SUMMARY OF THE INVENTION

The present invention seeks to provide a highly efficient and cost- effective system for automated on-demand baking.

There is thus provided in accordance with a preferred embodiment of the present invention an automated, on-demand baking system including a computer controllable injector configured to be operative to programmably inject liquid baking ingredients through a wall of and into a mixing, baking and dispensing container, a computer controllable rotator configured to be operative to programmably rotate the mixing, baking and dispensing container containing baking ingredients in a vertical plane of the container, thereby mixing the baking ingredients into a dough, a heating generator operative to cause baking of the dough in the mixing, baking and dispensing container and a controller operative to govern the operation of the computer controllable injector, the computer controllable rotator and the heating generator.

Preferably, the computer controllable rotator includes a rotating drive motor and a drive shaft coupled to a container support and the computer controllable injector injects the liquid baking ingredients along an injection pathway that is generally coaxial with the drive shaft.

In accordance with a preferred embodiment of the present invention the computer controllable rotator includes a rotating drive motor and a drive shaft coupled to a container support and the computer controllable injector injects the liquid baking ingredients along an injection pathway that lies above the drive shaft.

Preferably, the controller is associated with a container recognition subsystem and is operative to permit operation of at least one of the computer controllable rotator and the computer controllable injector only when a recognized container is in operative engagement with the computer controllable injector.

There is also provided in accordance with another preferred embodiment of the present invention an automated, on-demand baking method including providing dry baking ingredients in a mixing, baking and dispensing container, inserting liquid baking ingredients into the mixing, baking and dispensing container through a needle which penetrates the mixing, baking and dispensing container, mixing the liquid baking

ingredients and the dry baking ingredients into a dough by rotating the mixing, baking and dispensing container in a vertical plane of the container, baking the dough in the mixing, baking and dispensing container to produce an edible baked product; and thereafter dispensing the edible baked product in the mixing, baking and dispensing container.

Preferably, the providing dry baking ingredients in a mixing, baking and dispensing container includes supplying the dry baking ingredients from a single unit storage container to the mixing, baking and dispensing container. Alternatively, the providing dry baking ingredients in a mixing, baking and dispensing container includes storing the dry baking ingredients in the mixing, baking and dispensing container.

In accordance with a preferred embodiment of the present invention the inserting liquid baking ingredients into the mixing, baking and dispensing container through a needle which penetrates the mixing, baking and dispensing container employs a needle which initially penetrates a wall of the mixing, baking and dispensing container, thereafter injects the liquid baking ingredients into the container and thereafter is withdrawn from the container. Additionally, the inserting liquid baking ingredients into the mixing, baking and dispensing container through a needle which penetrates the mixing, baking and dispensing container employs a needle which initially penetrates a wall of the mixing, baking and dispensing container, thereafter injects the liquid baking ingredients into the container at a location in the container located above the dry ingredients and in which the dry ingredients are not currently present and thereafter is withdrawn from the container.

Preferably, the mixing the liquid baking ingredients and the dry baking ingredients into a dough in the mixing, baking and dispensing container includes an initial stage in which the liquid baking ingredients and the dry baking ingredients are mixed when they are both located below the location in the container at which the needle penetrated the container. Additionally, the mixing the liquid baking ingredients and the dry baking ingredients into a dough in the mixing, baking and dispensing container includes a further stage at which the dough is initially formed and generally flowable liquid baking ingredients are no longer present in the mixing, baking and dispensing container and the dough is no longer always below the location in the container at which the needle penetrated the container.

CLAIMS

1. An automated, on-demand baking system comprising:

a computer controllable injector configured to be operative to programmably inject liquid baking ingredients through a wall of and into a mixing, baking and dispensing container;

a computer controllable rotator configured to be operative to programmably rotate said mixing, baking and dispensing container containing baking ingredients in a vertical plane of the container, thereby mixing said baking ingredients into a dough;

a heating generator operative to cause baking of said dough in said mixing, baking and dispensing container; and

a controller operative to govern the operation of said computer controllable injector, said computer controllable rotator and said heating generator.

2. An automated, on-demand baking system according to claim 1 and wherein:

said computer controllable rotator includes a rotating drive motor and a drive shaft coupled to a container support; and

said computer controllable injector injects said liquid baking ingredients along an injection pathway that is generally coaxial with said drive shaft.

3. An automated, on-demand baking system according to claim 1 and wherein:

said computer controllable rotator includes a rotating drive motor and a drive shaft coupled to a container support; and

said computer controllable injector injects said liquid baking ingredients along an injection pathway that lies above said drive shaft.

4. An automated, on-demand baking system according to any of claims 1 - 3 and wherein said controller is associated with a container recognition subsystem and is operative to permit operation of at least one of said computer controllable rotator and

said computer controllable injector only when a recognized container is in operative engagement with said computer controllable injector.

5. An automated, on-demand baking method comprising:

providing dry baking ingredients in a mixing, baking and dispensing container;

inserting liquid baking ingredients into said mixing, baking and dispensing container through a needle which penetrates said mixing, baking and dispensing container;

mixing said liquid baking ingredients and said dry baking ingredients into a dough by rotating said mixing, baking and dispensing container in a vertical plane of the container;

baking said dough in said mixing, baking and dispensing container to produce an edible baked product; and thereafter

dispensing said edible baked product in said mixing, baking and dispensing container.

6. An automated, on-demand baking method according to claim 5 and wherein said providing dry baking ingredients in a mixing, baking and dispensing container includes supplying said dry baking ingredients from a single unit storage container to said mixing, baking and dispensing container.

7. An automated, on-demand baking method according to claim 5 and wherein said providing dry baking ingredients in a mixing, baking and dispensing container includes storing said dry baking ingredients in said mixing, baking and dispensing container.

8. An automated, on-demand baking method according to any of claims 5 -7 and wherein said inserting liquid baking ingredients into said mixing, baking and dispensing container through a needle which penetrates said mixing, baking and dispensing container employs a needle which initially penetrates a wall of said mixing, baking and dispensing container, thereafter injects said liquid baking ingredients into said container and thereafter is withdrawn from said container.

9. An automated, on-demand baking method according to any of claims 5 - 7 and wherein said inserting liquid baking ingredients into said mixing, baking and dispensing container through a needle which penetrates said mixing, baking and dispensing container employs a needle which initially penetrates a wall of said mixing, baking and dispensing container, thereafter injects said liquid baking ingredients into said container at a location in said container located above said dry ingredients and in which said dry ingredients are not currently present and thereafter is withdrawn from said container.

10. An automated, on-demand baking method according to claim 9 and wherein said mixing said liquid baking ingredients and said dry baking ingredients into a dough in said mixing, baking and dispensing container includes an initial stage in which said liquid baking ingredients and said dry baking ingredients are mixed when they are both located below said location in said container at which said needle penetrated said container.

11. An automated, on-demand baking method according to claim 10, wherein the initial stage comprises rotating said mixing, baking and dispensing container in the vertical plane of the container with amplitude of about 20 degrees from the vertical axis.

12. An automated, on-demand baking method according to claim 10 and wherein said mixing said liquid baking ingredients and said dry baking ingredients into a dough in said mixing, baking and dispensing container includes a further stage at which said dough is initially formed and generally flowable liquid baking ingredients are no longer present in said mixing, baking and dispensing container and said dough is no longer always below said location in said container at which said needle penetrated said container.

13. An automated, on-demand baking method according to claim 12, wherein the further stage comprises rotating said mixing, baking and dispensing container through 360 degrees in the vertical plane of the container.