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(54) Title: A METHOD OF AND AN INSTALLATION FOR MILKING AN ANIMAL HAVING AT LEAST TWO TEATS

(57) Abrégé/Abstract:
A method of milking an animal having at least two teats. The method comprises a stimulation phase in which the teats of the animal are stimulated and a milking phase in which the animal is milked. The method comprises the steps of applying a stimulation phase and a milking phase to one of the teats of the animal and applying substantially only a milking phase to at least one of the other teats of the animal. The method further comprises a determination phase in which the teat with the shortest period of time in which the teat is milked out is determined, the stimulation phase and the milking phase being applied to the animal's teat with the shortest period of time, and the milking phase being applied substantially only to at least one of the other teats of the animal.

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(54) Title: A METHOD OF AND AN INSTALLATION FOR MILKING AN ANIMAL HAVING AT LEAST TWO TEATS

(57) Abstract: A method of milking an animal having at least two teats. The method comprises a stimulation phase in which the teats of the animal are stimulated and a milking phase in which the animal is milked. The method comprises the steps of applying a stimulation phase and a milking phase to one of the teats of the animal and applying substantially only a milking phase to at least one of the other teats of the animal. The method further comprises a determination phase in which the teat with the shortest period of time in which the teat is milked out is determined, the stimulation phase and the milking phase being applied to the animal's teat with the shortest period of time, and the milking phase being applied substantially only to at least one of the other teats of the animal.

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A METHOD OF AND AN INSTALLATION FOR MILKING AN ANIMAL HAVING AT LEAST TWO TEATS

The invention relates to a method of milking an animal having at least two teats.

Such a method is known per se, see EP-A-1,369,029. In this method it is ensured that teats with long periods of time, i.e. teats needing more time for being milked out, will be stimulated longer or at a higher frequency.

It is an object of the invention to provide an alternative method.

According to one aspect of the present invention, there is provided a method of milking an animal having at least two teats, the method comprising: a stimulation phase in which the teats of the animal are stimulated, a milking phase in which the animal is milked, wherein the method comprises the steps of: applying a stimulation phase and a milking phase to one of the teats of the animal, and applying substantially only a milking phase to at least one of the other teats of the animal.

According to another aspect of the present invention, there is provided a method described herein, wherein the method is applied to an animal having four teats, the method comprising the steps of applying a stimulation phase and a milking phase to a number of teats of the animal, which number is smaller than four and greater than or equal to one, and applying substantially only a milking phase to the other teats of the animal.

According to still another aspect of the present invention, there is provided a method described herein, wherein the method further comprises: a determination phase in which the teat with the longest period of time in which the teat is milked out is determined, substantially only the milking phase being applied to the animal's teat with the longest period of time, and the stimulation phase and the milking phase being applied to at least one of the other teats of the animal.

According to yet another aspect of the present invention, there is provided a method described herein, wherein, in the determination phase, the teat with the shortest period of time in which the teat is milked out is determined, the method being applied to an animal having four teats, the stimulation phase and the milking phase being applied to the teat with the shortest period of time.

According to a further aspect of the present invention, there is provided a method described herein, wherein the difference between the periods of time of each of the two other teats and the value of the period of time of the teat with the shortest and/or longest period of time are determined, each difference being compared with a threshold value and, in dependence on the result of the comparison, it being decided whether the relevant other teat will be subjected to a stimulation phase and a milking phase or substantially only to a milking phase.

According to yet a further aspect of the present invention, there is provided a method described herein, wherein milking takes place by means of connecting a teat cup to a respective teat, and wherein the stimulation phase is applied at least to the teat that is connected first.

According to still a further aspect of the present invention, there is provided a method described herein, wherein the teat to which the stimulation phase is applied alternates according to a particular routine after a number of milkings.

According to another aspect of the present invention, there is provided an installation for milking an animal having at least two teats, the installation comprising: stimulation means for stimulating the teats of the animal, milking means for milking the animal, and control means for controlling the operation of the stimulation means and the milking means, wherein the control means are designed to control the stimulation means and the milking means in such a way that one of the teats of the animal will be stimulated and milked, and wherein at least one of the other teats of the animal will substantially only be milked.

According to yet another aspect of the present invention, there is provided an installation as described herein, wherein the installation is suitable for milking an animal having four teats, the control means being designed to control the stimulation means and the milking means in such a way that a number of teats of the animal will be stimulated and milked, which number is smaller than four and greater than or equal to one, and wherein all the other teats of the animal will be milked.

According to another aspect of the present invention, there is provided an installation described herein, wherein the installation further comprises determination means for determining the teat with the longest period of time in which the teat is milked out, the control means being designed to control the stimulation means and the milking means in such a way that the animal with the longest period of time will substantially only be milked, and that at least one of the other teats of the animal will be stimulated and milked.

According to still another aspect of the present invention, there is provided an installation described herein, wherein the determination means are suitable for determining the teat with the shortest period of time in which the teat is milked out, the control means being designed to control the stimulation means and the milking means in such a way that the teat with the shortest period of time will be stimulated and milked.

According to yet another aspect of the present invention, there is provided an installation described herein, wherein the determination means are suitable for determining the difference between the periods of time of each of the two other teats and the value of the period of time of the teat with the shortest and/or longest period of time, wherein the installation is provided with comparison means for comparing each difference with a threshold value and for supplying a comparison signal representing said difference, the control means controlling, in dependence on the comparison signal, the stimulation means and the milking means for each other

teat in such a way that the relevant other teat will be stimulated and milked, or will substantially only be milked.

According to a further aspect of the present invention, there is provided an installation described herein, wherein the installation comprises teat cups that are connectable to a teat, the control means controlling the stimulation means and the milking means in such a way that at least the first teat connected will be stimulated and milked.

According to yet a further aspect of the present invention, there is provided an installation described herein, wherein the control means comprise a routine that controls the stimulation means in an alternating manner after one or more milkings.

The invention is based on the insight that the known method has drawbacks owing to the fact that longer stimulation times are used. The total time needed for milking the animal thus increases unnecessarily. By stimulating at a higher frequency the teat in question is unnecessarily loaded and this may lead to inconvenience for the animal. According to the invention, by substantially only milking the teat with the longest period of time, and consequently not stimulating said teat or stimulating it considerably less long than the other teats, it is ensured that, by stimulating at least one of the other teats, there will be formed in the animal hormones promoting the milk production of the animal for all the teats, whereas the teat with the longest period of time, i.e. the slowest milking teat, will not be unnecessarily loaded by stimulation, and a relatively short total milking time will still be obtained. Determination of the (longest) period of time takes place, for example, during a previous milking of the animal, said period of time being used in a subsequent milking to decide whether a teat will be substantially only milked or will be stimulated and milked.

If the method is applied to an animal having four teats, the teat with the shortest period of time in which the teat is milked out is preferably determined in the determination phase, the stimulation phase and the milking phase being applied to

the teat with the shortest period of time. In this case of an animal having four teats, the difference between the periods of time of each of the two other teats and the value of the period of time of the teat with the shortest and/or longest period of time are preferably determined, each difference being compared with a threshold value and, in dependence on the result of the comparison, it is decided

whether the relevant other teat will be subjected to a stimulation phase and a milking phase or substantially only to a milking phase. Said threshold value, which may be a percentage, a fixed value or a variable, adjustable value, thus ensures that the other teats or one of the other teats will be both stimulated and milked.

The invention is also based on the insight that, besides the period of time, other parameters may also be used to decide whether at least one of the teats will substantially only be milked, whereas the other eats will be stimulated and milked. Such a parameter may be, for example, the sensitivity of the teat to stimulation. The invention thus relates in general to a method of milking an animal having at least two teats, the method comprising a stimulation phase in which the teats of the animal are stimulated, and a milking phase in which the animal is milked, characterized in that the method comprises the steps of applying a stimulation phase and a milking phase to one of the teats of the animal, and applying substantially only a milking phase to at least one of the other teats of the animal.

If this method is applied to an animal having four teats, the method preferably comprises the steps of applying a stimulation phase and a milking phase to a number of teats of the animal, which number is smaller than four and greater than or equal to one, and applying substantially only a milking phase to the other teats of the animal.

It is advantageous if milking takes place by means of connecting a teat cup to a respective teat, the stimulation phase being applied at least to the teat that is connected first. It is known that the hormone secreted upon stimulation of a teat has an effect on all the teats. In this manner the milk production of teats not yet connected is already stimulated at the first milking action.

It is further advantageous if the teat to which the stimulation phase is applied alternates after a number of milkings according to a particular routine. In this manner it is prevented that a teat will be irritated or even damaged by too much stimulation. Alternating can take place at random or in a particular sequence. Alternating can be limited to only between the rear quarters, because these are usually connected prior to the front quarters. Alternating can take place after a particular period of time has elapsed but preferably takes place after one or more milkings.

The invention also relates to an installation for milking an animal having at least two teats, the installation comprising stimulation means for stimulating the teats of the animal, milking means for milking the animal, and control means for controlling the operation of the stimulation means and the milking means, characterized in that the control means are designed to control the stimulation means and the milking means in such a way that one of the teats of the animal will be stimulated and milked, and in that at least one of the other teats of the animal will substantially only be milked. Since such an installation is known from EP-A 1,369,029, it will be easy for a person skilled in the art to program the control device disclosed therein, for example a computer, and/or to provide it with comparison means known per se, in such a way that it will be possible to put the inventive features (also in conformity with the embodiments described hereinafter) into practice. Consequently, a more detailed description of the installation is considered superfluous.

The installation is preferably suitable for milking an animal having four teats, the control means being designed to control the stimulation means and the milking means in such a way that a number of teats of the animal will be stimulated and milked, which number is smaller than four and greater than or equal to one, and that the other teats of the animal will all be milked.

The installation further comprises in an advantageous manner determination means for determining the teat with the longest period of time in which the teat is milked out, the control means being designed to control the stimulation means and the milking means in such a way that the animal with the longest period of time will substantially only be milked, and that at least one of the other teats of the animal will be stimulated and milked. In this case, the determination means are preferably suitable for determining the teat with the shortest period of time in which the teat is milked out, the control means being designed to control the stimulation means and the milking means in such a way that the teat with the shortest period of time will be stimulated and milked. The determination means are then in particular suitable for determining the difference between the periods of time of each of the two other teats and the value of the period of time of the teat with the shortest and/or longest period of time, the installation being provided with comparison means for comparing each difference

with a threshold value and for supplying a comparison signal representing said difference, the control means controlling, in dependence on the comparison signal, the stimulation means and the milking means for each other teat in such a way that the relevant other teat will be stimulated and milked, or will substantially only be milked.

In a favourable embodiment, the installation comprises teat cups that are connectable to a teat, the control means controlling the stimulation means and the milking means in such a way that at least the first teat connected will be stimulated and milked. It is further advantageous if the control means comprise a routine that controls the stimulation means in an alternating manner after one or more milkings. By controlling in an alternating manner is meant that after a number of milkings another teat is stimulated.

CLAIMS:

1. A method of milking an animal having at least two teats, the method comprising:

a stimulation phase in which the teats of the animal are stimulated,

a milking phase in which the animal is milked,

wherein the method comprises the steps of:

applying a stimulation phase and a milking phase to one of the teats of the animal, and

applying substantially only a milking phase to at least one of the other teats of the animal.

2. A method as claimed in claim 1, wherein the method is applied to an animal having four teats, the method comprising the steps of applying a stimulation phase and a milking phase to a number of teats of the animal, which number is smaller than four and greater than or equal to one, and

applying substantially only a milking phase to the other teats of the animal.

3. A method as claimed in claim 1 or 2, wherein the method further comprises:

a determination phase in which the teat with the longest period of time in which the teat is milked out is determined, substantially only the milking phase being applied to the animal's teat with the longest period of time, and

the stimulation phase and the milking phase being applied to at least one of the other teats of the animal.

4. A method as claimed in claim 3, wherein, in the determination phase, the teat with the shortest period of time in which the teat is milked out is determined, the method being applied to an animal having four teats, the stimulation phase and the milking phase being applied to the teat with the shortest period of time.

5. A method as claimed in claim 4, wherein the difference between the periods of time of each of the two other teats and the value of the period of time of the teat with the shortest and/or longest period of time are determined, each difference being compared with a threshold value and, in dependence on the result of the comparison, it being decided whether the relevant other teat will be subjected to a stimulation phase and a milking phase or substantially only to a milking phase.

6. A method as claimed in any one of claims 1 to 5, wherein milking takes place by means of connecting a teat cup to a respective teat, and wherein the stimulation phase is applied at least to the teat that is connected first.

7. A method as claimed in any one of claims 1 to 6, wherein the teat to which the stimulation phase is applied alternates according to a particular routine after a number of milkings.

8. An installation for milking an animal having at least two teats, the installation comprising:

stimulation means for stimulating the teats of the animal,

milking means for milking the animal, and

control means for controlling the operation of the stimulation means and the milking means,

wherein the control means are designed to control the stimulation means and the milking means in such a way that one of the teats of the animal will be stimulated and milked, and wherein at least one of the other teats of the animal will substantially only be milked.

9. An installation as claimed in claim 8, wherein the installation is suitable for milking an animal having four teats, the control means being designed to control the stimulation means and the milking means in such a way that a number of teats of the animal will be stimulated and milked, which number is smaller than four and greater than or equal to one, and wherein all the other teats of the animal will be milked.

10. An installation as claimed in claim 8 or 9, wherein the installation further comprises determination means for determining the teat with the longest period of time in which the teat is milked out, the control means being designed to control the stimulation means and the milking means in such a way that the animal with the longest period of time will substantially only be milked, and that at least one of the other teats of the animal will be stimulated and milked.

11. An installation as claimed in claim 10, wherein the determination means are suitable for determining the teat with the shortest period of time in which the teat is milked out, the control means being designed to control the stimulation means and the milking means in such a way that the teat with the shortest period of time will be stimulated and milked.

12. An installation as claimed in claim 11, wherein the determination means are suitable for determining the difference between the periods of time of each of the two other teats and the value of the period of time of the teat with the shortest and/or longest period of time, wherein the installation is provided with comparison means for comparing each difference with a threshold value and for supplying a comparison signal representing said difference, the control means controlling, in dependence on the comparison signal, the stimulation means and the milking means for each other teat in such a way that the relevant other teat will be stimulated and milked, or will substantially only be milked.

13. An installation as claimed in any one of claims 8 to 12, wherein the installation comprises teat cups that are connectable to a teat, the control means

controlling the stimulation means and the milking means in such a way that at least the first teat connected will be stimulated and milked.

14. An installation as claimed in any one of claims 8 to 13, wherein the control means comprise a routine that controls the stimulation means in an alternating manner after one or more milkings.