49 of the body, this portion being also exteriorly threaded to receive a locking-nut 50 and a stuffing-cap 51. The charging-valves are secured in the frame by means of the locking-nuts 50, and they are disposed at suitable intervals to accommodate the receptacles. The charging-valve is provided with a nipple 52, surrounding the lower end of the passage 42 and beneath the valve-plug to constitute a guide for the receptacle, and this nipple is surrounded by a rubber gasket 53 to provide a tight joint between the valve-body and the bottle. The receptacles are supported on adjustable bases, which consist of disks 54, swiveled on screws 55, having hand-wheels 56 and operating through the side of the frame directly opposite the charging-valves, so that the receptacles can be placed upright upon the bases and then secured in position between the bases and the valves by operating the hand-wheels 56, and blocks 57 may be employed when the receptacles are short, so that they can be secured rigidly in the frame, or the standards may be made higher and the screws 55 longer.

I may use siphon-bottles or any other kind of bottles or receptacles with this apparatus which are provided with valves for admitting the gas or carbonated liquid and preventing its escape, and in Fig. 1 I have shown a siphon-bottle, a bottle provided with a bail-stopper, and a bottle provided with a screw-stopper arranged in position for simultaneous use. It will be understood, of course, that the siphon-bottle is provided with a head constructed with a vertical passage through which the gas or carbonated liquid may be admitted, such a siphon-head being illustrated in my application, Serial No. 69,510, filed July 24, 1901. The bail-stopper is shown in detail in Fig. 8 and consists of a hollow cap 58, carried by a bail 59 and provided with a valve 60, which closes the passage 61 in the cap when the bottle contains liquid under pressure and which will open to admit gas or liquid under pressure through the passage to the bottle. In Fig. 7 I have shown a screw-stopper 62, which is provided with a valve 63, arranged to close a chamber 64, communicating with a passage 65 in the valve-stem 67, this valve-

stem being provided with an enlarged head 68, operating in a recess 69 in the stopper-body against a spring 70, which normally holds the valve closed against its seat 71. This stopper is used in an ordinary bottle capable of withstanding the pressure and provided with a threaded neck, and both the bail-stopper and the screw-stopper are generally removed for serving the liquid in the bottle; but suitable devices may be employed for opening the valves 60 and 63, so that the liquid can be served directly from the bottles without removing the stoppers. The bottles are arranged in the frame at right angles to its axis, with the nipples 52 fitted in the passage 61 of the bail-stopper or in a recess 72 of the screw-stopper or in a similar recess provided in the siphon-head, the recesses in the screw-stopper and siphon-head being enlarged to receive the nipples 52 and forming continuations of the fluid-passages. The nipple therefore acts as a guide for the bottle while the base is being screwed up to secure the bottle in place between the base and valve, and in thus clamping the siphon-bottle or the bottle provided with the screw-stopper it will be observed that the valves are opened by the clamping pressure to admit the gas or carbonated liquid. When the siphon-bottle is being charged with gas or carbonated liquid, its discharge-nozzle will be closed by a cap 73, and this cap is used to close the fluid-passage in the head after the bottle is filled to prevent the carbonated liquid from escaping there-through.

Instead of the bottles illustrated in Fig. 1 I may use receptacles of any kind which are adapted for holding carbonated liquids, and in Figs. 9 and 10 I have shown a tank 74 arranged in the frame and connected with one of the charging-valves. Such a tank may be used when it is desired to carbonate liquid in quantities or for serving the liquid directly from the receptacle while it remains in the apparatus, which can be accomplished with the tank or with one or more bottles by simply turning off the gas-supply and operating the valve 75 in the upward branch of the T-joint, which communicates with a fountain or nozzle or other serving means.

In practice the gas-tank will be arranged in the cabinet and connected with the pipe 28 for immediate use, the tank-valve and the operating-valve 31 being normally closed, as well as the charging-valves and the valve 75. The receptacles are filled with liquid and arranged in the frame and inclosed by guard-plates 76, hinged or otherwise secured on the frame, to prevent any possible injury from accidental breakage of the receptacles. The charging-valve for each receptacle is opened, and the key-wrench 34 is operated to open the tank-valve. The valve 31 is then opened, and the gas flows from the tank through the regulating-valve 30, gage 32, and pipe 28, and the hollow trunnion 21 and fluid-passage 39 to the charging-valves, and while the gas is

thus turned on to the receptacles the frame is revolved or rocked, by means of the handle 20, to thoroughly agitate the liquid in the receptacles, and thereby promote carbonation.

5 The liquid in the bottles of the kind shown in Fig. 1 will become thoroughly carbonated in two or three minutes, and then the tank-valve, the operating-valve 31, and the charging-valves are closed and the bottles removed, 10 or if it is desired to carbonate more bottles of water at once the tank-valve and operating-valve 31 may be left open and only the charging-valves closed, or the charging-valves and the operating-valves may be closed.

15 The gas-tank is preferably held in place in the compartment of the cabinet by means of a strap 77, and the regulating-valve is connected with the tank and set so that the predetermined pressure may not be exceeded in 20 the receptacles, even though the gas may be turned on for a greater length of time than required, and as the receptacles are inclosed by the guard-plates 76 and as the tank and regulating-valve are preferably locked in 25 their compartment the element of danger by use of an apparatus of this kind by persons unskilled in the art is practically eliminated.

I may construct the apparatus for a single bottle or for several bottles, and when the apparatus is constructed for several bottles it 30 may be used for carbonating one bottle or for carbonating a tank or other receptacle, as shown in Figs. 9 and 10, as the charging-valves are wholly independent of each other.

35 Carbonated waters of different kinds may be made with this apparatus by using the proper salts, and I may carbonate wines and other liquids. I may also use this apparatus for filling receptacles with liquid which has 40 already been carbonated by connecting the T-joint with the supply of carbonated water and employing a pump or other suitable means for forcing the liquid into the receptacle. If it is desired to recharge the carbonated liquid, the gas-supply may be turned 45 on at the same time.

This invention provides a simple apparatus which can be manufactured and sold at a reasonable price for general use, and it is 50 particularly adapted for family use, as fresh carbonated liquids of any kind can be produced in a very few minutes in any desired quantity.

At the present time bottlers carbonate liquids in quantities and deliver siphons in cases 55 to houses, restaurants, saloons, and other places where carbonated drinks are served, and it frequently happens that the siphons permit the gas to escape, so that the liquid becomes flat. By my invention families, restaurants, saloons, &c., may have their own individual carbonating apparatus, and they 60 may produce fresh carbonated liquids in quantities as desired, thus obtaining a carbonated drink of superior excellence and at a minimum cost.

When it is desired to serve carbonated

drinks at a counter, as at soda-fountains and in saloons, a tank may be employed, as shown in Figs. 9 and 10, and a fountain connected 70 with the discharge-nozzle at 79, so that the liquid may be carbonated directly in the tank and then drawn off from the tank without removing the tank from the frame. The carbonated water can be drawn off from the tank 75 in this manner by simply turning the frame to bring it upside down, in which case the pressure within the tank will force the water out through the fluid-passage 39 and T-joint up through the branch 79 to the fountain or 80 nozzle, the operating-valve 31 being closed at this time and the valve 75 being operated to control the flow.

The branch 79 of the T-joint 74 may be connected with a suitable draft device for 85 serving the carbonated liquid direct from the tank or the bottles held by the frame, or I may provide a device in said branch for filling siphons with the carbonated liquid, as shown in Figs. 10, 11, and 12. This siphon- 90 filling device consists of a coupling 81, comprising a flared casing 82, having a conical or tapered nipple or packing 83, held therein by means of a cap 84, the casing being connected with the barrel 85 of a plug-cock which is 95 connected with the T-joint. The plug 86 of the cock is provided with a transverse passage 87 and with a lateral passage 88, which communicates with an exhaust-passage 89 in 100 the barrel. When it is desired to fill a siphon with carbonated liquid, the nozzle of the siphon is inserted in the casing and pushed through the opening 90 in the tapered end of the nipple, and the cock is turned to permit 105 the liquid to flow from the receptacle into the siphon-bottle. The pressure within the tank will be sufficient to cause the liquid to flow freely, and the pressure around the nipple will form a tight joint between the nipple and the nozzle to prevent the flow of gas or carbonated liquid while the bottle is being filled. 110 To prevent the liquid which will accumulate in the casing between the plug of the cock and the nipple from escaping through the nipple when the nozzle of the siphon-bottle 115 is withdrawn, I provide the lateral passage 88 in the plug and the exhaust-passage 89 in the barrel of the cock, so that when the plug is turned to close the cock, which must be done, of course, before removing the nozzle of 120 the siphon-bottle from the casing, the liquid above the plug may escape through the lateral passage 88 and the exhaust-passage 89.

This siphon-filling device is very simple in construction and can be operated in a superior 125 manner to the ordinary siphon-filling machines and apparatus now in use. In filling siphon-bottles with carbonated liquid at the present time it is customary to admit the liquid to the bottle through the discharge-noz- 130 zle, and in doing so it is found that the gas will collect on top of the liquid in the bottle and from time to time prevent the flow of liquid into the bottle. This necessitates the

disconnection of the bottle from the filling apparatus and the operation of the siphon-valve to permit the accumulated gas to escape, called "sniffing off." This involves a considerable loss of time and waste of gas, and besides when the bottle is filled with carbonated liquid it will have lost a part of its gas. This is avoided in my present apparatus, and it will be found that the liquid in the bottle will have substantially the same pressure as the liquid in the receptacle.

Having thus fully described my invention, what I claim, and desire to secure by Letters Patent, is—

1. In an apparatus of the character described, the combination of a rectangular frame, trunnions centrally disposed at the ends of the frame and journaled in suitable bearings, one of said trunnions being hollow and connecting at its outer end with a gas-supply and at its inner end with a gas-passage extending from said trunnion through the end of the frame to and through one side thereof, charging-valves supported in the frame and provided with transverse passages extending therethrough above the valve-plugs and interposed in and forming a continuation of the gas-passage, and means for clamping receptacles within the frame against the discharge ends of said valves.

2. In an apparatus of the character described, the combination of a rectangular frame, trunnions centrally disposed at the ends of the frame and journaled in suitable bearings, one of said trunnions being hollow and connecting at its outer end with a gas-supply and at its inner end with a gas-passage extending from said trunnion through the end of the frame to and through one side thereof, independent charging-valves each comprising a body supported in one side of the frame and provided with a valve-chamber and a transverse passage intersecting the chamber and forming a continuation of the gas-passage, a valve-plug located in the valve-chamber and seated below the transverse passage, a screw-stem for the valve-plug extending through the body to the outside of the frame and carrying an operating-wheel and means for clamping a bottle inside the frame against the valve.

3. In an apparatus of the character described, the combination with an agitatable frame, of a number of charging-valves arranged transversely through one side of the frame and provided with interior valve-plug chambers and transverse passages intersecting said chambers and opening through the sides of the valve-body, valve-plugs located in the chambers beneath the transverse passages, pipe-sections connecting the transverse passages of adjacent valves and leading to a pipe connected with a gas-supply and forming a continuous gas-passage through all of the valves and having independent communication with each, and means for clamping re-

ceptacles in the frame against the discharge-orifices of said valves.

4. In an apparatus of the character described, the combination of an agitatable frame and means for removably holding a receptacle therein, a fluid-passage in the frame, controlling means in said passage, a T-joint connected with the fluid-passage, a gas-supply connected with one branch of T-joint, a siphon-filling coupling connected with the other branch of said T-joint, and a valve in each of said branches.

5. In an apparatus of the character described, the combination of an agitatable frame and means for removably holding a receptacle therein, a fluid-passage in the frame, controlling means in said passage, a gas-supply connected with the fluid-passage, a siphon-filling coupling connected with said fluid-passage, and valves for opening and closing communication between the gas-supply and the fluid-passage in the frame and between said passage and the siphon-filling coupling.

6. In an apparatus of the character described, the combination of an agitatable frame and means for removably holding a receptacle therein, a fluid-passage in the frame, a T-joint connected with said fluid-passage, a gas-supply communicating with one branch of said joint, a siphon-filling coupling connected with the other branch of said joint, valves in both branches of said joint, and a charging-valve for opening and closing communication between the receptacle and the fluid-passage.

7. In an apparatus of the character described, the combination of an agitatable frame and means for removably holding a receptacle therein, a fluid-passage communicating with the receptacle, controlling means in said passage, a gas-supply connected with said fluid-passage, a valve in said connection, and a siphon-filling device connected with said fluid-passage and comprising a coupling for connection with the nozzle of a siphon-bottle, and a cock below said coupling provided with a charging-passage communicating with the fluid-passage and the coupling, and an exhaust-passage.

8. In an apparatus of the character described, the combination of an agitatable frame and means for removably holding a receptacle therein, a fluid-passage communicating with the receptacle, controlling means in said passage, a gas-supply connected with said fluid-passage, a valve in said connection, and a siphon-filling device connected with said fluid-passage between said valve and the receptacle and comprising a casing, a nipple arranged in said casing, a cock having its plug provided with a charging-passage and a lateral passage communicating with an exhaust-passage in the cock when the charging-passage is closed.

9. In an apparatus of the character described, the combination of a cabinet, a gas-

5 tank arranged in said cabinet and provided with a valve, an agitatable frame and means for removably holding a receptacle therein, a fluid-passage in said frame, a pipe connected with said fluid-passage and the tank, a pressure-regulating valve in said pipe arranged in said cabinet, and a device arranged in an

opening in the cabinet for operating the tank-valve without entering the cabinet.

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