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(54) Title of the Invention: **Confectionery product**
 Abstract Title: **Applying a stamp or roller to a confectionery product**

(57) A method for preparing a confectionery product and products producible by the method. The method comprises applying a stamp 12 or roller to a plastic or flowable confectionery composition 8 in a mould 4. The confectionery composition may be chocolate. The method may further comprise removing the stamp or roller prior to allowing the composition to solidify or set. Alternatively the method may comprise partially or completely solidifying the composition before removal of the stamp such that the composition retains the shape/texture of the stamp or roller when removed. In one embodiment the method comprises preparing a shell 2 from a first confectionery composition within a mould 4. The shell is then filled with a filling material 6 and a second confectionery composition 8 is deposited into the mould to provide a coating, backing or lid. The stamp 12 or roller is applied to the surface of the second confectionery composition 8 such that a closed cavity is formed by the mould 4 and stamp 12.

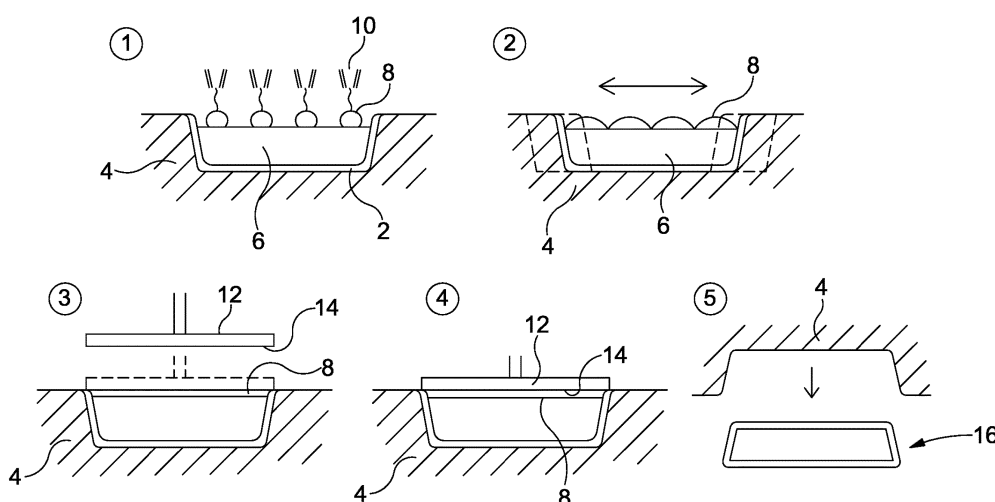


Figure 1

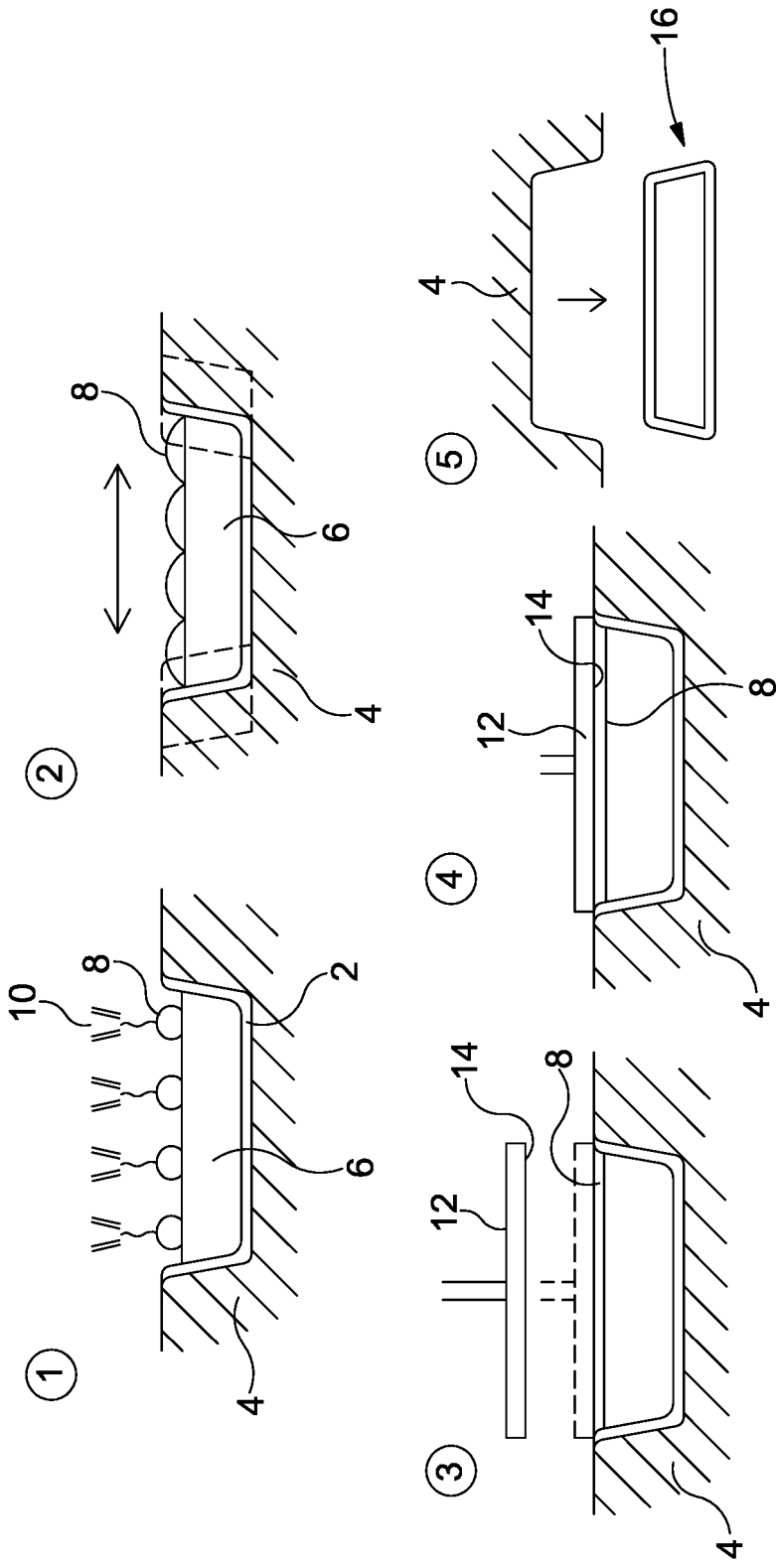


Figure 1

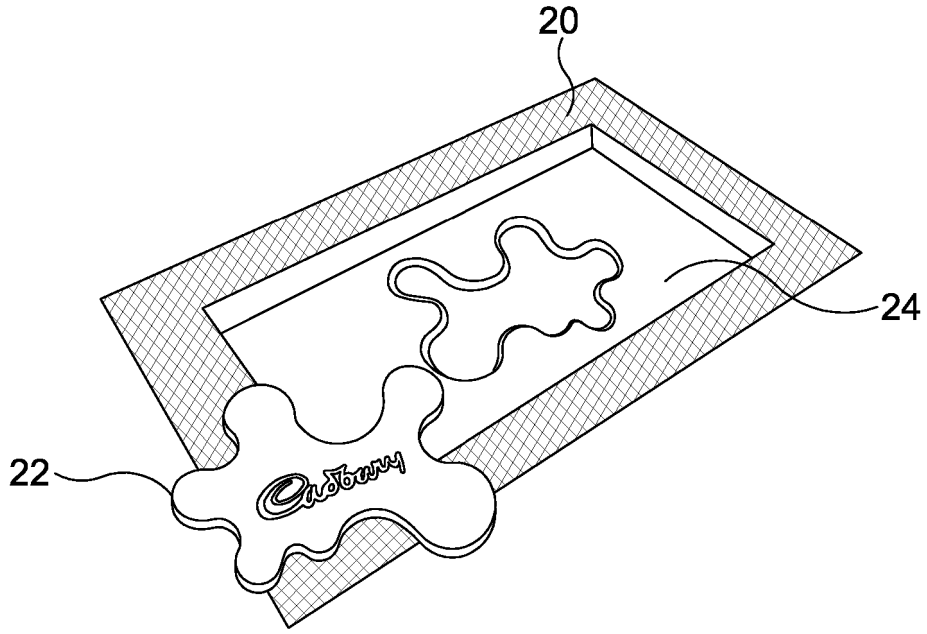


Figure 2a

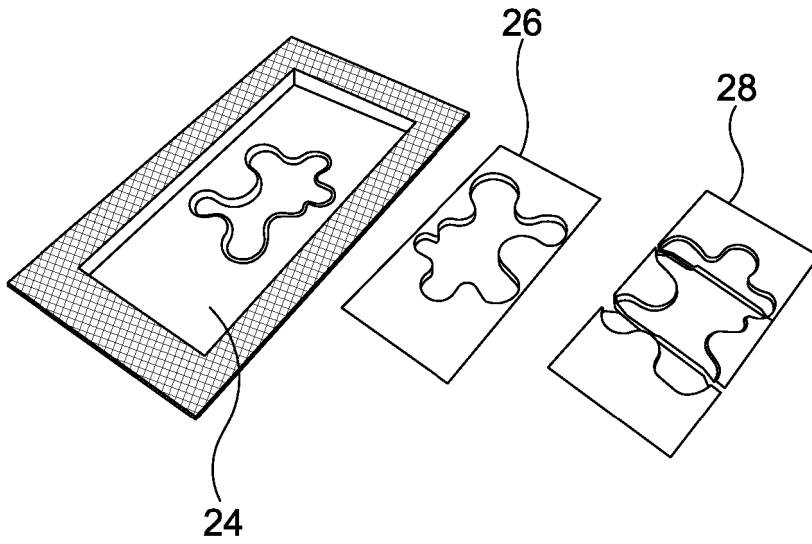


Figure 2b

13 03 15

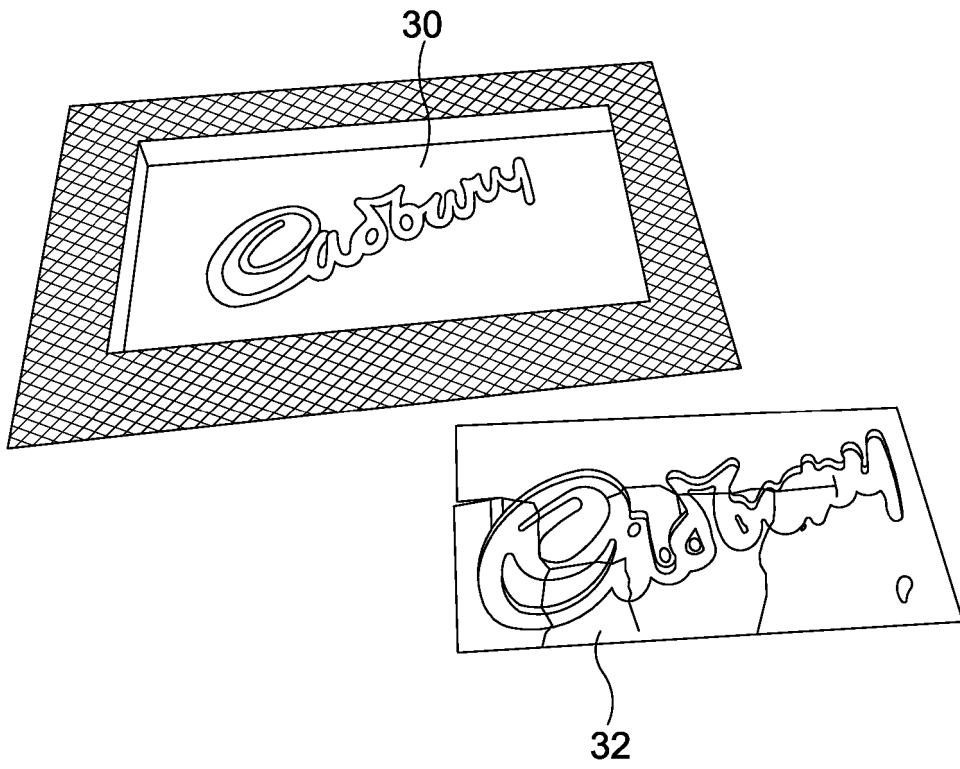
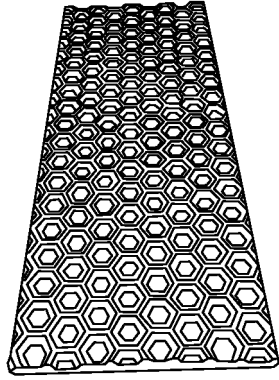


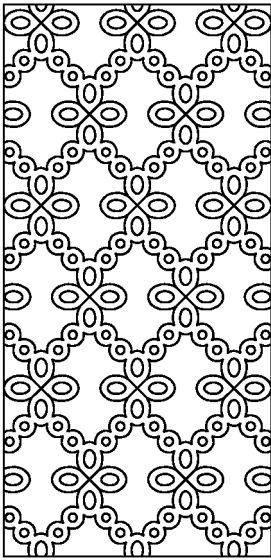
Figure 3



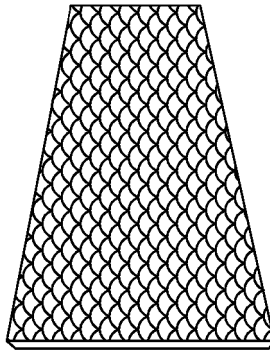
a



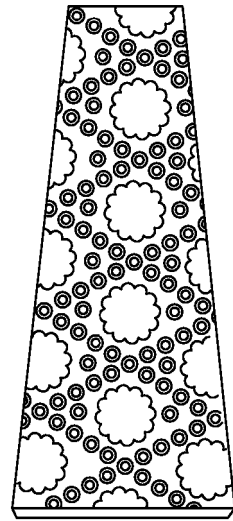
b



c



d



e

Figure 4

13 03 15

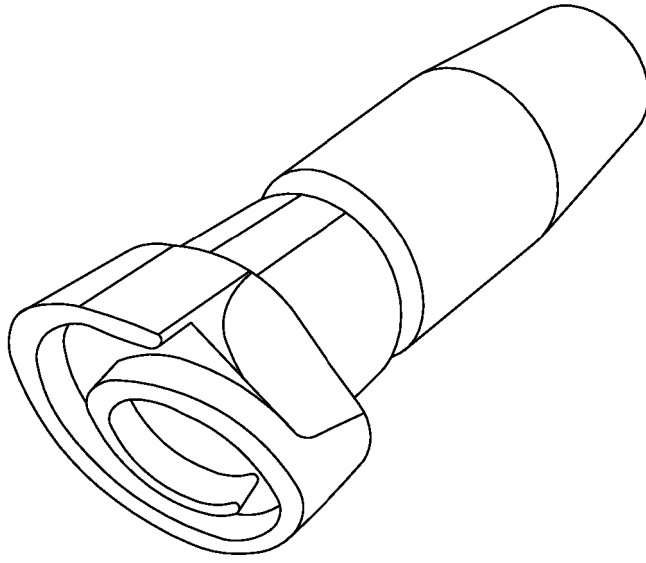


Figure 5a

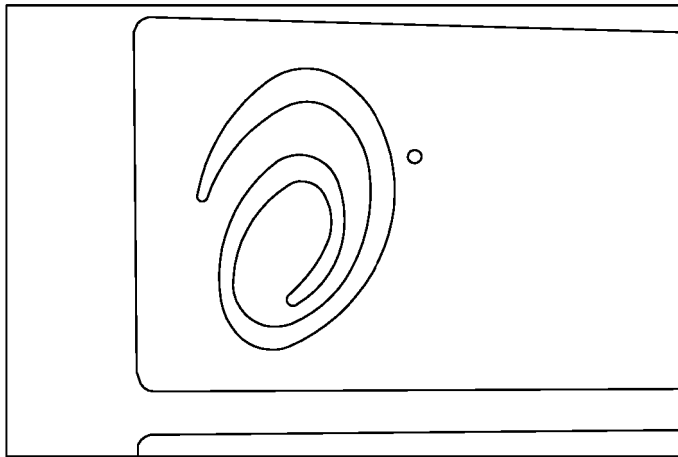


Figure 5b

Confectionery Product

The present invention relates to a confectionery product and a method for the preparation thereof. In particular, the invention relates to a method for preparing a confectionery product which comprises applying a stamp or roller to moulded confectionery.

Confectionery bars continue to be popular with consumers, in particular chocolate bars. Many varieties of chocolate bars are available, including bars of solid chocolate, and bars of chocolate comprising a contrasting filling such as caramel, fruit, nuts, biscuit, aerated chocolate, fudge, fondant etc.

However, there is still a need for new and varied confectionery products in order to appeal to the consumer. In particular, there is a need for chocolate products which are visually interesting as well as having interesting flavours and mouthfeel.

According to a first aspect of the invention, there is provided a method for preparing a confectionery product comprising applying a stamp or roller to a plastic or flowable confectionery composition in a mould.

By “plastic” it will be understood that the confectionery composition is in a semi-solid state which is capable of being formed or shaped. A confectionery composition in a plastic state is not completely liquid or flowable, nor is it completely solidified. In the plastic state the composition is capable of retaining the shape/texture of the applied stamp or roller once the plate or roller has been removed, without having to wait for the composition to completely solidify or set while the stamp or roller is in place.

By “flowable” it will be understood that the confectionery composition is in a substantially liquid or molten state such that the composition is not capable of being formed or shaped. In this state, after application of the stamp or roller, the composition must be partially or completely solidified before removal of the stamp or roller from the composition in order for the composition to retain the shape/texture of the stamp or roller.

The confectionery composition is deposited into a mould, after which it may be passed beneath a roller. Alternatively, a stamp may be applied to the confectionery composition.

In some embodiments, the stamp or roller is chilled. The stamp or roller may have a temperature of no greater than 10 °C, no greater than 5 °C, no greater than 2 °C or no greater than 0 °C. In some embodiments, the temperature of the chilled stamp or roller is less than 0 °C, less than -5 °C, less than -10 °C or less than -15 °C.

In some embodiments, the chilled stamp or roller is applied to a flowable confectionery composition. The use of a chilled stamp or roller accelerates the cooling and solidification of the flowable confectionery composition.

The stamp or roller may be chilled prior to and/or during its application to the confectionery composition. Cooling of the stamp or roller prior to contact with the confectionery composition may be achieved by holding the stamp or roller in a cold environment, or by placing it in contact with a cold liquid or gas. Alternatively, or additionally, the stamp or roller may comprise an intrinsic cooling means, for example cooling channels.

In some embodiments a temperate stamp is used. By “temperate” it will be understood that the stamp is neither substantially heated nor substantially cooled prior to contact with the confectionery composition. The temperature of the stamp could up to the temperature of the chocolate confectionery composition, for example it could be up to around 30°C. It will be appreciated that the air temperature in a moulding plant is likely to be above the 20°C that is often designated as room temperature and that a temperature of 30°C could be considered temperate, given the environment. In some embodiments, the stamp is at approximately room temperature when it is applied to the composition. In some further embodiments, the temperature of the stamp may be raised or lowered by a few degrees relative to room temperature in order to achieve a desired quality of surface finish. For example, the temperature of the stamp may be increased or decreased by no more than 5 °C or no more than 3 °C, compared to the localised air temperature prior to application of the stamp to the confectionery composition. A temperate stamp may therefore be at a temperature of from 10 to 30 °C, from 15 to 25 °C or from 18 to 22 °C, e.g. 20 °C, if, for example, the room temperature was 20°C. The use of a temperate stamp as opposed to a cold stamp facilitates the retrofit of the invention to existing production lines where there may not be a convenient supply of coolant or refrigerant to maintain the tools in a cooled state. Furthermore, there are economic benefits to using a temperate stamp as opposed to a cooled stamp. It will be appreciated that where a

temperate stamp is used it will be necessary to retain the stamp in contact with the confectionery composition for a longer period of time as, in order to result in a clean imprint in the confectionery composition that does not become distorted by the pull out of the stamp or roll off of the roller the confectionery composition will need to achieve a certain level of rigidity (which will vary dependant on the exact constitution of the product). In contrast a cooled stamp or roller will accelerate the relative cooling, and therefore the setting of the confectionery composition, and allow for the stamp or roller to remain in contact with the confectionery composition for a shorter period of time before it can be reliably removed.

The stamp or roller may be applied to a confectionery composition which is in a plastic (i.e. semi-molten) state. Thus, in some embodiments, the confectionery composition is partially cooled prior to the application of the stamp or roller. Since the composition is in a plastic state, it is not always necessary for the stamp or roller to be chilled in order to impart shape or texture to the confectionery composition (although in some embodiments it may be preferred to use a chilled stamp or roller). It will be appreciated that the exact temperature and viscosity of the composition at which the stamp is applied to it will depend on the type of confectionery composition, its rate of solidification, and other production line specific parameters. In a production line the stamp will be applied to each product at a particular point in the line and that point will be determined by the rate of cooling that takes place on the line to that point.

In some embodiments the stamp or roller is transiently applied to the confectionery composition. By “transiently applied” it will be understood that the stamp or roller does not have prolonged contact with the confectionery composition, i.e. it does not remain in place throughout the solidification process. In some embodiments the stamp or roller is applied to the confectionery composition for as short a time as is sufficient for a surface of the confectionery composition to retain the shape of the stamp or roller. This method may be particularly suited to the use of cooled stamps or cooled rollers.

A temperate stamp plate or roller may be applied to the confectionery composition for no more than 60 minutes, no more than 45 minutes, no more than 30 minutes, no more than 20 minutes, no more than 15 minutes or no more than 10 minutes. A chilled stamp or roller may be applied to the confectionery composition for no more than 5 minutes, no more than 3 minutes, no more than 2 minutes or no more than 1

minute. If, however, a chilled stamp is being applied to a semi-solid chocolate that is already partially cooled, and is therefore more viscous, a contact time in the order of seconds, for example 0.25 to 3 seconds, or 0.5 to 1.5 seconds is sufficient.

After removal of the stamp or roller from the confectionery composition, the composition may then be subjected to a further or final cooling step to sufficiently complete the solidification process. In particular, when using a cooled stamp or roller, after removal of the stamp or roller it will be necessary to continue to cool the product so that it is solid enough to be removed from the mould and/or packaged. This will be done using a final cooling step or steps for which parameters in the ranges of 5°C – 20°C air temperature, 1-8m/sec air speed at the point of control and 10 - 45 minutes residence time, may be applied. It will be appreciated that these parameters will vary with product and production line parameters, for example the ambient temperature and/or the extent of the cooling/solidification of the product that has occurred during the stamping or rolling process. The exit temperature of the product after the cooling step will be sufficiently high to be above the dew point to avoid condensation on the product, but will be low enough that the product is not in a molten state, or too soft to be handled in downstream operations..

In some alternative embodiments, the stamp may remain in contact with the molten confectionery composition until the composition has sufficiently solidified. In particular when using a temperate stamping process it may be necessary for the stamp or roller to remain in contact with the confectionery composition until the product is sufficiently solidified that it can be removed without distorting the imprint or the surface in which the imprint has been formed. The confectionery composition will be at least partially, and optionally fully, cooled with the stamp in place. The cooling time when using a temperate stamp may vary from that of an unstamped product as the stamp remains in place during at least part of the cooling cycle. As the stamp has a thermal mass this will also need to be cooled and the heat extracted from the confectionery composition will need to pass through the stamp or roller. The extent of any increase in cooling time will be dependant upon the nature of the stamp; in particular it will depend upon the thermal conductivity of the stamp material, and the relative dimensions thereof.

In some embodiments, the stamp may comprise a stamping plate which is applied to a confectionery composition in a mould such that the stamping plate and the mould form a 2-part cavity. The stamping plate may remain in place until the composition

has sufficiently solidified, after which the stamping plate is removed and the final product is de-moulded. In some further embodiments, the stamp and/or the mould is temperate. Where a stamping plate is used the stamping plate may substantially cover the entire area of the back side of the moulded confectionery product and as such may distribute the product in the mould as it is applied, in particular this may be of benefit where the product is of a relatively high viscosity, for example it is viscous liquid or plastic material when added to the mould and does not naturally flow to form a flat level surface in the mould.

In some embodiments, the confectionery composition is a chocolate composition such as a milk chocolate, a dark chocolate or a white chocolate. As used herein, a "chocolate composition" is a confectionery composition comprising at least non-fat cocoa solids and/or cocoa butter and optionally CBR (CBE and/or CBS). The term "chocolate composition" should be construed as covering not only chocolate compositions which can be sold as "chocolate" in countries where chocolate is legally defined, but also chocolate compositions which, because of fat, cocoa content etc. may not be legally described as "chocolate" in those countries.

A suitable milk chocolate composition comprises non-fat cocoa solids and milk solids in addition to the bulk sweetener and fat.

A suitable dark chocolate composition comprises non-fat cocoa solids in addition to the bulk sweetener and fat.

A suitable white chocolate composition comprises a bulk sweetener and at least one of cocoa butter/CBE/CBS.

The chocolate composition may be a low-fat chocolate composition, in which case the chocolate composition has a fat content of less than 25wt% or less than 23wt%. The chocolate composition may have a fat content of at least 16wt%, at least 18wt% or at least 20wt%.

Suitable milk solids include cream, full fat milk, skimmed milk and/or whey. The confectionery composition may be prepared from powdered milk solids such as powdered milk/cream or whey powder. Useful sources of whey include whey protein concentrate, whey protein isolate, whey protein hydrolysate or a combination thereof. The whey may be demineralised.

In some embodiments the confectionery composition comprises bulk sweetener, cocoa butter, non-fat cocoa solids and milk solids. In a particular embodiment the confectionery composition comprises 40-70wt% sucrose, 15-30wt% cocoa butter, 2-10wt% non-fat cocoa solids and 10-20wt% milk solids

In some alternative embodiments the confectionery composition comprises 45-55wt% bulk sweetener, 25-30wt% cocoa butter substitute, 10-15wt% demineralised whey, 4-8wt% non-fat cocoa solids and 0-2wt% cocoa butter.

The chocolate may comprise a cocoa butter substitute (CBS) (sometimes known as a cocoa butter replacer, CBR) in place of some or all of the cocoa butter. Such chocolate materials are sometimes known as compound chocolate. Suitable CBS's include CBS laurics and CBS non-laurics. CBS laurics are short-chain fatty acid glycerides. Their physical properties vary but they all have triglyceride configurations that make them compatible with cocoa butter. Suitable CBS's include those based on palm kernel oil and coconut oil. CBS non-laurics consist of fractions obtained from hydrogenated oils. The oils are selectively hydrogenated with the formation of trans acids, which increases the solid phase of the fat. Suitable sources for CBS nonlaurics include soya, cottonseed, peanut, rapeseed and corn (maize) oil.

In some embodiments, the stamp or roller is not completely immersed in the confectionery composition so as to form the overall shape of the confectionery product, but instead it is applied so as to shape, decorate or emboss an external surface of the confectionery product. The stamp or roller may be only immersed in the confectionery composition to a depth which is sufficient to form an impression in the surface of the composition. Thus, in some embodiments, the method is for shaping, decorating or embossing an external surface of a confectionery product. In some embodiments, the external surface of the confectionery product is substantially planar. In some embodiments, the stamp or roller is applied to the external surface of the confectionery composition which forms the base of the final confectionery product.

In some embodiments the stamp or roller comprises a bearing surface having one or more projections or indentations which are capable of imparting letters, shapes, numbers, pictures, patterns, logos, texture and/or other design features to the surface of the confectionery composition to which it is applied. It may be desirable

to immerse only the projections of a bearing surface in the confectionery composition in order to create the desired effect.

The bearing surface of the stamp or roller may be adapted to form shapes or patterns such as flowers, stars, bark, honeycomb, grids, zig-zags, strips, waves, spots, snowflakes, animals, faces, bubbles, ripples, shells, waves, scales, chains, geometric patterns or the like into the surface of the confectionery composition. In one particular embodiment the stamp may be a pattern that includes break lines to indicate to the consumer where to break the bar. These break indicators may optionally be aligned with areas of weakness in the bar, for example they may coincide with areas of less product depth between adjacent sections of the bar that would not otherwise be apparent from the face of the bar into which the pattern is stamped.

In some alternative embodiments the stamp or roller has a substantially smooth bearing surface, i.e. with no design features. In these embodiments, the purpose of the stamp may be to evenly distribute the confectionery composition within the mould and/or to provide an even, smooth surface.

In some embodiments, the stamp is substantially planar. A planar stamping plate is particularly suitable for applying decoration to a substantially planar surface of a confectionery product, for example, to the base of a chocolate bar.

In some embodiments, the method comprises applying a roller to the confectionery composition. The use of a roller is advantageous in that it enables a large surface area to be shaped, decorated and/or embossed quickly by moving the roller over the surface of a confectionery composition deposited in moulds, while the confectionery composition is in a plastic state. It will be appreciated that the shape, pattern or decoration created in the confectionery composition will be dependent on the spacing of the complementary indentations/projections in or on the surface of the roller, and on the diameter of the roller. Rollers within the present invention are not limited only to drum type, i.e. substantially cylindrical, rollers but may comprise two or more cylindrical rollers having a belt carrying individual press faces on it, i.e. the rolling element may be formed as a belt such that it has a section that runs parallel to the production line. In this way the contact time of the rolling element and the product passing down the production line can be extended compared to a standard cylindrical roller. The stamp features of the roller, i.e. the roller drum or the stamp plates

attached to the rolling belt are preferably cooled. Using a roller the contact time of the stamp element and the confectionery is limited to the duration for which the product is under the roller and therefore will be of a relative short duration. Cooling the stamp feature of the roller will enable the confectionery to solidify, at least locally, around the stamp such that upon removal of the stamp the imprint is retained. Although any convenient material may be used, in order to maximise the speed of heat transfer heat from the stamp part of the cooled roller, the roller is preferably made of a material having a high thermal conductivity, preferably a metal. In order to minimise the adhesion of confectionery to the stamp it may be coated with a material that does not readily adhere to the confectionery product, in particular with a material having a low coefficient of friction. Furthermore coatings that minimise problems associated with condensation on the rollers or the stamps of roller belts may be used, for example the coating may be hydrophobic. Although a hydrophobic coating will not prevent condensation it will result in condensation not adhering to the stamps or rollers which will prevent or reduce the effect of accumulated condensation from building up into large drops of water which could cause defects in product quality.

The speed of rotation of the roller will be matched to the linear speed of the throughput of the plant at the point of stamping and may be in the range of 4m/minute to 30m/minute

The confectionery product may be a bar, such as a chocolate bar. The bar may be solid (i.e. formed entirely from the confectionery composition), or it may comprise a filling.

In some embodiments, the method comprises:

preparing a shell from a first confectionery composition within a mould;

filling the shell with a filling material;

depositing a second confectionery composition into the mould to provide a coating, backing or lid; and

applying a stamp or roller to the surface of the further confectionery composition.

In some embodiments, the method may further comprise applying vibration to the mould to evenly distribute the deposited second confectionery composition within the mould.

In some embodiments, a stamp is applied to the further confectionery composition such that the stamp and the mould together form a two-part moulding cavity. The second confectionery composition may then be cooled before the stamp is removed and the resulting product is de-moulded.

The first and second confectionery compositions may be the same or different. In some embodiments, the first and second confectionery compositions are chocolate compositions.

Any suitable filling material may be used, such as aerated or non-aerated fat-based fillings. The filling material may comprise chocolate (e.g. milk, white or dark chocolate), praline, mousse, nougat, caramel, fondant, biscuit, Turkish delight, marshmallow, honeycomb, peanut butter, nuts, fruit, wafer, cookie or mixtures thereof.

In some embodiments, the method comprises preparing and filling a plurality of shells in adjacent moulds. The second confectionery composition may be deposited over each individual mould, thereby forming a plurality of individual coated confectionery products. Alternatively, the second confectionery composition may be deposited over the plurality of filled shells such that the plurality of shells are linked by a backing or base formed from the second confectionery composition.

In some embodiments, a stamping plate having a substantially smooth bearing surface forms a part of a 2-part moulding cavity. This is particularly useful wherein the confectionery composition is deposited as a backing, coating or lid onto a filled shell or a plurality of shells within a mould. The stamping plate maintains the shape of the confectionery composition and ensures that none of the composition spills out of the mould during cooling. This eliminates the need to remove excess chocolate from the final product (e.g. by scraping).

In some further embodiments, the method is for shaping, decorating and/or embossing the exterior surface a chocolate product, the method comprising applying a chilled stamp or roller to a surface of a chocolate composition in a mould, wherein the surface forms an external surface of the chocolate product. The chilled stamp or roller may be applied to the chocolate composition for no more than 5 seconds, no more than 3 seconds or no more than 2 seconds. The method may further comprise

removing the chilled stamp or roller from the chocolate composition, and cooling the composition until it has sufficiently solidified.

In other embodiments, the method is for shaping, decorating or embossing the exterior surface of a chocolate product, the method comprising:

depositing a chocolate composition in a mould;

partially cooling the chocolate composition until it is in a plastic state; and

applying a temperate stamp or roller to a surface of the partially cooled chocolate composition.

The temperate stamp may be held in contact with the chocolate composition for as short a time as is sufficient for the surface of the confectionery composition to retain the shape of the stamp or roller. The temperate stamp or roller may be applied to the chocolate composition for less than 30 seconds, less than 10 seconds, or less than 5 seconds. The method may further comprise removing the stamp or roller from the confectionery composition, after which the confectionery composition is further cooled until solidified. The resulting confectionery product may then be de-moulded. It will be appreciated that if the stamp is removed prior to complete solidification of the confectionery composition then the composition will have cooled sufficiently so as to retain the imprint created by the stamp once it is removed.

In some embodiments, the method is for shaping, decorating or embossing the external surface of a chocolate product, the method comprising:

preparing a shell from a first chocolate composition within a mould;

filling the shell with a filling material;

depositing a second chocolate composition into the mould to provide a backing, coating or lid;

applying a temperate stamp to the surface of the second chocolate composition such that the stamp and the mould form a 2-part cavity;

allowing the second chocolate composition to solidify before removing the stamp;

and

de-moulding the chocolate product.

In some embodiments, the mould and stamp form part of the packaging of the confectionery product. Alternatively or additionally, the mould and/or stamp may constitute an additional product which is packaged together with the confectionery product. For example, a stamp which is used to shape, decorate or emboss the

surface of the confectionery product may also function as a toy or a tool which can be used by the consumer. Therefore, the stamp and/or mould, as a constituent of the product and/or packaging, may remain in contact with the confectionery composition during cooling, storage, distribution and retail, and would be removed when unwrapped by the consumer.

Thus, in some embodiments, the method comprises
depositing a confectionery composition into a mould;
applying a stamp to the confectionery composition while it is in a molten or semi-molten state;
cooling the confectionery composition without removing the stamp; and
packaging or wrapping the solidified confectionery composition and the stamp as a single product.

Optionally the mould may also form part of the final packaged product.

This process eliminates the need to de-mould and then re-package the solidified confectionery, thereby making the process more efficient. In addition, the stamp has a dual use in that it provides decoration or interest to the confectionery product, but also forms part of the final product and can be re-used by the consumer. For example, the stamp may provide a children's toy which can be used for decorating, shaping or embossing other substances such as foods or modelling clay.

The stamp or roller may be made from any suitable material such as metal or plastic. It is preferred that the material from which the stamp or roller is made enables efficient heat transfer from the confectionery composition. The material may be rigid or it may be flexible, and it may be of any suitable thickness. In some embodiments, the material is semi-porous to allow the release of gas from the confectionery composition.

It will be appreciated that when applying a stamp or roller to the confectionery some of the confectionery will be displaced by the stamp or roller. In order to compensate for this the mould containing the plastic or flowable confectionery will not be filled to capacity. Furthermore to ensure that there are no air bubbles trapped beneath the stamp the stamp will be designed such that the material will flow around it expelling any air. Depending on the nature of the shape being stamped into the confectionery it may be necessary to provide the stamp plate or roller with air removal routes or

tracks, which may route the air to an outer edge of the stamp, or may include holes through the stamp to allow air to escape therethrough.

Embodiments of the invention will now be described by way of example with reference to the accompanying figures in which:

Figure 1 is a diagram showing the stages of a method according to an embodiment of the invention, in which a stamping plate forms part of a 2-part mould cavity;

Figure 2a shows an example of a stamping plate for use in a method according to an embodiment of the invention;

Figure 2b shows chocolate bars produced using the stamping plate of Figure 2a, in accordance with an embodiment of the invention;

Figure 3 shows a further example of a stamping plate for use in a method according to an embodiment of the invention, together with a chocolate bar produced using the stamping plate;

Figures 4a-4d show chocolate bars produced in accordance with a method of the invention;

Figure 5a shows an example of a stamp of the invention; and

Figure 5b shows a product stamped with the stamp shown in Figure 5a.

Example 1

With reference to Figure 1, a chocolate shell 2 is first prepared in a mould 4 by standard methods known to those skilled in the art. The chocolate shell 2 is filled with a confectionery filling material 6. On top of the filling material 4 is deposited a chocolate composition 8 by depositer nozzles 10 (step 1). The chocolate composition 8 is then evenly distributed over the filling material 6 by applying vibration to the mould 4 (step 2). A stamping plate 12 is then applied to the chocolate composition 8 such that a closed cavity is formed by the mould 4 and the stamping plate 12 (step 3). The stamping plate 12 has a bearing surface 14 which is in contact with an outer surface of the chocolate composition 8 such that the surface of the chocolate composition 8 takes the shape of the bearing surface 14. The stamping plate 12 remains in place while the chocolate composition 6 is cooled (step 4). After the chocolate composition 8 has sufficiently solidified, the stamping plate 12 is removed and the resulting chocolate product 16 is de-moulded (step 5).

Example 2

A vacuum form 20 was formed out of 0.75mm PET using a template 22, as shown in Figure 2a. The vacuum form 20 constitutes a stamping plate 24 which can be used

to decorate confectionery products with the shape of the template 22. The depth of the shape projecting from the surface of the stamp was approximately 5mm and could be pressed into the confectionery to different depths by hand. A molten chocolate composition was deposited into a mould (not shown) agitated to evenly distribute it. The stamp was then applied to the chocolate while it was in a flowable state and the mould, together with the stamp, was then refrigerated to cool for approximately 5 minutes to set the chocolate. The resulting chocolate bar was demoulded. The process was repeated, in which the stamping plate 24 was pressed more lightly into the chocolate composition. The results are shown in Figure 2b. A chocolate bar 28 produced by the initial test cracked because the stamping plate 24 was pressed too far into the chocolate composition, causing very thin regions of chocolate. A chocolate bar 26 produced by the second test did not show any cracking since the stamping plate was not pressed as far into the chocolate composition. In both cases, the shape of template 22 was successfully replicated in the chocolate. The shape had well-defined edges.

Example 3

The method of example 2 was repeated to test whether letters could be successfully printed into chocolate. A stamping plate 30 was made using a template of the "Cadbury" logo. The logo was successfully transferred into the base of a chocolate bar 32 with high definition, as shown in Figure 3. No cracking of the chocolate occurred, although air entrapment in the chocolate was observed. In this product the reverse side of the chocolate bar was moulded to define a rectangular array of chunks of chocolate, joined by raft sections on the bottom the bar (resulting in the substantially flat base seen in Figure 3 which shows the logo stamped into the reverse of the bar. As will be appreciated the product is only stamped to a depth that does not compromise the strength of the raft sections joining the chunks so as to avoid unintentional breaking of the bar.

Example 4

The method of example 2 was repeated using stamping plates in the form of textured plastic sheets. Stamping plates with various designs were tested to investigate the level of detail and definition that could be achieved using chocolate. The stamping plates were applied to the surface of a chocolate composition in a mould which forms the base of the resulting chocolate product. The results are shown in Figures 4a-4e. Patterns including honeycomb (Figure 4a), snowflakes (Figure 4b) and other

geometric patterns (Figures 4c-4e) were replicated with a surprising level of definition, providing interesting texture and detail to the base of the chocolate bars.

Example 5

In this example tests were run in order to achieve a uniform surface cooling of the bars. The stamp used in this example was a manual hand stamp having a metal stamp head as depicted in Figure 5a. A plurality of bars were moulded at ambient temperature using tempered chocolate (27.6°C) and were placed in a cooler after approximately 1min and left in the cooling simulator for approximately 50 sec. The air flow speed in the simulator was 2m/s and the air temperature was set at 14°C. A cold stamp at -18°C was applied 40seconds after the bars were taken out of the cooler. Each consecutive stamp was in contact with the bar for an average of 2 seconds. The resulting shapes were in this case well defined as depicted in Figure 5b.

Claims

1 A method for preparing a confectionery product comprising applying a stamp or roller to a plastic or flowable confectionery composition in a mould.

2 The method of claim 1 wherein the confectionery product is a plastic composition, the method further comprising removing the stamp or roller prior to allowing the composition to solidify or set.

3 The method of claim 1 wherein the confectionery product is a flowable composition, the method further comprising partially or completely solidifying the confectionery before removal of the stamp such that the composition retains the shape/texture of the stamp or roller when removed.

4 The method according to any preceding claim further comprising depositing the confectionery composition into a mould and thereafter passing said mould containing the confectionery composition beneath a roller.

5 The method according to any one of claims 1 to 3 further comprising depositing the confectionery composition into a mould and thereafter applying a stamp to the confectionery composition in the mould.

6 The method according to any preceding claim wherein the stamp or roller is chilled.

7 The method according to claim 6 wherein the stamp or roller has a temperature of no greater than 10 °C, no greater than 5 °C, no greater than 2 °C or no greater than 0 °C.

8 The method according to claim 6 wherein the stamp or roller is cooled to a temperature of less than 0 °C, less than -5 °C, less than -10 °C or less than -15 °C.

9 The method according to any one of claims 6 to 8 wherein the stamp or roller is chilled prior to and/or during its application to the confectionery composition.

10 The method according to any one of claims 6 to 9 wherein the stamp or roller is cooled prior to contact with the confectionery composition by one or more of:

holding the stamp or roller in a cold environment, by placing it in contact with a cold liquid or gas, or by intrinsic cooling means.

11 The method according to any one of claims 6 to 10 wherein the chilled stamp or roller is applied to the confectionary composition for: no more than 5 minutes, no more than 3 minutes, no more than 2 minutes or no more than 1 minute.

12 The method according to any one of claims 6 to 10 wherein the chilled stamp or roller is applied to the confectionary composition when the confectionery composition is in a semi-solid state, for a time period in the range of: 0.25 to 3 seconds or 0.5 seconds to 1.5 seconds.

13 The method according to any one of claims 1 to 5 comprising applying a stamp to the confectionery product and wherein the stamp is temperate.

14 The method according to claim 13 wherein the stamp has a temperature in the range of 10°C to 30°C, 15°C to 25°C or 18°C to 22°C.

15 The method according to claim 13 or claim 14 wherein the temperate stamp is applied to the confectionary composition for: no more than 60 minutes, no more than 45 minutes, no more than 30 minutes, no more than 20 minutes, no more than 15 minutes, or no more than 10 minutes

16 The method according to any preceding claim further comprising partially cooling the confectionery composition prior to the application of the stamp or roller.

17 The method according to any preceding claim further comprising, after removal of the stamp or roller from the confectionery composition, cooling the composition to further solidify the confectionery product.

18 The method according to claim 17 further comprising cooling the confectionery product for 10-45 minutes at an air temperature of 8°C – 20°C and an air flow in the range of 1-8m/sec.

19 The method according to claim 1 comprising applying a stamp to the confectionery product and wherein the stamp comprises a stamping plate which is

applied to a confectionery composition in a mould such that the stamping plate and the mould form a 2-part cavity.

20 The method according to claim 6 comprising applying a stamp to the confectionery product and wherein the stamp comprises a stamping plate that substantially covers the entire area of the back side of the moulded confectionery product and during its application distributes the product in the mould as it is applied.

21 The method according to any preceding claim wherein the confectionery composition comprises a chocolate composition comprising of a milk chocolate, a dark chocolate or a white chocolate.

22 The method according to any of the preceding claims wherein the stamp or roller is applied to the external surface of the confectionery composition which forms the base of the final confectionery product.

23 The method according to any preceding claim wherein the stamp or roller comprises a bearing surface, said bearing surface being: a smooth bearing surface or a bearing surface having one or more projections or indentations thereon.

24 The method according to any preceding claim further comprising:
preparing a shell from a first confectionery composition within a mould;
filling the shell with a filling material;
depositing a second confectionery composition into the mould to provide a coating, backing or lid; and
applying said stamp or roller to the surface of the second confectionery composition.

25 The method according to claim 24 further comprising applying vibration to the mould to evenly distribute the deposited second confectionery composition within the mould.

26 The method according to claim 1 comprising applying a stamp to the confectionery product, the method further comprising cooling the confectionery composition without removing the stamp, and packaging or wrapping the solidified confectionery composition and the stamp as a single product.

27 The method according to claim 4 wherein the moulds are provided on a moving conveyor and wherein the roller comprises a continuous belt mounted on at least one rolling element and arranged such that a section of said belt is parallel to the moving conveyor; the method further comprising:

operating the roller such that at least parts of the belt, or plates mounted to said belt, come into contact with the composition within the moulds, and

operating the roller such that at least in the section parallel to the moving conveyor, its speed is equal to that of the moving conveyor such that as the mould passes below the roller on the conveyor there is substantially no relative movement between the parts of the roller in contact with the confectionery composition and the moulds.

28 A moulded confectionery product having a front side and a back side and wherein a pattern or print is pressed into the back side.

29 A moulded confectionery product according to claim 28 wherein the confectionery comprises chocolate.

30 A moulded confectionery product according to claim 28 or 29 further comprising a stamp plate embedded in the back side

31 A moulded confectionery product according to any one of claims 28 to 30 wherein the confectionery product comprises a filled confectioner product.

32 A moulded confectionery product according to any one of claims 28 to 31 manufactured in accordance with any preceding claim.

33 A method substantially as described herein.

34 A moulded confectionery product substantially as described herein.



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Claims searched: 1-34

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Patents Act 1977: Search Report under Section 17

Documents considered to be relevant:

Category	Relevant to claims	Identity of document and passage or figure of particular relevance
X	1,2,3,5- 12,17- 21,23,28- 32	WO 98/30111 A1 (MARS INCORPORATED) see particularly figures 6 and 9b
X	1,2,3,5- 12,17- 21,23	EP 2543260 A1 (KRAFT FOODS) whole document
X	1,2,3,5- 12,17- 21,23	DE 9321186 U (AASTED et al) see the figures and WPI Abstract Accession No. 1994-047589
X	1,3,5,13,1 4,15,17,1 8,19,23	JPS55118348 A (LOTTE) see the abstract and figures
X	1,2,4,16,1 7,18,23,2 7	GB 831028 A (HELLIWELL) whole document
X	1,2,5,13- 18,21,23- 25	US 1673344 A (WALLBURG) whole document
X	1,2,4,16,1 7,18,21,2 3	JPH10179035 A (UETAKE) see the figures and WPI Abstract Accession No. 1998-430843

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Field of Search:

Search of GB, EP, WO & US patent documents classified in the following areas of the UKC^X :

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A23G; A23P



The following online and other databases have been used in the preparation of this search report

WPI, EPODOC

International Classification:

Subclass	Subgroup	Valid From
A23G	0001/00	01/01/2006
A23P	0001/10	01/01/2006