

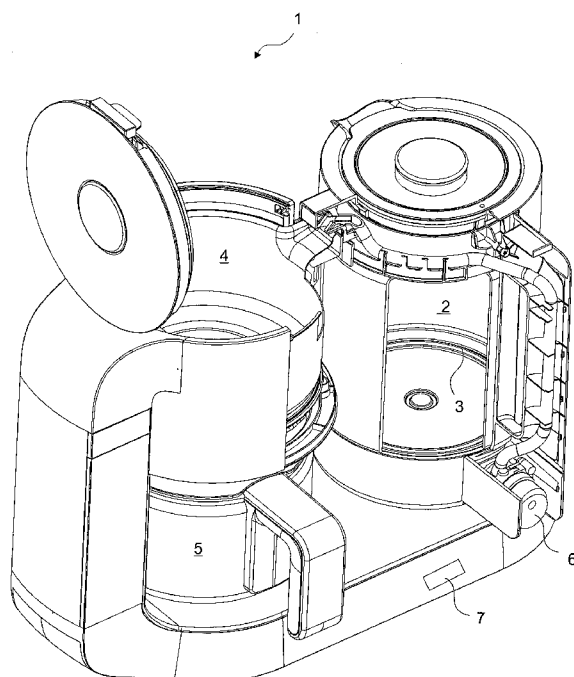


- (51) International Patent Classification:
A47J 31/00 (2006.01)
- (21) International Application Number:
PCT/TR2014/000296
- (22) International Filing Date:
31 July 2014 (31.07.2014)
- (25) Filing Language: English
- (26) Publication Language: English
- (30) Priority Data:
2013/09560 6 August 2013 (06.08.2013) TR
- (71) Applicant (for all designated States except US): ARCE-
LIK ANONIM SIRKETI [TR/TR]; E5 Ankara Asfalti
Uzeri, Tuzla, 34950 Istanbul (TR).
- (72) Inventors; and
- (71) Applicants (for US only): AKGUL, Ozkan; E5 Ankara
Asfalti Uzeri, Tuzla, 34950 Istanbul (TR). HATIPOGLU,
Oner; E5 Ankara Asfalti Uzeri, Tuzla, 34950 Istanbul
(TR).
- (74) Agent: ANKARA PATENT BUREAU LIMITED; Be-
stekar Sokak No.10, Kavaklidere, 06680 Ankara (TR).
- (81) Designated States (unless otherwise indicated, for every
kind of national protection available): AE, AG, AL, AM,
AO, AT, AU, AZ, BA, BB, BG, BH, BN, BR, BW, BY,
BZ, CA, CH, CL, CN, CO, CR, CU, CZ, DE, DK, DM,
DO, DZ, EC, EE, EG, ES, FI, GB, GD, GE, GH, GM, GT,
HN, HR, HU, ID, IL, IN, IR, IS, JP, KE, KG, KN, KP, KR,
KZ, LA, LC, LK, LR, LS, LT, LU, LY, MA, MD, ME,
MG, MK, MN, MW, MX, MY, MZ, NA, NG, NI, NO, NZ,
OM, PA, PE, PG, PH, PL, PT, QA, RO, RS, RU, RW, SA,
SC, SD, SE, SG, SK, SL, SM, ST, SV, SY, TH, TJ, TM,
TN, TR, TT, TZ, UA, UG, US, UZ, VC, VN, ZA, ZM,
ZW.
- (84) Designated States (unless otherwise indicated, for every
kind of regional protection available): ARIPO (BW, GH,
GM, KE, LR, LS, MW, MZ, NA, RW, SD, SL, SZ, TZ,
UG, ZM, ZW), Eurasian (AM, AZ, BY, KG, KZ, RU, TJ,
TM), European (AL, AT, BE, BG, CH, CY, CZ, DE, DK,
EE, ES, FI, FR, GB, GR, HR, HU, IE, IS, IT, LT, LU, LV,
MC, MK, MT, NL, NO, PL, PT, RO, RS, SE, SI, SK, SM,

[Continued on next page]

(54) Title: A HOT BEVERAGE PREPARATION MACHINE

Figure 1



(57) Abstract: The present invention relates to a hot beverage preparation machine (1) comprising a water container (2) wherein water is filled, a water heater (3) enabling the water in the water container (2) to be heated, a brewing chamber (4) wherein the raw material of the beverage to be prepared is put and whereto the water heated in the water container (2) is transferred, wherein the brewing process is performed as a result of the interaction between the raw beverage material and water, a pot (5) that is situated under the brewing chamber (4) and wherein the beverage brewed in the brewing chamber (4) is transferred, a pump (6) that enables the water heated in the water container (2) to be transferred to the brewing chamber (4), and a valve (8) that is situated between the brewing chamber (4) and the pot (5) and that enables the brewed beverage to be transferred into the pot (5).



TR), OAPI (BF, BJ, CF, CG, CI, CM, GA, GN, GQ, GW, **Published:**
KM, ML, MR, NE, SN, TD, TG).

— *without international search report and to be republished
upon receipt of that report (Rule 48.2(g))*

A HOT BEVERAGE PREPARATION MACHINE

The present invention relates to a hot beverage preparation machine comprising a control unit.

In hot beverage preparation machines, the water filled into the water container is heated by a water heater and is transferred to the brewing chamber containing raw material of the beverage to be prepared. The brewing process is performed in the brewing chamber as a result of the interaction between the raw beverage material and water. Afterwards, the brewed beverage is transferred into a pot and served. The hot beverage preparation process is composed of steps such as heating the water, transferring the water, brewing and transferring the brew. Hot beverage preparation machines wherein serving time can be programmed are preferred since they provide ease of utilization. However, since the hot beverage preparation steps depend on more than one parameter such as water heating time, brewing time, etc., hot beverage serving time may deviate from the planned time. This situation complicates the utilization of the machine.

In the state of the art Chinese Patent Document No. CN2034811, an energy-saving and time-saving electronic cooker is disclosed, that is capable of delayed starting.

The aim of the present invention is the realization of a hot beverage preparation machine that provides ease of utilization.

The hot beverage preparation machine realized in order to attain the aim of the present invention and explicated in the claims, comprises a water container wherein the brewing water is heated, a brewing chamber wherein the brewing process is performed as a result of the interaction between raw beverage material and water, a pump that enables the water heated in the water container to be transferred to the brewing chamber, a pot that is situated under the brewing chamber and a valve that enables the beverage brewed in the brewing chamber to be delivered into the pot.

The hot beverage preparation machine of the present invention comprises a control unit that operates the water heater an estimated beverage preparation time predetermined by the producer and at least one tolerance time predetermined by the producer before the hot beverage serving time planned by the user. By means of the tolerance time, the hot beverage is enabled to be ready at the time planned by the user even if deviations may occur in the anticipated heating time and/or brewing time during the water heating process and/or brewing process.

In an embodiment of the present invention, the control unit keeps the temperature of the water inside the water container fixed if the actual water heater operation time is smaller than the predetermined estimated water heater operation time as long as the time difference between the estimated water heater operation time and the actual water heater operation time. Since the estimated water heater operation time and the tolerance time are determined by taking into consideration the worst case (low environment pressure, maximum water amount, etc.) in order to prevent the beverage preparation time from being effected by the deviations in the water heating time, the time difference between the estimated water heater operation time and the actual water heater operation time always remains inside the tolerance time. By means of the tolerance time, the water transfer process does not start after the heating process in case the actual water heater operation time does not reach the estimated water heater operation time predetermined by the producer. Thus, the beverage preparation process is prevented from being completed before the planned time.

In an embodiment of the present invention, the control unit delivers the beverage into the pot by means of the valve if the actual brewing time is smaller than the estimated brewing time predetermined by the producer, operates the pot heater until the end of the estimated brewing time and the tolerance time and enables the beverage to be served hot. Moreover, the control unit delays the beverage ready warning as much as the brewing tolerance time. Thus, the planned hot beverage serving time is prevented from being affected by variations in the brewing time.

The hot beverage preparation machine realized in order to attain the aim of the present invention is illustrated in the attached figures, where:

Figure 1 – is the perspective view of a hot beverage preparation machine.

Figure 2 – is the exploded perspective view of a hot beverage preparation machine.

Figure 3 – is the partial cross-sectional view of the brewing chamber in an embodiment of the present invention.

The following symbols are used for explicating the hot beverage preparation machine (1) of the present invention:

- hst : an estimated hot beverage preparation time predetermined by the producer
- ts : at least one tolerance time predetermined by the producer
- tp : the hot beverage serving time planned by the user
- 1st : an estimated water heater operation time predetermined by the producer
- dst : an estimated brewing time predetermined by the producer
- 1sg : the actual heater operation time
- dsg : the actual brewing time

The elements illustrated in the figures are numbered as follows:

1. Hot beverage preparation machine
2. Water container
3. Water heater
4. Brewing chamber
5. Pot
6. Pump

7. Control unit

8. Valve

9. Pot heater

The hot beverage preparation machine (1) comprises a water container (2) wherein water is filled, a water heater (3) enabling the water in the water container (2) to be heated, a brewing chamber (4) wherein the raw material of the beverage to be prepared is put and whereto the water heated in the water container (2) is transferred, wherein the brewing process is performed, a pump (6) that enables the water heated in the water container (2) to be transferred to the brewing chamber (4), a pot (5) situated under the brewing chamber (4) and whereto the beverage brewed in the brewing chamber (4) is transferred, and a valve (8) that is situated between the brewing chamber (4) and the pot (5) and that enables the brewed beverage to be delivered into the pot (5).

The hot beverage preparation machine (1) realizes the hot beverage preparation process composed of variable-time steps such as water heating, brewing, etc. and of fixed-time steps such as water transferring, brew transferring, etc. The hot beverage preparation machine (1) of the present invention comprises a control unit (7) that, in order to prepare the beverage at a hot beverage serving time (t_p) planned by the user, operates the water heater (3) and thus starts the hot beverage preparation process an estimated beverage preparation time (t_{est}) predetermined by the producer and at least one tolerance time (t_s) predetermined by the producer before the hot beverage serving time (t_p). By means of the tolerance time (t_s), differences between the actual process times and the estimated process times do not change the planned hot beverage serving time (t_p).

In an embodiment of the present invention, the control unit (7) stops the pump (6) and keeps the water transfer process waiting until the end of the estimated water heater operation time (t_{est}) and the tolerance time (t_s), predetermined by the producer. The actual water heater operation time (t_{act}) changes depending on a number of parameters such as the amount of the water to be heated, the

temperature the water must reach by being heated, the temperature and the pressure of the environment wherein the water container (2) is situated. In case the actual water heater operation time (1sg) does not reach the estimated water heater operation time (1st), the temperature of the water inside the water container (2) is kept fixed, and the pump (6) is not operated and the water transfer process is not started until the estimated heater operation time (1st) and the tolerance time (ts) end. Thus, the hot beverage serving time (tp) is accurately planned, increasing user satisfaction.

In an embodiment of the present invention, the hot beverage preparation machine (1) comprises a pot heater (9) enabling the beverage in the pot (5) to be kept hot. In this embodiment, if the actual brewing time (dsg) is smaller than the estimated brewing time (dst) predetermined by the producer, the control unit (7) opens the valve (8) and delivers the hot beverage into the pot (5) after being removed from the raw beverage material and operates the pot heater (9) until the end of the estimated brewing time (dst) and the tolerance time (ts). Moreover, the control unit (7) delays the beverage ready warning as much as the tolerance time (ts). Thus, while preserving the brewing quality, the difference between the estimated brewing time (dst) and the actual brewing time (dsg) is prevented from changing the planned hot beverage serving time (tp).

By means of the present invention, thanks to the tolerance time (ts), the hot beverage serving time (tp) planned by the user is not changed by the difference between the actual heater operation time (1sg) and the estimated heater operation time (1st) and/or the difference between the actual brewing time (dsg) and the estimated brewing time (dst). Thus, the beverage is enabled to be ready at the time (tp) planned by the user without any deviations.

CLAIMS

1. A hot beverage preparation machine (1) **comprising**
 - a water container (2) wherein water is filled,
 - a water heater (3) that enables the water in the water container (2) to be heated,
 - a brewing chamber (4) wherein the raw material of the beverage to be prepared is put and whereto the water heated in the water container (2) is transferred, wherein the brewing process is performed as a result of the interaction between the raw beverage material and water,
 - a pump (6) that enables the water heated in the water container (2) to be transferred to the brewing chamber (4),
 - a pot (5) that is situated under the brewing chamber (4) and wherein the beverage brewed in the brewing chamber (4) is transferred,
 - a valve (8) that is situated between the brewing chamber (4) and the pot (5) and that enables the brewed beverage to be transferred into the pot (5),

characterized by

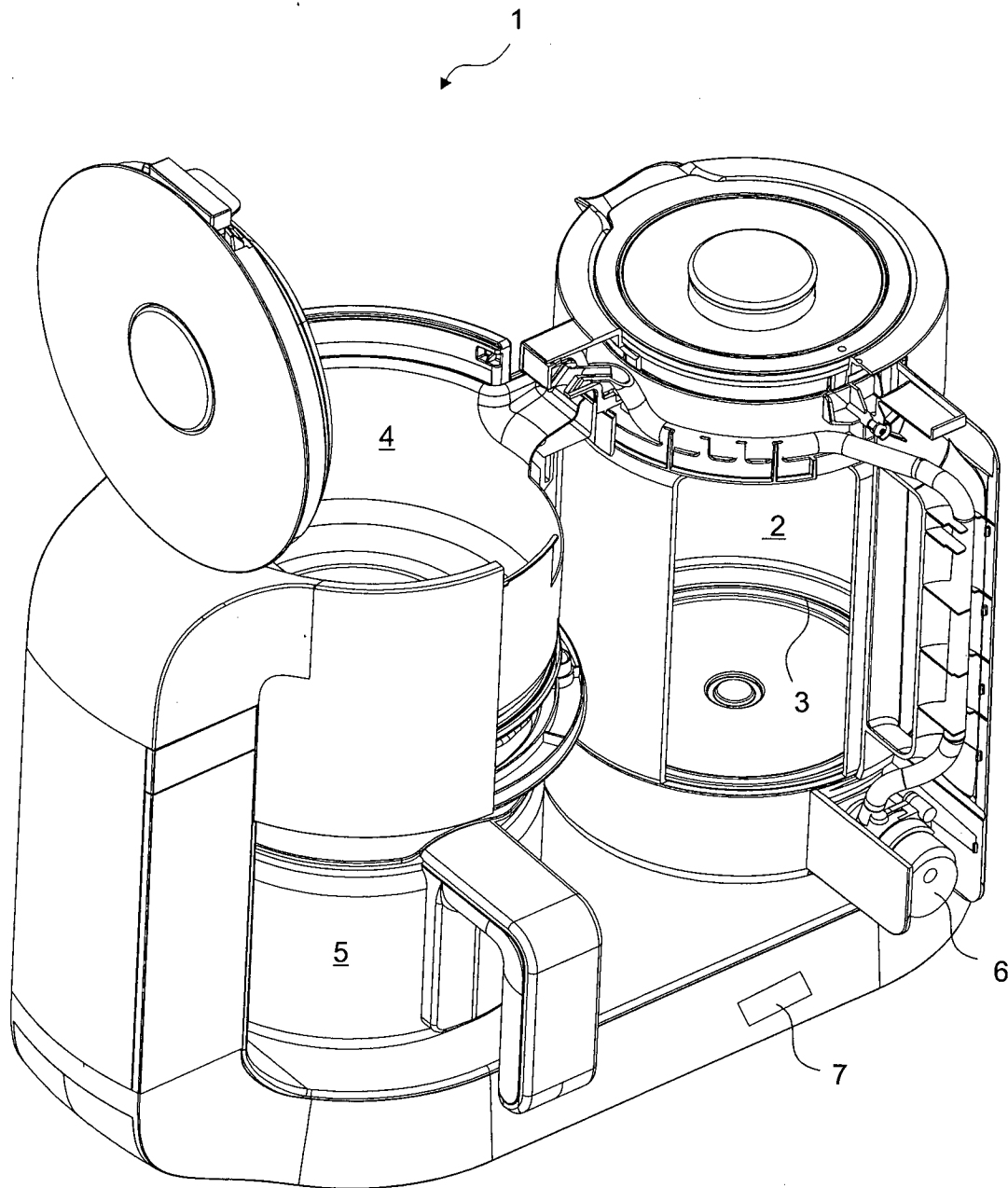
- a control unit (7) that, in order to prepare the beverage at a hot beverage serving time (tp) planned by the user, starts the hot beverage preparation process an estimated beverage preparation time (hst) predetermined by the producer and at least one tolerance time (ts) predetermined by the producer before the hot beverage serving time (tp).
2. A hot beverage preparation machine (1) as in Claim 1, **characterized by** the control unit (7) that delays the operation of the pump (6) and keeps the water transfer process waiting until the end of the estimated water heater

operation time (1st) and the tolerance time (ts) predetermined by the producer.

3. A hot beverage preparation machine (1) as in Claim 1 or 2, comprising a pot heater (9) that enables the beverage in the pot (5) to be kept hot, and **characterized by** the control unit (7) that opens the valve (8) and delivers the beverage into the pot (5) at the end of the actual brewing time (dsg), that operates the pot heater (9) until the end of the tolerance time (ts) and that delays the beverage ready warning until the end of the tolerance time (ts), if the actual brewing time (dsg) is smaller than the estimated brewing time (dst) predetermined by the producer.

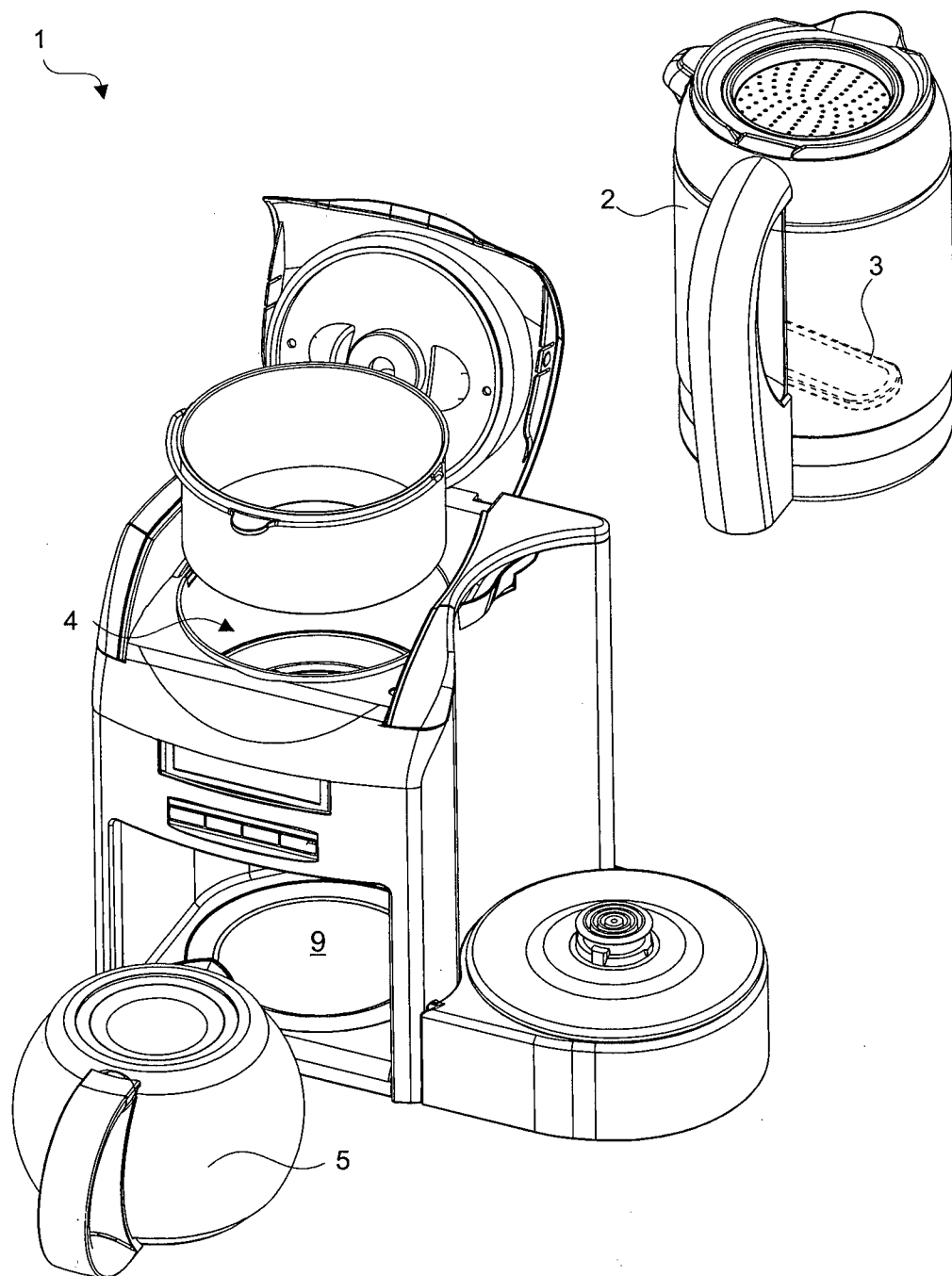
1 / 3

Figure 1



2 / 3

Figure 2



3 / 3

Figure 3

