

Internal distribution code:

- (A) [] Publication in OJ
(B) [] To Chairmen and Members
(C) [X] To Chairmen
(D) [] No distribution

**Datasheet for the decision
of 30 November 2006**

Case Number: T 1415/04 - 3.2.06

Application Number: 96104015.1

Publication Number: 0732437

IPC: D06F 35/00

Language of the proceedings: EN

Title of invention:

Method for balancing the load in a laundry washing and/or
drying machine, and machine implementing such a method

Patentee:

Indesit Company S.p.A.

Opponent:

BSH Bosch und Siemens Hausgeräte GmbH

Headword:

-

Relevant legal provisions:

EPC Art. 54, 56

Keyword:

"Main request, novelty (no)"

"Auxiliary request, inventive step (yes)"

"Test results inadequate to support alleged interpretation of
prior art"

Decisions cited:

-

Catchword:

-



Case Number: T 1415/04 - 3.2.06

D E C I S I O N
of the Technical Board of Appeal 3.2.06
of 30 November 2006

Appellant: BSH Bosch und Siemens Hausgeräte GmbH
(Opponent) Hochstrasse 17
D-81669 München (DE)

Representative: -

Respondent: Indesit Company S.p.A.
(Patent Proprietor) Viale Aristide Merloni, 47
I-60044 Fabriano (AN) (IT)

Representative: Dini, Roberto
Metroconsult S.r.l.
Via Sestriere 100
I-10060 None (Torino) (IT)

Decision under appeal: Decision of the Opposition Division of the
European Patent Office posted 14 October 2004
rejecting the opposition filed against European
patent No. 0732437 pursuant to Article 102(2)
EPC.

Composition of the Board:

Chairman: P. Alting van Geusau
Members: M. Harrison
W. Sekretaruk

Summary of Facts and Submissions

- I. The appellant (opponent) filed an appeal against the opposition division's decision of 14 October 2004 rejecting its opposition against European patent E-B-0 732 437.

The following document was filed together with the appeal grounds.

D8: DE 39 11 124

- II. With the summons to oral proceedings, the Board issued a communication informing the parties of its provisional opinion. In particular, the matter of claim interpretation was addressed, together with a comparison of the claim with respect to the disclosure of

D6: US-A-2 917 175

- III. In response to the preliminary assessment by the Board, the respondent (proprietor) filed, with letter dated 30 October 2006, test results carried out on a washing machine, being allegedly in accordance with the disclosure in D6.

- IV. During oral proceedings on 30 November 2006, the respondent revised its requests, whereby its main request was dismissal of the appeal and its auxiliary request, filed during the oral proceedings, was for maintenance of the patent in amended form.

V. Claim 1 of the main request reads:

"Method for balancing the load of clothes in a laundry washing and/or drying machine of the type comprising a motor (MO) to generate a rotation of a drum containing the laundry, a control system (SC) for said motor (MO) and means (T) for detecting the balance conditions of the laundry load inside the drum, said method comprising an initial rotation phase (B') of the drum at a first speed capable of producing a substantial adhesion of the clothes to the drum walls, and a detection phase of the load balance conditions, during said initial phase (B'), where one or more balance actions (R, A'', B'') of the load itself are provided should an unbalanced load condition be detected, said balance actions (R, A'', B'') being obtained maintaining the drum in continuous rotation, characterized in that each of said balance actions (R, A'', B'') comprises:

 a first phase (R) of reduction of the drum rotating speed from said first speed (90 rpm) to a second speed (45-55 rpm) suitable to cause the laundry to leave the drum walls and tend to fall towards the center of the drum itself;

 a second phase (A''), where the drum rotation speed is returned from said second speed (45-55 rpm) to said first speed (90 rpm) before the laundry collects to the drum bottom;

 a third phase (B'') to maintain said first speed (90 rpm)
said first, second and third phase being repeated in sequence until the laundry is balanced in the drum."

VI. Claim 1 of the first auxiliary request reads:

"Method for balancing the load of clothes in a laundry washing and/or drying machine of the type comprising a motor (MO) to generate a rotation of a drum containing the laundry, a control system (SC) for said motor (MO) and means (T) for detecting the balance conditions of the laundry load inside the drum, said method comprising an initial rotation phase (B') of the drum at a first speed capable of producing a substantial adhesion of the clothes to the drum walls, and a detection phase of the load balance conditions, during said initial phase (B'), where one or more balance actions (R, A'', B'') of the load itself are provided should an unbalanced load condition be detected, said balance actions (R, A'', B'') being obtained maintaining the drum in continuous rotation, characterized in that each of said balance actions (R, A'', B'') comprises:

a first phase (R) of reduction of the drum rotating speed from said first speed (90 rpm) to a preset second speed (45-55 rpm) suitable to cause the laundry to leave the drum walls and tend to fall towards the center of the drum itself, wherein said first speed is substantially about 90 revs per minute and said second speed is substantially comprised between 45 and 55 revs per minute, upon reaching said preset second speed, said control system (SC) performs a second phase (A''), in which a new speed increase slope up to said first speed is performed, such that the drum rotation speed is returned from said second speed (45-55 rpm) to said first speed (90 rpm) before the laundry collects to the drum bottom;

a third phase (B'') to maintain said first speed (90 rpm) said first, second and third phase being repeated in sequence until the laundry is balanced in the drum."

Claim 7 of the auxiliary request reads:

"Laundry washing and/or drying machine comprising a drum containing the laundry and a motor (MO) for generating the rotation of said drum, a control system (SC) for controlling said motor (MO), means (T) for detecting the balance conditions of the laundry load inside the drum, where said control system (SC) commands an initial rotation phase (B') of the drum at a first speed capable of producing a substantial adhesion of the clothes to the drum walls, and a detection phase of the load balance conditions, during said initial phase (B'), where one or more balance actions (R, A'', B'') of the load itself are provided should an unbalanced load condition be detected, said balance actions (R, A'', B'') being obtained maintaining the drum in continuous rotation, characterized in that each of said balance actions (R, A'', B'') commanded by the control system (SC) comprises:

a first phase (R) of reduction of the drum rotating speed from said first speed (90 rpm) to a preset second speed (45-55 rpm) suitable to cause the laundry to leave the drum walls and tend to fall towards the center of the drum itself, wherein said first speed is substantially about 90 revs per minute and said second speed is substantially comprised between 45 and 55 revs per minute, upon reaching said second preset speed, said control system (SC) performs a second phase (A''), in which a new speed increase

slope up to said first speed is performed, such that the drum rotation speed is returned from said second speed (45-55 rpm) to said first speed (90 rpm) before the laundry collects to the drum bottom;

a third phase (B'') to maintain said first speed (90 rpm)

said first, second and third phase being repeated in sequence until the laundry is balanced in the drum."

VII. The arguments of the appellant relevant to the decision may be summarised as follows:

(a) *Main request*

Novelty

The subject matter of claim 1 was not novel with respect to D6.

The only matter disputed by the respondent was that the D6 control system caused the drum rotation to be increased from the second lower speed to the first higher speed before the laundry collected to the drum bottom. Fig. 6 showed the drum speed control system and Fig. 11 the details of the contact switch of this system. The description in col. 1, line 67 to col. 2, line 10 and col. 7, lines 59 *et seq* disclosed wattage used as the control parameter. Wattage variation at 1.17 cycles per second was shown in Fig. 7. The system operated such that an acceleration motor was engaged if an unbalance condition remained for a time longer than one revolution at 1.17 cycles per second. The disclosure in col. 8, line 46 to col. 9, line 50 concerned the control operated via a contact switch, whereby the accelerating motor was disengaged whenever

the contacts of the switch closed, which closure was due to an unbalance threshold being exceeded once during one revolution. The accelerating motor was re-engaged when the contacts were no longer closed after one revolution at that rotational frequency, (see col. 10, lines 33 to 51), whereby the switch contacts remained open when the laundry was redistributed sufficiently while approaching tumble speed. As the drum slowed down below plaster speed, the clothes would start to move inwardly, initially at the location where a part of the laundry was closer to the middle than other parts due to the lower centrifugal force. This partial redistribution reduced the unbalance, allowing acceleration to the first (higher) speed. At this point only part of the entire laundry would have reached the drum bottom or fallen towards it, and claim 1 had to be interpreted such that acceleration to the first speed occurred at a point only before the entire laundry was collected together and tumbling.

The respondent's test results were not supported by evidence showing that a machine as in D6 had been used, not least regarding the control switch of D6. Also, in those tests, unbalance was measured by current level, not voltage as in D6 (see e.g. col. 8, lines 30 to 45 and line 67 to col. 9, line 17 and col. 10, lines 6 to 14). Finally, the unbalance results at only two individual speeds were provided. The situation between these two speeds, where the laundry redistributed as in D6, was not shown. The interpretation of D6 in col. 10, lines 33 to 40, was that the unbalance in the load would be reduced as speed decreased to tumble.

(b) *Auxiliary request*

Inventive step

The term "preset" and the feature of speed of between 45 and 55 rpm now in claim 1 were not novel with respect to D6. D6 drum speed was reduced towards tumble which was however preset at 47 rpm. Claim 1 did not define a technical means for measuring speed, so the term "preset" could only be interpreted as being a speed which was preset in any possible way. Likewise, when the preset tumble speed was reached in D6, the control system performed a new speed increase slope up to said first speed, so that the purpose-related definition of the second preset speed in claim 1 was also fulfilled.

The value "90 rpm" for the first speed was therefore the only novel feature. This was however dependent only on the drum size. D6 used about 70 rpm for a drum size which was larger than in the patent. A speed of 90 rpm was thus the natural result of using a smaller drum size. 90 rpm was also typical for the first speed as was clear from paragraph [0016] of the patent.

D8, col. 1, lines 13 to 18 also used 90 rpm for balancing as in the patent and was the same type of machine as in D6 and could thus be combined with it to arrive at claim 1.

The problem to be solved was to find a suitable alternative speed for conducting unbalance measurement for the drum size in question. The speed had to be high enough that the clothes stuck to the drum and D8 (see

calculations in col. 2) disclosed that this speed was dependent on drum diameter. No inventive skill was therefore needed in selecting the speed of 90 rpm.

The same arguments applied to the machine of claim 7, which merely defined the product feature equivalents of the method steps of claim 1.

VIII. The arguments of the respondent relevant to the decision may be summarised as follows:

(a) Main request

Novelty

The subject matter of claim 1 was novel. The test results provided did accurately show the situation described in D6, col. 10, lines 33 to 40. In particular it was stated that the drum speed "returns to tumble", and in col. 10, lines 38 to 41, it was stated that "the accelerating motor remain de-energized until a speed has been reached at which the clothes redistribute themselves again. At this point, another attempt is made...". This text could only be interpreted to mean that the terminology "a speed" was the tumble speed, and "at this point" meant the point in time when the clothes had redistributed themselves due to tumbling. This meant that the tumble speed was actually reached each time speed was reduced, and all the clothes were tumbled. This was because D6 disclosed that when the accelerating motor de-energized, the unbalance was sufficiently large "as a result of the deceleration itself" causing the contact switch to "be closed frequently". This meant that there were only two

possibilities for interpreting D6: either tumble speed was reached (at which point deceleration was no longer present) allowing the clothes time to redistribute sufficiently, or the device of D6 simply did not function at all and was thus a non-enabling disclosure because a balance condition would never be reached (due to the fact that unbalance increased as tumble speed was approached).

Claim 1 had to be interpreted such that acceleration from the second speed to the first speed occurred before all clothes were tumbling. Claim 1 also related to the acceleration of the laundry load being used as the means to make it become redistributed, since by the wording of the claim the acceleration occurred such that the laundry load was not given time to redistribute at the second lower speed. This concept was nowhere disclosed in D6.

The claim must be considered in terms of its complete meaning; the teaching of the patent and its use to interpret the claims under Article 69 EPC could not be ignored. When correctly interpreting claim 1, it was evident that D6 did not disclose all features thereof nor the general idea of accelerating without tumbling. In particular, there was no disclosure of clothes which were tending to fall being accelerated "before the laundry collect(ed) at the drum bottom" as defined in claim 1.

The appellant's argument that load in D6 was redistributed during deceleration, was contradictory to the wording of D6 and to common knowledge. Even if the part of the laundry load closer towards the center of

the drum would detach and fall, this would take only a very short time, i.e. less than the time for one drum revolution, such that a new unbalance would be created elsewhere in the drum causing the contact switch to close and its momentary balancing effect by falling would not be detected by the system, since an unbalance once per revolution was all that was required to maintain the switch closed (see D6, col. 9, lines 17 to 50). The test results proved that the initial unacceptable unbalance at high speed was even higher at tumble speed. This, added to the teaching of D6 that deceleration of the unbalanced load caused sufficiently large unbalance, combined with the general understanding of what occurred to the laundry during this deceleration phase, were together enough to deduce that a sufficient balance condition would never be reached when slowing down to allow the D6 device to function as described. Furthermore, when considering D6 drum size, it would only be at a speed of 52 rpm that load could possibly start to fall, so that tumble speed of 47 rpm was clearly the speed intended to be reached.

(b) *Auxiliary request*

The wording "preset second speed" and "upon reaching said preset second speed" defined the operation of the control circuitry with respect to the time when the increase in speed occurred, which meant an immediate increase. The feature of 90 rpm was a speed above plaster speed. This feature was also novel over D6, but it was the combination of preset second speed being reached in the context of the claim that led to the invention. The actual speed values merely related to the drum size but did not by themselves constitute an

invention and were present to meet the requirements of Article 123(2) EPC. It was thus irrelevant that the speed 90 rpm was disclosed in D8, and equally irrelevant whether the tumble speed of 47 rpm of D6 fell within the claim.

Claim 1 defined a substantial difference over the method used for re-balancing in D6, requiring no measurement of unbalance while decelerating. Merely reaching the second speed triggered the acceleration to the first speed.

No need existed to define a technical means such as a speedometer as in granted claim 8, because the skilled person could use any appropriate means for speed detection.

Contrary to the appellant's arguments, there was no "preset" speed in D6 causing acceleration to the first speed. The preset tumbling speed of 47 rpm in D6 did not fulfil the definition of the preset second speed in claim 1.

The method in claim 1 was simpler compared to the switch control in D6 which, with so many necessary mechanical parts, would also be prone to failure or poor reliability. No cited prior art taught using a preset second speed for causing re-acceleration to the first speed. The method of the patent was also quicker than that in D6. The subject matter of claim 1 thus involved an inventive step.

The same arguments applied to the machine of claim 7.

Reasons for the Decision

1. *Main request*

Novelty:

The interpretation of claim 1 is particularly important in relation to the expressions (1) "a second speed suitable to cause the laundry to leave the drum walls and tend to fall towards the center of the drum itself" and (2) "the drum rotation speed is returned from said second speed to said first speed before the laundry collects to the drum bottom". In particular it is important to determine whether these expressions, when claim 1 is read in its full scope and with reference to the specification, could have a meaning distinct from the disclosure in D6.

In regard to the above expressions, these are notably defined in terms of the laundry load. This load will however vary, such that parts of it may leave the drum walls at different rotational speeds depending on the laundry items and their degree of wetness, as well as other factors. No means are described or implied in the patent for detecting the laundry condition nor for detecting when items tend to fall. Nor is there a means for detecting a time before they reach the drum bottom. Indeed, the patent itself only teaches use of a "disatellization value" (paragraph [0057]) using a preset speed. Due to the varying laundry load which may be present, a preset speed will also result in laundry entirely leaving the walls (e.g. if somewhat dry already) or remaining fixed at least in part. Thus, the

expressions can only be interpreted to imply that the drum is allowed to reduce to a speed at which items generally detach at least in part if not completely before being re-accelerated, especially when interpreted in light of the description.

The Board thus concludes that the method steps in claim 1 correspond to the situation disclosed in D6, col. 9, line 71 to col. 10, line 40, where, depending on the condition of the laundry, the items will at least start to detach as the speed reduces to tumble, because the rotational speed has been reduced below the plaster speed. The wording "at this point" in col. 10, lines 40 and 41, concerns a point in time at which "a speed has been reached at which the clothes redistribute themselves again", as stated in the previous sentence. The wording "a speed" cannot be read as being "tumble speed" as this would make the sentence meaningless in its context. Instead it means a speed on the approach to tumble speed.

Further in this context, the meaning of D6 in col. 10, lines 32 to 40, is that as the speed of the drum returns to tumbling speed, i.e. while the drum is slowing down and not after it has slowed down, the unbalance condition is sufficiently reduced for the unbalance condition to cause constant opening of the contacts 101, 102 of the switch, causing the acceleration motor to be re-engaged. Indeed, the item(s) of clothing or part(s) thereof protruding from the washing load and being closest to the centre of the drum, which is/are generally the cause of an unbalanced load, will start to fall towards the inner part of the drum. In this way the unbalance will be reduced, even

if some or most of the laundry remains attached to the walls. It is in this condition that the unbalance falls below the threshold required to open the contact switch in D6. This is also a condition which has been generally recognised when observing prior art washing machines slowing from spin speed, whereby the unbalanced loaded drum at high speed causes high vibrations which when decelerating, at a certain speed, suddenly disappear while the machine is still continuing to slow down further. It is also of relevance to note that the contact switch in D6 has a fluid damping means 109 which prevents contact 102 descending as quickly as contact 101, which speed difference is however reduced as the speed of the drum slows and whereby the magnitude of movement is reduced due to some laundry items detaching at least partially. This allows the switch to reach a constant "open" state whenever a high unbalance has been removed.

The test results provided by the respondent do not alter the above findings. Firstly, it has not been shown that the test results correspond to the same type of machine with the same type of control system with a damped control switch as in D6, nor that the test is carried out on a machine using voltage (as opposed to current) as factor for use in control based on an unbalance. Secondly, the results represent only a first and a second speed, the second speed being where the laundry load is tumbling in its entirety and thus entirely out of balance (acting as a single load over a small segment of the drum). No test results have been supplied which support the respondent's allegation that the unbalance increases during deceleration from 93 rpm to 45 rpm, which allegation the Board concludes is

technically incorrect and not implied by D6 col. 10, lines 33 to 40.

The respondent's argument that an item of clothing would fall from the drum to the other side of the drum before one complete revolution occurs and that this would cause a greater unbalance is not agreed. Firstly, the laundry item would generally start to detach partially before being fully detached and, even if fully detached, would not form an equally unbalanced mass on a different part of the drum since the clothing item, as it falls, will contact a moving drum, or other items of moving laundry on the drum, and will thus be spread out rather than being concentrated at one small location.

Thus, the Board can find no technical support for the respondent's interpretation of D6 to mean that the drum must be slowed down all the way to reach the tumble speed and must be maintained at tumble speed to cause redistribution.

The remaining features of claim 1 are disclosed in D6; this not being disputed by the parties.

The subject matter of claim 1 thus lacks novelty over D6. Consequently the requirements of Article 54 EPC are not met.

2. *Auxiliary request*

Inventive step:

The Board concludes that claim 1 differs over D6 at least by virtue of the feature relating to the second preset speed and its interaction with the control system, whereby "upon reaching said preset second speed said control system (SC) performs a second phase (A'') in which a new speed increase slope up to said first speed is performed".

The appellant argued that this feature was known from D6, based on the allegation that the speed of 47 rpm was a preset speed and acceleration would be increased from this speed when reached. However, the Board concludes that while the tumble speed is *per se* a preset speed, it is not a preset speed which corresponds to the definition of being a speed which when reached results in the control system increasing motor speed up to said first speed. The D6 system relies entirely, as discussed in respect of the main request, on detecting an unbalance condition. Thus, it is only the unbalance condition which is preset to cause the acceleration motor to re-engage. No means for speed detection exists in D6 which interacts with the control system as defined in claim 1. D6 simply causes acceleration from an unknown and thus non-preset speed which is entirely dependent on the preset unbalance condition.

Claim 1 and claim 7 each contain this feature.

The original problem given in the granted patent paragraph [0010] is not correct with respect to D6 as the closest prior art, since the method and device claimed are not quicker than that known from D6. The problem to be solved by the aforementioned feature over D6 is objectively to provide a simpler and more reliable control system for increasing drum speed. The control system in D6 namely relies on unbalance detection and uses a particularly complicated arrangement of springs and damping elements together with related circuitry. These are clearly prone to damage and unreliability.

The invention according to claim 1 and claim 7 on the other hand relies on merely detecting a particular speed being reached during deceleration and causing the control system to perform a speed increase based on this.

No cited prior art suggests using a preset speed to trigger the control system to provide such a speed increase back to a first higher speed. In particular, D6 teaches the skilled person an entirely different solution, based on a detection of unbalance.

Since the appellant's arguments on inventive step are based on a different interpretation of D6, which the Board finds incorrect (see above), the appellant's arguments based on this interpretation and concerning the combination of D6 and common general knowledge, or D6 and D8 in combination, lack relevance.

The subject matter of each of claim 1 and claim 7 therefore involves an inventive step and the

requirements of Article 56 EPC are consequently fulfilled.

Order

For these reasons it is decided that:

1. The decision under appeal is set aside.
2. The case is remitted to the opposition division with the order to maintain the patent in amended form based on the following documents filed as the auxiliary request during oral proceedings on 30 November 2006:

Claims 1 to 8;

Description columns 1 to 7;

Figures 1 to 4.

The Registrar:

The Chairman:

C. Eickhoff

P. Alting van Geusau