Oct. 7, 1930. F. E. RICE 1,777,327

CLARIFYING AND CARBONATING APPARATUS

Filed Oct. 25, 1928

Fig. 1

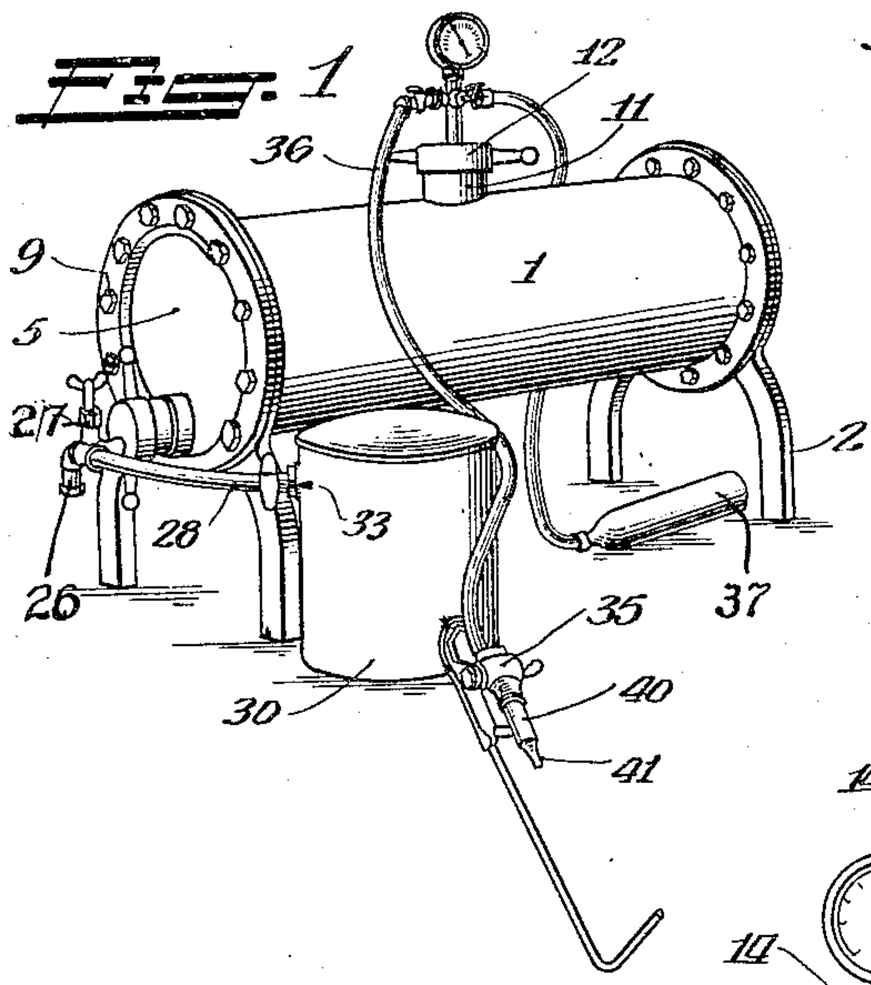


Fig. 2

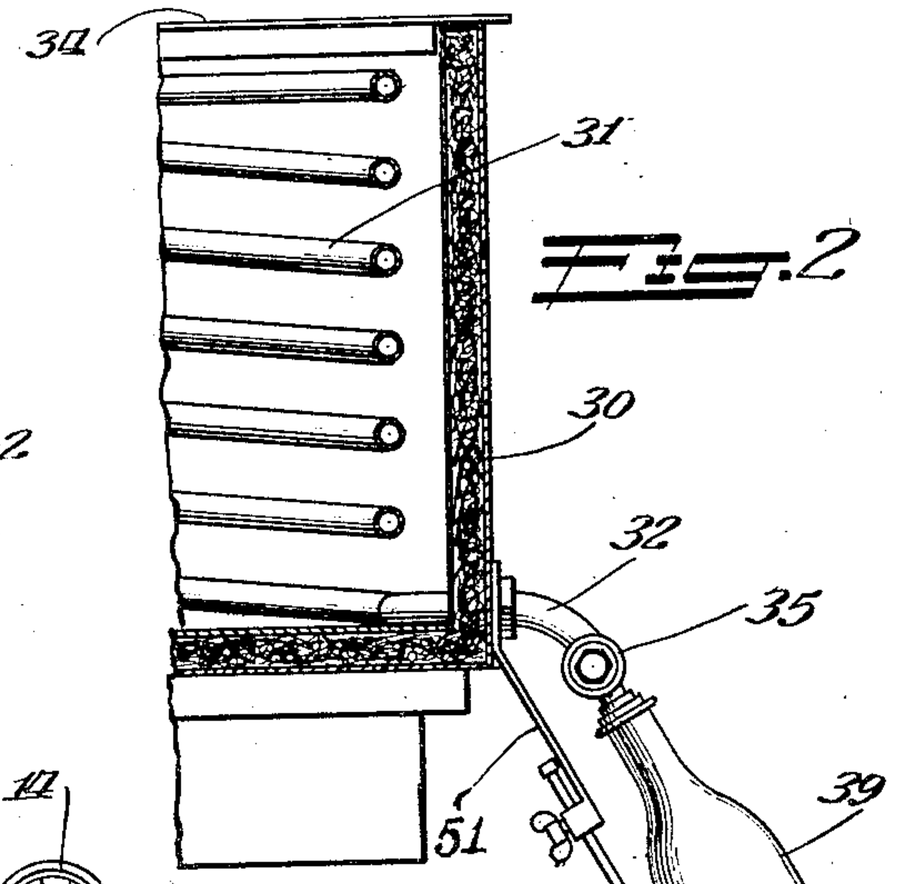


Fig. 3

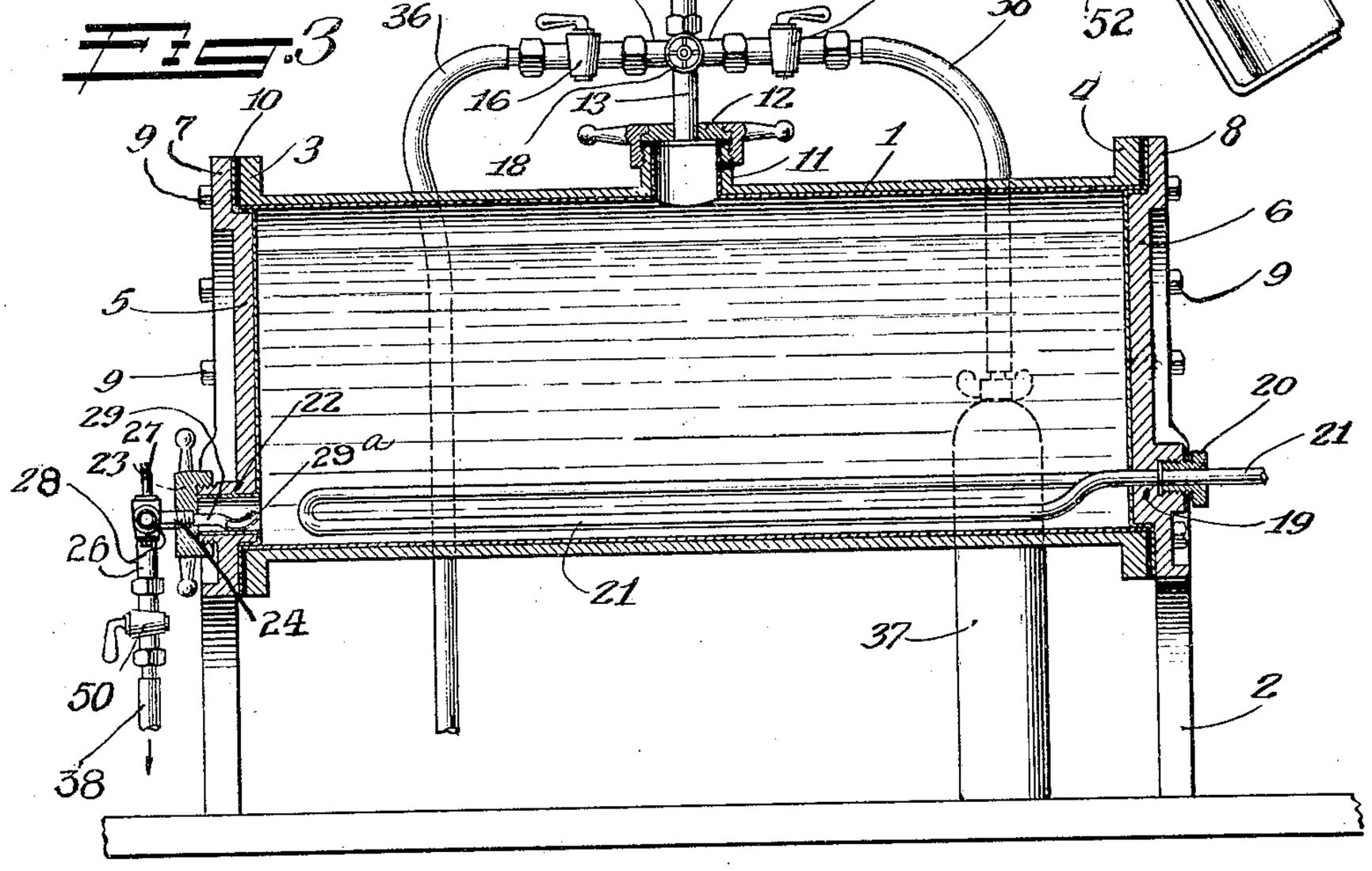
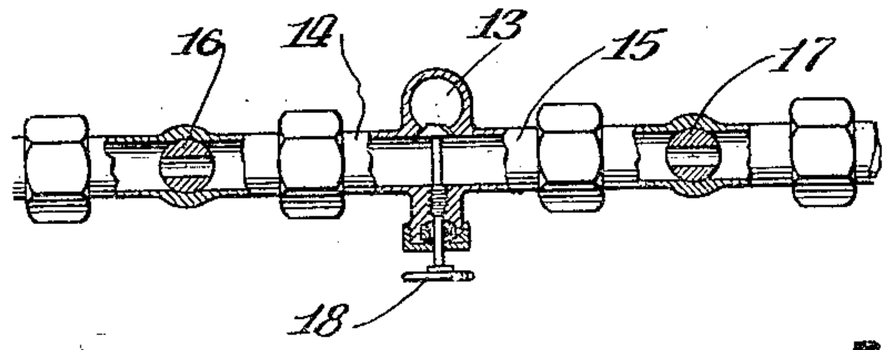


Fig. 4



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Patented Oct. 7, 1930 1,777,327

UNITED STATES PATENT OFFICE

FRANK E. RICE, OF DETROIT, MICHIGAN

CLARIFYING AND CARBONATING APPARATUS

Application filed October 25, 1928. Serial No. 314,954.

This invention relates to a clarifying and carbonating apparatus in which clarification and carbonating are carried out in the same receptacle and from which the finished beverage may be drawn for bottling or cooled and supplied in small quantities for immediate consumption.

The apparatus is arranged to clarify the liquid introduced therein and after clarification gas may be introduced above the liquid so as to prevent roiling of the liquid by sediment which otherwise would be agitated by the bubbles created, were the gas introduced directly into the liquid.

An object of the invention is to provide a clarifying and carbonating apparatus in which clarification and carbonating may be carried out in one receptacle.

Another object of the invention is to provide a clarifying and carbonating apparatus in which the carbonating gas may be introduced above the liquid to prevent agitation of sediment.

Another and further object of the invention is to provide a clarifying and carbonating apparatus in which clarification and carbonating may be carried out in one receptacle and the resulting beverage dispensed for immediate use without further treatment.

A yet further object of the invention is to provide an apparatus wherein clarification, carbonation and cooling may be carried out in the same receptacle and the beverage withdrawn for immediate consumption or bottled for later use.

A still further object of the invention is to provide a clarifying and carbonating apparatus which is sanitary, economical to manufacture and efficient in use.

The above, other and further objects of the invention will be apparent from the following description, accompanying drawings and appended claims.

According to the invention the apparatus includes a receptacle lined with such lining as to allow ready cleaning and sterilizing, and which will not contaminate the liquid introduced into the receptacle. Liquids for the manufacture of beverages are introduced and clarified by settling; and sugar is added to produce a carbonating gas such as carbon dioxide. When sufficient beverage has been withdrawn and consumed to decrease the original amount of carbonating gas so formed, additional carbonating gas (such as carbon dioxide) is introduced into the receptacle above the beverage therein so as to prevent agitation of the sediment by the bubbles created by said gas. A cooling agent may be applied for cooling the contents of the receptacle whereupon the contents may be withdrawn for immediate consumption or else bottled for future use.

One form of the invention is illustrated in the accompanying drawings and the views thereof are as follows:

Figure 1 is a perspective view of an apparatus embodying the invention.

Figure 2 is an enlarged fragmentary sectional view of a portion of a cooler with a bottle secured in position for filling.

Figure 3 is an enlarged longitudinal vertical section through the illustrated form of apparatus with parts in elevation.

Figure 4 is a top plan view partially in section of a valve arrangement.

The form of the invention illustrated to exemplify the invention comprises a horizontally disposed cylindrical receptacle 1 having legs 2 for supporting said receptacle in any suitable manner. The ends of the receptacle 1 are flanged, as at 3 and 4, and heads 5 and 6 are provided for closing said ends. The heads 5 and 6 have flanges 7 and 8 for cooperating with the flanges 3 and 4 on the receptacle 1 and are secured by bolts 9 to said receptacle. Gaskets 10 are interposed between the flanges of the receptacle ends and heads so as to make an air and liquid tight joint.

A filling opening 11 is provided on the top side of the receptacle 1 of sufficient size to allow the introduction of any liquid for the manufacture of beverages together with treating agents. The opening 11 is closed by a cap 12 having threaded engagement with the outer surface of the collar defining said opening 11.

The receptacle 1 as well as the opening 11

is lined with suitable material such as glass, enamel, or other vitreous or suitable material, which is acid proof and which may be easily washed and sterilized for maintaining the same in a sanitary condition.

The inner surfaces of the heads 5 and 6 are also lined with a similar material so that when the heads are in position the interior of the receptacle is completely lined in order that no deleterious effect may be imparted to the beverage from the receptacle.

An upwardly extending pipe 13 is carried by the cap 12 of the opening 11 and communicates with the interior of said opening. A pressure gauge 14 is arranged on the upper end of the pipe 13 for indicating the amount of pressure within the receptacle 1. Extending horizontally from each side of pipe 13 are branch pipes 14 and 15 provided with stop cocks 16 and 17, respectively. A valve 18 controls the communication between the pipe 13 and the branch pipes 14 and 15.

The head 6 is provided with an opening 19 having a stuffing box 20 for cooperating with the same. A pipe coil 21 passes through the stuffing box 20 and the opening 19 into the interior of the receptacle and extends snbstantially the length of the receptacle, with one or more bends in its length, for receiving a cooling fluid for controlling the temperature of the contents of the receptacle 1 if necessary.

The head 5 is provided with an opening 22 extending laterally through said head. Said opening 22 is of considerable size and is lined with the same material as the receptacle for the purpose of cleanliness. A cap 23 closes the outer end of said opening 22 having threaded engagement with the outer wall defining said opening. A pipe 24 is threaded into said cap and communicates with the interior of the opening 22. Said pipe 24 has two branches 26 and 28, the branch 28 being controlled by a stop cock 27 for connection to a cooler 30 and the branch 26 having a stop cock 50. A nozzle 29 is formed as an inner extension of the pipe 24 within the opening 22 with its inner end 29^a deflected upwardly.

The cooler 30, which may be of any convenient form of construction, is provided with a pipe coil 31, the lower end of which extends through the cooler, as at 32. The other end of the coil 31 extends to the outer surface of the cooler 30 near the upper end thereof and is provided with means for receiving the pipe conduit 28 connected from the stop cock 27.

The cooler 30 has a top 34 of usual construction adapted for the introduction of ice or other cooling agents, in order that the beverage circulated through the coil 31 may be sufficiently cooled for discharge therefrom through the outlet 32.

A two-way faucet 35 is connected through one of its outlet openings to the outlet 32 of the coil 31 of the cooler and through its other outlet opening by means of a conduit 36 to the stop cock 16 in the branch pipe 14.

The two-way nozzle or faucet 35 is similar to that illustrated in my copending application Serial No. 110,433 filed May 20, 1926.

A gas container 37, in which is stored carbon dioxide gas or any other proper carbonating gas, is placed near the receptacle 1 for communication with the interior of the receptacle through the conduit 38 by connection either to the stop cock 17 or to the stop cock 50.

The operation of the apparatus is as follows:

The cap 12 is removed from the opening 11 and such liquids as are to be used in the manufacture of the beverage introduced into the receptacle 1. Sugar may be added in proper proportion and the liquid allowed to settle until properly clarified. Any sediment that forms will, of course, accumulate on the bottom of the receptacle 1. Such sediment, no matter how little, is detrimental when taken internally. It is therefore highly important that the charging gas in the container 37 be introduced into the receptacle 1 in such manner as not to agitate the sediment. The stop cock 17 is now opened and gas from the receptacle 37 allowed to pass into the receptacle 1 above the level of the liquid therein. A substantial amount of carbonating can thus be effected without in the slighest degree agitating any of the sediment which may have accumulated on the bottom of the receptacle.

The liquid is retained in the receptacle a sufficient length of time to be in proper condition for consumption.

Should it be desired to utilize the apparatus for supplying beverages for consumption on the spot, then a cooling medium of any suitable sort is introduced through the pipe coil 21 to cool the liquid within the receptacle 1. The stop cock 17 is, of course, closed when a proper amount of carbonating gas has been delivered into the receptacle 1.

Liquid is withdrawn from the receptacle 1 by opening the stop cock 27 whereupon the liquid flows through the conduit 28 through the coil 31 of the cooler 30 and thence through the nozzle 35 into the receptacle. A cup or glass applied to the end of the faucet or nozzle 35 is filled with the carbonated beverage from the receptacle 1 which has been suitably cooled as before described.

Should, however, it be desirable to bottle the beverage, then a bottle may be applied to the faucet 35 and held thereagainst by a bracket 51 attached to the cooler for convenience and having an extensible portion 52 to receive a bottle 39 of any desired size and shape. The member 52 is adjusted to secure the bottle 39 on the faucet 35 so that when

said faucet is open said bottle will be filled. The faucet 35 is provided with a resilient or compressible cushion sleeve 40 so as to make an air tight connection between the faucet and the bottle. Furthermore the faucet is provided with an opening between the beverage outlet 41 and the sleeve 40 so that any air in the bottle 39 may pass upwardly through the conduit 36 into the interior of the receptacle 1. This two-way connection to the receptacle 1 serves to equalize the pressure between the bottle and receptacle to permit the beverage to flow by gravity into the bottle upon opening the stop cock 27 without losing any carbon dioxide gas.

It will be observed that this apparatus lends itself readily to manufacture in small units or in large units. I have found that such apparatus is very useful in small units for manufacture in the home of carbonated beverages such as ginger ale, root beer and the like. Large units, of course, would be employed by manufacturers of bottled beverages.

Should there be beverages which can be made without much sediment then the cylinder 37 containing the carbonating gas may be connected to the branch pipe 26 and the carbonating gas introduced directly into the liquid or liquor within the receptacle 1. When so connected, of course, the conduit 38 would be disconnected from the stop cock 17 and attached to the stock cock 50.

The stop cocks communicating with the pipe 24 are, of course, closed at all times except when gas is being introduced through the branch pipe 26 or when the beverage is being withdrawn through the stop cock 27 and conduit 28.

While I have described more or less precisely the details of construction of my invention, yet I do not wish to be understood as limiting myself thereto, as I am aware that changes may be made in the arrangement and proportion of parts, and that equivalents may be substituted, all without departing from the spirit and scope of my invention.

I claim as my invention:

1. A carbonating and clarifying apparatus including a tank disposed to receive sediment in its bottom, a removable head for said tank, a combined inlet and outlet fixture carried by said head, said fixture including a pipe having an upturned end communicating with the interior of said tank above the bottom of the same, said fixture having a plurality of connections outwardly of said head with valves in said connections, and a gas inlet communicating with the interior of said tank above the level of the liquid in said tank, a faucet, and a conduit leading from said faucet to said gas inlet.

2. A clarifying and carbonating apparatus comprising a horizontally disposed cylindrical tank, removable heads for each end of said tank, one of said heads having a recessed portion therein, a combined inlet and outlet fixture associated with said recess and having an open ended pipe within said recess, the end of said pipe communicating with the interior of said tank being above the bottom of the tank, a liquid dispensing faucet, connections between said fixture and said faucet, connections between said faucet and said tank communicating with the tank above the liquid level thereof, and a connection communicating with the interior of said tank above the liquid thereof for admission of carbonated gas.

In testimony whereof I have hereunto subscribed my name at Detroit, Wayne County, Mich.

FRANK E. RICE.