

Method and apparatus for cooking raw Chinese Wheat Noodle (yew mian or chu mian in Mandarin)

Description

Field of the Invention

The present invention relates to a method for controlling a noodle cooking basket attached with a pivoted cylindrical stirrer and a computer program performing such a method. One of the embodiment of this invention relates to cooking wanton noodles (Cantonese egg noodles) using the motion of the noodle cooking basket attached with a pivoted cylindrical stirrer to stir the noodles to ensure the characteristic springy on the outside and well cooked on the inside noodle texture.

Background

To date, to cook raw wheat based noodles like wanton noodles to perfection requires an experienced cook with years of experience, to produce noodles with springiness on the outside and thoroughly cooked through on the inside. There are 4 processes that helps to achieve this result, namely (a) continuous stirring and spreading of noodles between temperatures of 96-98 deg Celsius to prevent sticking and lumpy noodles (b) Cold water treatment to reduce the surface temperature of the cooked noodles so that the outside will achieve the springiness while the inside continues to cook through (c) cooking duration (d) ensuring that the cooking water remains clear as opposed to high viscosity.

Looking at the prior art in cooking the noodles, experienced cooks normally fire up the temperature of the water to a rolling boil representing close to 100 deg Celsius, they will then either drip down or add a ladle of room temperature water to still the water surface (effectively bringing it down to between 96-98 deg Celsius), before throwing in the noodle. After stirring and spreading the noodle in the hot water for a predetermined number of seconds, the almost cooked noodles are transferred to a room temperature water bath (which have to be changed regularly due to its rising temperature). This will cool down the surface of the noodles, while the noodle interior continues to be cooked. The noodles are transferred back to the hot water to reheat up the noodles surface. This ensures that the noodles are springy on the outside and thoroughly cooked on the inside. In addition, experienced cooks will change the cooking water regularly to keep it as clear as possible.

Summary of the Invention

An object of the invention is to design a noodle cooker that achieves the following:-

1. Constant temperature range between 96 – 98 deg Celsius;
2. Constant stirring of noodles to prevent sticky and lumpy noodles;
3. Room temperature water treatment of the noodles to lower the surface temperature of the noodles in order to achieve the springy on the outside and cooked through on the inside texture;
4. Regular hot water change to ensure clear boiling water;
5. Constant water addition to compensate for evaporation and achieve overflow that removes the foam floating at the top of the water

Hence, in a first aspect there is provided a method for controlling a noodle cooking basket attached with a pivoted cylindrical stirrer. The method comprises the steps of tapping a selector switch, determining a type of noodle to be cooked, where the type of noodle is one of at least a thin type and a thick type. Depending on the determined type of noodle, motion sequence of a first configuration is initiated when the determined type of noodles is the thin type and a motion sequence of a second configuration is initiated when the determined type of noodle is the thick type.

In another aspect there is provided a method for controlling the release of room temperature water onto the almost cooked noodles in the midst of cooking to cool down the surface temperature of the noodles.

In another aspect there is provided a method for controlling the release of the thickening water from the operating tank and adding an equal amount of hot water of at least 96 degrees Celsius from the spare tank at regular intervals. Thereafter, water is added to the spare tank from a water inlet to be heated up to be ready for the next release.

Brief description of the Drawings

Having thus described the invention in general terms, reference will now be made to the accompanying drawings, which are not drawn to scale, and wherein Fig 1 shows an overview of how the machine looks like.

Fig. 2 shows schematically a block diagram of the controller according to one embodiment of the present invention.

Fig. 3 is a flow diagram illustrating a number of steps of a method according to one embodiment of the present invention.

Fig. 4 illustrates the detail flow of the operation of the method of fig. 3

Fig. 5 shows the assembled noodle cooking basket attached with a pivoted cylindrical stirrer.

Fig. 6 shows the schematic drawing for the operating tank and spare tank.

Detailed Description of the Invention

The present invention now will be described more fully hereinafter with reference to the accompanying drawings, in which some examples of the embodiments of the invention are shown. Indeed, these inventions may be embodied in many different forms and should not be construed as limited to the embodiments set forth herein, rather, these embodiments are provided by way of example so that this disclosure will satisfy applicable legal requirements. Like numbers refer to like elements throughout.

Fig. 2 illustrates schematically an operator interface (0) in which an embodiment of the present invention is implemented. The interface comprises a PLC circuit as well as input/output units in the form of a touch screen control & display(1), bracket (4) driven by a stepper motor with controller (3),

noodle cooking basket attached with a pivoted cylindrical stirrer (4a) and solenoid valves (5a & 6a) as shown in Fig. 1

The method according to the present invention will in general reside in the form of software instructions, together with other software components necessary for the operation of the interface, in the memory of the interface.

Turning now to Figs 3 and 4, a method according to one embodiment of the invention will be described in terms of a number of steps to be taken by controlling software in an interface such as the interface (0) described above in connection with Fig. 2

The exemplifying method starts at a point in time when a touch action, for example tapping performed on the touch screen control & display (1) is sensed by the sensors input (2). Depending on the input selected, the controller (3) will send instructions on the motion sequence configuration to motor control output (4), said motion sequence configuration corresponding to the various noodle types. The controller (3) will lower the noodle cooking basket (4a) vertically into the operating tank of boiling water (5) and starts to move in a horizontal motion. This horizontal motion will cause the pivoted cylindrical stirrer in the basket to move in tandem like a pendulum.

After the specified duration, the noodle cooking basket attached with a pivoted cylindrical stirrer (4a) is lifted out of the operating tank (5) and room temperature water is showered on the noodles from water spray (4b), the noodle cooking basket attached with a pivoted cylindrical stirrer (4a) moving horizontally all the time, stirring and spreading the noodles. The noodle cooking basket attached with a pivoted cylindrical stirrer (4a) is lowered once again into the operating tank (5) for another specified duration to reheat the surface of the cooked noodles, after which the noodle cooking basket is restored back to its start position, completing the cooking process.

Fig 6 shows the schematic diagram of the operating and spare tanks. The temperature in the operating tank (5) is maintained between 96 -98 deg Celsius through the use of thermocouple, which will cut out heating at 98 deg Celsius and restart reheating when the temperature drops to 96 degree Celsius. An additional safeguard to prevent noodles being cooked at temperatures below 96 degree Celsius, controller (3) will check whether the prevailing temperature of operating tank (5) is at least 96 deg Celsius before initiating motion sequence.

The numerical counter controlling water release is incremented by one, which is then compared with a pre-set value. If it matches, solenoid valve (5a) located on the operating tank (5) will be turn on to discharge water. At the same time, solenoid valve (6a) located on the spare tank (6) will also turn on to discharge an equal amount of hot water into operating tank (5).

Claims

1. A method of controlling a noodle cooking basket attached with a pivoted cylindrical stirrer comprising a control panel, Stepper motor, bracket, a water sprayer, a operating tank and a spare tank, the method comprising the steps of : determining a type of noodle being selected, said type of noodle being one of at least a thin egg noodle type and a thick egg noodle type, and depending on the determined type of noodle, activating a noodle cooking basket attached with a pivoted cylindrical stirrer that is hooked on a bracket mounted on stepper motor motion sequence of a first configuration when the determined type of noodle is the thin type and activating a noodle cooking basket attached with a pivoted cylindrical stirrer that is hooked on a bracket mounted on stepper motor motion sequence of a second configuration when the determined type of noodle is the thick type.
2. The method according to claim 1, wherein the motion sequence of a first configuration is shorter in duration compared to the motion sequence of a second configuration.
3. A noodle cooking basket controlled with inputs from a PLC (Programmable Logic Controller or any other computer programmed) terminal determining type of noodles to be cooked, said type of noodles being one of at least thin noodles and a thick noodles.
4. A computer program product comprising readable medium having computer readable software instructions embodied therein, wherein the computer readable software instructions comprise Computer readable software instructions capable of determining a type of noodles having been selected on the control panel, said type of noodles being one of at least a thin noodle and a thick noodle.
5. The computer program product according to claim 4, wherein computer readable software instructions capable of depending on the determined type of noodle, initiate a motion sequence of a first configuration when the determined type of noodle is the thin type and initiating a motion sequence of a second configuration when the determined type of noodle is the thick type.
6. The computer program product according to claim 4, wherein Computer readable software instructions capable of depending on the determined type of noodle, initiate cold water spray onto the cooking basket.
7. The computer program product according to claim 4, wherein Computer readable software instructions capable of initiating the release of cold water into the spare tank to heat up to a minimum temperature of 96 deg C.