BEVERAGE PREPARATION MACHINE

Field of the invention

The present invention relates to a machine preparing beverage from single dose containers.

Background of the invention

Systems for the preparation of a beverage comprise a beverage preparation machine and a capsule. The capsule comprises a single-serving of a beverage forming precursor material, e.g. ground coffee or tea. The beverage preparation machine is arranged to execute a beverage preparation process on the capsule, typically by the exposure of pressurized, heated water to said precursor material. Processing of the capsule in this manner causes the at least partial extraction of the precursor material from the capsule as the beverage.

This configuration of beverage preparation machine has increased popularity due to 1) enhanced user convenience compared to a conventional beverage preparation machines (e.g. compared to a manually operated stove-top espresso maker) and 2) an enhanced beverage preparation process, wherein preparation information encoded by a code on the capsule is read by the machine to define a recipe, and the recipe is used by the machine to optimise the preparation process in a manner specific to the capsule. In particular, the encoded preparation information may comprise operating parameters selected in the beverage preparation process, including : fluid temperature, fluid pressure, preparation duration and fluid volume.

Different types of codes exist with different corresponding types of reading processes. For some codes, in particular codes that are read optically, the machine may implement a process to read the code that needs a contact of the code with the code reader of the machine.

US2017196397A1 discloses a capsule processing unit of a beverage preparation machine, which comprises an extraction unit to extract an ingredient of a beverage from a capsule during preparation of the beverage. The capsule processing unit comprising: a code reading system comprising a code reader and a code reading mechanism, the code reading mechanism configured to effect reading of a code of a capsule by the code reader by imparting relative movement between a code reader and capsule; a capsule transfer mechanism configured to effect transfer of a capsule to the extraction unit; an actuator unit to actuate the code reading system to read the code and to actuate the capsule transfer mechanism to effect transfer of the capsule.

A similar code reading mechanism is also discloses in EP3838080A1.

WO2016116359A1 discloses a code reading mechanism of a beverage preparation machine. The code reading mechanism comprises a code reader support, the code reader support comprising a support portion and a support body, the support portion to support the code

reader, the support portion movable relative the support body and biased to abut a supported receptacle to apply a biasing force thereto, a receptacle engagement unit to support a receptacle, the receptacle engagement unit configured to apply a restraining force to restrain a supported receptacle, the restraining force being greater than the biasing force, an actuator unit to supply rotary motion to rotate, about an axis of rotation, at least part of the receptacle engagement unit to rotate a supported receptacle or to supply rotary motion to the code reader support, the said rotary motion to effect relative rotation between a supported receptacle and the code reader support to read a code arranged on a supported receptacle.

US2013099597A1 discloses a brewing unit of a beverage preparation machine which has a seat for receiving a capsule comprising an electrically conductive material; and a capsule sensing electric circuit with first and second electric connectors. The first electric connector and the second electric connector are electrically connected through the electrically conductive material of the capsule when the capsule is present in the seat and electrically disconnected when the capsule is not in the seat so as to close and interrupt, respectively, the capsule sensing electric circuit.

Capsules can be made of different materials. Preferably, these materials are airtight in order to protect the beverage precursor from oxygen before the capsule is used. These materials can present different mechanical properties : some capsules can be made of rigid material whereas other capsules can be made of soft and deformable material, such as a material comprising a paper material. In case of an airtight capsule made of a soft and deformable material, it can be observed that the shape of the walls of the capsule vary under the effect of a certain difference of altitudes between the place where the capsule is manufactured and the place where the capsule is used for preparing a beverage. In particular, the walls of the capsule can inflate when the altitude is higher at use than at manufacturing. If the capsule comprises an optical code on an inflated wall, the process of reading may be impacted by this deformation of the wall and the reading may not be correct.

An object of the present invention is to solve this problem.