This invention relates to a method of and apparatus for handling, transporting, cooling, storing, and dispensing beverages, and has particular reference to a method and apparatus of this character for use especially in connection with gas charged beverages, such as beer, ale, and the like.

In order that brewed gas containing beverages such as beer and ale may be dispensed to the consumer in the state or condition intended by the producer or brewer, it is essential that from the time the beverage leaves the brewery and until it is served to the consumer, it be transported, stored, and otherwise handled under definite standards of temperature, pressure, and cleanliness or sanitation. Furthermore, it is considered by many to be important that for a considerable period prior to the actual dispensing of the beverage that the same be maintained in a quiescent state and not subjected to unnecessary turbulence or agitation.

Under conventional arrangements for merchandising brewed beverages such as beer and ale the brewer substantially loses control over the handling and storing of his product after he has delivered kegs or barrels containing the beverage to his retailing customer or distributor. There is, accordingly, a definite need for a beverage handling method and equipment which will enable the brewer to supervise or control the treatment accorded his product until the same is dispensed or served to the consumer. In addition to the brewer's lack of control and supervision over the product according to conventional beverage handling systems, he is required to make a substantial investment in shipping or transportation containers, such as barrels, kegs and similar cooperage. One reason for this large cooperage outlay is because the tavern keeper or other retailer of draught beverages usually maintains on hand, in order to meet the demands of his trade, a number of kegs of beverage. Since it is inconvenient and impractical for the beverage distributor or brewer to make frequent calls at his customers' places of business, the present practice usually results in a considerable number of kegs or barrels being placed with each retailer or dealer, many of such kegs remaining empty for long periods of time between visits of the brewer's representative. The care accorded the empty kegs or containers by the retailers is not always of the highest order and the brewer is accordingly required to make large expenditures on repairs and replacement of cooperage thus incurred. Additionally, kegs of beverage delivered but not yet placed on tap are often subjected to adverse temperature conditions that frequently injure the beverage before the same is tapped for dispensing.

It is, therefore, one aim of the present invention to provide a novel method of handling, storing, cooling, and dispensing beverage and an apparatus for carrying out such method that will reduce the investment and upkeep costs of a brewer or producer of beverage and also afford him a large measure of control over his product until the same is served to the ultimate consumer.

Another object of the invention is to provide improved apparatus or equipment for receiving and storing the beverage on the premises of the retailer or at the place of dispensing so as to keep such beverage under proper conditions of temperature, pressure, and general sanitation. More specifically, the invention aims to provide beverage handling equipment which occupies a minimum of space and includes improved means for refrigerating the stored beverage and maintaining thereon an adequate pressure for retaining in the beverage the essential gases which contribute to the taste and palatability of the beverage.

Another object is to provide in a compact unit, beverage storing and dispensing equipment which is neat in appearance and occupies a minimum of space.

Another object of the invention is to provide an improved method of and apparatus for handling, storing, and dispensing beverage which enables the producer or brewer to deliver his product to the retailer, transfer the same to containers or receptacles permanently installed at the place of dispensing, and immediately return the transportation container or containers to the brewery or other place of manufacture of the beverage.

Another and more specific object is to provide a method and apparatus of the above character which is adapted to quickly and efficiently effect the transfer of beverage from the transportation container to the storage receptacle and which can be operated by attendants or other agents without requiring separate training or skill.

A still further object of the invention is to provide a generally improved beverage handling method and a generally improved apparatus for carrying out such method which is relatively simple in design and construction and inexpensive to manufacture. Other objects and advan-
tages will become apparent from the following detailed description of suitable embodiments of the invention made in connection with the accompanying drawings, in which like parts throughout the several views are indicated by like or corresponding letters and numerals of reference.

Figure 1 is a longitudinal vertical sectional view with parts removed showing a unit dispenser of the character contemplated herein, said section being taken on the line indicated at 1—1 of Fig. 2:

Fig. 2 is a transverse vertical sectional view, with parts removed, of the storing and dispensing unit shown in Fig. 1, and is taken substantially on the line 2—2 of that figure;

Fig. 3 is a diagrammatic view, with parts removed, showing the connections for the several parts of the beverage handling system;

Fig. 4 is a fragmentary vertical sectional view, with parts omitted, showing a modified form of beverage handling equipment employing the principles of the present invention;

Fig. 5 is a detail partly in section and with parts removed showing the construction of one of the control valves employed in the dispenser of the present invention; and

Figs. 6 and 7 are sectional details taken substantially on the lines 5—5 and 1—1, respectively, of Fig. 5.

Pursuant to the broader aspects of the invention, beverage is placed by the brewer or producer in kegs, barrels, or other transportation containers indicated in the drawings at T. The brewer's agent or delivery man takes the filled transportation containers to the establishment of the retailer or other place of dispensing and there transfers the entire contents of one or more transportation containers T to storage or dispensing receptacles R (R1 and R2 of Figs. 1 and 2). This transfer is effected by evacuation of the gas from the receptacle R and an application of pressure to the transportation container T by means of a pump P driven by suitable means such as an electric motor M. A valve V is provided to control the evacuation of and the application of pressure to each of the storage or dispensing receptacles R. In Figs. 1 and 2 the valves V are indicated at V1 and V2 for the receptacles R1 and R2, respectively. The storage receptacles R are immersed in a bath of cooling liquid contained in an insulated cabinet C and beverage is withdrawn from the receptacles from time to time as desired for consumption through faucets F carried by a chambered upper cabinet or bar B.

In the embodiment of the invention shown in Figs. 1 and 2, the cabinet C may be formed of inner and outer sheet metal casings 1 and 2, respectively, which are maintained in spaced apart relation and the intervening space filled with suitable insulating material 3. The upper bar B may also be formed of inner and outer sheet metal casings 4 and 5, respectively, which can be integrally connected to the casings 1 and 2 of the cabinet if desired so as to form a sturdy and fluid-tight unit assembly. Preferably, the casings for the cabinet and bar are formed of corrosion-resistant material such as stainless steel or galvanized sheet metal. Desirably, the outer casings are treated with paint or other surface decoration and preservative. As shown in Fig. 2, the insulation 3 extends upwardly between the casings 4 and 5 of the bar B so that coolant 8, forming the bath for the receptacles R, may be insulated from the atmosphere throughout its depth and up to the top of the bar. The bar B is surrounded by an insulated top 7 hinged at 8 which provides access to the chamber within the bar and cabinet for repairing or otherwise servicing the beverage handling equipment contained therein. The coolant 8 may be any suitable liquid such as water or brine. In most cases water will be suitable since the temperatures employed for beverages such as beer and ale do not fall below its normal freezing temperature.

The receptacles R may be formed of any of numerous strong heat conducting materials, such, for example, as stainless steel or other corrosion-resistant material. For example, ordinary sheet metal may be used, the inside being coated with porcelain enamel, lined with glass, or otherwise treated to resist chemical action between the receptacle lining and the beverage and to present a smooth, slick surface adaptable to flushing cleansing in the manner to be hereinafter described. Although receptacles R of the receptacles R is not critical, it is preferable that they utilize to the maximum the available space within the cabinet C so as to reduce the relative floor space required for the quantity of beverage stored. It is therefore intended to make the receptacles R1 and R2 approximately square or rectangular in horizontal cross section so that side walls 9 thereof are substantially uniformly spaced from the inner casings 1 of the cabinet.

The bottoms 10 of each of the receptacles is concave or dished so as to provide for drainage away from the mounting plate of the fountain. A drain 11 is drawn to be dispensed through the tap or faucet F is wholly immersed in the cooling liquid 6 so as to insure the

2,339,082
proper temperature conditioning of the beverage as the same is withdrawn from the system for consumption. If desired, the conduit 12 may be formed with a collier portion 28, also immersed in the coolant, which affords additional cooling capacity and prevents the dispensing of warm beverage even when the temperature of the beverage in the receptacle R is above that desired.

A conductor or coll 28 for carrying a suitable refrigerant is coiled around the upper portion of the receptacles R1 and R2 and suitably supported in the coolant chamber of the cabinet. One or more turns of the refrigerant coll may be carried upwardly and across the chamber in the bar B, as indicated at 27. A suitable refrigerating unit comprising a compressor 29 and drive motor 29 and housed in a chamber 30 formed in an extension portion of the cabinet C at one end of the latter. This compressor unit is arranged to circulate refrigerating liquid through the conductors 26 and 27 so as to cool the liquid 6 in which the refrigerant conductors are immersed, in accordance with well known practice. The operation of the compressor or refrigerating unit is controlled by means of a thermal responsive bulb 31 immersed in the coolant 6 at the bottom of the chamber in the cabinet C and connected to an electric switch, that controls the electric motor 29, through a conductor 32. The refrigerating unit is set or adjusted so that the coolant 6 is maintained at a uniform temperature suitable for dispensing of the particular beverage being handled. In the case of beer and ale this temperature is usually considered to be between about 35°F. to about 37°F.

Suitably mounted in the compartment 30 above the refrigerating unit, as, for example, on a shelf or platform 33, is a pumping means for gas, which includes the pump P and the drive motor M connected by a belt 34. This pump is utilized in applying a pressure on beverage in the receptacles R1 and R2 to retain therein the carbon dioxide or other gas with which the beer or other beverage is charged, and is also utilized for the purpose of evacuating one or both of the receptacles when the same are to be filled with beverage and for supplying gas under pressure to the transportation containers T to force beverage from the latter into one or both of the storage receptacles.

Referring to Fig. 3, the arrangement of the conductors for connecting the several parts of the apparatus will now be described. In this figure is shown the receptacle R1, together with its associated conductors and valves, it being understood that a similar arrangement of parts is provided for receptacle R2. Each of the two receptacles, and its associated control devices with the pump means and refrigerating apparatus, constitutes a complete dispenser, but they are connected in parallel with the pump means.

Outlet 37 of the pump P is connected by a fluid or gas conductor 38 to a reservoir 39 which receives gas under pressure, a check valve 40 being provided in the conductor 38 to prevent the reverse flow of gas from the reservoir 39 to the pump P. Electrical energy for running the motor M is received from a suitable source of supply through conductors L1 and L2 which are connected to the motor M through electrical conductors 41 and 42, a pressure switch 43 being interposed in the conductor 42. The switch 43 is responsive to pressure in the reservoir 39 and is arranged to start the motor M to drive the compressor or pump P when the pressure in the reservoir 39 falls below a predetermined amount and to stop the motor M when the pressure in the reservoir exceeds a predetermined amount. Thus, for maintaining the pressure in the reservoir 39 between predetermined limits, the operation of the compressor or pump P is substantially automatic. The precise pressure limits are not critical, variations being permissible to suit the requirements of particular kinds of beverage and the capacity of the receptacles serviced by the pump means. For usual needs in dispensing a beverage such as beer, a pressure of from about 15 to about 20 pounds, more or less, has been found satisfactory. For a purpose to be later explained, a manual switch 44 is provided in parallel with the switch 43, so that the compressor P can be started and stopped at the will of the operator or attendant.

The valve means 45 includes a pair of movable valve bodies 45 and 46 mounted in a suitable housing indicated at 47. These movable valves, which are preferably rotatable although valves of the slide type may be employed, are of the multiple position variety and are each adapted to effect a number of different connections or arrangements of the several fluid conductors with which they are associated.

Inlet 48 of the pump means P is connected by a tubular conduit 49 to a port in the valve housing 47 which communicates through a first passage 50 in the valve body 45 with a passage 51 formed in the housing 47. By means of a passage 52 in the valve body 45 the housing passage 51 is placed in communication with a port to which is connected a tubular conduit 53 connected into the extension 22 of the conduit 20. In this manner when the movable valve bodies 45 and 46 are in the full line positions shown in Fig. 3, the inlet 48 of the pump means P is placed in communication with the interior of the storage and dispensing receptacle R1, so that actuation of the pump withdraws air or gas from the beverage receptacle.

A tubular conduit 56 connected to the conduit 38 between the pump outlet 37 and the check valve 40 is connected to a port in the valve housing 47 which may be placed in communication with an atmospheric outlet passage 51 through a second passage 59 in the movable valve body 46. As shown in Fig. 3, the passages 50 and 51 in the valve body 45 are so arranged that they make their respective connections just described when the valve body is in the full line position illustrated. When thus connected and the pump means P is started by manually closing the control switch 44, or otherwise, air or gas is withdrawn from the receptacle R1, and, if the reservoir 39 is full, may be discharged to the atmosphere through the outlet 57 in the valve housing 47, as will later appear. During this withdrawal of gas or air from the receptacle the fluid or gas P, and the valve 25 are closed so that atmospheric air is not drawn into or admitted to the system, and the check valve 40 prevents reverse flow of gas out of the reservoir 39, thus retaining the pressure therein. A valve 82 is provided in the tubular conduit 56 so that gas or air drawn out of the receptacle R by the pump means P, instead of being released to the atmosphere through the control valve and outlet 51, is forced through the check valve 40 into the reservoir 39 and thence into the transportation container T. In this manner the air or gas evacuated from the storage and dispensing receptacle is used to ap-
ply a positive pressure on the beverage in the transportation container to force such beverage into the storage and dispensing receptacle. The valve 52 can, of course, be opened, when necessary, to release excess gas or air from the system. The beverage is then introduced into one of the receptacles R, a transportation container T containing the beer or other beverage to be transferred is connected to the fitting 14 by means of a flexible conduit 59. This conduit is connected to hand valve 61 at the top of a tap rod 60 which extends to the bottom of the transportation container T, as shown by the broken lines of Fig. 2.

As is well known, beer and other carbonated beverages are normally maintained under considerable pressure in the transportation containers in which they are supplied to the retailer at the place of dispatching by the brewer or producer. Therefore, upon opening the valves 15 and 61 with the flexible conduit 59 connected as aforesaid, the gas pressure within the transportation container T forces beverage through the tap rod 60, conduit T, and upwardly through the outlet opening 11, into the bottom of the receptacle R.

The flow of the beverage from the transportation container T to the storage and dispensing receptacle R is hastened and assisted by introducing gas under pressure into the transportation container T from the storage and dispensing receptacle R or the reservoir 39, a tubular conductor 52 permanently installed in the dispensing unit being provided for this purpose. This conductor terminates in a connector fitting 63 on the bartender's side of the bar or cabinet, to which is attached a flexible conduit 64 leading to a conventional tap rod and gas supply fitting or connector 65 attached to the top of the transportation container T and through which is inserted the tap rod 60. A shut-off valve 68 is provided for the conduit 62 adjacent the fitting 63 so that the conduit may be closed to prevent the escape of gas from the reservoir 39 when the flexible conduit 64 is disconnected and the transportation beverage T removed. A valve 67 on the gas connector fitting 65 controls the flow of gas into and out of the transportation container in the usual manner.

The entire contents of the transportation container T is transferred preferably to one of the receptacles R in a single transferring operation, although it is contemplated to provide larger transportation receptacles which will be sufficient in capacity to fill a number of receptacles. Upon completion of the transferring operation, the valves 15 and 61 are closed, permitting the flexible beverage conductor 59 to be disconnected and removed from the fitting 14 and tap rod 60. Valves 66 and 67 are also closed, permitting the flexible gas conduit 64 to be disconnected from the fittings 63 and 65 and removed. Thus the transportation container T can be immediately returned to the brewer and only remains at the place of dispatching a sufficient length of time to transfer its beverage content to one of the storage receptacles R. In most cases this time interval will be but a few minutes, so that arrangements can be made for the brewer's representative or delivery man to make the necessary connections of the conduits 59 and 64 and supervise the beverage transferring operation. Accordingly, the brewer maintains control over the beverage until it is placed in the refrigerated receptacles at the place of dispatching and his product is not subjected to the careless handling and neglect that might result if the transportation containers containing the beverage were left at the place of dispensing to be handled by the retailer's representatives.

Immediately upon the completion of the beverage transferring operation and as soon as the valve 15 is closed, the valve bodies 58 and 68 are moved or rotated from the first or full line positions shown in Fig. 3 to approximately the dotted line position illustrated. When thus positioned, the passage 52 in the valve body 45 connects the conduit T to a port in the housing 47 which is connected by a tubular conduit 65 to the high pressure conduit 62 previously mentioned. In this manner high pressure air or gas from the reservoir 39 is immediately admitted to the receptacle R to place the transferred beverage therein under sufficient pressure to retain the gas content with which the beverage is charged.

Movement of the valve body 46 to the dotted line position shown in Fig. 3 places the pump inlet conduit 49 in communication with the valve passage 57 (to the atmosphere) through the previously mentioned second valve passage 50. Accordingly, a demand for gas or air in the reservoir 39, which starts the pump P, is supplied from the atmosphere through the conduit 49. When the valve body 46 is rotated to the dotted line position shown, the first passage 50 places the high pressure tubular conduit 55 in communication with the passage 51 in the valve housing 47. However, the previous or simultaneous movement or rotation of the valve body 45 to the dotted line position shown seals the port to the passage 51 so that the escape of the high pressure gas through the conduit 55 is arrested. Accordingly, gas or air forced through the conduit 55 by the pump P flows through the check valve 50 into the reservoir 39. The valve means V 1 and also the valve means V 2 must both be arranged to close or seal their respective conduits 55 in order that the pump may be effective to force gas or air into the reservoir 39. Hence when one of the receptacles is being filled or replenished in the manner previously described, the pump may force the gas withdrawn therefrom into the reservoir 39, or into one of the transportation containers being emptied.

When all of the beverage has been dispensed from one of the receptacles, the outlet valve 15 is opened and a suitable means provided for receiving drainage from the receptacle. A conduit 69, connected to a suitable source of fluid or liquid cleanser, such as a solution of any well known detergent and water, is affixed to the fitting 23 and the valve 35 is opened, allowing the liquid detergent under pressure to flow through conduit 22 and into the receptacle R through the spray or liquid distributing head 21. The head 21 directs the inflowing detergent mixture upwardly and outwardly against the top 17 of the receptacle. The liquid detergent then flows downwardly and evenly over the side walls of the receptacle to the bottom 18 and out the central opening or outlet 11. During this flow of the liquid detergent, the top, sides, and bottom of the receptacle are thoroughly cleansed and the residue left by the beverage is effectively removed. After the completion of the washing of the receptacle by the liquid detergent, a suitable conduit (not shown) from a source of water is connected to the valve fitting 23 and the receptacle flushed with fresh clear water which removes all traces of the detergent.

Prior to the cleansing and flushing of the empty
receptacles the valve bodies 45 and 46 are shifted from their second position, indicated by the dotted lines in Fig. 3, to their third or flushing position indicated by the broken lines of Fig. 3. In this position the valve body 45 seals the port to the conduit 53, preventing the flow of liquid detergent and flushing or rinsing water into the valve and also the flow of gas from the reservoir 39 through the tubular conduit 58. The valve body 45 seals the ports to the tubular conduits 48 and 56, preventing the flow of air or gas through these parts of the conduit system.

When the flushing of the receptacle is completed the valves 15 and 23 are closed and the valve bodies 45 and 46 are moved to their first position, indicated by the full lines of Fig. 3. The apparatus is then ready to receive another supply of beverage from a transportation container or containers.

In the above description the valve bodies 45 and 46 have been treated or described as separate elements of a valve system. It is, however, contemplated that they may be connected together for simultaneous actuation by a single control element. For example, the valve body 45 may be provided with a control arm 70 and the valve body 46 provided with a control arm 71. The control arms 70 and 71 may in turn be connected by a link 72 for simultaneous actuation of the valve bodies 45 and 46.

If desired, the valve bodies 45 and 46 of each of the control valves V may be combined in an integral movable or rotatable valve body 75, Figs. 5, 6, and 7. This valve body is of substantially cylindrical form and is rotatably mounted in a housing 76 which corresponds to the housing 47 previously mentioned. The housing is provided with a cylindrical bore 77 which rotatably receives the valve body and the latter is retained in place by a cover 78 threaded into the housing and provided with a central opening 79 in which is rotatably journaled an extension or shaft portion 80 of the valve body, on which is secured an actuating handle 81, by means of which the valve body may be rotated to its three operative positions previously described.

The surface of the valve body 75 is cut away, in the plane indicated by the line 6—6 of Fig. 5, to provide the passage 52 previously mentioned and is cut away, in the plane indicated by the line 1—1 of Fig. 5, to provide the first and second passages 50 and 58 previously mentioned. The housing 76 is cored out or otherwise provided with passages to effect connection between the several conduits previously mentioned and to provide the ports which communicate with the passages 50, 52 and 58. The conduits or tubular conductors 45, 53, 55 and 56 are secured in sockets formed in the rear side of the housing 76, or in any other suitable manner customary in the art, and communicate with the valve body passages through openings or passages formed in the housing.

The unit multiple position valve illustrated in Figs. 5 through 7 is arranged, through actuation of the single control handle or lever 81, to connect the receptacle R alternatively to the intake 48 and the outlet 37 of the pump P. Furthermore, this valve, in one position, connects the receptacle to the pump intake 48 and the pump outlet with the atmosphere, causing the pump to feed the gas reservoir, and connects the receptacle with the gas reservoir so that gas under pressure may flow into the receptacle. In the third position of the valve the receptacle is closed to the atmosphere so that the pump can force air or gas into the reservoir.

In the embodiment of the invention illustrated in Figs. 1 and 2, the method of the present invention may be carried out as follows:

The refrigerating unit is set in operation to cool the liquid 6 which is maintained at a sufficiently high level to keep the beverage dispensing conduits 34 wholly immersed. Preferably the liquid level extends above the faucets F1 and F2. The valves V1 and V2, for the receptacles R1 and R2, respectively, and which are constructed as illustrated in Figs. 5 through 7, are moved to the first position previously described so that the conductors 53 from the receptacles are connected to the inlet or intake openings 48 of the pump P. Motor M is then set in operation by manually closing the switches 44 so that the pump means is driven to withdraw air or gas from the receptacles.

Beverage is brought to the place of dispensing in one or more of the transportation containers T. One of these containers is connected to the receptacle R1 as shown in Fig. 2 and in the manner previously described, and the valve 15 is opened to allow the beverage to flow into the receptacle R1 from the transportation container. This flow is uniform and even, being substantially without turbulence or undue agitation since it enters the receptacle from the bottom and the level thereof rises evenly in the receptacle until the transferring operation is completed. The valve 15 may be opened and the valve 23 closed to apply a gas pressure to the beverage in the transportation container and assist the transfer. This feature is important since although the beverage in the transportation container may be under considerable pressure when received at the place of dispensing, the pressure therein decreases as the beverage is transferred to the receptacle. Therefore, the supplying of additional gas pressure to take the place of the beverage flowing out of the transportation container is desirable.

In a similar manner beverage is transferred from the same or a different transportation container or containers to the receptacle R2. In each case when the transferring operation has been completed, the valve 15 and 66 are closed and the multiple position valves V1 and V2 are shifted to their second position in which the gas under pressure in the reservoir 39 is admitted to the receptacles to substantially immediately apply sufficient pressure on the transferred beverage to retain therein the gas with which the beverage is charged. The attendant then opens the manual switch 44 so that the control of the pump motor M is by means of the automatic switch 43, which insures a supply of air or gas in the reservoir 39 at the correct pressure.

As previously mentioned, the transportation containers T may be disconnected from the dispensing apparatus as soon as the transferring operation is completed, which in most instances requires but a few minutes. It is to be noted that the controls and attaching connections for connecting the transportation containers to the several conduits of the system are all located on the cabinet C and bar B and readily accessible to the attendant. Thus, liquid these parts of the transportation containers for purposes of transferring beverage may be effected with expedition.

In some instances it may be desired to transfer in succession the contents of a plurality of transportation containers to one of the receptacles,
This will be particularly true where the receptacles are located in a large retailing establishment where considerable quantities of beverage are sold. For example, it may be desirable to have storage and dispensing receptacles which receive and store the contents of from two to six or more half barrels of beer or ale. Accordingly, when the contents of one keg or transportation container has been transferred to the receptacle, the valves 15 and 66 are closed, the empty transportation container T removed, and a full transportation container substituted in its place, after which the valves 15 and 66 are again opened to transfer the contents of the second transportation container to the storage and dispensing receptacle. This procedure can be repeated until the contents of as many transportation containers as desired have been transferred to the receptacle.

When one of the receptacles B1 or B2 has been emptied of beverage, the corresponding control valve V is shifted to its third position, such as diagrammatically represented by the broken lines of Fig. 3. This position of the valve, as previously mentioned, causes the conduit 13 and prevents liquid detergent and flushing water entering through the conduit 22 and valve 35 from flowing through the control valve V and into the remainder of the system. The empty receptacle is then cleaned and flushed, as previously described, and is ready to receive a fresh supply of beverage.

The transportation container T may be connected to the system immediately after the receptable R has been emptied and cleaned.

After the removal of the transportation container the pressure of air or gas applied to the storage and dispensing receptacle R forces into the beverages gases that may have escaped during the transferring operation, thus restoring the beverage to substantially its original state as prepared by the brewer.

While one of the receptacles is empty and is being cleaned, beverage may be dispensed as usual from the other receptacle, there being sufficient capacity in the reservoir 39 to supply gas or air under pressure to the receptacle from which beverage is being dispensed.

Fig. 4 illustrates a modification of the invention, in which the bar B1 is located in another room or on another floor of the building. A large tubular conductor 83, preferably insulated, extends upwardly from an aper- tured fluid-tight top 84 secured on the cabinet C1 and is connected to a tubular fitting 85 secured in the bottom of the bar B1. The connections of the conduit 83 to the bar and cabinet are made liquid-tight so that the cooling liquid 6 may extend from the cabinet C1 upwardly through the conduit 83 and into the chamber of the bar B1. The beverage conduits 24 are carried upwardly from the receptacles R through the conduit 83 and are connected to the bar B1 as previously described. As in the embodiment of the invention here described, the beverage conduits 24 are wholly immersed throughout their length in the refrigerated coolant 6, which is cooled by a refrigerating unit in the manner previously described.

A coolant circular 86 is mounted on the cabinet C1 and has an inlet 87 which receives coolant through a conduit 88 extending upwardly through the conduit 83 and having an inlet end 89 disposed near the top of the chamber of the bar B1, just below surface 90 of the coolant 6. Outlet 91 of the cooler 86 discharges coolant through a conduit 92 into the body of coolant within the cabinet C1. When the cooler 86 is in operation, coolant from the cabinet C1 flows upwardly through the conduits 83 around the conduits 24 and into the chamber of the bar B1. The coolant at the top of the chamber in the bar is drawn into the inlet 89 of the conduit 88 and downwardly by the conduit through the cool-
tire contents of a transportation container to a storage and dispensing receptacle from which the gas is removed as the beverage is introduced therein under pressure. The single pump means is uniquely arranged with a novel valve structure or structure so that it may be utilized in withdrawing air or gas from the storage and dispensing receptacle as well as for the purpose of applying a pressure on beverage to be transferred or beverage to be dispensed.

The storage of the beverage is in containers which are maintained at a uniform temperature proper for preserving the beverage and for minimizing secondary fermentation of a beverage such as beer and ale. Included in the apparatus is a unique arrangement for facilitating the cleansing of empty receptacles before they are filled with a fresh supply of beverage. This feature of the invention enables the public to obtain a more sanitary beverage which has improved characteristics of taste and palatability.

The principles of the present invention may be utilized in various ways, numerous modifications and alterations being contemplated, substitution of parts and changes in construction being resorted to as desired, it being understood that the embodiments shown in the drawings and described above are given merely for purposes of explanation and illustration without intending to limit the scope of the claims to the specific details disclosed.

What I claim is:

1. Beverage handling and dispensing apparatus comprising a plurality of storage receptacles from which beverage may be dispensed from time to time as desired, pump means having an inlet and an outlet and having means for connecting the pump to withdraw gas from the receptacle or to force gas into the same, a conduit connected to the pump outlet and having means for connecting the pump to the same to a supply container whereby gas withdrawn from the receptacle can be forced into such container, and a conduit having means for connecting the same to the receptacle and to the bottom of a container connected to the pump whereby beverage in the container can be displaced by gas from the receptacle to flow into the receptacle.

4. Apparatus for handling and dispensing a gas charged beverage comprising a receptacle having capacity to receive the entire contents of a supply container in a single transferring operation and a dispensing faucet connected thereto, a gas pump having an inlet and an outlet, a gas reservoir and means connecting the same to the pump outlet, a motor having connection with the pump to actuate the same, control means responsive to the pressure within the reservoir to start and stop the motor and thereby maintain the pressure in the reservoir between predetermined limits, conduits extending between the receptacle and the pump inlet and the reservoir, valve means in said conduits for alternatively connecting the pump to withdraw gas from the receptacle or to force gas into the same, a conduit connected to the reservoir and having means for connecting the same to a supply container whereby gas withdrawn from the receptacle can be forced into such container, and a conduit having means for connecting the same to the receptacle and to the bottom of a container connected to the reservoir whereby beverage in the container can be displaced by gas from the reservoir to flow into the receptacle.

5. Apparatus for handling a gas charged beverage comprising a receptacle having a faucet connected thereto and the beverage contained in the receptacle, a gas pump having an inlet and an outlet, a reservoir and means connecting the same to the pump outlet, a drive motor for the pump having pressure responsive control means connected to the reservoir for actuating the pump to maintain the pressure in the reservoir between predetermined limits, a unitary valve means, conduits connecting said valve means to the receptacle, pump and reservoir, said valve means being arranged when in one position to put the reservoir in communication with the receptacle and the pump in communication with the reservoir and in another position to put the receptacle in communication with the pump inlet and the pump outlet in communication with the gas source, and check valve means in the connection between the reservoir and the pump to retain the gas in the reservoir.

6. Apparatus for handling and dispensing a gas charged beverage comprising a receptacle having a faucet connected thereto for dispensing beverage from the receptacle, a container for transferring the beverage to the receptacle, a gas pump having an inlet and an outlet and drive means therefor, means for connecting the container to the receptacle for transferring the beverage therebetween, conduits connecting the receptacle and the container with the inlet and the outlet of the pump, valve means for placing the receptacle in communication with the pump inlet and the pump outlet in communication with the container whereby beverage in the latter is forced to flow into the receptacle and is displaced by air from the receptacle, said valve means being further arranged to place the receptacle in communication with the pump outlet for maintaining gas pressure on the displaced beverage, and pressure responsive means for controlling the drive means.
to maintain the pressure on the displaced beverage between predetermined limits.

7. Beverage handling apparatus comprising a receptacle having a faucet for dispensing beverage as desired, a gas pump having an inlet and an outlet, a gas reservoir connected to the pump outlet, drive means for the pump having control means responsive to the pressure in the reservoir to automatically maintain such pressure within predetermined limits, conduits and valve means for connecting the gas reservoir to the receptacle to supply gas thereto under pressure, said valve means being movable to alternatively connect the receptacle with the pump inlet through said conduits for evacuation of the receptacle, and manual control means for actuating the pump drive irrespective of the pressure in the reservoir to effect said evacuation.

8. Apparatus for handling and dispensing a gas charged beverage comprising a receptacle having capacity to receive the entire contents of a supply container in a single transferring operation and a dispensing faucet connected there-