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Remarks:

Amended claims in accordance with Rule 86 (2) EPC.

(54) **Method and machine for packaging coffee**

(57) The invention relates to a method of packaging coffee, wherein the coffee is filled into an inner bag, and an outer wrapper is conveyed in a machine direction and wrapped around the inner bag before or after filling the coffee into the inner bag, and wherein tear tapes are applied to the outer wrapper at an angle to the machine direction.

A corresponding packaging machine for packaging

coffee includes a device for forming an inner bag, a device for filling coffee into the inner bag, a conveyer for conveying an outer wrapper in a machine direction, a device for applying tear tapes to the outer wrapper at an angle to the machine direction, and a device for wrapping the outer wrapper around the inner bag.

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Description

Technical Field

[0001] The invention relates to a method of packaging coffee and a packaging machine for packaging coffee.

[0002] In the field of packaging food products, in particular coffee, several aspects, which involve specific requirements, have to be taken into account. Firstly, the coffee is to be packaged in a hermetic manner so as to keep its freshness and taste. Secondly, the packaging operation should be performed as economically as possible. Thirdly, it is desirable that the consumer will be able to open the package easily.

Finally, both the closed and the opened package should exhibit an attractive outer appearance.

Background Art

[0003] EP 0 298 302 B1 discloses a vacuum pack for ground coffee, which consists of a tube of multilayer composite sheet which is provided with a tear-open strip. The vacuum pack can be wrapped in an outer wrapper, which can be made of paper.

Such types of coffee packages are also available on the market, for example, for the Applicant's Jacobs Krönung-brand. DE 38 33 939 A1 and DE 38 28 847 A1 disclose similar vacuum packs.

[0004] EP 0 121 371 B2 relates to a method of producing filmic packaging material, to which a tear tape is adhered in a machine direction, i.e. in a direction, in which the packaging material is conveyed in the packaging machine.

Summary of the Invention

[0005] The invention provides a method of packaging coffee, which can efficiently produce a coffee package which is both easy to open and has an attractive appearance after opening. Moreover, a packaging machine for carrying out such a method is provided.

[0006] Accordingly, the novel method of packaging coffee includes the step of filling coffee into an inner bag. Filling the coffee into the inner bag can be performed before or after an outer wrapper, which is described in more detail below, is wrapped around the inner bag. Generally, the method and the machine described herein are also suitable for packaging other food products, preferably ground food products for which it is beneficial to have a preferably hermetic inner bag, in which the food product is contained, and which is wrapped in an outer wrapper. As an example, it can be mentioned that the method and device described herein are also suitable for packaging rice. Thus, the invention generally relates to such packages, independent of their contents.

[0007] The inner bag can consist of an airtight and/or hermetic material in order to constitute a vacuum pack in the final state. The inner bag can be formed by wrap-

ping a suitable material around a mandrel and forming a first end seal as well as a side seal. Thus, one end remains open, and coffee is filled into the bag at this end either before or after the outer wrapper is wrapped around the inner bag. Afterwards, an evacuating step can be carried out, and the second end can be sealed thereafter.

[0008] In the novel method of packaging coffee, an outer wrapper is wrapped around the inner bag. The outer wrapper can be made of paper, plastic film or laminate, for example, consisting of paper and a plastic film or a suitably coated paper, and is conveyed in a machine direction. In particular, the outer wrapper, rather a continuous web of plural outer wrappers is conveyed in the form of a web, and individual outer wrappers are cut at an appropriate stage. In particular, the outer wrapper can be partially wrapped around the inner bag, before the individual outer wrapper is cut from the web. However, individual outer wrappers can also be cut, before they are fed into the packaging machine and conveyed into the machine direction. Finally, cutting of individual outer wrappers can also be performed at any other appropriate time, for example, just before the wrapper is wrapped around the inner bag. A currently preferred process can be described as follows. The inner bag is cut from a web, wrapped around a mandrel and a first end seal and a side seal are formed. The individual outer wrapper is also cut from a web, and wrapped around the inner bag. In this state, the inner bag can still be on the mandrel. Afterwards coffee is filled into the inner bag, an evacuating step can be conducted, and both the inner bag and the outer wrapper are closed. As mentioned, the outer wrapper can also be wrapped around the inner bag, when the latter is already filled with coffee, and an optional evacuating step has been conducted.

[0009] In any case, individual outer wrappers are wrapped around the inner bag, in order to form a coffee package with an attractive appearance. In particular, a material of the inner bag can be specifically chosen so as to fulfill the requirements regarding airtightness, sealability and so on. Independent thereof, the material of the outer wrapper can be chosen to provide the desired attractive appearance.

[0010] In order to allow for easy opening of the package, tear tapes are applied to the outer wrapper. This application can be performed, while plural outer wrappers are still present as a web. As an alternative, the individual tear tape can also be applied to an individual outer wrapper, after the latter has been cut from a web. Normally, one tear tape is applied to each individual outer wrapper. This application is, in a novel manner, performed at an angle to the machine direction. In particular, the tear tapes can be applied substantially perpendicular to the machine direction, in other words in a cross-machine direction. This allows for an efficient method for packaging coffee and, at the same time, provides an easy-to-open package.

[0011] This is because, the inner bag can be formed, filled and sealed in one and the same packaging machine

and "in line" with the wrapping of the outer wrappers. Due to the application of the tear tapes at an angle to the machine direction, the tear tapes will extend across the final package, preferably horizontally in an upright package with the end seals of the inner bag being located at the bottom and top of the package. Thus, the top part of the outer wrapper can, for example, be removed after the tear tape has been gripped and torn around the package. This allows, firstly, easy opening of both the outer wrapper and the inner bag, as the area, where the inner bag is to be opened, is exposed by removal of a part of the outer wrapper. Moreover, also in the opened state, the package exhibits an attractive appearance, as a major part of the outer wrapper can stay intact and has a relatively straight edge, where the tear tape has been torn, and only a part of the outer wrapper has been removed. In particular, when a major part of the outer wrapper remains on the inner bag, the surface thereof is still visible on the opened package, and the "branding", any product information and the like is still legible on the opened package. This is also beneficial for the consumer, as he can easily realize what the opened package contains.

[0012] Preferred embodiments of the method described herein are specified in dependent claims.

[0013] As mentioned above, specific advantages can be obtained for the coffee package, when the tear tapes are applied in a direction substantially perpendicular to the machine direction. This particularly implies that the tear tape is oriented substantially horizontally in an upright package so that the above-mentioned advantageous effects can be realized. The package is to be considered in an upright position, when any printing thereon is legible, and the end seals of the inner bag are normally located at the bottom and top of the package, in this upright state.

[0014] Generally, the invention is independent of certain details regarding the application of the tear tapes. However, the tear tapes can advantageously be applied to a rear side of an outer wrapper, which is printed on a front side. In other words, the outer face of the outer wrapper is printed, in order to provide both an attractive appearance and product information. The tear tape of the package is "hidden" by being applied to the (inner) rear side of the outer wrapper. The front side can contain an indication that a tear tape is present, in order to assist the consumer in finding and using the tear tape, when the package is to be opened. It can, however, also be mentioned that the tear tape can also be applied on an outer face or a front side of the outer wrapper. In such a case, the tear tape can be particularly wide and can be printed in order to make the consumer especially aware of the presence of the tear tape and/or provide additional product information in a particularly exposed manner.

[0015] It has been found particularly advantageous for the method of packaging coffee, when the tear tapes are applied in a self-adhesive state. In this embodiment, the application of the tear tapes can be conducted particu-

larly efficiently.

[0016] Moreover, the tear tapes can also be applied in a sealable state. Thus, they can be heat or cold sealed to the outer wrapper. Finally, they can be suitably glued to the outer wrapper.

[0017] Moreover, tests have shown that it provides advantages if the tear tapes are, before they are applied to the outer wrapper, cut to a predetermined width. In other words, the tear tapes are supplied to the outer wrapper with the required width so that they do not need to be cut to the predetermined width immediately before their application to the outer wrapper. Moreover, the tear tapes will normally be cut to the appropriate length, preferably extending across the complete outer wrapper. This cutting to length can be performed before, during or after the tear tape is applied to the outer wrapper.

[0018] In order to merely need one cutter in connection with the tear tapes, these can be supplied as rolls having a continuous strip of tear tapes with the desired width wound thereon.

[0019] In the novel method of packaging coffee, the tear tapes are preferably applied intermittently, which is advantageously compatible with the intermittent filling and packaging of coffee packages. Experiments have shown that the inventive method currently allows up to 130 or even more coffee packages to be produced per minute which corresponds to an efficient method of producing easy-to-open packages.

[0020] The above-mentioned object underlying the invention is, moreover, solved by the packaging machine described in claim 8.

[0021] Corresponding to the method described above, the packaging machine includes a device for forming an inner bag, a device for filling coffee into the inner bag, preferably a device for sealing the inner bag, a conveyer for conveying an outer wrapper in a machine direction, a device for applying tear tapes to the outer wrapper at an angle to a machine direction, and a device for wrapping the outer wrapper around the inner bag. This list of components of the packaging machine described herein does not imply any particular order of method steps. Rather, numerous alternatives, as detailed above in connection with the inventive method, are possible.

[0022] Preferred embodiments of the packaging machine described herein substantially correspond to preferred embodiments of the inventive method.

[0023] In addition, the packaging machine can include a cutter for cutting the tear tapes to a predetermined width.

[0024] Moreover, the device for applying the tear tapes can include a device for accommodating at least one roll of tear tapes. This allows the tear tapes to be supplied as a continuous strip of material, from which individual tear tapes are cut and applied to the outer wrapper.

[0025] In order to be compatible with well-established machines for forming the inner bag of the coffee package, the device for forming the inner bag can include a mandrel, around which the material, which is to form the inner

bag, is wrapped and sealed at one end and the side.

Claims

1. A method of packaging coffee, wherein the coffee is filled into an inner bag, and an outer wrapper is conveyed in a machine direction and wrapped around the inner bag before or after filling the coffee into the inner bag, and wherein tear tapes are applied to the outer wrapper at an angle to the machine direction. 10
2. The method in accordance with claim 1, wherein the tear tapes are applied in a direction substantially perpendicular to the machine direction. 15
3. The method in accordance with claim 1 or 2, wherein the outer wrapper has a front side, which can be printed, and the tear tapes are applied to a rear side of the outer wrapper. 20
4. The method in accordance with any of the preceding claims, wherein the tear tapes are applied in a self-adhesive state. 25
5. The method in accordance with any of the preceding claims, wherein the tear tapes are, before being applied to the outer wrappers, cut to a predetermined width. 30
6. The method in accordance with claim 5, wherein the tear tapes are supplied as rolls having a predetermined width. 35
7. The method in accordance with any of the preceding claims, wherein the tear tapes are applied intermittently. 40
8. A packaging machine for packaging coffee, including a device for forming an inner bag, a device for filling coffee into the inner bag, a conveyor for conveying an outer wrapper in a machine direction, a device for applying tear tapes to the outer wrapper at an angle to the machine direction, and a device for wrapping the outer wrapper around the inner bag. 45
9. The packaging machine in accordance with claim 8, wherein the device for applying the tear tapes is adapted to apply the tear tapes in a direction substantially perpendicular to the machine direction. 50
10. The packaging machine in accordance with claim 8 or 9, further including a cutter for cutting the tear tapes to a predetermined width. 55
11. The packaging machine in accordance with any of claims 8 to 10, wherein the device for applying the tear tapes includes a device for accommodating at

least one roll of tear tapes.

12. The packaging machine in accordance with any of claims 8 to 11, wherein the device for forming the inner bag includes a mandrel.

Amended claims in accordance with Rule 86(2) EPC.

1. A method of packaging coffee, wherein the coffee is filled into an inner bag, and an outer wrapper is conveyed in a machine direction and wrapped around the inner bag before or after filling the coffee into the inner bag, and wherein tear tapes are applied to the outer wrapper substantially perpendicular to the machine direction and the outer wrapper is wrapped around the inner bag in such a way that the tear tape is oriented substantially horizontally in an upright package.
2. The method in accordance with claim 1, wherein the outer wrapper has a front side, which can be printed, and the tear tapes are applied to a rear side of the outer wrapper.
3. The method in accordance with any of the preceding claims, wherein the tear tapes are applied in a self-adhesive state.
4. The method in accordance with any of the preceding claims, wherein the tear tapes are, before being applied to the outer wrappers, cut to a predetermined width.
5. The method in accordance with claim 4, wherein the tear tapes are supplied as rolls having a predetermined width.
6. The method in accordance with any of the preceding claims, wherein the tear tapes are applied intermittently.
7. A packaging machine for packaging coffee, including a device for forming an inner bag, a device for filling coffee into the inner bag, a conveyor for conveying an outer wrapper in a machine direction, a device for applying tear tapes to the outer wrapper substantially perpendicular to the machine direction, and a device for wrapping the outer wrapper around the inner bag in such a way that the tear tape is oriented substantially horizontally in an upright package.
8. The packaging machine in accordance with claim 7, further including a cutter for cutting the tear tapes to a predetermined width.
9. The packaging machine in accordance with claims

7 or 8, wherein the device for applying the tear tapes includes a device for accommodating at least one roll of tear tapes.

10. The packaging machine in accordance with any of claims 7 to 9, wherein the device for forming the inner bag includes a mandrel.

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European Patent
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EUROPEAN SEARCH REPORT

Application Number
EP 05 01 6623

DOCUMENTS CONSIDERED TO BE RELEVANT			
Category	Citation of document with indication, where appropriate, of relevant passages	Relevant to claim	CLASSIFICATION OF THE APPLICATION (IPC)
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A	DE 38 43 333 A1 (JACOBS SUCHARD AG, ZUERICH, CH) 28 June 1990 (1990-06-28) * abstract; figures 5-8 *	1	
			TECHNICAL FIELDS SEARCHED (IPC)
			B65B B31B B65D
The present search report has been drawn up for all claims			
Place of search The Hague		Date of completion of the search 15 December 2005	Examiner Grentzius, W
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**ANNEX TO THE EUROPEAN SEARCH REPORT
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EP 05 01 6623

This annex lists the patent family members relating to the patent documents cited in the above-mentioned European search report.
The members are as contained in the European Patent Office EDP file on
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15-12-2005

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REFERENCES CITED IN THE DESCRIPTION

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