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**Datasheet for the decision
of 15 October 2009**

Case Number: T 0225/08 - 3.2.04

Application Number: 02076360.3

Publication Number: 1249169

IPC: A21C 9/04

Language of the proceedings: EN

Title of invention:

Air unit for the removal of particulate material

Patentee:

CFS Bakel B.V.

Opponent:

Stork Titan B.V.

Headword:

-

Relevant legal provisions:

EPC Art. 54, 56

Relevant legal provisions (EPC 1973):

-

Keyword:

"Novelty (main request): no"

"Inventive step (auxiliary requests): no"

Decisions cited:

-

Catchword:

-



Case Number: T 0225/08 - 3.2.04

DECISION
of the Technical Board of Appeal 3.2.04
of 15 October 2009

Appellant: Stork Titan B.V.
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Decision under appeal: Interlocutory decision of the Opposition
Division of the European Patent Office posted
28 November 2007 concerning maintenance of
European patent No. 1249169 in amended form.

Composition of the Board:

Chairman: M. Ceyte
Members: A. de Vries
C. Heath

Summary of Facts and Submissions

I. The Appellant (Opponent) lodged an appeal, received 24 January 2008, against the interlocutory decision of the Opposition Division posted 28 November 2007 on the amended form in which European Patent No. 1 249 169 can be maintained, and simultaneously paid the appeal fee. The statement setting out the grounds was received 28 March 2008.

Opposition was filed against the patent as a whole and based on Article 100 (a) together with Articles 52(1), 54 and 56 EPC 1973, for lack of novelty and inventive step.

The Opposition Division held that the grounds for opposition under Article 100 EPC 1973 did not prejudice the maintenance of the patent as amended according to a second auxiliary request having regard to the following documents among others:

D1: US-A-6 129 037

D3: US-A-3 045 640

D4: US-A-4 636 301

D5: US-A-3 703 382

D6: US-A-5 454 872

II. In the appeal proceedings the following document filed with the statement of grounds also played a role:

D11: DE-A-2 030 595

III. The Appellant (Opponent) requests that the decision under appeal be set aside and the patent be revoked in its entirety.

The Respondent (Proprietor) requests that the appeal be dismissed, or, in the alternative, that the patent be maintained in amended form in accordance with claims of auxiliary requests 1 to 3 filed with letter of 15 September 2009.

IV. Oral proceedings were duly held before the Board on 15 October 2009.

V. The wording of claim 1 of the requests is as follows :

Main Request

"Combination of a coating machine(2) and an air unit (1) for the removal of surplus particulate coating material that is present on products (42) that are in the coating machine (2), which air unit (1) comprises at least a blowing member (37) for blowing surplus particulate material off the products (42), at least one suction member (38) for drawing off air, with particulate material contained therein, separating means (12, 28) for removing particulate material from the air drawn off, and circulating means (10,30,31) for feeding at least a portion of the air drawn off to the blowing member (37) characterized by the coating machine (2) comprises a housing (44), a conveyor belt (41), that extends through the housing (44) and is provided with openings and on which the products (42) can be transported through the housing (44), in which housing (44) feed means (43) are located for feeding particulate material onto the products (42) located on the conveyor belt (41), wherein the blowing member (37) is located above the conveyor belt (41) for blowing air into the housing (44) and over the conveyor belt (41),

and the suction member (38) for the air unit (1) is for drawing air out of the housing (44)."

Auxiliary Request 1

Claim 1 is as in the main request but adds at the end the following wording:

"and the separating means comprise a cyclone (12) provided with a casing (16) that is symmetrical with respect to revolution and has a tangentially located feed (19), a core (11) which extends centrally in the casing (16) at the level of the feed (19), and collection means (20), for the particulate material, located at the bottom of the casing (16)."

Auxiliary Request 2

Claim 1 is as in the main request but adds at the end the following wording:

"and a dust filter (28) is provided for discharging purified surplus air."

Auxiliary Request 3

Claim 1 is as in the main request but adds at the end the following wording:

",wherein partitioning means (39, 40) are provided in the housing (44), such that each blowing member (37) is on one side of the partitioning means and the feed means (43) are on the other side of the partitioning means (39, 40)."

VI. The Appellant argued as follows :

D3 is prejudicial to novelty for the main request. In particular, the fan arrangement at 44 on the right-hand side of figure 1 corresponds to the blowing and suction members of the claim. Its baffle 43 separates particulate material out of the air drawn up into the fan into the area immediately to its left, in the same manner as in the left-hand fan arrangement.

Turning to the auxiliary request 1, D11 can be regarded as a starting point. Thus, the air flow in the chamber of D11 is over the web material implying a removal of excess. The only differences with respect to prior art D11 reside in a cyclone as separating means, and a conveyor belt with holes. These two differences are unrelated and can be treated separately. Cyclones are a known alternative to the cartridge filter in D11, and are used in similar context in D4, D5 or D6. A belt with holes is just one of two obvious, possible choices.

D11 does not show any discharge of surplus air (auxiliary request 2). However, it is obvious - as it would not be allowed otherwise - that if surplus air were to be expelled it would do so by means of a dust filter. Examples of excess discharge via a dust filter are given in D1. D1 also discloses the idea of circulating air as well as creating an under-pressure in the hood and expelling the surplus air.

As for auxiliary request 3, internal partitions - the sole difference over D3 - is routine design. The specification is silent as to its technical significance.

VII. The Respondent (Proprietor) argued as follows :

Claim 1 of the main request requires separation to take place downstream of the suction member. This is not the case for baffle 43 in figure 1 of D3, which is positioned below the point of air intake. Nor does D3 specify the baffle's function, and any statement in this regard is pure speculation.

Circulation in D11 serves an entirely different purpose, namely to provide a protective atmosphere within the coating chamber. Seen in that context aerating conduit 2 cannot be equated to a blowing means in the sense of claim 1 of the auxiliary request 1. There is no removal of excess, as D11 also strives to maximize deposition of coating material on the web. As for the difference of the cyclone, none of the cited prior art suggest its use in a closed loop to recirculate purified air. Moreover, incorporation of a cyclone in D11 must accommodate feed 14 which would not be straightforward.

The main idea of the auxiliary request 2 is to discharge an air surplus implying the creation of a vacuum. There is no motivation to do so in D11, which is a closed system. D1 may show the use of a vacuum in the context of a pneumatic (pressure assisted) dust delivery system. However, its application to the current blowing system is special. It is realized in a way that allows vacuum to be achieved simply by expelling surplus air from the separator.

The partition between feed and blowing member provided an improved separation of functions within the housing.

This is apparent from its position and extent as shown in figure 4.

Reasons for the Decision

1. The appeal is admissible.
2. *Background of the Invention*

The patent relates to a combination of a coating machine and an air unit. The air unit includes a blowing member for blowing air across products coated with particulate material to remove surplus, a suction member which draws off air and particulate material, and a separating means which then removes particulate material from the drawn off air. The air is then recirculated to the blower.

Claim 1 in the amended form upheld by the decision is essentially directed at a housing which accommodates the particulate feed and a conveyor belt with holes conveying the products to be coated, and into which the blowing member blows air and from which air is drawn off by the suction member. The auxiliary requests add to claim 1 the features of, respectively, a cyclone as separating means, a dust filter discharging purified surplus air, or a partition within the housing.

3. *Admissibility of new evidence*

D11 is filed with the grounds of appeal, that is outside the statutory opposition period. However, it is filed in response to the decision's emphasis on the

housing as inventive feature of claim 1 as maintained in amended form. In accordance with established jurisprudence, see for example the Case Law of the Boards of Appeal, 5th edition, 2006, VI.F.3.1.5 and the case law cited therein, such evidence filed in reaction can be considered as duly filed. The Board has therefore decided to admit D11 into the proceedings.

4. *Main request, auxiliary request 3: Novelty and Inventive Step over D3*

4.1 D3 in reference to figure 1 describes a combination of a coating machine and air unit in a single apparatus, referred to as a breeding machine in the opening paragraph, see column 1, lines 9 to 13. The *coating machine* itself comprises a hopper 22 with roll 23 "for metering the discharge of comminuted material onto the products", see column 1, lines 56 to 61 (shown at 19 in figure 1).

A fan 44 and a discharge nozzle disposed above the belt, see figure 1 right hand side, and also column 2, lines 27 to 31, form parts of an *air unit*. The nozzle blows air onto the products "to remove excess comminuted material", column 3, lines 5 to 9, thus forming a blower or *blowing member* in the sense of the claim.

According to column 2, lines 27 to 29, the "housing and associated elements [of the right hand unit] are similar to those adjacent the hopper 31", in reference to the similar unit shown on the left in figure 1 immediately adjacent hopper 22 at reference signs 31 to 36. Its structure and function are described in greater detail in column 2, lines 6 to 18 and 38 to 56. It

includes a baffle 32 forming two compartments, column 2, lines 7 to 8, the leftmost of which communicates with the inlet to the fan 33, column 2, lines 14 to 16, and forms suction means. The baffle deflects particulate material from the intake and so "insures that the intake to the fan is substantially free of the material", column 2, lines 50 to 56; it thus acts as separating means for air drawn into the left compartment as claimed. Finally, see column 2, lines 51 to 52, the "path of the circulating air is ... a closed one" within this air unit.

As the two units are stated to have similar structure, their elements must also carry out similar functions; this is not a mere speculation but a logical conclusion. For the right hand unit baffle 43 thus also serves as a *separating means* for separating out particulate material entering the compartment to its left connected to fan 44's intake and constituting a *suction member* in the sense of claim 1. The claimed wording, the Board notes, only specifies a functional, not a positional relationship between suction member and separating means. By virtue of their stated structural similarity, air flow path in the right hand unit is also circulatory. Here fan 44, the left hand compartment and the discharge nozzle form *circulating means* as in claim 1.

The D3 device further includes a *housing* formed by a lower cover plate 38, column 2, lines 19 to 21, and upper elements including a tray 46, column 2, lines 31 to 34, together with the walls of hopper 22 and the housings 31 and 42 of the two fan units. This housing extends along bottom and top of the machine, as is

clear from figure 1, as well as along its sides, see figure 5. It so encloses and accommodates all essential components, though, as in the present patent (see e.g. figure 4), it includes openings at left and right for entry and exit of products.

A wire mesh belt 16 for carrying the products to be breaded extends through the housing, column 1, line 41 to 50. The belt is "open mesh", column 3, lines 7 to 9, to allow blown off excess to fall through, and so to the *conveyor belt with openings* of the claim.

Hopper 22 and roll 23 within the housing feed particulate material onto the products on the belt below and constitute *feed means* in the sense of the claim, see further column 1, lines 56 to 61.

As stated in column 2, lines 29 to 31, the *blowing member* or discharge nozzle of the right hand air unit (fan 44, housing 42) is *located above the belt* and necessarily *blows air into the housing*, and as is clear from the figure, see the two arrows) *over the belt* 16.

Finally, the *suction member*, the compartment to the left of baffle 43, by virtue to its connection to the interior *draws air out of the housing*.

Concluding, all features of claim 1 of the *main request* are directly and unambiguously derivable from D3. The subject-matter of this claim lacks novelty.

- 4.2 Claim 1 of the *third auxiliary request* adds the feature (from granted claim 7) of a partitioning means within the housing between feed and blowing means.

4.2.1 In D3 the feed (hopper 22, roller 23) and the blowing means (discharge nozzle of fan 44) are provided at opposite ends of the housing, separated by - from left to right in figure 1 - the lower, curving right hand section of the hopper enclosure; the lower walls 31 housing the first (left) air unit with fan 33; vibrating plate 38; the lower left wall 42 of the air unit with fan 44, where it connects with plate 38 in segments shown as stepped. As "partitioning means" signifies nothing more than something that separates one space from another, these elements either alone or in combination constitute partitioning means. However, this means is integral to the housing, and cannot be said to be *within* the housing, as required by the claim. This is the sole difference of its subject-matter over D3.

4.2.2 The patent is silent as to any effects or advantages associated with an inner partition. The description in fact makes no mention of this feature, though corresponding reference signs 39,40 in figure 4 do denote what appear to be inner panels separating different areas within the machine. They may well improve separation and air flow as asserted by the Respondent, but this will depend on the particular layout and overall design of the machine, which are not defined in the claim. Outside of that specific context the addition of an inner partition in a device such as that of D3, which already includes a partition integrated in the housing, serves no clear purpose. Such an arbitrary modification cannot serve as basis for inventive step. The subject-matter of claim 1 of the auxiliary request 3 thus lacks inventive step.

5. *Auxiliary requests 1, 2 : Inventive Step over D11*
- 5.1 The requests add to claim 1 of the main request features of a cyclonic separating means and a dust filter for discharging purified surplus air respectively. D11 which provides greater detail of the air separation and processing per se, is now a more appropriate starting point for the assessment of inventive step.
- 5.2 D11, see e.g. page 3, first complete paragraph, concerns the coating of web material ("Bandmaterial") with e.g. resin powder prior to its entry in an oven where the resin melts and forms a protective cover. The sole figure in conjunction with page 6, penultimate paragraph, to page 7, first complete paragraph, shows the main coating unit ("Auftragseinrichtung") 4 housed within a closed housing ("geschlossenen Kabine") 1. It comprises a feed unit in the form of a storage funnel ("Schütteltrichter") 4, metering roll ("Dosierwalze") 5 and brushing roll ("Bürstenwalze") for covering the web material, shown in the figure as being fed through the housing towards melting zone 19, with fine particulate material ("Feinzerstäuberung"). Connected to the housing is an air unit ("Belüftungseinrichtung") 2 which includes a suction member ("Ansaugung") 3 which draws off air with (excess) particulate material ("Das überschüssige Überzugsmaterial wird ... abgesaugt"), which is then separated out from the drawn off air in a separating means 11 ("... in einer Abscheidseinrichtung aus dem abgesaugten Pulver-Luftgemisch getrennt").

- 5.2.1 The figure shows how after separation the drawn off air is fed to the suction fan ("Absaugventilator") 10 and then recirculated to the housing via a channel extending between the fan at 10 and shown opening into the housing at 1 above the coated web. The recirculated air is necessarily blown past and over the coated web material to be drawn off again towards the separating means. This path implies that some of the powder deposited on the web material, if only a small part, will be blown off again and entrained, together with that powder which has not been deposited, in the air drawn off.
- 5.2.2 It is true that D11 strives to avoid changes in coating, but only after the web material has passed the coating stage (page 5, lines 1 to 5: "*Damit nach Durchlaufen des Bandmaterials durch die Beschichtungsvorrichtung eine Änderung ... vermieden wird*" - emphasis added). Within the coating stage, however, some loss is inevitable due to the recirculation path across the web. The fact that recirculation may also serve to condition the air (and so create a protective environment) is immaterial in this regard.
- 5.2.3 The recirculation channel and its outlet into the housing thus constitute a blowing member in the sense of claim 1 of either of auxiliary requests 1 and 2.
- 5.3 Turning first to claim 1 of auxiliary request 1, its subject-matter is seen to differ from D11 in the features of a conveyor belt with openings running through the housing, and in the features of a cyclonic separator. No belt is shown in D11; it is superfluous for a continuous web. D11, furthermore, cites cartridge

filters ("Kastentaschenfilter", page 7, second complete paragraph) as sole example of separating means.

5.3.1 These two distinct differences address dissimilar problems: a belt (with openings) in first instance serves the transport of discrete items, whereas a cyclone is an alternative means for separating out dust. The two differing features are thus unrelated - either per se or in their underlying problem - and can be assessed independently for inventive step.

5.3.2 That the use of a conveyor belt is a routine measure for the transport of discrete items behoves no further comment. The skilled person, who in order to modify a device as in D11 for coating discrete items as a matter of course adopts a belt, is then faced with two known options : the belt has either an open or a closed structure. Neither choice involves an inventive insight. Open mesh belts are in fact well-known in particulate coating machines, see D3 (belt 16, above) or D5 ("endless belt ... open mesh wire conveyor" 74, column 4, lines 41,42), as also acknowledged in the patent specification paragraph [0004].

5.3.3 Cyclones, the basic structure of which consists of a cylindrical housing with tangential feed and a central core (a gas outlet) at the top end, and a (conical) collector at the lower end, are a well known alternative type of separator. A familiar application is for air purification in plants, e.g. saw-mills. D4, D5 and D6 illustrate their use in particulate coating.

In D4, see figures 1 and 2, and column 4, line 59, to column 5, line 5, the two arrangements each with

cylindrical tank 61, (tangential) inlet pipes 60 feeding into internal an vortex eliminator 62, and tapered discharge 63, are effectively cyclonic separators for filtering out flour for recycling in a flour dusting arrangement (abstract). In the combination wet batter and dry breader machine of D5, a cyclone, shown at 98 in figure 1, and in greater detail in figure 12, is used for capture and recirculation of breader material, column 6, lines 17 to 25. Cyclones are also shown in the powder spraying arrangement of D6, in figure 1 at 110, see also column 5, lines 38 to 43, figure 9 at 902, and in figure 10 at 1002.

Replacing the cartridge type separator of the D11 device by such a commonly known alternative does not involve an inventive insight. This is all the more so as D11 clearly cites cartridge type separators only by way of example ("z.B. Kastentaschenfilter", page 7, first complete paragraph), making allowance for other types of separators. Any alternative that the skilled person would recognize as suitable for incorporation into a closed system as in D11 will do; this does not imply that it need already have been so used. In this case the Board has no reason to assume that the skilled person would consider cyclones as unsuitable. At any rate D6, for example, in each of figures 1, 9 and 10, does show circulation of the air expelled from the cyclone.

- 5.3.4 Neither of the differing features thus involves an inventive step. Adopting both of these unrelated, obvious modifications adds nothing over and above the straightforward combination of their individual effects, and is thus a mere juxtaposition of individually

obvious measures. The subject-matter of claim 1 of the *auxiliary request 1* thus lacks inventive step.

5.4 Considering now the auxiliary request 2, the subject-matter of its claim 1 differs from D11 in the feature of a conveyor belt with openings, as above, and the further feature of a dust filter for discharging purified surplus air. These are again disparate features, addressing unrelated problems of conveyance and air circulation, and can be dealt with separately in the assessment of inventive step.

5.4.1 The discharge of an air surplus is linked to the generation of a vacuum or under-pressure in the housing, see specification paragraph [0019]. This prevents airborne dust escaping from the openings in the housing. Filtering the air surplus used to create the vacuum ensures that the dust so contained does not escape elsewhere. The objective technical problem can be formulated accordingly as preventing further escape of dust, in particular from the housing openings, and without compromising the machine's overall ability to contain dust.

5.4.2 The proposed solution as well as the underlying problem are however already known. D1, see the paragraph bridging columns 9 and 10, details how main blower 155, see figure 1, provides a volumetric flow (500 ft³/min) made up of individual flow contributions from the various enclosure openings (inlet 140, outlet 154 etc, see figure 15) and so establishes a recapture flow rate back through those openings. This is "to prevent ... flour from exiting the enclosure 130 at an enclosure opening other than the collection orifice 156". Some of

the suction can be provided by fan 38 (figure 1) used to spray dust items in the enclosure, "reducing the suction [from] main blower 155", see column 11, lines 45 to 55. In figure 1 the surplus is shown exiting blower 155 at 36 after previous filtering in drop out filter box 50, see the sentence bridging columns 6 and 7.

5.4.3 The skilled person, intent on eliminating further sources of dust from a device such as that of D11, will as a matter of obviousness draw on D1's teaching to prevent dust escaping from the openings in the enclosure. Independently, he will as a matter of course modify D11's design by incorporating an open structured belt so as to coat discrete items (see above). The mere juxtaposition of these individually obvious and unrelated modifications results in the subject-matter of claim 1 of the auxiliary request 2 without the exercise of inventive skills.

6. The Board concludes that none of the amendments made to granted claim 1 according to the main request or auxiliary requests result in subject-matter that meets all the requirements of the Convention.

Order

For these reasons it is decided that:

1. The decision under appeal is set aside.
2. The patent is revoked.

The Registrar

The Chairman

G. Magouliotis

M. Ceyte