(54) Title: METHOD AND SYSTEM FOR BREWING AND SERVING A HOT BEVERAGE

(57) Abstract

A method and system for brewing one or more hot beverages, such as gourmet coffees. The gourmet coffee is brewed, at a brewing temperature, in the liners of a brewing urn (10). After brewing, the coffee can be transferred to any one of three storage tanks (42A, B, C) by means of manual or solenoid valves, and, if desired, a gravity-assist pump (48). The shelf-life of the brewed coffee is increased substantially when stored at a serving temperature which is lower than the brewing temperature. Coffee contained in feed lines (78A, B, C) leading from each of the storage tanks passes through a pressurizing line to a tap tower (82) located to provide efficient service to the coffee-purchasing customers. Hot water from the water jacket (22) of the brewing urn is circulated in hot water lines (40) retained in close proximity to the feed lines between storage tanks and the tap tower, thereby keeping the coffee in the feed lines at a desirable serving temperature. A control panel (94) connected to level sensors in each of the storage tanks provides visible and audible indications to the operator that the supply of coffee in a particular storage tank is running out, so that the operator can brew a new batch of coffee. When the empty volume in a particular storage tank is adequate to store an additional full batch of freshly brewed coffee, the operator receives a second visible indication from the control panel. The operator can control pumps and valves from the control panel and can read the temperature of the coffee in each of the storage tanks.
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1. A hot beverage brewing and serving system, comprising:
   a brewing vessel for brewing separate batches of hot beverages at a temperature in a brewing temperature range;
   an insulated storage tank for storing a batch of a beverage brewed in the brewing vessel at a temperature in a storage temperature range so that the beverage from the same brewing vessel may be simultaneously brewed and served, the storage temperature range being lower than the brewing temperature range;
   a serving tap remote from the brewing vessel and storage tank;
   a first feed line for carrying the beverage from the brewing vessel to the storage tank;
   a second feed line for carrying the beverage from the storage tank to the serving tap for dispensing the hot beverage; and
   means for maintaining the beverage in the second feed line at a serving temperature so that when the serving tap is operated after a period of inoperation, it serves the beverage at the serving temperature, the serving temperature being lower than the storage temperature range.
2. The hot beverage brewing and serving system of claim 1 wherein the means for maintaining the beverage in the second feed line at the serving temperature comprises a hot water line running in proximity to the second feed line, whereby heat is exchanged between the hot water line and the second feed line.

3. The hot beverage brewing and serving system of claim 1, further comprising means to indicate the level of the beverage in the storage tank, whereby an operator of the system can be alerted to brew a batch of the beverage for subsequent storage in the storage tank when the level of the beverage in the storage tank falls below a predetermined reserve level.

4. A gourmet hot beverage brewing and serving system comprising:
   a plurality of brewing liners for brewing separate batches of brewed hot beverage, the liners being surrounded by a jacket of hot water;
   one or more insulated storage tanks, each storage tank for storing the beverages brewed in the liners at a serving temperature;
   first feed lines for transferring the brewed beverage from the liners to the storage tanks;
one or more pumps in the first feed lines for facilitating transfer of beverage from the liners to the storage tanks, the pump or pumps being controlled by a timer pre-set for a duration of operation sufficient for transferring a full batch of beverage from a liner to a storage tank;

- serving taps for serving the beverages, the serving taps being remote from the brewing vessel and from the storage tanks;

- second feed lines for transferring the stored beverages from the storage tanks to the serving taps for dispensing the beverage;

- pumps in the second feed lines for pressurizing the beverages in the second feed lines so that a particular beverage may be dispensed by opening the tap connected to the second feed line, transferring the particular beverage;

- hot water lines connected to the water jacket surrounding the liners for circulating the hot water in proximity to the second feed lines and a pump for circulating the hot water through the hot water lines, such that the hot water lines transfer heat from the brewing water to the second feed lines to keep the beverages in the second feed lines at the serving temperature;

- thermal insulation surrounding the hot water lines and the second feed lines which are in proximity to each other;
a first level indicator in each storage tank for indicating when the level of beverage in the tank is sufficiently low that a new batch of beverage for that tank should be brewed;

a second level indicator in each storage tank for indicating when the tank is sufficiently empty that a new batch of brewed beverage may be transferred to the tank; and

a temperature gauge in each storage tank for monitoring the temperature of the beverage in each tank and an external indicator connected to the gauge for reading the monitored temperature.

5. The hot beverage brewing and serving system of claim 4 wherein the second feed lines are selected from the group consisting of Teflon, stainless steel, and Kynar feed lines.

6. The hot beverage brewing and serving system of claim 4 further comprising:

   a solenoid valve in a first feed line for selectively directing the brewed beverage from one of the brewing liners to one of the one or more storage tanks.

7. The hot beverage brewing and serving system of claim 4 wherein the serving tap comprises a stainless steel
tap tower having a plurality of spigots, each spigot connected to a distinct second feed line, such that different beverages may be stored in the storage tanks and simultaneously served from the same serving tap.

8. The hot beverage brewing and serving system of claim 4 wherein the hot water lines are copper pipes.

9. A method for brewing and serving a hot beverage, comprising the steps of:
   - brewing the hot beverage in a vessel;
   - promptly transferring the brewed beverage to a storage tank for storing the beverage at a serving temperature so as to minimize the time that the beverage is kept at the brewing temperature;
   - transferring the beverage through a feed line from the storage tank to a serving tap;
   - warming the feed line between the storage tank and the serving tap to keep the beverage in the feed line at a serving temperature; and
   - operating the serving tap to dispense the hot beverage at the serving temperature.
10. A method for brewing and serving hot beverages, comprising the steps of:

brewing a first batch of a hot beverage in a vessel;
promptly transferring the brewed beverage to a storage tank that is surrounded by a hot water jacket for storing the beverage at a serving temperature so as to minimize the time that the beverage is kept at the brewing temperature;
transferring the beverage through a feed line from the storage tank to a serving tap;
transferring hot water from the hot water jacket through a hot water line in proximity to the feed line so that heat is transferred between the hot water line and the feed line to keep the beverage in the feed line at serving temperature;
operating the serving tap to dispense the beverage at serving temperature;
monitoring the volume of beverage in the storage tank to first and second predetermined levels;
brewing a second batch of hot beverage in the vessel when the level of beverage in the storage tank reaches the first predetermined level;
transferring the second batch of beverage from the vessel to the storage tank when the level of beverage in the storage tank reaches the second pre-determined level; and
transferring the second batch of beverage through the feed line from the storage tank to the serving tap for dispensing at serving temperature when the tap is operated.
11. A hot beverage brewing and serving system, comprising:

   a brewing vessel for brewing separate batches of hot beverages at temperatures in a brewing temperature range;

   a plurality of insulated storage tanks for separately storing the separate batches of hot beverages at temperatures in a storage temperature range, so that a beverage may be simultaneously brewed in a particular brewing vessel and served from a particular storage tank, the storage temperature range being lower than the brewing temperature range;

   a serving tap remote from the brewing vessel and the plurality of storage tanks;

   first feed lines for carrying the beverages from the brewing vessel to the plurality of storage tanks;

   second feed lines for carrying the beverages from the plurality of storage tank to the serving tap; and

   means for maintaining the beverages in the second feed line at a serving temperature so that when the serving tap is operated after a period of inoperation, it serves the beverages at the serving temperature, the serving temperature being lower than the storage temperature range.

12. The hot beverage brewing and serving system of claim 11, further comprising:
a solenoid valve in a first feed line for selectively directing the brewed beverage from the brewing vessel to one of the plurality of storage tanks.

13. A hot beverage brewing and serving system, comprising:

- a plurality of brewing liners for brewing separate batches of brewed hot beverage, the liners being surrounded by a jacket of hot water;
- an insulated storage tank for storing a batch of a beverage brewed in the brewing vessel at a temperature in a storage temperature range so that the beverage from the same brewing vessel may be simultaneously brewed and served, the storage temperature range being lower than the brewing temperature range;
- a serving tap remote from the brewing vessel and storage tank;
- a first feed line for carrying the beverage from the brewing vessel to the storage tank;
- a second feed line for carrying the beverage from the storage tank to the serving tap for dispensing the hot beverage; and

means for maintaining the beverage in the second feed line at a serving temperature by circulating water from the hot water jacket in proximity to the second feed line and back to the hot water jacket, whereby heat is exchanged to the second feed line.
14. The hot beverage brewing and serving system of claim 13, further comprising means to indicate the level of the beverage in the storage tank, whereby an operator of the system can be alerted to brew a batch of the beverage for subsequent storage in the storage tank when the level of the beverage in the storage tank falls below a predetermined reserve level.

15. The hot beverage brewing and serving system of claim 13, further comprising means to indicate the temperature of the beverage in the storage tank, whereby an operator of the system can be alerted to discard a batch of the beverage when its temperature falls below the serving temperature.

16. The hot beverage brewing and serving system of claim 15, further comprising means to indicate the level of the beverage in the storage tank, whereby an operator of the system can be alerted to brew a batch of the beverage for subsequent storage in the storage tank when the level of the beverage in the storage tank falls below a predetermined reserve level.

17. The hot beverage brewing and serving system of claim 13, further comprising one or more additional storage tanks for separately storing the separate batches of
hot beverages at temperatures in the storage temperature range, so that a beverage may be simultaneously brewed in a particular brewing vessel and served from a particular storage tank, the storage temperature range being lower than the brewing temperature range:

18. The hot beverage brewing and serving system of claim 17, further comprising:
   a solenoid valve in a first feed line for selectively directing the brewed beverage from the brewing vessel to one of the storage tanks.

19. The hot beverage brewing and serving system of claim 17 wherein the serving tap comprises a tap tower having a plurality of spigots, each spigot connected to a distinct second feed line, such that different beverages may be stored in the storage tanks and simultaneously served from the same serving tap.