BESCHWERDEKAMMERN DES EUROPÄISCHEN PATENTAMTS

BOARDS OF APPEAL OF THE EUROPEAN PATENT OFFICE

CHAMBRES DE RECOURS DE L'OFFICE EUROPEEN DES BREVETS

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

Datasheet for the decision of 24 May 2007

Case Number: T 0168/05 - 3.2.03

Application Number: 97914553.9

Publication Number: 0836900

IPC: B22C 15/28, B22C 11/10

Language of the proceedings: EN

Title of invention:
Method of supplying sand to blow head of blow type molding machine

Applicant:
SINTOKOGIO, LTD.

Opponent:
DISA Industries A/S

Headword:
-

Relevant legal provisions:
EPC Art. 108, 123(2), 84, 54, 56

Keyword:
"Admissibility of appeal (yes)"
"Admissibility of claim filed with grounds of appeal (yes)"
"Amendments - added subject-matter (no)"
"Claims - clarity (yes)"
"Novelty (yes) - implicit disclosure (no)"
"Inventive step - (yes)"

Decisions cited:
T 0840/93

Catchword:
-

Europäisches Patentamt | European Patent Office | Office européen des brevets

Beschwerdekammern | Boards of Appeal | Chambres de recours

Case Number: T 0168/05 - 3.2.03

D E C I S I O N
of the Technical Board of Appeal 3.2.03
of 24 May 2007

Appellant: (Patent Proprietor)
SINTOKOGIO, LTD.
7-23 Meieki-4-chome
Nakamura-ku
Nagoyashi,
Aichi 450 (JP)

Representative:
Behrens, Dieter
Wuesthoff & Wuesthoff
Patent- und Rechtsanwälte
Schweigerstraße 2
D-81541 München (DE)

Respondent: (Opponent)
DISA Industries A/S
Herlev Hovedgade 17
DK-2730 Herlev (DK)

Representative:
Roerboel, Leif
Budde, Schou & Ostenfeld A/S
Vester Soegade 10
DK-1601 Copenhagen V (DK)

Decision under appeal: **Decision of the Opposition Division of the European Patent Office posted 15 December 2004 revoking European patent No. 0836900 pursuant to Article 102(1) EPC.**

Composition of the Board:

Chairman: U. Krause
Members: G. Ashley
J.-P. Seitz

Summary of Facts and Submissions

I. European Patent EP-B1-0 836 900 relates to a method of filling a mould with sand from a blow head by means of compressed air. Grant of the patent was opposed under Article 100(a) EPC for lack of novelty.

II. The opposition division was of the view that the sole amended claim of the main request was not allowable for added subject-matter contrary to Article 123(2) EPC, and that the claimed method of the auxiliary request lacked inventive step (Articles 100(a) and 56 EPC); consequently it decided to revoke the patent.

III. The decision of the opposition division was posted on 15 December 2004 and the appellant (patent proprietor) filed notice of appeal on 3 January 2005, paying the appeal fee on the same day. A statement containing the grounds of appeal, together with a further amended claim, was filed on 14 April 2005.

In reply, the respondent (opponent) alleged that the appeal is not admissible and that the new claim filed with the appeal should not be admitted into the proceedings; in the alternative, it submitted that the patent should be revoked, since the claimed invention contains added subject-matter (Article 123(2) EPC), is not clear (Article 84 EPC) and does not involve an inventive step (Article 56 EPC).

In a communication dated 10 January 2007, the Board issued a summons to attend oral proceedings, together with a preliminary opinion pursuant to Article 11(1) of the Rules of Procedure of the Boards of Appeal. In

response both the appellant and the respondent submitted further arguments; the respondent also informed the Board that it would not be attending the oral proceedings. The oral proceedings were held on 24 May 2007 and, in accordance with Rule 71(2) EPC, in the absence of the respondent.

IV. The claim reads as follows:

"Method of blowing molding sand from a blow-off port of a blow head of a blow type molding machine into a blow-in port of a device that defines a mold space, comprising the steps of
(a) connecting the blow-off port of the blow head to the blow-in port of said device that defines a mold space in that the device is rotated about a horizontal axis such that the blow-in port of the device engages with the blow-off port of the blow head,
(b) blowing molding sand contained in the blow head into the device through the blow-off and blow-in ports, and then
(c) squeezing the molding sand in the mold space,

characterized in that

after step (a) a predetermined amount of molding sand is introduced into the blow head,
and in that
after a mold is produced to some degree the molding sand in the blow-off port of the blow head is hardened and blocks the blow-off port, so that after a first mold is produced molding sand does not flow out when it is supplied to the blow head."

The claims of the main and auxiliary requests before the opposition division had the following characterising parts:

Main request:
"… characterized in that
after step (a) the molding sand is introduced into the blow head,
and in that
after step (b) to some degree the molding sand in the blow head is hardened, blocks the blow-off port and is used."

Auxiliary request:
"… characterized in that
after step (a) a predetermined amount of molding sand is introduced into the blow head."

V. Prior Art

The following documents, together with English translations, were cited in the notice of opposition and are relevant for this decision:

D1: JP-A-56 168935
D2: JP-A-07 016705

Both D1 and D2 were provided with English translations.

VI. Summary of the Submissions of the Parties

(a) Admissibility of the Appeal and Amended Claim

The respondent submitted that the appeal is inadmissible because of insufficient substantiation in the notice of appeal. Citing T 840/93, it argued that the amended claim filed with the grounds of appeal is a new request which was not discussed during opposition proceedings. Since the grounds of appeal relate only to this new request, no reasoning is given as to why the decision of the opposition division was wrong. Consequently, the appeal is not substantiated and is inadmissible.

The respondent also held the view that the amended claim filed with the appeal should not be admitted into the proceedings. The relevant prior art (D1 and D2) was made known to the appellant in the notice of opposition, and a claim drafted to take account these documents could have been filed during the opposition proceedings; thus, there is no acceptable reason for the late filing.

The appellant reasoned that the new claim filed with the appeal corresponds essentially to that of the auxiliary request filed during oral proceedings before the opposition division, but with a further amendment to avoid the grounds set out in the contested decision.

(b) Article 123(2) EPC

Both the respondent and the opposition division maintain that there is no basis in the originally filed application for the feature that sand in the blow-off

ports is hardened after a mould has been produced. Sand in the blow-off ports is hardened as a natural consequence of the production process, but the present amended claim defines this as an active step, ie one in which some additional action is required. Since this is not disclosed in the application as originally filed, the amendment is contrary to Article 123(2) EPC.

The appellant agreed that sand left in the blow-off ports hardens to some degree without any additional action, but submitted that the expression "moulding sand… is hardened" does not add any further subject-matter. It argued that "no further action" is an activity required to produce hardening of the sand. A comparison was made with a bricklayer building a wall from bricks and mortar, where the mortar is hardened by taking no additional action.

(c) Article 84 EPC

Granted claim 1 was amended to contain the feature that a predetermined amount of moulding sand is introduced into the blow head after step (a). According to the respondent, the "predetermined amount" could correspond to the size of the mould cavity, or to some level in the blow head that ensures complete filling of the mould. This doubt gives rise to a lack of clarity, which is now of relevance, as the feature was introduced into the claim during post-grant proceedings.

The appellant submits that the feature must be understood in the context of the description. An unbiased reader referring to paragraphs [0007] and [0008] would understand the feature to mean that the

amount of sand must be sufficient to fill the mould space and the blow-in and blow-off ports.

(d) Novelty

The respondent alleges that the claimed method lacks novelty with respect to D2. Although the features that form the characterising portion of the claim are not explicitly disclosed in D2, they are inherent to the process described there.

Firstly, in order to have identical starting conditions for each mould production when making a series of moulds, a predetermined amount of sand, equal to the amount of sand required to fill the mould cavity, is introduced into the blow head. The exception to this being the production of the first mould when an additional amount of sand must be provided for blocking the blow ports; this is the situation in Figure 1 of D2, where an amount of sand is shown to be present in the blow head and blow-off ports after production of a mould.

Secondly, Figure 1 of D2 clearly indicates that sand does not exit from the blow ports, and the only explanation for this is that the ports are blocked by sand; this would occur naturally as the sand in the blow-off ports is subjected to compression along with that in the mould when the squeeze plates are operated.

The appellant submitted that Figure 1 of D2 is merely schematic, whose purpose is to show the components and operation of the moulding machine. It does not show any particular step in the process, so for example, it

shows sand in both the blow head and the mould only as an indication of where sand can be located in the apparatus. The skilled person knows that normally only enough sand to fill a mould is charged into the blow head, and hence if Figure 1 were showing a point in the process cycle, sand would not be present in both mould and blow head, and certainly not the large quantity shown in the blow head after making one mould.

D2 therefore does not contain any information concerning the point in the process when sand is supplied to the blow head. In addition, there is no teaching in D2 of the quantity of sand to be loaded into the blow head, and the claim requires a surplus such that, after a mould is produced, some sand remains in the blow-off port.

(e) Inventive Step

The respondent is of the view that hardening and blocking of the blow-off port is an results inevitably from the production of the first mould. Figure 1 of D2 indicates that sand is held back inside the container and does not exit from the blow ports, and the only natural explanation for this is that the blow ports are blocked by sand, which has been subjected to compression when the sand in the mould is compressed. Since the blow ports are inevitably blocked after making the first mould, the problem of scattered sand in the workplace when charging the blow head does not exist, and in the absence of a problem, inventive step cannot be recognised.

Both the respondent and the opposition division referred to D1 as providing the solution to the problem of sand spilling from blow ports when no hardened sand blocks the ports, as D1 discloses that this can be prevented by introducing the sand into the blow head after attaching the mould.

The appellant argued that, faced with the problem of preventing sand from being scattered, the skilled person would only fill the blow head with the amount of sand required to fill the mould and no more. The claimed process is thus counter to the normal practice of the skilled person. He reiterated his submission that Figure 1 of D2 does not show any particular stage of the process, and in particular does not teach that the blow head should be filled with sufficient sand both to fill the mould and block the blow-off port.

D1 does not provide the solution. The moulding sand of D1, known as "dry sand", contains a binder or "tackifier" that hardens the sand in the mould by curing. The sand of the disputed patent is "green sand" that is hardened not by curing but by compression between squeeze plates 4 and 8. During the process of D1 some moulding sand is inevitably left in the blow head and blow-off ports; this has to be removed by an additional cleaning step before it hardens in the nozzles, as it is not expelled into the mould during subsequent moulding cycles. D1 provides no indication of temporary plugging of blow ports by moulding sand between consecutive shots into the moulds.

In summary, none of the cited documents provides an indication of the invention without knowledge of the invention and the benefit of hindsight.

VII. Requests

The appellant requested that the decision under appeal be set aside, and that a patent be maintained on the basis of the following documents:

a) The claim filed with the letter of 14 April 2005;

b) Description paragraphs [0001] to [0004], filed during the oral proceedings held before the Board, and paragraphs [0005] to [0009] as granted;

c) Figures 1 to 4 as granted.

The respondent requested in writing that the appeal be either declared inadmissible or dismissed.

Reasons for the Decision

1. Admissibility of the Appeal and the Amended Claim

The Board in T 840/93, referred to by the respondent, emphasised that, whereas a patentee who has lost before an opposition division has the right to have the rejected requests reconsidered by the appeal board, the admission of other requests is a matter of discretion of the board. In exercising this discretion, it is the practice of the boards of appeal to allow amended or auxiliary requests during the appeal procedure,

provided that such requests are bona fide attempts to overcome objections raised and are clearly allowable. On the facts of the case in T 840/93, the new requests raised issues that had never been considered by the opposition division, and since this was not in accordance with the purpose of the appeal procedure, the Board refused to admit them.

The present Board agrees with the respondent and the findings of T 840/93 in that a new request on appeal which raises issues not considered by the opposition division is not in accordance with the main purpose of appeal. However, this is not the case here. The new claim 1 is based essentially on the characterising features of claims 1 of the main and auxiliary requests before the opposition division (see IV above), whose views regarding these features are set out in its decision. The present request of the appellant does not therefore raise a completely new issue, as described in T 840/93.

The grounds of appeal address the reasons for revocation set out in the contested decision, ie added subject-matter, clarity issues and inventive step with respect to D1 and D2, and the amended claim is considered to be a bona fide attempt to meet these objections. Consequently, the appeal meets the requirements of Article 108 EPC and, along with the amended claim filed with the appeal, is admissible.

2. Article 123 EPC

Compared with the granted claim, the present claim defines a further feature in that after a mould is produced the moulding sand in the blow-off port of the blow head is to some degree hardened.

The patent application as published describes an embodiment of the method of the invention, and states, at column 2, lines 18 to 20, that "after a mould is produced in this way, since to some degree the moulding sand in the blow-off ports of the blow head 7 is hardened, it blocks the ports."

It is apparent from both the description and the amended claim that sand hardens in the blow-off ports. Although there is no explicit mention in the particular embodiment given in the application of any means other than natural hardening occurring, it is apparent to the skilled person that such means would not be excluded by either the definition in the description or in the amended claim. The distinction drawn by the respondent and the opposition division is very fine, and it seems that in terms of what is realistically disclosed to the skilled person in the amended claim and the description, there is no appreciable difference. In addition, if the "novelty test" is applied (see page 215 of the Case Law of the Boards of Appeal of the EPO, 4th edition), it becomes apparent that the disclosure in the application anticipates the amendment, this being a further indication that Article 123(2) EPC has been complied with.

In conclusion, the amended claim meets the requirements of Article 123(2) EPC.

It is also noted that the additional features defined in the amended claim provide a narrower scope of protection, thereby complying with Article 123(3) EPC.

3. Article 84 EPC

The respondent submitted that the expression "a predetermined amount" lacks clarity, since it is not clear whether or not the amount should correspond to the volume of the mould.

The claim requires that the predetermined amount of sand introduced into the blow head and after a mould is produced, the blow-off port is blocked by sand hardened there. It is therefore apparent that when making the first mould of the sequence, there must be at least sufficient sand to fill the mould space, the blow-in port of the mould, and the blow-out port to the extent that it is blocked. After the first mould is made, there is already some sand in the blow-in and blow-off ports, and hence the amount required for the second and subsequent moulds is less than that for the first mould.

The claim thus provides the skilled person with sufficient information to enable suitable amounts of sand to be determined, and a lack of clarity of the amended feature does not arise.

4. Novelty (Article 54 EPC)

The characterising portion of the claim requires that a predetermined amount of sand is introduced into the blow head after the mould has been connected to the blow head.

It is clear that, in order to prevent sand from flowing out of the blow head and onto surrounding equipment and floor, either the blow-off ports must be provided with a closure mechanism or the mould must be attached before the blow head is filled, but neither of these features is clearly disclosed in D2.

In particular, it is also not possible to determine exactly how or if nozzles (1) can be closed, and there is no discussion in D2 of filling of the blow head with sand. Thus, the point in the moulding sequence at which the mould is connected to the blow head and the point at which the blow head is filled with sand is not disclosed.

The claimed subject-matter is therefore novel.

5. Inventive Step (Article 56 EPC)

Document D2 is considered by the parties and the opposition division as providing the closest state of the art, and the Board sees no reason to depart from this view. D2 discloses a similar moulding machine and method of moulding as described in the disputed patent.

Starting from D2, the problem to be solved is how to prevent sand from being scattered around the moulding

machine when the blow head is being filled (see paragraphs [0002] and [0003] of the specification).

There are two aspects to the proposed solution. Firstly, the mould is attached to the blow head before the blow head is filled with sand. This is especially significant when making the first sand mould in a sequence; any sand spilling out of the blow head goes directly into the mould and not onto surrounding surfaces. Secondly, sufficient sand is supplied to fill not only the mould, but also the blow-off ports where it hardens thereby closing the ports; this is significant when making the second and subsequent sand moulds in the sequence.

Considering the first aspect of the invention, the claimed method requires that the blow head is filled with sand only after the mould has been attached. Although this is particularly important in preventing sand from spilling out before the first mould has been made and the ports have been blocked, the claim requires that this applies when making all sand moulds in a sequence. It is apparent that spillage of sand from the blow head can be achieved by either providing the blow-off ports with a closure mechanism, or by putting a container under the blow head to catch the sand. Given such a limited choice, the connection of a container, ie the mould, to the blow head in order to prevent sand spillage is an obvious step for the skilled person. Although this feature is disclosed in D1, it is considered that, concerning this point, D1 adds nothing beyond the general knowledge of the skilled person.

Considering the second aspect of the invention, the claim requires that the blow head is filled with a predetermined amount of sand, so that after a mould is produced sand remains in the blow-off ports and is hardened, thereby blocking the ports. Thus, on making the first sand mould in a sequence, at least enough sand must be loaded into the blow head to fill both mould and blow-off ports; for second and subsequent moulds, it would only be necessary to load enough sand as is required to fill a mould. Once sufficient extra sand is loaded into the blow head, the outlet ports become blocked without the need for further steps to be taken. The appellant explains that this occurs naturally as the sand settles in the blow head; in fact compressed air is used to fluidise the sand in order to enable it to flow freely into the mould.

The question is therefore whether D2 discloses the use of an excess amount of sand to block the blow-off ports. The text of D2 does not describe the charging of the blow head, however, Figure 1 shows a moulding apparatus in which mould halves containing sand have been separated, indicating that a mould has been produced; at the same time, the blow head is shown as containing a relatively large quantity of sand, clearly in excess of that required to fill the mould, and although the mould has been moved away from the blow-off ports, sand remains in the blow head. This, argues the respondent, is a clear indication to the skilled person that the blow-off ports can be blocked by filling the blow head with an extra amount of sand, thereby preventing spillage of sand.

The appellant explained that the normal procedure is to load the blow head with just enough sand for making one mould, thus it is clear that Figure 1 does not represent any particular stage in the moulding cycle, and, as set out above, merely shows schematically where sand is located in the apparatus. In the absence of any argument from the respondent on this matter, the Board finds the argument of the appellant convincing, as it does not seem reasonable to leave such a large amount of sand in the blow head after having made a sand mould. In particular, the amount shown in Figure 1 is considerably in excess of that needed to fill the blow-off ports and additional compressed air would be required to fluidise this extra sand. The Board has come to the conclusion that there is no clear teaching in D2, either in the text or in the figures, that the blow-off ports can be closed by supplying extra sand to the blow head.

The solution is not disclosed in D1 either. D1 also concerns a method in which moulding sand is blown by compressed air from a blow head into a mould. Since the mould is attached prior to filling the blow head, sand is prevented from spilling out. After blowing is completed and the mould has been filled, some sand remains in the blow head; the blow head is therefore moved to a position above a recovery hopper into which the residual sand is discharged for recycling, the blow head is then returned ready to make the next mould. There is no indication in D1 that extra sand is used in order to block the outlet port of the blow head, in fact there does not appear to be any closure mechanism at all for the outlet port of D1 ("blowing hole" 14).

None of the cited documents discloses the use of excess moulding sand for closing the blow-out ports, thereby preventing sand from spilling into the working environment. Of course, once this concept is known by reading the patent specification, it appears to be a trivial step to take. However, as pointed out by the appellant, the invention must not be judged with the benefit of hindsight, and since none of the available documents describes the closure of ports through the use of extra sand, inventive step must be recognised.

Order

For these reasons it is decided that:

1. The decision under appeal is set aside.

2. The case is remitted to the department of first instance with the order to maintain the patent with the following documents:

   (a) The claim filed with the letter of 14 April 2005 setting out the grounds of appeal;

   (b) Description paragraphs [0001] to [0004], as filed during the oral proceedings held before the Board, and paragraphs [0005] to [0009] as granted;

   (c) Figures 1 to 4 as granted.

The Registrar: The Chairman:

A. Counillon U. Krause