Title: AUTOMATIC MACHINE FOR PREPARING SLUSHES, ICE CREAM, MILKSHAKES AND/OR THE LIKE

Abstract: An automatic machine (1a, lb) for preparing slushes, ice creams, milkshakes and/or the like, comprising a container body (2, 14) adapted to contain at least one frozen tablet of slush, ice cream, milkshake and/or the like, provided with means (6, 26) for crushing the frozen tablet and with means (10, 16) for the evacuation of the tablet once it has been crushed, respectively, to obtain and dispense the final product.
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AUTOMATIC MACHINE FOR PREPARING SLUSHES, ICE CREAM, MILKSHAKES AND/OR THE LIKE

Technical Field

The present invention relates to an automatic machine for preparing slushes, ice creams, milkshakes and/or the like.

Background art

Machines for preparing slushes, ice creams, milkshakes and/or the like are commercially widespread which, depending on the product being processed, consist of slush machines, ice crushers, immersion blenders, whipping machines, refrigerators and heaters.

All such machines have, as a common aspect, the fact of generating heat in the rooms where they are installed.

In order to keep the product at a constant temperature below zero, the electric current consumption of these machines is in fact continuous, and so is the generation of heat.

In addition to the drawback that is common to the types of machines described, some of them, such as for example slush machines, suffer the drawback of continuously mixing the product which, by remaining for a long time within the bowl, loses its freshness and therefore is altered and scarcely hygienic.

Other machines, such as for example whipping machines, suffer the drawback of being large and expensive machines.

In these machines, specifically in slush machines, there is in fact a tray or bowl for each flavor.

Another drawback suffered by slush machines consists in that the product can be preserved in trays or bowls for a limited time, and therefore if no sale occurs, product degradation and excessive consumption of electric power occur.

Disclosure of the invention

The aim of the present invention is to eliminate the drawbacks noted
above, by providing an automatic machine for preparing slushes, ice creams, milkshakes and/or the like that is suitable for preparing and serving slushes, ice creams, milkshakes and/or the like without emitting heat, with a plurality of flavors, whipping the product when it is requested by the customer.

Within this aim, an object of the present invention is to provide an automatic machine for preparing slushes, ice creams, milkshakes and/or the like that is simple to provide in practice, inexpensive, compact in size and simple to use.

This aim, as well as these and other objects that will become better apparent hereinafter, are achieved by an automatic machine for preparing slushes, ice creams, milkshakes and/or the like, characterized in that it comprises a container body, which is adapted to contain a frozen tablet of product, which is provided with means for crushing said frozen tablet and with means for evacuating said crushed tablet, respectively, to obtain and dispense the final product.

Brief description of the drawings

Further characteristics and advantages of the present invention will become better apparent from the description of preferred but not exclusive embodiments of an automatic machine for preparing slushes, ice creams, milkshakes and/or the like, according to the invention, illustrated by way of non-limiting example in the accompanying drawings, wherein:

Figure 1 is a perspective view of an automatic machine for preparing slushes, ice creams, milkshakes and/or the like, according to the present invention, in a first embodiment;

Figure 2 is a perspective view of an automatic machine for preparing slushes, ice creams, milkshakes and/or the like, according to the present invention, in a second embodiment.

Ways of carrying out the invention

With reference to Figure 1, the first embodiment of the automatic machine for preparing slushes, ice creams, milkshakes and/or the like,
generally designated by the reference numeral Ia, comprises a container body 2, which can be cylindrical and is adapted to contain at least one frozen tablet, not shown, for providing slush, ice cream, milkshake and/or the like.

Means 3 for loading the frozen tablet into the container body 2 are provided which, in the first embodiment Ia, comprise a lateral opening 4, which is formed on the lateral surface of the container body 2 and is provided with a corresponding closure door 5 provided with a handle, through which the frozen tablet is to be inserted.

Advantageously, the frozen tablet is kept at a temperature equal to -18°C and can be of different flavors and made of different products; thanks to the crushing means 6, which comprise at least a blade which is actuated by motor means 7 and is slideable within the container body 2, it is possible to crush the frozen tablet at different blade rotation rates depending on the consistency that the final product must have.

Simultaneously with the crushing of the frozen tablet, such tablet is subjected to a thermal treatment performed by heating and/or cooling means 8, which comprise electric coils provided with a thermostat and wound around the container body 2 in order to lower or raise the temperature of the frozen tablet.

The lowering or rise of the temperature of the frozen tablet and the type of tablet vary depending on the final product to be obtained; in fact, if a creamy ice cream is to be obtained, the frozen tablet is crushed at high speed, and by means of the refrigerating coil it is possible to obtain a whipping of the crushed tablet at a temperature from -3°C to -8°C, so as to pass from the solid state to the creamy state. Otherwise, if a slush is to be obtained, the frozen tablet is crushed at low speed and is slightly heated by the heating coil.

Once the final product has been obtained, it can be served by evacuation means, which comprise a piston 10, slideable within the
container body 2 for the exit of the final product by means of at least one tap 11 provided at the lower end face of the container body 2.

According to the invention, the piston 10 and the driving shaft 9, which is associated with the motor means 7 and which carries at an end the blade that can perform a translational motion within the container body 2, are coaxial and kinematically independent with respect to each other for the translational motion of the blade in order to crush the tablet even when the piston 10 is not moving.

After obtaining the final product, the piston 10 performs a translational motion, compressing the final product toward the bottom of the container body 2 and making it exit through the tap 11.

As already mentioned earlier, the machine 1a can be used a number of times with different frozen tablets. In order to protect the flavor of the i-th inserted tablet without it being altered by the flavor of the preceding tablet, means 12 for washing the blade and the container body 2 are provided which comprise a water sprayer to clean them after evacuation of the previously served final product.

This first embodiment 1a can be reproduced in dimensions that are suitable to work with tablets of approximately 250 cm³, so as to be single-dose, and can comprise a supporting structure 13 constituted for example by a frame with beams.

As regards the second embodiment 1b, it comprises substantially the same whipping assembly described in the first embodiment, i.e., it comprises a cylindrical container body 14, inside which a blade 26 can slide which is mounted on a shaft 15 coaxially and independently with respect to a piston 16 that is adapted to evacuate the final product as a consequence of the action of motor means 17.

The fundamental difference between the first embodiment 1a and the second embodiment 1b consists in that in the latter the loading means 18 comprise a carousel magazine 19, which is moved by a motor and defines a
plurality of receptacles 20 for frozen tablets, which can be positioned selectively and below the container body 14 for the insertion of at least one frozen tablet in the container body 14 through a lower opening thereof by way of pusher means 21 constituted by additional pistons which can move upward.

For this second embodiment also it is possible to provide means 22 for washing the blade 26 and the container body 14, which comprise a water sprayer for cleaning them after evacuation of the previously served final product.

As for the first embodiment, in the second embodiment heating and/or cooling means 23 are provided, which comprise electrical coils provided with a thermostat and wound around the container body 14 to lower or raise the temperature of the frozen tablet.

While in the first embodiment the generic frozen tablet could be contained in a separate freezer, in this second embodiment the tablet supporting carousel 19, together with a refrigerator 24, defines a compartment which is refrigerated directly to -18°C, so as to allow the fullest automation of the machine Ib.

Such machine can in fact be integrated in a vending machine of the coin-operated or other type, so as to allow the generic customer to select the type of product from an optional control panel and to be served automatically without the intervention of an operator.

This second embodiment Ib can be provided so as to work with single-use tablets or with tablets weighing approximately 6 kg each, thus ensuring a long operating endurance.

The last difference between the two described embodiments consists in that the tap 11 provided on the bottom of the container body 2 is arranged, in the second embodiment, laterally to the container body 14 and is designated by the reference numeral 27.

Operation of the machine Ia and Ib for preparing slushes, ice creams,
milkshakes and/or the like in the two described embodiments is as follows.

Once the selected frozen tablet has been inserted in the appropriate container body 2, 14, thanks to the heating and/or cooling means 8, 23 the temperature of the inserted frozen tablet is lowered or raised, and the tablet is simultaneously crushed by the crushing means 6, 26, so as to obtain the desired final product and be able to serve it through the tap 11, 27.

In practice it has been found that the automatic machine for preparing slushes, ice creams, milkshakes and/or the like according to the present invention fully achieves the intended aim and objects, since it allows to prepare and serve automatically slushes, ice creams, milkshakes and/or the like without emitting heat, with a plurality of flavors, whipping the product when requested by the customer without the intervention of the operator.

A further advantage of the machine according to the present invention consists in that it can be integrated in vending machines of the coin-operated or other type.

Another advantage of the machine according to the present invention consists in that it provides a product of very high quality and with a high degree of hygiene.

The automatic machine for preparing slushes, ice creams, milkshakes and/or the like is susceptible of numerous modifications and variations, all of which are within the scope of the appended claims.

All the details may further be replaced with other technically equivalent elements.

In practice, the materials used, so long as they are compatible with the specific use, as well as the contingent shapes and dimensions, may be any according to requirements and to the state of the art.

The disclosures in Italian Patent Application No. MI2008A001782 from which this application claims priority are incorporated herein by reference.

Where technical features mentioned in any claim are followed by
reference signs, those reference signs have been included for the sole purpose of increasing the intelligibility of the claims and accordingly such reference signs do not have any limiting effect on the interpretation of each element identified by way of example by such reference signs.
1. An automatic machine for preparing slushes, ice creams, milkshakes and/or the like, characterized in that it comprises a container body (2, 14), which is adapted to contain at least one frozen tablet of slush, ice cream, milkshake and/or the like and is provided with means (6, 26) for crushing said at least one frozen tablet and with means (10, 16) for the evacuation of said crushed tablet, respectively, to obtain and dispense the final product.

2. The machine according to claim 1, characterized in that it comprises heating and/or refrigerating means (8, 23), which are associated with said container body (2, 14), to lower or raise the temperature of said at least one frozen tablet.

3. The machine according to one or more of the preceding claims, characterized in that said heating and/or cooling means (8, 23) comprise at least one electric coil provided with a thermostat and wound around said container body (2, 14).

4. The machine according to one or more of the preceding claims, characterized in that said crushing means (6, 26) comprise at least one or more interchangeable blades operated by motor means (4, 17) and adapted to crush said at least one frozen tablet, said at least one blade being jointly connected to a driving shaft (9, 15), which is associated with said motor means (4, 17) and performs a translational motion within said container body (2, 14).

5. The machine according to one or more of the preceding claims, characterized in that said evacuation means (10, 16) comprise a piston which can slide within said container body (2, 14) for the exit of said final product by means of at least one tap (11, 27) provided at the lower end face of said container body (2, 14).

6. The machine according to one or more of the preceding claims, characterized in that said piston (10, 16) and said driving shaft (9, 15) are
coaxial and kinematically independent with respect to each other for the translational motion of said at least one blade even when said piston (10, 16) is not moving.

7. The machine according to one or more of the preceding claims, characterized in that it comprises washing means (12, 22) for washing said at least one blade and said container body (2, 14) in order to clean them after the evacuation of said final product.

8. The machine according to one or more of the preceding claims, characterized in that it comprises loading means (3, 18) for loading said at least one frozen tablet into said container body (2, 14).

9. The machine according to one or more of the preceding claims, characterized in that said loading means (3) comprise an opening (4), which is lateral, or from the top of said container body (2) and is provided with a corresponding closure door (5), through which said at least one frozen tablet is to be inserted.

10. The machine according to one or more of the preceding claims 1 to 8, characterized in that said loading means (18) comprise a carousel magazine (19) which defines a plurality of receptacles (20) for frozen tablets which can be arranged selectively and below said container body (14) for the insertion of said at least one frozen tablet in said container body (14) through a lower opening thereof by way of pusher means (21).