The opinion in support of the decision being entered today is *not* binding precedent of the Board.

UNITED STATES PATENT AND TRADEMARK OFFICE

BEFORE THE BOARD OF PATENT APPEALS
AND INTERFERENCES

Ex parte UZI BIRK and HANS MARTIN SJOLUND

Appeal 2006-2786
Application 10/240,329
Technology Center 3600

Decided: June 27, 2007

Before BRADLEY R. GARRIS, THOMAS A. WALTZ and
LINDA M. GAUDETTE, *Administrative Patent Judges*.

GARRIS, *Administrative Patent Judge*.

DECISION ON APPEAL

Appellants appeal the final rejection of claims 1, 3-5, 7-9, and 11-23 under 35 U.S.C. § 134. We have jurisdiction over the appeal pursuant to 35 U.S.C. § 6(b).

We AFFIRM.

INTRODUCTION

Appellants invented a method and apparatus for separating foremilk in an automatic milking process (claims 1 and 9; Specification 2). Appellants'

method and apparatus senses the transparency of the milk to electromagnetic radiation to determine when the transition from foremilk to good quality milk occurs (Specification 2-3). Once the transition from foremilk to good quality milk is sensed, a controller regulates a valve to switch the milk flow from a waste milk container for the foremilk to a collection vessel for the good milk (Specification 3).

Claims 1, 4, 5, 9, 15, and 19 are illustrative:

1. A method of separating foremilk in an automatic milking process, comprising controlling a means operable to divert foremilk away from a milk line in accordance with a sensed optical property of the milk whereby the amount of foremilk separated is dependent upon the sensed optical property, the sensed optical property being transparency of the milk to electromagnetic radiation.

4. A method according to claim 1, wherein separation of the foremilk is terminated upon the sensed milk transparency rising after the milk opacity reaches an initial peak after the start of milking.

5. A method of milking an animal wherein milk extracted from a teat of an animal is directed along a milk path to a container, an initial portion of the milk extracted from the teat being diverted from the milk path, an optical property of the milk extracted from the teat is sensed, the sensed optical property being the transparency of the milk to electromagnetic radiation, and the diversion of the initial milk flow from the milk path leading to the container is controlled in dependence upon the sensed optical transparency.

9. An apparatus for the automatic milking of animals comprising a teat cup connected to a main milk line through which milk extracted from a teat is conveyed, a device for directing milk to flow through the main milk line or to a branch line, control means for controlling the device so that an initial amount of milk extracted from a teat is directed into the branch line, and an optical sensing means for sensing an optical property of the milk upstream of the flow directing device, wherein the optical sensing means comprises a device that senses the transparency of the milk and produces a signal dependent on the milk transparency, and the control means receives

the signal produced by the optical sensing means and detects a predetermined change in the transparency sensed by the optical sensing means, the control means operating the flow directing device to terminate the flow of milk into the branch line and to direct the milk to flow through the main milk line in response to the predetermined change in the milk transparency being detected.

15. An automatic milking method in which premilking is performed to remove foremilk prior to a main milking stage, wherein transparency of the milk is sensed at least during an initial period of the main milking stage and therefrom it is determined whether premilking was carried out correctly.

19. An automatic milking apparatus comprising means for premilking a teat from an udder, a teat cup for attachment to the teat after premilking for carrying out a main milking stage in which milk extracted by the teat cup is conducted through a milk line to a container, and a transparency sensing means for sensing the transparency of the milk extracted from the teat by the teat cup, wherein the transparency sensing means produces a signal dependent on the milk transparency, and a control device is provided to receive the signal produced by the transparency sensing means and detect a predetermined change in the transparency sensed by the transparency sensing means whereby the transparency falls initially and then rises at the beginning of milk extraction during the main milking stage, and wherein a means controlled by the control device is provided to interrupt delivery of milk to the container in response to the predetermined change in transparency detected by the control device.

The Examiner relies on the following prior art references as evidence of unpatentability:

Tamas	US 4,190,020	Feb. 26, 1980
Brayer	US 5,116,119	May 26, 1992
Petterson	WO 99/31966	Jul. 1, 1999

The rejections as presented by the Examiner are as follows:

1. Claims 1, 3-5, 7-9, 11-20, 22, and 23 are rejected under 35 U.S.C. § 102(a) as being unpatentable over Petterson.
2. Claims 15-23 are rejected under 35 U.S.C. § 102(b) as being unpatentable over Tamas.
3. Claims 1, 3-5, 7-9, and 11-14 are rejected under 35 U.S.C. § 103(a) over Tamas in view of Brayer.
4. Claim 21 is rejected under 35 U.S.C. § 103(a) as being unpatentable Petterson in view of Tamas.

Regarding the § 102(a) rejection over Petterson, Appellants separately argue claims 1, 4, 5, 8, 9, and 19. Accordingly, claims 3, 7, 11-18, and 20-23 stand or fall with claims 1, 4, 5, 8, 9, and 19.

Regarding the § 102(b) rejection over Tamas, Appellants separately argue claims 15 and 19. Accordingly, claims 16-18, and 20-23 stand or fall with claims 15 and 19.

Regarding the § 103(a) rejection over Tamas in view of Brayer, Appellants separately argue claims 1, 5, and 9. Accordingly, claims 3-4, 7-8 and 11-14 stand or fall with claims 1, 5, and 9.

OPINION

35 U.S.C. § 102(a) REJECTION OVER PETTERSON

INDEPENDENT METHOD CLAIMS 1 AND 5

Appellants argue that Petterson fails to disclose that sensing the transparency of the milk may be used as a means to control any aspect of the method (Br. 7). Appellants contend that Petterson does not disclose

separating foremilk, rather, Petterson senses whether milk, be it foremilk or normal milk, has blood or clots and then discards the milk if it does contain blood or clots or sends it to the collection vessel if it does not contain blood or clots (Br. 7-8). Appellants further argue that Petterson's embodiment of Figures 7 and 8 does not show "means operable to divert foremilk away from a milk line" (Br. 8)

We cannot agree with Appellants' arguments for the reasons discussed below.

Petterson discloses a method and apparatus for sensing milk quality to ensure that "no foremilk or milk not suitable for human consumption comes into the milk line system including the milk tank" (Petterson 6, ll. 19-22; Figure 1). Petterson describes Figure 1 as ". . . an apparatus for separation, analysing and taking care of foremilk according to the invention" (Petterson 4). To ensure that "no foremilk" comes into the milk tank or milk line, Petterson uses sensing means 36 to analyze the milk quality and send a signal to control unit 14 (Petterson 6-7). The control unit 14 controls valve device 32 and three-way valve 37 depending upon the milk quality sensed by sensing means 36 (Petterson 7). Petterson's sensing means 36 may be "light emitting diodes (LED), light sensing means, infrared detectors and video systems. . ." (Petterson 11).

Appellants disclose that the sensing means used in their method and apparatus for separating foremilk includes "a light source, such as a light omitting [*sic* emitting] diode and a photosensitive component, e.g. a phototransistor" (Specification 3).

Therefore, Petterson's sensing means are the same as Appellants' sensing means (i.e., a light emitting diode and a photosensitive component

(i.e., a light sensing means)). Because both sensing means are the same they must sense the same property (i.e., transparency of the milk). Accordingly, we find that Petterson's sensing means for detecting the presence of blood or clots performs this function by detecting a change in transparency.

Moreover, Appellants state that milk transparency varies with the "fat and protein content" of the milk (Br. 10). Thus, changes in protein and fat content will affect the transparency of the milk. Blood and clots contain protein[1] such that the additional protein added to the milk by the blood and clots would affect the transparency of the milk and would be sensed by the sensing means (i.e., light emitting diodes). Therefore, Petterson's detection of blood and clots involves measuring the transparency of the milk. For these reasons, we find that Petterson discloses sensing the transparency of the milk.

Petterson further discloses that the sensing means 36 (i.e., transparency sensor) sends a signal regarding milk quality to control unit 14, which controls three-way valve 37 (i.e., "means operable to divert foremilk away from a milk line" (claim 1)) to send the milk to either a waste tank 22 or milk tank 20 depending upon the signal from the sensing means 36 (Petterson, 6, l. 14 to 7, l. 1-15). Therefore, contrary to Appellants' arguments, Petterson discloses using transparency to determine milk quality and, based upon the transparency measured, where the milk should be sent (i.e., the waste tank or milk tank).

Regarding Appellants' argument that Petterson does not distinguish between foremilk and "normal milk" (Br. 8), we understand Petterson's

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[1] *Hawley's Condensed Chemical Dictionary*, 12th Ed., "blood," p. 157, © 1993.

disclosure as stating that all foremilk is separated out so as to prevent any of the foremilk from entering a milk line or milk tank 20. Specifically, Petterson states:

> Hence, by setting a predetermined value in the control unit 14, which depends on the required milk quality it is possible to ascertain that *no foremilk* or milk not suitable for human consumption comes into the milk line system including the milk tank. (emphasis added) (Petterson 6, ll. 19-22).

From this disclosure it is clear that Petterson uses control unit 14 to operate the apparatus to remove all foremilk so that "no foremilk" enters the milk line system including the milk tank. Control unit 14 is disclosed as being coupled to sensing means 36 to perform the foremilk removal (Petterson 6-7).

Petterson also states that Figure 1 "is a general diagram of an apparatus for <u>*separation, analysing and taking care of foremilk*</u> according to the invention" (emphasis added), and Figure 2 "is a diagram of an example of an arrangement of devices, which are included in the apparatus according to fig. 1" (Petterson, 4). This disclosure further underscores that Petterson discloses a method and apparatus for separating out the foremilk.

For the above reasons we are not persuaded by Appellants' arguments regarding the § 102(a) rejection of claims 1 and 5 over Petterson.

DEPENDENT METHOD CLAIMS 4 AND 8

Claims 4 and 8 depend upon claims 1 and 5, respectively, and are rejected under § 102(a) over Petterson. Appellants argue that Petterson does not disclose the following feature of claims 4 and 8: "separation of the

foremilk is terminated upon the sensed milk transparency rising after the milk opacity reaches an initial peak after the start of milking" (claims 4 and 8) (Br. 8-9).

We cannot agree with Appellants' arguments for the reasons below.

As previously noted in our discussion of claims 1 and 5, Petterson discloses a method for separating foremilk using a transparency sensing means 36 (Petterson, 6, l. 14 to 7, l. 10). That is, the transparency sensing means 36 for sensing the presence of clots or blood performs this function by sensing the transparency of the milk (See our discussion in the CLAIMS 1 AND 5 section of this opinion).

Based on our previous analysis regarding claims 1 and 5, the presence of blood or clots translates into an increase in the opacity of the foremilk due to an increase in protein in the foremilk from the blood or clots. Correspondingly, as the amount of blood or clots in the foremilk decreases, the transparency of the foremilk increases. Thus, Petterson's sensing means 36 sends a signal to the control unit 14 indicating the increase in transparency, and the control unit 14 sends a signal to the three-way valve 37 to control separation in accordance with the transparency measurement (Petterson, 6, l. 14 to 7, l. 10).

From the foregoing discussion, we find that Petterson satisfies the termination step of claims 4 and 8.

INDEPENDENT APPARATUS CLAIMS 9 AND 19

Appellants argue that Petterson does not disclose the following claim features: (1) "control means that receives the signal produced by the optical sensing means and detects a predetermined change in the transparency

sensed by the optical sensing means, the control means operating the flow directing device to terminate the flow of milk into the branch line and to direct milk to flow through the main milk line in response to the predetermined change in the milk transparency being detected" (claim 9) (Br. 9), and (2) "a control device provided to receive the signal produced by the transparency sensing means and detect a predetermined change in the transparency sensed by the transparency sensing means whereby the transparency falls initially and then rises at the beginning of milk extraction during the main milking stage, and wherein a means controlled by the control device is provided to interrupt delivery of milk to the container in response to the predetermined change in transparency detected by the control device"[2] (claim 19) (Br. 9).

As we previously indicated in our discussion of claims 1 and 5, Petterson discloses a control unit 14 which receives signals from sensing means 36 and uses those signals to control the three-way valve 37 to either direct the foremilk into the waste tank 22 or milk tank 20 (Petterson 6, l. 14 to 7, l. 10). Thus, Petterson discloses "control means [i.e., control unit 14] operating the flow directing device [i.e., three-way valve 37] to terminate the

[2] Neither Appellants nor the Examiner has expressly interpreted the "means-plus-function" language of these claims. In any event, when properly interpreted, the here claimed "means" encompasses the structure of Petterson. For example, Petterson's "three-way valve" is the same as Appellants' "means" for interrupting delivery of milk as recited in claim 19 with the corresponding structure (i.e., a three-way valve) for such "means-plus-function" language recited in claim 21 (which ultimately depends on claim 19) and disclosed on page 6, lines 12-19 of the Specification. *In re Donaldson*, 16 F.3d 1189, 1195, 29 USPQ2d 1845, 1850 (Fed. Cir. 1994) (*en banc*).

flow of milk into the branch line and to direct the milk to flow through the main milk line" (claim 9) and "means controlled by the control device is provided to interrupt delivery of milk to the container" (claim 19) (i.e., three-way valve 37), which are controlled based on the transparency sensed by sensing means 36.

We also add that since claims 9 and 19 are apparatus claims, they must structurally define over the prior art. *In re Schreiber*, 128 F.3d 1473, 1477-78, 44 USPQ2d 1429, 1431-32 (Fed. Cir. 1997). Petterson's milking apparatus structurally satisfies each of Appellants' features of claims 9 and 19 such that it need only be capable of performing Appellants' functional recitations. *Schreiber*, 128 F.3d at 1478, 44 USPQ2d at 1432. Petterson's apparatus is structured (i.e., the control means 14 receives a signal from the sensing means 36 and the signal is used to control three-way valve 37 and valve device 32) such that it is capable of performing the recited functions.

Accordingly, Petterson discloses both of Appellants' argued features of claims 9 and 19.

Based on the foregoing analysis of claims 1, 4, 5, 8, 9, and 19, we affirm the Examiner's § 102(a) rejection of argued claims 1, 4, 5, 8, 9, and 19 and non-argued claims 3, 7, 11-18, 20, 22, and 23 over Petterson.

35 U.S.C. § 102(b) REJECTION OVER TAMAS

INDEPENDENT METHOD CLAIM 15 AND APPARATUS CLAIM 19

Appellants argue that Tamas uses a color sensor, not a transparency sensor, to sense bloody and purulent milk (Br. 11, 13). Appellants further contend that Tamas removes the foremilk based on "a predetermined duration or determined by a unit of time or within a certain number of pulses

[of the milking machine]" such that Tamas does not use transparency sensing to control foremilk removal (Br. 11).

We agree with the Appellants' arguments for the reasons discussed below.

Claim 15 recites that the "transparency of the milk is sensed at least during an initial period of the main milking stage" (claim 15). Claim 19 recites "a transparency sensing means for sensing the transparency of the milk extracted from the teat by the teat cup" (claim 19). In contrast, Tamas discloses that "segregation of bloody, and purulent milk respectively is accomplished on the basis of its colour" (Tamas, col. 2, ll. 18-19). Moreover, Tamas discloses that the "first squirts of milk" (i.e., the foremilk) are removed based upon the "length of time" or "number of pulses," not the sensed transparency (Tamas, col. 1, l. 61 to col. 2, l. 6).

Therefore, Tamas does not disclose either expressly or inherently the claim features "the transparency of the milk is sensed" (claim 15) or "a transparency sensing means" (claim 19). Anticipation requires that each claim feature be found either expressly or inherently in the prior art. *Verdegaal Bros. v. Union Oil Co. of California*, 814 F.2d 628, 631, 2 USPQ2d 1051, 1053 (Fed. Cir. 1987). It follows that Tamas fails to anticipate claims 15 and 19.

We reverse the Examiner's § 102(b) rejection over Tamas of independent claims 15 and 19 and of dependent claims 16-18 and 20-23.

35 U.S.C. § 103(a) REJECTION OVER TAMAS IN VIEW OF BRAYER

As discussed above regarding the § 102(b) rejection over Tamas, Tamas fails to discloses sensing the transparency of the milk or using a

transparency sensor. Rather, Tamas uses a sensor that determines the presence of blood in the milk based on colour (Tamas, col. 2, ll. 15-20). Moreover, Tamas uses a predetermined duration to segregate the "first squirts of milk" (i.e., the foremilk), not a sensing means.

Brayer discloses a method and apparatus for measuring liquid flow, especially the flow of milk (Brayer, col. 1, ll. 7-9). The method and apparatus includes light sources (20, 22) and detectors (24, 26) for determining the velocity and composition (transparency) of the milk flowing through the apparatus (Brayer, col. 1, ll. 42-57, col. 3, ll. 30-34, col. 4, ll. 22-31, 47-50). Brayer does not disclose sensing foremilk.

Therefore, even if Brayer's disclosure that "the sensed optical property is the transparency of the milk to electromagnetic radiation" (Answer 8, 9, and 10) is combined with Tamas' method and apparatus for providing sterile milk free from blood and pus, one would not achieve the claimed invention. The claimed invention requires that a transparency sensor be used to direct foremilk (claim 1), "[an] initial milk flow" (i.e., foremilk) (claim 5) or "an initial amount of milk extracted from a teat" (i.e., foremilk) (claim 9) to a branch line to avoid contaminating the collection of the main supply of milk. Neither Tamas nor Brayer discloses sensing the transparency of foremilk.

Moreover, the combination of Brayer's transparency sensor with Tamas' apparatus for providing sterile milk free from pus and blood would not produce an apparatus capable of performing the function recited in apparatus claim 9. The Examiner concludes that it would have been obvious to "add the sensed optical property being the transparency of the milk to electromagnetic radiation of Brayer" to "the method of Tamas" so as to

accurately measure the flow of milk (Answer 10). Thus, according the Examiner, Brayer's optical sensor would be added to, not substituted for, Tamas' color sensor. Accordingly, the apparatus resulting from the Examiner's proposed combination of Brayer's transparency sensor with Tamas' apparatus for providing sterile milk free from pus and blood would not be structured such that the "optical sensing means" (i.e., transparency sensor) sends a signal to the "control means" to control the flow of the milk into the "branch line" or the "main milk line" as required by claim 9. Rather, in accord with Tamas' disclosure, the colour sensor would control the flow of the milk based on sensed color changes in the milk caused by blood or pus. In another words, the Examiner's proposed combination of Tamas and Brayer would not be capable of performing the recited functions in claim 9 because the claimed apparatus and the apparatus resulting from the proposed combination are structurally different. *Schreiber*, 128 F.3d at 1478, 44 USPQ2d at 1432.

For the above reasons, we reverse the Examiner's § 103(a) rejection of independent claims 1, 5, and 9, and dependent claims 3-4, 7-8, and 11-14 over Tamas in view of Brayer.

35 U.S.C. § 103(a) REJECTION OVER PETTERSON IN VIEW OF TAMAS

Claim 21 recites that the "means for interrupting delivery of milk comprises a three-way valve."

Appellants have not separately argued the rejection of claim 21 which ultimately depends on claim 19. Rather, Appellants rely on the same arguments made previously regarding the rejection of claim 19 under

§102(a) over Petterson or under § 102(b) over Tamas. Namely, Appellants argue that neither Petterson nor Tamas "ha[s] anything to do with the detection of the transition of a flow of milk from foremilk to normal milk by monitoring the transparency of the milk" (Br. 17). However, we were unpersuaded by this argument regarding the § 102(a) rejection over Petterson for the reasons discussed above.

We add that Petterson discloses a three-way valve 37 for diverting the milk to either a milk tank 20 or a waste tank 22 depending upon the transparency value sensed by sensing means 36 (Petterson, 6, l. 14 to 7, l. 10). Accordingly, Petterson's disclosure anticipates claim 21. Anticipation is the epitome of obviousness. *In re Fracalossi*, 681 F.2d 792, 794, 215 USPQ 569, 571(CCPA 1982).

For these reasons, we affirm the Examiner's § 103(a) rejection of claim 21 over Petterson in view of Tamas.

DECISION

The Examiner's rejection of claims 1, 3-5, 7-9, 11-20, 22, and 23 under 35 U.S.C. § 102(a) as being unpatentable over Petterson is AFFIRMED.

The Examiner's rejection of claim 21 under 35 U.S.C. § 103(a) as being unpatentable over the Petterson in view of Tamas is AFFIRMED.

The Examiner's rejection of claims 15-23 under 35 U.S.C. § 102(b) as being unpatentable over Tamas is REVERSED.

The Examiner's rejection of claims 1, 3-5, 7-9, and 11-14 under 35 U.S.C. § 103(a) over Tamas in view of Brayer is REVERSED.

No time period for taking any subsequent action in connection with this appeal may be extended under 37 C.F.R. § 1.136(a)(1)(iv).

AFFIRMED

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