

Method for producing a beverage-ingredient capsule for the preparation of a beverage and apparatus

The present invention relates to the manufacturing of a beverage-ingredient capsule used for preparing a beverage in a beverage producing device, such as a coffee machine. The method also relates to an apparatus for implementing the method.

Beverage producing systems have been developed for many years on the basis of portioned beverages, in particular, capsules containing a predetermined dose of beverage ingredient such as coffee, tea, milk powder and the like. The numerous advantages of such systems have been widely recognized, in particular, their convenience of use, clean operations and better controlled quality of the brewed beverage delivered.

The term "capsule" is here used to designate packets, pods or cartridges as well, comprising in general a mass of ingredient and an outer (removable or non-removable) package.

Capsules such as coffee pods, wherein the ingredient is compacted therein, are known, for example, in EP0602203B1. The capsule can take the form of a flexible sachet containing individual portions of ingredient powder, e.g., coffee, tea, soluble coffee, etc. The ingredient powder is compacted to form a solid cake of powder. The compacted cake of powder is sealed in a gastight package formed of two flexible foils of circular, oval or polygonal shape. When hot water is injected through one of the two foils, the opposite foil is opened under the effect of the increase of the fluid pressure inside the capsule, such as against perforating elements of a capsule holder of the beverage preparation device. Other extraction principles also encompass capsules which open solely under the effect of inside pressure or pre-opened before insertion in the device.

A capsule with a cake of compacted ingredients therein provides advantages over a capsule with loose ingredients therein. In particular, a smaller capsule can be produced for providing a similar quality of beverage, e.g., liquid coffee extract. Therefore, the capsule uses less packaging material and provides a reduced volume of waste after brewing. They can be more conveniently and more economically

packaged in large packs, e.g., in cardboard containers or flow wrap bags, to reduce shipment costs and storage space.

Co-pending European patent application No. 09164590.3 relates to a capsule for the preparation of a beverage comprising a first and second covering wall (e.g., foil) connected at a peripheral seam for forming an internal cavity containing a beverage ingredient and a contactless identifying element for identifying the capsule by detecting means of a beverage producing device, wherein the identifying element is placed inside the ingredient powder. In particular, the identifying element can be an insert embedding glass-coated metal-alloy wire(s) providing magnetic characteristics. This invention proposes a capsule detecting solution, e.g., that provides more freedom on the design of the capsule, ensures a more reliable signal detection and is less prone to damage or deterioration of the identifier, e.g., during handling of the capsule.

Another co-pending European patent application No. 09164586.1 relates to a capsule wherein the identifying insert is oriented along its longest dimension substantially orthogonally relative to the transversal plane passing along the seam of the capsule.

Therefore, there is a need for producing a capsule with an insert, such as an identification element, precisely and reliably positioned in the compacted mass of ingredient.

There is also a need for producing the capsule, in particular, the compacted mass or cake, at quick pace on the manufacturing line. One problem of positioning an insert in a compacted mass of powder comes from the ability to place the insert in a precisely defined position but also the ability to maintain this insert in this position during all the steps of production. Furthermore, the insert should not move in the capsule after its manufacturing, i.e., before or during its use in the beverage machine. In case the insert would be an identification element as in co-pending patent applications No. 09164590.3 and No. 09164586.1, a deviation of the position of the insert in the capsule would potentially lead to problems of detection of the insert by the detecting means of the beverage producing device or other control devices.

The present invention now fulfils these needs and resolves essentially all these problems.

For this, the invention relates to a method according to the appended independent claim(s). Additional characteristics of the method and apparatus are present in the appended dependent claims.

More particularly, the invention relates to a method for producing a beverage-ingredient capsule for the preparation of a beverage; the method comprising the steps of:

- providing a mould cavity,
- at least partially filling a mould cavity with the beverage ingredient in powdered or particulate form,
- compacting the powdered or particulate beverage ingredient in the mould cavity to obtain a compacted mass of the beverage ingredient,
- forming at least one recess in the compacted mass and,
- inserting a capsule identification insert into the said recess.

In a mode, the recess is formed while the mass of powdered or particulate beverage ingredient is being compacted.

According to the method of the invention, the forming of the recess is facilitated. Also the dimensions and shape of the recess are better geometrically defined. Also, the walls of the recess become more compact, thereby more solid and less crumbly. As a result, the insert can be well positioned and its position is more reliable and less subject to deviation or alteration during placing and/or once the insert is in place.

In an embodiment, the filling step is carried out in a single filling operation with the entire amount of powdered or particulate beverage ingredient mass required for the capsule.

The filling of the mould cavity can be done in more than one operation.

In another mode, the mould cavity is filled with less than the entire amount of powdered or particulate beverage ingredient required for the capsule before inserting the insert and thereafter feeding into the mould cavity the remainder of the required amount of powdered or particulate beverage ingredient for the capsule and further compacting the mass. In this embodiment, the mould cavity is filled with a partial mass of powdered or particulate ingredient before insertion of the insert and the mould cavity is filled with the remainder mass after insertion of the insert.

In a mode, the step of insertion of the insert is carried out after a recess dedicated for the insert has been formed. For example, once the compaction of the ingredient powder is finished, a recess is left open in the compacted mass which enables placement of the insert therein. Since the mass is compacted, the recess has walls, e.g., bottom end and tubular sidewalls that offer a relatively solid support for the insert thereby ensuring a correct and reliable position.

In another mode, the recess is formed by the insert itself preferably during its insertion in the mass of powdered or particulate ingredient. In this mode, the operation is simplified by the use of the insert for forming the recess. Furthermore, the operation can also comprise leaving the insert in place in the recess once it is formed by the insert.

In a method, the compacting step and the recess forming step are effected by pressing an outer shape forming surface and a recess forming surface against the mass of powdered or particulate beverage ingredient.

More preferably, the outer shape forming surface and the recess forming surfaces are both part of a portion of a mould, e.g., a half-mould; such that both surfaces are connected in such a manner that the two operations applied on the mass of powdered or particulate ingredient are carried out substantially during a single pressing stroke applied by the portion of mould, e.g., half-mould, onto the powder.

In a preferred mode, the recess is formed in the central region of the mass of powdered or particulate beverage ingredient. The central location of the recess is preferred for many different reasons. The recess in the centre of the mass provides

reduced risks of damaging the mass and a potentially stronger recess for receiving the insert. The insert is also better protected in the centre of the capsule inasmuch as potentially a greater mass of powdered or particulate ingredient surrounds the insert and prevents it from moving in the mass when compacted.

In a particular mode, the outer shape forming surface and recess forming surface are formed in an upper mould part. The upper mould part is preferably moved relatively to a lower mould part containing the powder mass, in the manner of a piston stroke, for providing powder compaction and for forming the recess at the same time. The external form, e.g. of the upper mould part, complementary fits in the cavity of the lower mould part causing the reduction of the size of the cavity during the stroke and consequently, compaction of the mass of powder contained therein.

The control of the compaction of the powder mass is generally made by determining the quantity of powdered or particulate ingredient filled in the cavity and by controlling the reduced size of the cavity left by the stroke between the two mould parts. Therefore, a constant compaction is generally obtained by maintaining the quantity of powder and reduced size of the cavity constant; all other possible relevant parameters (e.g., powder grind size, type of powder, etc.) being equal.

Preferably, no subsequent compacting step is necessary after said stroke. However, it can also be possible that a later compacting step of the mass of powdered or particulate ingredient and/or of capsule itself containing said ingredient, is carried out by a second stroke to complete the compaction desired or when an additional filling operation is necessary to complete the content of the final mass of powder desired for the capsule.

The compaction of the (partial or full) mass of powder is usually such that the powdered or particulate ingredient, e.g., coffee cake, forms a relatively handleable and solid piece with limited crumbliness.

The recess can be formed in any suitable location(s) of the mass of powdered or particulate beverage ingredient. Also more than one recess can be formed at the same

time in different locations of the mass. More preferably, the recess is formed in the central region of the mass of powdered or particulate beverage ingredient.

In the preferred method, the recess is formed with a flared opening. Such opening configuration of the recess takes into account the tolerance of positioning of the insert by the insert positioning device (at the operational positioning speed), e.g., an insert feeder.

Preferably, the insert is an elongate element. The insert can be an elongate element which ratio of length-to-diameter is comprised between 50:1 and 3:1. Preferably, the element is cylindrical or parallelepiped. More preferably, the insert is an identification element such as a magnetically responsive, inductive element or RFID element.

The insert has a cross-section which is substantially complementary to the cross-section of the recess. However, slight cross-sectional variation between the insert and the recess are tolerated such as if they can help anchoring the insert in the powder.

The cross-section of the insert is preferably slightly larger than the cross section of the recess for tightening the insert in the recess and therefore avoiding the insert to move during the subsequent manufacturing operations of the capsule and during all subsequent handling and use of the capsule. This size differential is also useful for taking into account the tolerances between the dimensions of the insert and the dimensions of the formed recess. For example, the element can be a small rigid stick of about 5-20 mm long and 0.5-3 mm large with its diameter being larger by about 0.01 to 0.5 mm the diameter of the recess.

In a specific mode, the mass of powdered or particulate beverage ingredient is compacted and formed in the moulding cavity to define two main opposed convex surfaces and a truncated peripheral edge.

After the steps of compacting, forming the recess and inserting the insert are completed, the compacted mass is removed from the mould cavity and loaded into a package comprising a first and second foils covering the respective main surfaces and the foils are sealed at a peripheral seam adjacent to the truncated peripheral edge.

The invention also relates to an apparatus for implementing the method, as aforementioned, comprising at least a first mould part and at least a second mould part in opposed relation and relatively moveable toward and away of each other, at least one of said mould parts comprising recess-forming means for forming at least one recess in the mass of powdered or particulate beverage ingredient while the mass is compacted between the mould parts; said apparatus comprising recess means for positioning an insert in the recess thus formed in the compacted mass of powdered or particulate beverage ingredient.

The apparatus may further comprise another mould part received around the first and second mould parts for defining a truncated peripheral edge of the compacted mass of powdered or particulate beverage ingredient.

The invention will be described in more detail in the description of the figures that follows.

Fig. 1 is a cross-section view of a capsule for the preparation of a beverage including an ingredient-powder cake and an identification insert embedded therein;

Fig. 2 is a schematic view of an apparatus for producing the ingredient-powder cake of the capsule of figure 1;

Figs. 3 to 9 illustrate a first embodiment of the process of forming the powder cake and placing the insert therein;

Figs. 3 show the beginning of filling the lower mould portion with ingredient powder;

Fig. 4 shows the mould portion when filled with loose ingredient powder before compaction;

Fig. 5 shows the punching step in the mould during the stroke;

Fig. 6 shows the powder cake with its recess after the punching step;

Fig. 7 shows the handling of the insert in the apparatus for positioning it within the compacted cake;

Fig. 8 shows the positioning of the insert in the compacted cake;

Fig. 9 shows the compacted cake with its insert being properly placed;

Figs. 10 to 17 illustrate a second embodiment of the process of forming the powder cake and placing the insert therein;

Fig. 10 shows the beginning of the powder filling operation with a partial mass of powder in a lower mould portion with ingredient powder;

Fig. 11 shows the mould portion when filled with the partial mass of loose powder just before compaction;

Fig. 12 shows the compacted partial mass of powder after a first compaction stroke,

Fig. 13 shows the positioning of the insert in the partial compacted mass;

Fig. 14 shows the second filling operation of the mould portion with the remaining mass of loose powder to complete the production of the powder cake;

Fig. 15 shows the mould portion full with powder and an insert therein just before compaction;

Fig. 16 shows the end of the second compaction of the mass of powder with the insert fully embedded therein during the second compaction stroke;

Fig. 17 shows the removal of the capsule from the lower mould.

In reference to figure 1, the capsule 1 of the invention forms a package containing ingredient-powder such as roast and ground coffee powder. The capsule can be sized

with powder suitable for preparing a beverage single or multi- serving. The capsule can be formed of a first foil 2 and a second foil 3 connected at a peripheral seam 4 and delimiting an internal cavity filled with ingredient. The capsule can (but not necessarily) be designed symmetrically along a plane passing through seam 4. The two foils may be permeable or impermeable to the liquid. If impermeable to liquid, the foils 2, 3 can be opened, such as by perforating them, before or at the time of use in the beverage producing device or removed before insertion in the device. The foils may further be impermeable to gas when a gas barrier layer is present, e.g., a layer of thin aluminium and/or EVOH. The container may further comprise one or more internal filter layer(s) such as paper filter(s) for instance. The two foils may also be formed entirely of filter layers such as a porous paper, porous plastic, porous aluminium and combinations thereof.

The two foils 2, 3 connect together at a seam 4 along a median transversal plane P. The seam can be produced by welding the two foils together in this region. In a preferred mode, the seam is preferably resistant to tearing and may be reinforced by additional layers such as cellulose (e.g. paper), polymeric fibres, plastic, rubber and the like. The foils can be flexible for facilitating forming during manufacturing and reducing the amount of packaging material. The foils can have an inner layer made of a layer compatible to sealing such as oriented polypropylene (OPP). The foil may also contain a decorative layer. In a preferred packaging configuration, each foil is formed of a multi-layer comprising the following layers (from exterior to interior):

PET/decorative layer /Adhesive/Aluminium/Adhesive/OPP. The aluminium layer has preferably a thickness between 10 and 100 microns. The OPP (i.e., oriented polypropylene) layer has a thickness of between 5 to 50 microns and the PET layer has a thickness of between 5 and 50 microns. The foils could also be formed of filter paper and a welding layer for the seam or a combination of aluminium, filter paper and/or plastic.

The connected foils 2, 3 delimit an internal cavity 5 which can be at least partially occupied by a powder cake 6 formed of compacted beverage ingredient. The beverage ingredient can be ground coffee, soluble coffee, leaf tea, soluble tea, cocoa, milk, chicory, herbal tea, an infant formula, culinary powder and combinations thereof. In a preferred embodiment, the ingredient contains essentially roast and ground coffee powder.

The beverage ingredient is in compacted form such as resulting in a solid powder cake. The cake may form a lenticular section with a truncated peripheral edge 7 substantially axially oriented. As a result of the edge 7 being present, an annular void 8 is created between the powder and the seam of the outer package. Such shape is less fragile after compaction and it facilitates welding of the foils at the seam. Eventually, the cavity may be placed under partial vacuum before sealing at the seam for preventing the walls to deform outwardly due to gas release (e.g., CO₂) from coffee powder. The resulting general form of the capsule can be a symmetrical lenticular container of substantially convex surface on both sides. Of course, other shapes of capsule can be envisaged which are not symmetrical. For instance, the outer package of the capsule can comprise a cup-shaped body with a flange and a membrane connected (e.g., welded) to the flange of the body.

An insert 9 is embedded, at least partially in the compacted cake. By "partially embedded", it is meant that more than 50% of the surface of the insert is directly in contact or in close vicinity with the powder without separation by the outer packaging material (e.g., foils). More preferably, the insert 9 is substantially fully embedded in the beverage ingredient. By substantially fully embedded, it means that at least about 90% of the surface of the insert is directly in contact or in close vicinity with the powder without separation by the outer packaging material (e.g., foils). The insert can be an identifying element which is sensitive to physical excitation by or from an outside detecting device and/or providing a signal to an outside detecting device such as by magnetic effect, inductive effect or radio-waves. In a preferred mode, the identifying element is designed for enabling detection of the capsule in presence of a magnetic field produced by a magnetic-field producing device. By "magnetically-responsive", it is here meant that, in a general manner, the identifying element (or also referred in short as: "identifier") has magnetic or ferromagnetic characteristics corresponding to its specific composition and identifiable, or at least discriminable, compared to another composition under the effect of magnetic flux provided by electromagnetic detecting means (not shown). More particularly, the insert 9 comprises a protective sheath including one or more glass-coated metallic wires such as described in co-pending European patent application No. 09164590.3.

Fig. 2 illustrates an apparatus for producing the ingredient-powder cake 6. The apparatus comprises a press 10 with a circular plate 11 including a series of mould portions 12 arranged in a circumferential pattern in the plate. The press is designed to produce a plurality of powder cakes at quick pace. The plate is controlled by a control and driving unit (not shown) to turn stepwise or in a continuous motion (in rotational direction A). The press further comprises a series of upper mould portions 13 wherein each mould portion is arranged to reciprocate up and down relative to a lower mould portion (along axial direction B) and to engage in the lower mould portion 12 for compaction of a powder cake. Preferably, each lower mould portion 12 is thus associated with an upper mould portion 13 such that the upper and lower mould portions 12, 13 are axially aligned (along axis D) and turn together along a circular path around a median vertical axis I of the plate and in direction of rotation A shown. In a known manner 'per se', the relative axial movement of the upper mould portions 13 is controlled by a cam path (not illustrated) forcing the portions up and down as they turn along axis I. As a possible alternative, the axial movement of the mould portions 13 could also be driven by a mechanism using hydraulic pistons. The press further comprises a powder feeder 14 for feeding the lower mould portions 12 with powder as the plate turns. The powder feeder extends across a portion of the plate 11 in intersection of the lower moulds 12 and it is arranged to continuously feed the lower mould portions moving below it with powder. The press further comprises an insert feeder 15 for placing at least one insert in each of the powder cake after compaction.

Fig. 3 shows, in cross section, a detail of the press 10 during feeding of powder in the lower mould 12. As the plate 11 moves (e.g., turns) relative to the powder feeder 14, powder 16 falls into the mould portion 12 and progressively fills it. The cavity 17 is sized to be able to receive a predetermined quantity of powder (e.g., ground coffee powder) corresponding to the desired ingredient quantity in the final capsule. When the mould 12 has passed the powder feeder 14, its cavity is filled with the proper quantity of powder as illustrated in Fig. 4. The powder is loose in the cavity and its upper surface has been scraped by the front surface of the feeder by virtue of the relative movement of the mould portion relative to the powder feeding portion 14. It should be noted by the way that the press could move in a linear relative fashion rather than in a rotary relative fashion as illustrated as a matter of example.

As shown in Fig. 5 in the next operation, the powder is compacted by the upper mould portion 13 lowering and engaging in the lower mould portion 12 in the manner of a piston-type press. The upper mould portion comprises an outer forming surface 18 that is designed to press one of the two extended sides of the compacted cake whereas the lower mould portion 12 comprises an outer forming surface 19 designed to press the other extended side. The surfaces 18 and 19 can also be of substantially cup shape. The surfaces 18 or 19 can be of relatively identical design when the resulting capsule is symmetrical. The degree of compaction of the powder cake is determined by controlling the relative constant cavity's height, e.g., "D", between the two moulds. In general, the volume of the powder is reduced between 10 and 80% of its initial volume in loose form in the mould. While the compact powder cake is being formed, at least one recess is being also formed by a recess forming surface 20 of the mould portion protruding downwards from the upper mould portion 13, i.e., from its forming surface 18. The recess forming surface thus forms, in general, at least one protrusion extending from the outer forming surface 18. For example, the protrusion 20 extends vertically along the median axis of the cavity to provide a recess within the mass of powder in a position aligned with the centre I of the capsule (Fig. 1). Thereby, as the upper mould portion lowers in the cavity of the lower mould portion, the recess in the coffee powder is created while the coffee remains sufficiently loose, so that the mass of powder is still relatively soft to be introduced by the protrusion. Furthermore, the compaction by the upper mould 13 on the powder is exerted while the protrusion 20 remains in place in the coffee powder thereby solidifying the powder by compaction effect around the puncher. As a result, the recess is well dimensionally defined and the walls and edges delimiting the recess become relatively solid.

In an alternative, the recess can be formed by a recess forming means protruding from the lower mould portion 12. In this case, the upper forming mould portion 13 can be formed as a concave forming surface 18 without the protrusion 20. The protrusion is thus affixed to the lower mould portion 12 and protrudes upwardly. In this case, the protrusion is preferably designed to produce a through-hole in the mass of powder to ensure an opening on the upper surface of the compacted mass enabling the insertion of the insert in the subsequent step. It can also be possible that both the upper and lower mould portions have a part of the protrusion.

As illustrated in Fig. 6 after compaction, the upper mould portion 13 is disengaged from the lower mould portion 12 thereby leaving a recess 21 in the compacted cake. The recess 21 may be formed with a flared opening portion 22 of a few degrees relative to the median axis I to take into account the precision tolerance when inserting the insert in the cake in the next operation of insertion. Preferably, the angle of the opening portion is of about 5-30 degrees relative to median axis I, more preferably of about 10 degrees. The recess may also be formed by a main portion 23 of tubular or slightly conical shape (e.g., 1-7 degrees relative to median axis I) to prevent risks of breakage. Furthermore, the recess is preferably slightly longer than the length of the insert to be received in or at least of equal length. Also, the main portion 23 is preferably of slightly smaller cross-section than the insert to ensure a certain blocking effect on the insert and consequently prevent risk of variation of its localization once in place.

In the next operation shown in Fig. 7, the lower mould portion 12 is uncovered thereby showing the compacted cake apparent with its empty recess 21. The insert 9 intended to be placed in the cake, is handled by a pair of jaws 24 of the insert feeder 15. The insert is lowered relatively to the compacted cake in axial direction C causing the insert to be introduced in the recess. The jaws handle the insert such that a sufficient free length "l" of the insert can be inserted in the recess while the remaining length of the insert is firmly held or pinched by the jaws. Preferably, the free length "l" represents at least 50 %, preferably at least 80 % of the total length of the insert.

In the next step as shown in Fig. 8, the insert 9 is pushed in the recess to take its final position by a pusher 25 that exerts a pushing action at the opposite end of the insert, e.g., an axially and downwardly oriented pushing action. During the pushing action, the insert may still be pinched by the jaws 24 or may be disengaged from the jaws (as illustrated).

After this operation, the compacted cake 6 is ejected from the press by a central part 26 of the lower mould portion moving upwardly relative to the outer part of the portion to force the compacted cake out of the mould portion 12 (Fig. 9).

The compacted cake including the insert is then sealingly packed between the two foils 2, 3 which are sealed at the peripheral seam (not shown).

A second embodiment of the process of the invention is illustrated in relation to Figs. 10 to 17. In order to avoid undue repetitions, only the main differences compared to the first embodiment will be described whereas the other characteristics and features of the method and/or apparatus will appear to the skilled person as applicable to this embodiment. For this also, the same numerical references are used to designate the same or similar technical means, axis, planes and directions.

As shown in Fig. 10, in this second embodiment, the press 10 comprises a lower mould portion 12 which is filled with a partial mass of powder 16 by the powder feeder 14. By “partial mass of powder” it is meant here that only a part of the total predetermined amount of powder due for making the final capsule is filled in a preliminary filling operation. For this, the size of the cavity 17 of the mould portion 12 is adapted to receive the partial mass of powder. The size of the cavity can be reduced compared to the size of the cavity which would be necessary for receiving the total amount of powder due to produce the final powder cake. The size reduction of the cavity can be obtained by different means. In the illustrated example, it is obtained by providing a size adjustable part 27 of the lower mould portion. The part 27 can be a central part which is moved relative to a circumferential part 28 of the lower mould portion until the proper size of reduced cavity is obtained.

Once the partial mass of powder is filled as illustrated in Fig. 11, an upper mould portion 13 is lowered relative to the lower mould portion 12 to compact the partial mass. The upper mould portion 13 may not necessarily comprise a recess forming surface but can simply comprise the outer shape forming surface 18, i.e., a convex surface, to form one extended side of a partial powder cake. After this first stroke (Fig. 12), a partial compacted cake of powder 29 is obtained. The size of the cake is reduced compared to the final compacted cake to be produced for the capsule.

In the next operation, the insert is used to provide a recess in the partial compacted mass. The insert 9 is placed by means of the insert feeder 15 in this partial compacted cake. It results that the insert engages only partially in the partial compacted cake

while a portion of the insert remains outside of the cake 29. As a possible variant, the recess could also be made by a recess forming surface or protrusion protruding from the surface of the upper mould portion 13.

In the next operation, a second powder filling operation takes place (Fig. 14). The same powder feeder 14 can be used to complete the filling of the cavity. The cavity can be re-sized to accommodate the second desired amount of powder necessary to complete the mass of powder. Then, a second stroke is carried out by the upper mould portion 13 or another mould portion to form the outer shape of the final compacted cake (Figs. 15 and 16). In the next operation, the final compacted cake 30 is removed, e.g., by moving the central part 27 upwardly or axial direction A until to eliminate or reduce the size of the cavity (Fig. 17).

As discussed, the rotary press described in relation to the figures is presented as a preferred example, but it could be replaced by another type of press in which the powder is fed into the mould portions by effect of a linear movement relative of the mould portions (or plate containing them) and the powder feeder.

Claims:

1. Method for producing a beverage-ingredient capsule for the preparation of a beverage; the method comprising the steps of:
 - providing a mould cavity,
 - at least partially filling a mould cavity with the beverage ingredient in powdered or particulate form,
 - compacting the powdered or particulate beverage ingredient in the mould cavity to obtain a compacted mass of the beverage ingredient,
 - forming at least one recess in the compacted mass and,
 - inserting a capsule identification insert into the said recess.
2. Method according to claim 1, wherein the recess is formed while the mass of powdered or particulate ingredient is being compacted.
3. Method according to claims 1 or 2, wherein the step of insertion of the insert is carried out after the recess has been formed.
4. Method according to claims 1 or 2, wherein the recess is formed by inserting the insert into the mass of powdered or particulate beverage ingredient before the compaction step is finished.
5. Method according to any one of claims 1 to 4, wherein the filling step is carried out in a single filling operation with the entire amount of powdered or particulate beverage ingredient mass required for the capsule.
6. Method according to any one of claims 1 to 4, wherein the mould cavity is filled with less than the entire amount of powdered or particulate beverage ingredient required for the capsule before inserting the insert and thereafter feeding into the mould cavity the remainder of the required amount of powdered or particulate beverage ingredient for the capsule and further compacting the mass.

7. Method according to any one of claims 1 to 6, wherein the compacting step and the recess forming step are effected by pressing an outer shape forming surface and a recess forming surface against the mass of powdered or particulate beverage ingredient.
8. Method according to any one of the preceding claims, wherein the recess is formed in the central region of the mass of powdered or particulate beverage ingredient.
9. Method according to any one of the preceding claims wherein the recess is formed with a flared opening.
10. Method according to any one of the preceding claims, wherein the insert is an elongate element.
11. Method according to claim 10, wherein the insert has a cross-section which is slightly larger than the cross-section of the recess.
12. Method according to any one of the preceding claims, wherein the mass of powdered or particulate beverage ingredient is compacted and formed in the moulding cavity to define two main opposed convex surfaces and a truncated peripheral edge.
13. Method according to claim 12, wherein after the steps of compacting, forming the recess and inserting the insert are completed, the compacted mass is removed from the mould cavity and loaded into a package comprising a first and second foils covering the respective main surfaces and the foils are sealed at a peripheral seam adjacent to the truncated peripheral edge.
14. Method according to claim 13, wherein the package forms a gas-tight enclosure.
15. Apparatus for implementing the method according to any one of the preceding claims comprising at least a first mould part (12) and at least a second mould part (13) in opposed relation and relatively moveable toward and away of each other,; at least one of said mould parts (12, 13) comprising recess-forming means (20) for forming at least one recess (21) in the mass of powdered or particulate beverage ingredient while

the mass is compacted between the mould parts (12, 13); said apparatus comprising recess means (15, 24, 25) for positioning an insert (9) in the recess (21) thus formed in the compacted mass of powdered or particulate beverage ingredient.

16. Apparatus according to claim 15, wherein further comprising another mould part received around the first and second mould parts for defining a truncated peripheral edge of the compacted mass of powdered or particulate beverage ingredient.