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Datasheet for the decision of 30 September 2014

Case Number: T 0495/11 - 3.2.06

Application Number: 02425697.6

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Language of the proceedings: EN

Title of invention:
Process for drying laundry in a drying device

Patent Proprietor:
Candy S.p.A.

Opponent:
Indesit Company S.p.A.

Relevant legal provisions:
EPC Art. 56

Keyword:
Inventive step - (yes)

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Case Number: T 0495/11 - 3.2.06

D E C I S I O N
of Technical Board of Appeal 3.2.06
of 30 September 2014

Appellant: (Opponent)	Indesit Company S.p.A. Viale Aristide Merloni, 47 60044 Fabriano (AN) (IT)
Representative:	Dini, Roberto Metroconsult S.r.l. Via Sestriere 100 10060 None (TO) (IT)
Respondent: (Patent Proprietor)	Candy S.p.A. Via Missori, 8 20052 Monza (MI) (IT)
Representative:	Crippa, Paolo Ernesto Jacobacci & Partners S.p.A. Via Senato, 8 20121 Milano (IT)
Decision under appeal:	**Decision of the Opposition Division of the European Patent Office posted on 30 December 2010 rejecting the opposition filed against European patent No. 1420104 pursuant to Article 101(2) EPC.**

Composition of the Board:

Chairman	G. Kadner
Members:	G. de Crignis
	W. Sekretaruk

Summary of Facts and Submissions

I. The opposition filed against European patent No 1 420 104, was rejected by the opposition division by way of its decision posted on 30 December 2010.

Claim 1 as granted reads:

"Process for drying laundry placed in a laundry enclosure or drum (5) of a drying device (6) such as a drying machine, washer-drier or drying cabinet, the said process comprising one or more phases (1,2) of drying the laundry in an airflow (7) heated by heating means (8) and conveyed into the laundry enclosure (5) by ventilation means (9) and a phase (4) of ventilating the laundry in an airflow (7) at ambient temperature conveyed into the laundry enclosure (5) by the said ventilation means (9), in which the said drying process begins with the said ventilation phase (4), reducing the initial peak moisture content of the laundry by means of the said airflow (7) at ambient temperature, characterised in that the process comprises the phases of:
- detecting the moisture content (U) of the laundry;
- determining the duration (T4) of the ventilation phase (4) on the basis of the moisture content (U) of the laundry and of a target value for the reduction of the moisture content (U), in order to end said ventilation phase (4) not before the initial moisture content (U) of the laundry has been reduced by 10%, preferably by from 20% to 50%."

II. The appellant/opponent filed an appeal against this decision and requested revocation of the patent on the grounds that the claims did not involve an inventive

step. For substantiation of this request the appellant referred to documents

D1 DE-A-197 25 536
D2 JP-A-2002 062048
D3 CA-A-2 345 631
D4 EP-A-1 164 218
D5 US-A-4 206 552
D6 EP-A-0 740 012
D7 GB-A-2 283 083.

III. In reply, the respondent/patent proprietor requested to dismiss the appeal and filed auxiliary requests 1 to 6.

IV. In a communication annexed to the summons to oral proceedings, the Board referred to the assessment of inventive step, in particular in relation to the problem to be solved.

V. The appellant commented on this communication with letter dated 28 August 2014 and submitted further arguments and observations on D3 and D4 and on the auxiliary requests.

VI. Oral proceedings were held before the Board on 30 September 2014.

The appellant requested that the decision under appeal be set aside and that the patent be revoked.

The respondent requested that the appeal be dismissed.

VII. The appellant's arguments can be summarized as follows:

Claim 1 did not involve an inventive step. D1 disclosed all the features of the preamble of claim 1 and

therefore represented the closest prior art. When taking into account that D1 already referred to the problem of providing an energy-efficient process for drying laundry and that no reduction of the amount of energy to a "minimum" could be considered in that the claimed features did not lead to a process in which the reduction of energy to a minimum was achieved, the objective technical problem to be solved could only be formulated such as to find an alternative process.

Facing this problem and starting from the embodiment disclosed as option c) on column 2 of D1, the skilled person would have considered D4. D4 also pointed to the reduction of energy consumption during a drying cycle. To this effect D4 disclosed that during the operation of a drying device a ventilation phase was included which should achieve "substantial drying" of the laundry (claim 2) which words had an even clearer meaning than the claimed moisture reduction. Moreover, the embodiment disclosed in paragraph [0026] of D4 disclosed that the moisture content of the load should be determined. D4 disclosed all the distinguishing features of the characterizing part of claim 1. Accordingly, claim 1 was deemed to be obvious to the skilled person in view of the combination of the teachings of D1 and D4.

Additionally, when starting from D1 and considering the disclosure of D3, the skilled person would have clearly arrived at the same conclusion. D3 disclosed to control the drying process by monitoring the moisture content of the laundry and thus the skilled person would be prompted to determine the duration of a ventilation phase according to the moisture content, or the reduction thereof, in order to dry the laundry, i.e. achieve a moisture reduction of not less than 10% or

any other obvious value. Concerning the "target" value for dryness, D3 referred to "*statistically and probabilistically estimate the time when the articles will reach a desired moisture content or degree of dryness*" and a signal could be used to indicate whether the clothes are dry near or at a target level of moisture content. Also the information regarding the time remaining for executing a cycle could be displayed. Accordingly, the skilled person knew that either the determination of the moisture content of the load or the determination of the ambient air temperature for ending a desired ventilation phase or for ending the drying procedure completely could be selected.

VIII. The respondent argued essentially as follows:

The claimed combination of an initial ventilation phase with a subsequent heated drying phase involved an inventive step.

The embodiment disclosed as option c) on column 2, lines 46 to 48 in D1 represented the closest prior art because the drying process disclosed therein included a ventilation phase which was followed by a subsequent phase of activated heating. In relation to moisture, D1 based the relevant parameters on environmental temperature and humidity only.

When starting the assessment of inventive step from this embodiment, the skilled person had to consider specific preconditions concerning the temperature and humidity of the ambient air. The skilled person disregarded the teaching of D4 as well as the teaching of D3 because in these documents such preconditions for applying a ventilation phase were not applicable. No

suggestion was present in these documents to derive an intermediate parameter concerning the dryness of the load.

D4 based its stop time of the drying cycle on the use of an - if necessary continuously heated - air flow. It disclosed a first embodiment in which the controller 21 determined the moisture content of the load, and the drying operation continued until the load was determined to be dry (paragraph [0026], Fig. 3) and the entire drying operation was stopped. It disclosed a second embodiment (paragraph [0027], Fig. 4) in which no moisture was detected, but the controller 21 set a time for the drying operation dependent upon the incoming air temperature at the beginning of the drying operation, after which set time the entire drying operation was stopped. The general teaching of D4 was to stop the entire drying operation when the load was determined to be finally dry. Hence, the duration of the drying operation in D4 could not lead the skilled person to the concept of comparing moisture levels of the load in an intermediate process step.

D3 provided a solution for accurately predicting the optimum drying time for different kinds of clothes. Its aim was to reliably estimate the total drying time in order to allow automatic termination of the drying cycle once a desired dryness level was reached. The moisture of the laundry was sensed and a dry stop time prediction was obtained on the basis of the sensed laundry moisture.

Accordingly, none of the cited documents indicated to reduce energy consumption or to find an alternative way of processing via the detection of the initial moisture content, and its comparison with another moisture

content, in order to regulate the start of a heated drying phase. Hence, the claimed subject-matter could not be obvious and thus involved an inventive step.

Reasons for the Decision

1. The sole aspect which was contested by the appellant was whether the claimed invention involved an inventive step. In order to decide whether or not claimed subject-matter fulfils the requirements of Article 56 EPC in proceedings before the EPO the "problem and solution approach" is regularly applied.

1.1 In a first step the "closest prior art" has to be determined. D1 is concerned with specific processes for controlling the heating performance of a vented drying device (col. 1, l. 3 to 5). For controlling the heating of the drying program, it refers to the detection and calculation of the temperature and humidity of the incoming ambient air (col. 2, l. 21 - 23) and distinguishes between three scenarios (col. 2, l. 37 - 48):
- option a): humidity more than 60%; air temperature below a chosen lower value;
- option b): humidity between 40% and 60%; air temperature between chosen lower and upper values;
- option c): humidity less than 40%; air temperature above a chosen upper value.
Thus, the decision of whether heating shall be applied or not - or only to a partial extent - depends on such parameters.

1.2 For its third scenario specified as option c) above, referring to the case that the temperature of ambient air is above a chosen upper value and humidity of the ambient air is below a value of 40%, D1 points to a drying process starting without heating and switching on heating in accordance with the desired drying time. Accordingly, this embodiment in D1 represents the closest prior art for the assessment of inventive step as the sequence of the process steps corresponds to the claimed sequence.

1.3 When starting from this embodiment in D1, the subject-matter defined in claim 1 differs by way of the features in the characterising part of claim 1 - as acknowledged in paragraph [0009] of the patent in suit.

1.4 These features are related to the determination of the moisture content of the laundry in order to set the duration of the ventilation phase. This duration is made dependent upon the difference between the initial and a defined reduced moisture content of the laundry. The features of the characterising portion are not linked to the object of saving energy - although this object is generally underlying the claimed invention as set out in paragraphs [0010] and [0011] - and hence, this object cannot be taken into account. The objective technical problem thus can be understood to be the provision of an alternative process to provide an efficient drying of laundry.

1.5 The appellant was of the view that the skilled person could derive the claimed solution from either D4 or D3.

1.6 With regard to D4, this document generally envisages minimising the total energy consumption during a drying cycle. The concept achieving the minimised energy

consumption is to significantly increase air flow for evaporating water from the load. Additionally, the incoming air should have a temperature above about 20°C and should be heated to lie ideally in the range of between 20°C and 30°C in order to avoid a long drying time. To such effect (Figure 3, paragraph [0024]), the controller determines the temperature of the incoming ambient air using sensors, and the output of the heater is adjusted to compensate for the temperature of the incoming ambient air.

1.6.1 An embodiment is disclosed in D4 (paragraph [0026], Figure 3) in which the controller 21 determines the moisture content of the load in order to continue the drying operation until the load is determined to be dry, after which the entire drying operation is stopped. Hence, this embodiment does not include the determination of the initial moisture content of the load or its comparison with an actual moisture content.

1.6.2 Another embodiment is also disclosed (paragraph [0027], Figure 4) in which the controller sets a time for the drying operation depending upon the temperature of the incoming air at the beginning of the drying operation, after which set time the entire drying operation is stopped. In this embodiment no compensatory heating of the incoming airflow is used and the drying cycle is considered to be set at a temperature of 20°C for eight hours.

1.6.3 Additionally, the appellant referred to D4 as also disclosing that during the operation of a drying device, a target value for the reduction of the moisture content was accounted for due to the determination of the duration of the ventilation phase. This reference concerned the disclosure of claim 2 of

D4 which refers to "*the airflow means (4) is arranged to maintain the ambient temperature airflow for at least a period of the drying cycle sufficient to achieve substantial drying of a load in the drum*". However, such wording is to be considered in the context of the concept of the process of D4 and hence concerns the airflow means being adapted to achieve complete drying in the desired time. Contrarily, in the patent in suit, the target value for the ventilation phase is an incomplete, yet specific, reduction of initial moisture in the load.

1.6.4 Accordingly, there is no embodiment disclosed in D4 which would prompt the skilled person to base the length of a ventilation phase which precedes a heated drying phase upon a specific difference in moisture content of the load.

1.7 With regard to D3, this discloses a method for controlling an appliance for drying clothing articles. A heater is provided for supplying heated air to the container during the drying cycle and a sensor is provided for delivering a signal indicative of the moisture content of the load (page 5, l. 1 - page 6, l. 7). The dryer comprises a controller which is responsive to a moisture sensor and the entire duration of the drying cycle is determined on the basis of the sensed moisture content of the laundry. A target value for the reduction of the moisture content is given (page 1, l. 10 - 12, page 7, l. 12 - 15, page 11, l. 19 - 22). The initial estimate of the stop time is superseded by the stop time estimated by the processor as the cycle is being executed. The processor allows for adapting the stop time of the dry cycle based on a functional relationship of various sensor and timer based signals, relative to one or more characteristics

of the articles and one or more desired values of predetermined dry-cycle parameters selectable by a user. The controller thus signalizes the end of the drying cycle based upon the moisture content of the clothes (page 6, l. 22 - 29).

1.7.1 Accordingly, there is no suggestion disclosed in D3 to compare at any time the desired final moisture content or an intermediate moisture content with an initial moisture content and to calculate the reduction of moisture achieved.

1.7.2 The reference of the appellant to the citation concerning the signal from the moisture sensor possibly being used as an input to a processor module "*to statistically and probabilistically determine when the clothes are dry near or at a target level of moisture content*" has to be considered in the context of the wording which follows: "*and the drying cycle should terminate*" (page 11, lines 20 - 22). Hence, this signal is only related to a timer for estimating the final stop time of the drying cycle. Accordingly, the target level of moisture content is directly related to the clothes being dry. No further processing of the data (or of the clothes) is to be considered. Therefore, the concept differs from the claimed subject-matter.

1.7.3 Hence, also in D3 there is no suggestion to link the duration of a ventilation period which precedes a heated drying step to a specific value or reduction of the moisture content of the load. Neither is a reference to reduced energy consumption to be found. D3 only provides a solution for estimating the total drying time and automatically terminating the entire drying cycle once a desired dryness level is reached.

1.7.4 The further reference of the appellant to D3, page 27, l. 14 to 16 with regard to a ventilation phase provided in the process of D3 concerns a final tumble phase which is the final process step in order to remove wrinkles. This step cannot be related at all to the claimed initial ventilation step as a reduction in initial moisture content of at least 10% is not the issue of such a step.

1.8 The opponent's problem/solution approaches based upon the object of the invention starting from D1 being either to provide an alternative process for drying laundry, or a process whereby the amount of energy required for drying shall be reduced (also not to a minimum) in accordance with the wording of the problem in paragraph [0011] of the patent in suit are not found convincing. The claimed concept is a different and specific drying concept which is non-obvious. It involves the reduction of the initial moisture content of the laundry during a ventilation phase preceding a heating phase. No suggestion to such a concept can be derived from the cited documents.

1.9 Based on the prior art cited by the opponent and the arguments made in support of its objections of lack of inventive step, the Board concludes that the subject-matter of claim 1 has to be considered as involving an inventive step (Article 56 EPC 1973).

Order

For these reasons it is decided that:

The appeal is dismissed.

The Registrar: The Chairman:

M. H. A. Patin G. Kadner

Decision electronically authenticated