Claims

1. Method for the automatic preparation of flat breads by a machine, comprising the steps of
   a. feeding the machine with capsules (3) which contain each a portion of dough (28) for the production of one single flat bread, the capsules (3) being hermetically closed,
   b. opening and emptying the first capsule (3) arriving,
   c. receiving the down-falling dough (28) from the opened capsule (3) on a baking plate (8),
   d. squeezing or rolling out the dough (28) portion on said baking plate (8) by a second plate (7) or by a roller or squeezing the dough portion (28) in between two baking plates (7,8) and baking it,
   e. releasing the finished flat bread into a recipient compartment (9).

2. Method for the automatic preparation of flat breads by a machine according to claim 1, comprising in the steps
   a. feeding the machine with capsules (3) which have the form and shape of cups, the opening of the cups being sealed by a gas-tight foil (18), in upside-down position on a conveyor belt (40) or gliding plate,
   b. opening the first cup-shaped capsule (3) by tearing off its foil by two adjacently positioned opposite rotating shafts (43,44) while the capsule (3) is conveyed over these shafts (43,44), then positioning the opened capsule (3) on a frame (64) or holding ring (45), followed by the steps c. to e.

3. Method for the automatic preparation of flat breads by a machine according to claim 1, comprising in the steps
   a. feeding the machine with collapsible capsules (3) which have the form and shape of cups, the opening of the cups being sealed by a gas-tight foil (18), stored in upright position in a stack in a feeding compartment (17),

then gripping the lowest capsule (3) of that stack with fingers (19) of a rotating disc (20), then rotating it around 180° to bring the capsule (3) in upside down position on a holding plate with an opening,

b. opening and emptying the capsule (3) by a plunger (12) which compresses the capsule (3) from above so the foil (18) is cut open by a circular knife (66) or by bursting along weaking lines (51) in the foil (18), followed by the steps c. to e.

4. Method for the automatic preparation of flat breads by a machine according to claim 1, comprising in the steps

a. feeding the machine with capsules (3) made of two hemispheric shells (52) with knobs (53) at their zeniths, by guiding these knobs (53) along rails (69),

b. opening the first such capsule (3) by pulling apart the two hemispheric shells (52) by pushing the capsules (3) along the rails (6) where they are spreading apart so the dough (28) falls down, followed by the steps c. to e.

5. Method for the automatic preparation of flat breads by a machine according to claim 1, comprising in the steps

a. feeding the machine with capsules (3) made of two shell-like halves (70) with orifices (71) at the outer side of the shell-like halves (70), so the orifices (71) will hook onto swivelable rail hooks (73), initially in vertical position,

b. swiveling these rail hooks (73) away from each other so the halves (70) are being pulled apart, the dough (28) falls down by gravity onto a pressing and baking plate (8) and while the rail hooks (73) further swivel over more than 120° from their initial vertical position, dropping the two halves (70) from the rail hooks (73) by gravity, so they fall into a recipient compartment (6), followed by steps c. to e.

6. Method for the automatic preparation of flat breads by a machine according to one of the preceding claims, after the steps a., b. and c., comprising the following steps:

d. squeezing and baking the dough (28) portion between two pressing and baking plates (7,8) which are moving parallel to each other while the upper plate (7) is actuated mechanically, hydraulically or pneumatically by a knee-knuckle mechanism (34) comprising several levers (35,36) connected by joints (37), in order to press it against the lower, stationary plate (8) and baking the dough (38), then lifting the upper plate (7) away,

e. releasing the finished flat bread into a recipient compartment (9) by pulling the lower plate (8) along guide rails (26) so the plate (8) will be inclined and the finished flat bread therefore glides down trough a dispenser slit (27) in the housing (1) of the machine or into a recipient compartment (9).

7. Machine for the automatic preparation of flat breads, comprising a feeding system and compartment (2) for conveying a number of capsules (3) which are hermetically sealed and containing each a portion of dough (28) for producing one single flat bread, an opening system for opening the each first arriving capsule (3) by pressure or by cutting means so the dough (28) inside the capsule (3) falls out of the capsule (3) and down onto a heatable baking plate (8), a second heating plate (7), whereby at least one of the two heating plates (7,8) is moveable for opening and closing and thereby varying the distance in between the two heating plates (7,8), and a recipient compartment (9) for receiving the finished flat breads after opening the heating plates (7,8).

8. Machine for the automatic preparation of flat breads according to claim 7, characterized in that the feeding system comprises a conveyer belt (40) for moving upside-down positioned capsules (3) of cup-like shape, sealed with a foil (18) to an opening system which consists of two adjacent shafts (43,44) that rotate in opposite directions for tearing the foil (18) in downward direction while the respective capsule (3) is moving over them, a holding ring onto which the opened capsule (3) is movable, for the dropping of the dough (28), and at least one of the heatable baking plates (7,8) being swivelable against the other by means of a movable piston, and a conveying system for conveying the emptied capsules (3) into a waste recipient compartment (6).

9. Machine for the automatic preparation of flat breads according to claim 7, characterized in that the feeding system comprises a compartement (2) for receiving a stack of cup-shaped capsules (3), the conveyer and opening system comprising a disc (20) rotatable around a horizontal axis (25) and the disc (20) having several fingers (19) with extend in perpendicular direction from the disc (20) to grip a capsule (3) between two fingers (19), a cylindrical wall (22) for moving the capsules (3) with their foil-side along this wall, and and opening system comprising a holding plate with an opening for positioning the capsule (3) upside down on said holding plate by rotating the disc (20) until such position of the capsule (3) is reached, the opening system further comprising a plunger (12) for pressing from above onto the bottom side of the capsule (3), further a circular knife (66) with a diameter of more than the opening of the capsule (3), for pressing the capsule (3) over this knife and partly opening the foil, and a knee-knuckle press mechanism (34) with several levers (35,36) connected with joints (37) for pressing the pressing and baking plates (7,8) by a mechanical, hydraulic or pneumatic actuator parallel to each other, and heating means in the baking plates (7,9) comprising resistive heating coils, inductive coils, or a the heating menas comprising a gas burner for heating up said plates (7,8).

10. Machine for the automatic preparation of flat breads according to one of claims 7 to 10, characterized in that the heatable baking plates (7,8) are made of induction heatable material and equipped with induction coils, and the apparatus further comprising an HF-generator for the induction coils.

11. Machine for the automatic preparation of flat breads according to one of the preceding claims 7 to 9, characterized in that the heatable baking plates are made electrically heatable by corresponding electrical resistive heating coils.

12. Capsule (28) for receiving a portion of dough for producing a single flat bread, characterized in that the capsule (28) comprises two parts which are sealingly closable for tighly and gas-tight encapsulating a dough portion (28) for making one single flats bread.

13. Capsule for receiving a portion of dough (28) for producing a single flat bread according to claim 12, characterized in that the capsule comprises a hollow part in form of a dome-like, ball-like part or a cylindrical or conical cup-like can made of a laminate and an even sealing foil (18) to be sealingly welded onto the hollow part, for gas-tightly encapsulating a portion of dough (28), and that the capsule (3) is collapsible along pre-determined folding lines (51).

14. Capsule for receiving a portion of dough (28) for producing a single flat bread according to claim 12, characterized in that the capsule comprises two cylindrical cans of slightly different diameter so the smaller one is pluggable into larger one, and then sealingly closable by welding or gluing, and then encapsulating a portion of dough (28) for one single flat bread.

15. Capsule for receiving a portion of dough (28) for producing a single flat bread according to one of claim 12, characterized in that the capsule consists of soft, bio degradable, flexible, rigid, semi-rigid material or a combination of them.

AMENDED CLAIMS
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1. Method for the automatic preparation of flat breads by a machine that comprises the steps of
   a. receiving a down-falling dough portion (28) on a baking plate (8),
   b. squeezing or rolling out the dough portion (28) on said baking plate (8) by a second plate (7) or by a roller, or squeezing the dough portion (28) in between two baking plates (7,8) and baking it,
   c. releasing the finished flat bread into a recipient compartment (9),

   characterized in that

   before step a), each single dough portion (28) fed to the machine is contained in a hermetically closed capsule (3) which is being opened and emptied by the machine immediately before releasing the dough portion (28) for its down-falling onto the baking plate (8).

2. Method for the automatic preparation of flat breads by a machine according to claim 1, *characterized in that*,

   before step a), the dough portions (28) are being fed in capsules (3) which have the form and shape of cups, sealed by a gas-tight foil (18), and are being fed in upside-down position on a conveyor belt (40) or gliding plate, and then each capsule (3) is being opened by tearing off its foil by two adjacently positioned opposite rotating shafts (43,44) while the capsule (3) is being conveyed over these shafts (43,44), then the opened capsule (3) is being positioned on a frame (64) or holding ring (45), followed by the steps a), b) and c).

3. Method for the automatic preparation of flat breads by a machine according to claim 1, *characterized in that*,

   before step a), the dough portions (28) are being fed in collapsible capsules (3) which have the form and shape of cups which are being sealed by a gas-

tight foil (18) and stored in upright position in a stack in a feeding compartment (17) of the machine, whereby the opening and emptying of the capsules (3) is being performed by gripping the lowest capsule (3) of that stack with fingers (19) of a rotating disc (20), then rotating it around 180° to bring the capsule (3) in upside down position on a holding plate with an opening, then opening and emptying the capsule (3) by a plunger (12) which compresses the capsule (3) from above so the foil (18) is cut open by a circular knife (66) or by bursting along weakening lines (51) in the foil (18), followed by the steps a) to c).

4. Method for the automatic preparation of flat breads by a machine according to claim 1, *characterized in that,*
before step a), the dough portions (28) are contained in capsules (3) made of two hemispheric shells (52) with knobs (53) at their zeniths, and that these capsules (3) are being fed in the machine by guiding these knobs (53) along rails (69), then the opening and emptying of these capsules (3) is being performed by pushing the capsules (3) along spreading apart rails (6) so the two hemispheric shells (52) are being pulled apart and consequently, the dough (28) falls down, followed by the steps a) to c).

5. Method for the automatic preparation of flat breads by a machine according to claim 1, characterized in that,
before step a), the dough portions (28) are contained in capsules (3) made of two shell-like halves (70) with orifices (71) at the outer side of the shell-like halves (70) and these capsules (3) are being fed to the machine so that the orifices (71) are being hooked onto swivelable rail hooks (73), initially in vertical position, then swiveling these rail hooks (73) away from each other so the halves (70) are being pulled apart, and the dough (28) falls down by gravity, while the rail hooks (73) further swivel over more than 120° from their initial vertical position, consequently dropping the two halves (70) from the rail hooks (73) by gravity, so they fall into a recipient compartment (6), followed by steps a) to c).

6. Method for the automatic preparation of flat breads by a machine according to one of the preceding claims, *characterized in that,*
in step b), the squeezing and baking the dough (28) portion between the two pressing and baking plates (7,8) which are moving parallel to each other while the upper plate (7) is actuated mechanically, hydraulically or pneumatically by a knee-knuckle mechanism (34) comprising several levers (35,36) connected by joints (37), in order to press it against the lower, stationary plate (8) and baking the dough (38), then lifting the upper plate (7) away, and in step c), the releasing the finished flat bread into a recipient compartment (9) is being performed by pulling the lower plate (8) along guide rails (26) so the plate (8) will be inclined and the finished flat bread therefore glides down through a dispenser slit (27) in the housing (1) of the machine or into a recipient compartment (9).

7. Machine for the automatic preparation of flat breads, comprising a first heatable baking plate (8) and a second heating plate (7), whereby at least one of the two heating plates (7,8) is moveable for opening and closing and thereby varying the distance in between the two heating plates (7,8), and a recipient compartment (9) for receiving the finished flat breads after opening the heating plates (7,8), characterized in that the machine comprises a feeding system and compartment (2) for receiving and conveying a number of capsules (3) which are hermetically sealed and containing each a portion of dough (28) for producing one single flat bread, further comprising an opening system for opening the each first arriving capsule (3) by pressure or by cutting means so the dough (28) inside the capsule (3) falls out of the capsule (3) and down onto the heatable baking plate (8).

8. Machine for the automatic preparation of flat breads according to claim 7, characterized in that the feeding system comprises a conveyer belt (40) for moving upside-down positioned capsules (3) of cup-like shape, sealed with a foil (18) to an opening system which consists of two adjacent shafts (43,44) that rotate in opposite directions for tearing the foil (18) in downward direction while the respective capsule (3) is moving over them, a holding ring onto

the other by means of a movable piston, and a conveying system for conveying the emptied capsules (3) into a waste recipient compartment (6).

9. Machine for the automatic preparation of flat breads according to claim 7, characterized in that the feeding system comprises a compartement (2) for receiving a stack of cup-shaped capsules (3), the conveyer and opening system comprising a disc (20) rotatable around a horizontal axis (25) and the disc (20) having several fingers (19) with extend in perpendicular direction from the disc (20) to grip a capsule (3) between two fingers (19), a cylindrical wall (22) for moving the capsules (3) with their foil-side along this wall, and opening system comprising a holding plate with an opening for positioning the capsule (3) upside down on said holding plate by rotating the disc (20) until such position of the capsule (3) is reached, the opening system further comprising a plunger (12) for pressing from above onto the bottom side of the capsule (3), further a circular knife (66) with a diameter of more than the opening of the capsule (3), for pressing the capsule (3) over this knife and partly opening the foil, and a knee-knuckle press mechanism (34) with several levers (35,36) connected with joints (37) for pressing the pressing and baking plates (7,8) by a mechanical, hydraulic or pneumatic actuator parallel to each other, and heating means in the baking plates (7,9) comprising resistive heating coils, inductive coils, or heating means comprising a gas burner for heating up said plates (7,8).

10. Machine for the automatic preparation of flat breads according to one of claims 7 to 9, characterized in that the heatable baking plates (7,8) are made of induction heatable material and equipped with induction coils, and the apparatus further comprising an HF-generator for the induction coils.

11. Machine for the automatic preparation of flat breads according to one of the preceding claims 7 to 9, characterized in that the heatable baking plates are made electrically heatable by corresponding electrical resistive heating coils.

12. Capsule (28) for receiving a portion of dough for producing a single flat bread, characterized in that the capsule (28) comprises two parts which are sealingly closable for gas-tightly encapsulating a dough portion (28) for making one single flat bread.

13. Capsule for receiving a portion of dough (28) for producing a single flat bread according to claim 12, characterized in that the capsule comprises a hollow part in form of a dome-like, ball-like part or a cylindrical or conical cup-like can made of a laminate and an even sealing foil (18) to be sealingly welded onto the hollow part, for gas-tightly encapsulating a portion of dough (28), and that the capsule (3) is collapsible along pre-determined folding lines (51).

14. Capsule for receiving a portion of dough (28) for producing a single flat bread according to claim 12, characterized in that the capsule comprises two cylindrical cans of slightly different diameter so the smaller one is pluggable into larger one, and then sealingly closable by welding or glueing, and then encapsulating a portion of dough (28) for one single flat bread.

15. Capsule for receiving a portion of dough (28) for producing a single flat bread according to claim 12, characterized in that the capsule consists of soft, bio-degradable, flexible, rigid, semi-rigid material or a combination of them.

What is claimed is:

1. Method for the automatic preparation of flat breads by a machine, the method comprising the steps of
   a. receiving a down-falling dough portion on a baking plate,
   b. squeezing or rolling out the dough portion on said baking plate by a second plate or by a roller, or squeezing the dough portion in between two baking plates and baking it,
   c. releasing the finished flat bread into a recipient compartment, and
   further comprising
   before step a), each single dough portion fed to the machine is contained in a hermetically closed capsule which is opened and emptied by the machine immediately before releasing the dough portion for its down-falling onto the baking plate.

2. Method for the automatic preparation of flat breads by a machine according to claim 1, further comprising,
   before step a), the dough portions are fed into the machine in capsules which have the form and shape of cups, sealed by a gas-tight foil, and are fed in upside-down position on a conveyor belt or gliding plate, and then each capsule is opened by tearing off its foil by two adjacently positioned opposite rotating shafts while the capsule is conveyed over these shafts, then the opened capsule is positioned on a frame or holding ring, followed by the step a), then under b) pressing and heating the dough portion between the heating plates in stages at a temperature of 200°C up to 260°C by initially pressing the heating plates to a distance of each other corresponding to the thickness of the final product, and immediately drive them apart to about a double distance and keep them so for 5 to 15 seconds, and then again pressing them to the initial distance for 3 to 8 seconds, followed by step c).

3. Method for the automatic preparation of flat breads by a machine according to claim 1, further comprising,

before step a), the dough portions are fed into the machine in collapsible capsules which have the form and shape of cups which are sealed by a gas-tight foil and stored in upright position in a stack in a feeding compartment of the machine, whereby the opening and emptying of the capsules is performed by gripping the lowest capsule of that stack with fingers of a rotating disc, then rotating it around 180° to bring the capsule in upside down position on a holding plate with an opening, then opening and emptying the capsule by a plunger which compresses the capsule from above so the foil is cut open by a circular knife or by bursting along weakened lines in the foil, followed by the step a), then under b) pressing and heating the dough portion between the heating plates in stages at a temperature of 200°C up to 260°C by initially pressing the heating plates to a distance of each other corresponding to the thickness of the final product, and immediately drive them apart to about a double distance and keep them so for 5 to 15 seconds, and then again pressing them to the initial distance for 3 to 8 seconds, followed by step c).

4. Method for the automatic preparation of flat breads by a machine according to claim 1, further comprising,
before step a), the dough portions are contained in capsules made of two hemispheric shells with knobs at their zeniths, and that these capsules are fed into the machine by guiding the knobs along rails, then the opening and emptying of these capsules is performed by pushing the capsules along spreading apart rails so the two hemispheric shells are pulled apart so the dough falls down, followed by the step a), then under b) pressing and heating the dough portion between the heating plates in stages at a temperature of 200°C up to 260°C by initially pressing the heating plates to a distance of each other corresponding to the thickness of the final product, and immediately drive them apart to about a double distance and keep them so for 5 to 15 seconds, and then again pressing them to the initial distance for 3 to 8 seconds, followed by step c).

5. Method for the automatic preparation of flat breads by a machine according to claim 1, further comprising,
before step a), the dough portions are contained in capsules made of two shell-

like halves with orifices at the outer side of the shell-like halves and these capsules are fed into the machine so that the orifices are hooked onto swivelable rail hooks, initially in vertical position, then swiveling these rail hooks away from each other so the halves are pulled apart, and the dough falls down by gravity, while the rail hooks further swivel over more than 120° from their initial vertical position, dropping the two halves from the rail hooks by gravity, so they fall into a recipient compartment, followed by step a), then under b) pressing and heating the dough portion between the heating plates in stages at a temperature of 200°C up to 260°C by initially pressing the heating plates to a distance of each other corresponding to the thickness of the final product, and immediately drive them apart to about a double distance and keep them so for 5 to 15 seconds, and then again pressing them to the initial distance for 3 to 8 seconds, followed by step c).

6. Method for the automatic preparation of flat breads by a machine according to any one of claims 1-5, further comprising
in step b),
squeezing and baking the dough portion between two pressing and baking plates which are moving parallel to each other while the upper plate is actuated mechanically, hydraulically or pneumatically by a knee-knuckle mechanism comprising several levers connected by joints, in order to press it against the lower, stationary plate and baking the dough, then lifting the upper plate away, and in step c), the releasing of the finished flat bread into a recipient compartment is performed by pulling the lower plate along guide rails so the plate will be inclined and the finished flat bread therefore glides down through a dispenser slit in the housing of the machine or into a recipient compartment.

7. Machine for the automatic preparation of flat breads, comprising a first heatable baking plate and a second heating plate, whereby at least one of the two heating plates is moveable for opening and closing and thereby varying the distance in between the two heating plates, and a recipient compartment for receiving the finished flat breads after opening the heating plates, wherein the machine comprises a feeding system and compartment for receiving and conveying a

number of capsules which are hermetically sealed and containing each a portion of dough for producing one single flat bread, further comprising an opening system for opening the each first arriving capsule by pressure or by cutting means so the dough inside the capsule falls out of the capsule and down onto the heatable baking plate.

8. Machine for the automatic preparation of flat breads according to claim 7, wherein the feeding system comprises a conveyer belt for moving upside-down positioned capsules of cup-like shape, sealed with a foil to an opening system which consists of two adjacent shafts that rotate in opposite directions for tearing the foil in downward direction while the respective capsule is moving over them, a holding ring onto which the opened capsule is movable, for the dropping of the dough, and at least one of the heatable baking plates being swivelable against the other by means of a movable piston, and control means for varying the distance of the heating plates while baking between 2mm and 5mm along a predetermined measure along time, and a conveying system for conveying the emptied capsules into a waste recipient compartment.

9. Machine for the automatic preparation of flat breads according to claim 7, wherein the feeding system comprises a compartment for receiving a stack of cup-shaped capsules, the conveyer and opening system comprising a disc rotatable around a horizontal axis and the disc having several fingers with extend in perpendicular direction from the disc to grip a capsule between two fingers, a cylindrical wall for moving the capsules with their foil-side along this wall, and opening system comprising a holding plate with an opening for positioning the capsule upside down on said holding plate by rotating the disc until such position of the capsule is reached, the opening system further comprising a plunger for pressing from above onto the bottom side of the capsule, further a circular knife with a diameter of more than the opening of the capsule, for pressing the capsule over this knife and partly opening the foil, and a knee-knuckle press mechanism with several levers connected with joints for pressing the pressing and baking plates by a mechanical, hydraulic or pneumatic actuator parallel to each other, and control means for varying the distance of the heating plates

while baking between 2mm and 5mm along a predetermined measure along time, and heating means in the baking plates comprising resistive heating coils, inductive coils, or heating means comprising a gas burner for heating up said plates.

10. Machine for the automatic preparation of flat breads according to one of claims 7 to 9, wherein the heatable baking plates are made of induction heatable material and equipped with induction coils, and the apparatus further comprising an HF-generator for the induction coils.

11. Machine for the automatic preparation of flat breads according to one of the preceding claims 7 to 9, wherein the heatable baking plates are made electrically heatable by corresponding electrical resistive heating coils.