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**Datasheet for the decision
of 8 August 2013**

Case Number: T 1248/11 - 3.3.05

Application Number: 05793341.8

Publication Number: 1802385

IPC: B01F 13/00

Language of the proceedings: EN

Title of invention:

Mixer for multi-component pastes, kit, and methods of mixing
paste components

Patent Proprietor:

3M Deutschland GmbH

Opponent:

Kettenbach GmbH & Co. KG

Headword:

-

Relevant legal provisions:

EPC Art. 100(b), 83

Relevant legal provisions (EPC 1973):

-

Keyword:

"Sufficiency of disclosure (all requests): no - gaps in
information"

Decisions cited:

T 0435/91, T 1063/06, T 1358/07

Catchword:

-



Case Number: T 1248/11 - 3.3.05

DECISION
of the Technical Board of Appeal 3.3.05
of 8 August 2013

Appellant 1:
(Patent Proprietor)

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Decision under appeal:

**Interlocutory decision of the Opposition
Division of the European Patent Office posted
20 May 2011 concerning maintenance of European
patent No. 1892385 in amended form.**

Composition of the Board:

Chairman: G. Raths
Members: G. Glod
P. Guntz

Summary of Facts and Submissions

- I. The present appeal lies from the interlocutory decision of the opposition division to maintain European patent EP-B-1 802 385 in amended form.
- II. The opposition division found that claim 1 of the patent in suit lacked novelty with respect to D1. The third auxiliary request was found to meet the requirements of the EPC.
- III. The documents cited during the opposition proceedings included the following:
- D1: US-A1-2003 123 323
D2: US-B1-6 244 740
D3: EP-A2-1 149 627
D4: US-A1-2002 175 186
D5: US 6 129 244
D6: EP-A1-1 110 599
D7: DE-B4-101 12 904
- IV. The patent proprietor's (hereinafter: appellant 1) notice of appeal and its statement of grounds of appeal were received on 13 July 2011 and 22 September 2011, respectively.
- V. The opponent's (hereinafter: appellant 2) notice of appeal and its statement of grounds of appeal were received on 9 June 2011 and 27 September 2011, respectively.

- VI. Further written submissions were received from appellant 1 on 13 December 2011, 20 July 2012, 28 January 2013 and 26 June 2013, respectively.
- VII. Appellant 2 made further written submissions by letters of 15 March 2012, 13 September 2012 and 21 June 2013.
- VIII. On 14 March 2013 the parties were summoned to oral proceedings scheduled for 8 August 2013. A provisional non-binding opinion of the Board was attached to the summons. Therein the Board indicated that, under Article 100(b) EPC, it had to be established whether the skilled person would know how it could be ensured that the "initial amount" was stored in a reservoir.
- IX. Oral proceedings took place on 8 August 2013. During the oral proceedings it was discussed whether the patent disclosed the invention in a manner sufficiently clear and complete for it to be carried out by the skilled person.
- X. **Appellant 1's** arguments, submitted during the written procedure and oral proceedings, which are relevant to the present decision, can be summarised as follows:

Some of the objections under Article 83 EPC, such as the objection to the "result to be achieved",, concerned the clarity of the claims under Article 84 EPC.

Claim 1 specified that the "initial amount" should be diverted from the discharge opening and not that there should be a change of direction of flow relative to a straight flow path.

The requirements of Article 83 EPC should be considered to be fulfilled if a mixer according to the drawings provided the technical advantages of the invention. To the extent that the technical advantages of the invention were achieved, the question of "how it can be avoided that subsequent content displaces the initial amount from the reservoir" did not arise and thus did not need to be answered, because the solution providing for this effect was already implemented with the reproduction of the mixer as such.

The patent proprietor's experiment submitted with the letter of 24 June 2013 would demonstrate that the skilled person would automatically obtain a mixer in which the "initial amount" was reliably stored and not displaced by the subsequent content when the example illustrated in Figure 9 was put into practice.

Thus at least one way to carry out the invention was disclosed, so that the requirements of Article 83 EPC were met.

The pastes mentioned in the patent were dental impression masses. They could have quite different viscosities, but the components that were mixed to obtain the desired paste normally had similar viscosities.

The patent related to a new concept that allowed the components to pass through the mixing chamber. The "initial amount" was taken away prior to exiting the mixer and stored to ensure that the quality of the paste exiting the mixer was as desired. The skilled person knew how to check the quality and how to adapt

the reservoir such that the "initial amount" that needed to be stored was large enough.

D1 showed in paragraph [0014] that the skilled person was able to adapt the sizes of ducts in accordance with fluid mechanics.

The skilled person knew how to construct a specific mixer for a defined paste by adapting for example the size of the reservoir, the diameter of the reservoir and the viscosity of the components.

The experimental test set-up was submitted with the letter of 24 June 2013, since the opponent had changed its line of argument under Article 100(b) EPC during the appeal proceedings as compared to the notice of opposition. The orange base component that was used in the test had been chosen because it was non-hardenable and stayed soft, so that in principle it could be displaced from the reservoir.

The time period selected for the test was typical in the field of dental impression masses.

XI. **Appellant 2's** arguments, submitted during the written procedure and oral proceedings, which are relevant to the present decision, can be summarised as follows:

The patent-in-suit was not sufficiently disclosed since the "initial amount" of the mixture and the subsequent content of the mixing chamber were not clearly defined. In addition, it was not indicated how the "initial amount" was diverted from the discharge opening and how it should be stored. In the embodiments according to

figures 3, 9 and 10 it was not the "initial amount" but the subsequent amount that was diverted.

There was no indication in the description how it could be ensured that the "initial amount" present in the reservoir was not displaced by the subsequent mixture. Since this was not within the skilled person's general knowledge, the invention was not sufficiently disclosed.

Pastes could have many different viscosities and their components could vary even more in viscosity. The mixer was not limited to any specific type of paste. There was no guidance in the patent on the parameters that allowed the construction of the mixer to be adjusted such that the "result to be achieved" could be obtained.

It was not indicated in the patent for what type of paste the embodiments shown in the figures were suitable.

The skilled person would have to conduct his own research programme to make sure that the desired result was achieved.

The test submitted with appellant 1's letter of 24 June 2013 was not in line with the wording of claim 1, since the reservoir was prefilled and not filled by leading the base component via the mixing chamber. In addition, the form of the mixer used was different from that of figure 9 since it had three discharge openings and it was not cylindrical, but tapered. These differences influenced the fluid dynamics of the paste.

The materials used in the test set-up had very different viscosities, but still some part of the "initial amount" (orange) was removed from the reservoir by the subsequent amount (dark blue), as could be seen in figure 5 of the submissions of 24 June 2013. In addition, the mixing time was rather short and would influence the amount left in the reservoir.

Paragraphs [0070] to [0072] of the patent in suit showed that the embodiment according to figure 9 was intended for storing a mixture prepared in the mixing chamber and not for an individual component.

XII. Claim 1 of the **main request** reads as follows:

*"1. A mixer (100, 200, 300, 400, 500, 600) for producing a paste by mixing components, comprising a housing (110, 210, 310, 410, 510, 610) having a longitudinal axis, a rear end (111, 211, 311, 411, 511) and a front end (112, 212, 312, 412, 512) provided with a discharge opening (113, 213, 313, 413, 513); and a mixing chamber (120, 220, 320, 420, 520) formed in said housing and having an entry side (121) facing said rear end of said housing; **characterized in that** said mixer is adapted such that the initial amount of at least one of said components entering said mixing chamber or the initial amount of mixture being prepared in said mixing chamber is diverted from said discharge opening, and the subsequent content of said mixing chamber is extrudable from said discharge opening; and wherein said mixer comprises a reservoir (140, 240, 340, 440, 540, 640) for storing said initial amount."*

The main request contains two additional independent claims. Claim 16 relates to a kit and claim 18 to a method, respectively.

The **first auxiliary request** only differs from the main request in that claim 18 is deleted and all the reference numbers equal to or higher than 300 are deleted from the claims.

The **second auxiliary request** is identical to the first auxiliary request except that the wording "*the initial amount of at least one of said components entering said mixing chamber or*" is deleted from claim 1.

The **third auxiliary request** is identical to the second auxiliary request except that the wording "*, and wherein the mixer is adapted to store the initial amount of the mixture in the reservoir such that it is not dispensed from the mixer.*" has been added at the end of claim 1.

The **fourth auxiliary request** is identical to the second auxiliary request.

The **fifth auxiliary request** is identical to the third auxiliary request.

XIII. Requests:

Appellant 1 requests that the decision under appeal be set aside and that the patent be maintained as granted, or, alternatively, that the patent be maintained on the basis of auxiliary requests 1 to 3 submitted with the letter of 24 June 2013 or of auxiliary requests 4 and 5

submitted with the grounds of appeal on 22 September 2011.

Appellant 2 requests that the decision under appeal be set aside and that European patent EP-B-1 802 385 be revoked.

Reasons for the Decision

1. Main request - Article 100(b) EPC

Requirements for sufficiency of disclosure

1.1 It is established jurisprudence of the boards of appeal that the requirements for sufficiency of disclosure are met only if the invention as defined in the claims can be performed by a person skilled in the art in the whole area claimed without undue burden, using common general knowledge and having regard to further information given in the patent in suit (see T 435/91, point 2.2.1 of the reasons).

1.2 That principle applies to any invention irrespective of the way the claims are defined, be it by way of a structural or a functional feature.

The peculiarity of the functional definition of a technical feature resides in the fact that it is defined by means of its effect. That mode of definition comprises an indefinite and innumerable host of possible alternatives of diverse structure, which is acceptable as long as all these alternatives achieve the desired result and are available to the skilled

person. This reflects the general principle in law whereby the protection sought must match the technical contribution made by the disclosed invention to the state of the art. Therefore, it has to be established whether or not the patent in suit discloses a technical concept fit for generalisation which makes available to the skilled person the host of variants encompassed by the functional definition of a technical feature as claimed (see T 1063/06, point 5 of the reasons).

In other words, if, in the patent in suit, gaps in information and/or a lack of guidance can be identified, there is insufficiency of disclosure.

Information regarding technical details

1.3 Claim 1 relates to a mixer for producing a paste by mixing components.

Neither the paste nor the components are further defined in claim 1. A paste is not a well-defined expression for a solid dispersion in a liquid that has a viscous consistency.

The mixer should make it possible to produce a paste (of any type) by mixing components (of any type). As admitted by the parties, it is known to the skilled person that a paste itself can vary considerably in viscosity. The components used for producing the paste can vary even more.

1.4 Claim 1, which is directed to a mixer, i.e. an apparatus, is characterised by process features that

define the "result to be achieved" (functional definition):

"said mixer is adapted such that the initial amount of at least one of said components entering said mixing chamber or the initial amount of mixture being prepared in said mixing chamber is diverted from said discharge opening, and the subsequent content of said mixing chamber is extrudable from said discharge opening; and wherein said mixer comprises a reservoir for storing said initial amount".

- 1.5 In the present case, it has to be analyzed whether the skilled person would be enabled to construct the different variants of mixers falling within the scope of claim 1, depending on the type of paste that is to be obtained and on the components that are to be used for producing the paste.

This means that, for specific components, the mixer has to be constructed such that the desired result can be achieved. The skilled person would understand that this result is achieved if the "initial amount" of either the mixture or a component that has entered the mixing chamber is diverted and stored in a reservoir such that the subsequent amount can pass by and exit the mixer prior to the "initial amount".

- 1.6 Since neither the paste that is produced nor the components that are used for its production are defined, many different variants of mixers may have to be constructed to ensure that for each type of component the desired result is obtained.

To obtain this result, the mixer must contain some structural features that ensure that

- the "initial amount" enters the reservoir and
- the subsequent amount does not mix with the "initial amount" present in the reservoir and does not displace the "initial amount" present in the reservoir.

Gaps in information regarding the initial amount

1.7 The skilled person would have to know first what is understood by the "initial amount". The patent in suit teaches that the "initial amount" that should not be dispensed is such that it allows the subsequent amount to have the desired quality (see for example column 2, lines 33 and 34: *"desired ratio of first and second components"*; column 3, lines 8 and 9: *"avoided that a mixture has an undesirable mixing ratio"*; column 3, lines 25 and 26: *"prevented from using the first amount of mixture potentially having an undesirable mixing ratio"*). As admitted by appellant 1, the "initial amount" is thus indirectly defined via the quality of the "subsequent amount".

The skilled person would have to analyse the paste exiting the mixer and to decide whether it is up to his expectations. Such an analysis seems to be within the competence of the skilled person, since it is standard practice in the field to analyse the quality of products.

1.8 However, to be able to analyse only the "subsequent amount", the skilled person would have to ensure that the "initial amount" is indeed stored away and does not exit together with the "subsequent amount". This can only be achieved if the "subsequent amount" does not displace the "initial amount" from the reservoir and does not mix with the "initial amount".

Gaps in information regarding the components, the reservoir, the mixer and the mixing process.

1.9 As admitted by appellant 1 during the oral proceedings, this displacement mentioned above under item 1.8 depends on the viscosities of the different components, on the size of the reservoir and on the diameter of the reservoir. It is the Board's opinion that other factors such as the size and form of the mixer itself, the openings, the position and inclination of the reservoir, the time and speed of mixing, and the quantity of the "subsequent amount" will also impact on the storage of the "initial amount". In fact, the construction of the mixer itself influences the fluid dynamics inside the mixer and mixing chamber and this has to be taken into consideration in the construction of a reservoir for the "initial amount".

1.10 The patent in suit is completely silent on the type of reservoir to be chosen for mixing specific components that might range from almost aqueous to very viscous or even powdery. The patent in suit only discloses that the paste to be obtained could be a dental impression mass (see paragraph [0002]), but fails to give any indication on the viscosity of such masses or on the components used for making such masses. The skilled

person would know that there is a large variety among dental impression masses both in viscosity and in composition, as acknowledged by appellant 1 during oral proceedings. Furthermore, claim 1 is not limited to a mixer for such dental impression masses.

- 1.11 The patent in suit contains many figures that describe different embodiments. There is not a single indication what components were mixed in the illustrated embodiments, what viscosities they are suitable for, what mixing speed and time were appropriate and what the real dimensions of the mixing chamber and the reservoir were. Thus, the skilled person could not deduce from the patent that a specific embodiment is perfectly suitable for use with a specific type of component and/or mixture. He could not recognise that the depicted reservoirs (figures 1 to 11) always store the "initial amount" independently of the type of components introduced into the mixer.

No suitable evidence to fill the gaps in information

- 1.12 Appellant 1 provided with its letter of 24 June 2013 an experimental set-up that was supposed to provide evidence that the "initial amount" is indeed stored in the reservoir and not displaced, by the "subsequent amount". Said experiment was conducted with a mixer as shown in the figure on page 1 of the appendix to said letter. Such a mixer is not illustrated in the patent in suit and cannot be considered as a mixer according to figure 9 of the patent in suit, since its form is tapered and it has several discharge openings, contrary to the mixer of figure 9. Thus, the fact that neither the dimensions of the mixer used in the experimental

set-up nor the dimensions of the mixer according to figure 9 are given is no longer of relevance.

- 1.13 The mixer used in the experimental set-up cannot be designated without any doubt as a mixer according to claim 1 of the patent in suit, since the orange base material was prefilled in the reservoir and did not enter the mixing chamber as required by claim 1. Furthermore, the "initial amount" was assumed to be the amount filling the reservoir so that the skilled person would have to have already gained knowledge from somewhere about the amount that needed to be discarded (stored away). The mixer was prefilled with a specific orange base component having a high viscosity while a hardenable paste with a lower viscosity was forced to flow through the mixing chamber. In fact, it seems that the paste (blue/violet) was not produced by mixing components in the mixer, but already entered the mixer as such (blue/violet). In that very specific set-up, most of the so-called "initial amount" was not displaced from the reservoir while the "subsequent amount" exited through the discharge opening. All the skilled person would learn from said experiment is that under specific conditions an "initial amount" already prefilled in the reservoir is not substantially displaced by the "subsequent amount". However, there is no information about how the skilled person would arrive at these specific conditions. The skilled person would not know whether said mixer is a mixer for producing a paste by **mixing components**, since the components are not mixed in the mixer. In addition, said experiment does not fulfil the following condition:

"adapted such that the initial amount of at least one of said components entering said mixing chamber or the initial amount of mixture being prepared in said mixing chamber is diverted from said discharge opening, and the subsequent content of said mixing chamber is extrudable from said discharge opening".

Actually, the "initial amount" of the first component did not enter the mixing chamber and was not diverted into the reservoir.

- 1.14 The experimental set-up shown in this example is not taught in the patent in suit, since neither such a specific mixer nor the specific components used are disclosed.

- 1.15 The experimental set-up seems to be based on specific knowledge of appellant 1 for which there is no evidence that it belongs to the skilled person's general knowledge.

- 1.16 The Board is not convinced that the same result would be achieved with the mixer shown in the experimental set-up if the first component was rather fluid and had a lower viscosity than the second component. In such a case the mixture would at least partially displace the "initial amount" from the reservoir so that the "initial amount" would not really be stored. The same would happen if the mixture formed in the mixing chamber was a fluid paste with rather low viscosity. In addition, it is not sure that the same observations would be made if the reservoir was not prefilled, but empty, and the "initial amount" first needed to be captured.

The Board is convinced that there are many possible mixtures or combinations of components for which it cannot easily be ensured that the subsequent amount exits through the discharge opening before the "initial amount".

Research programme to fill the gaps in information

1.17 The skilled person trying to construct the mixer according to claim 1 would thus be confronted with the following major tasks

- ensuring that the reservoir is such that the "initial amount" is correctly chosen and captured
- ensuring that the "initial amount" present in the reservoir is not displaced by the "subsequent amount".

1.18 These two tasks may require different, possibly opposing, characteristics of the reservoir, since a large "initial amount" requires a large reservoir while the content can be displaced more easily from a large and wide reservoir. On the other hand, it may be difficult to fill deep and narrow reservoirs, especially if the viscosity of the component or the mixture is high.

1.19 The Board is of the opinion that the skilled person would be at a complete loss as to how to solve the tasks identified above, since the patent in suit does not mention at all any of the parameters relevant for the solution to each task (e.g. viscosity, size and

form of reservoir, size of mixing chamber, position of the reservoir within the chamber, flow rate and speed etc.).

1.20 What the skilled person would probably need to do would be to start with the components and take a mixer that is available. As admitted by appellant 1, if the mixing of the components did not give the desired result since either the "initial amount" was not chosen such that the subsequent amount had the desired quality and/or the "initial amount" was not correctly stored, then the skilled person would have to start adapting the mixer and repeat the whole procedure again until the desired result was obtained. Alternatively he could change the components and try again with the mixer at hand. The patent in suit is silent as to which direction to take to ensure that success is guaranteed after a few tries. It seems up to the skilled person to establish for which type of components and paste produced the illustrated mixers could be of use.

1.21 The prior art is not of help either to the skilled person trying to solve the tasks identified in 1.17 above. As explained by appellant 1, the present invention relates to a new concept that helps to ensure that the mixed paste exiting the mixer has the desired quality, wherein the mixture or one component present in the mixing chamber is diverted afterwards to a reservoir. In contrast, the prior art tries to obtain the desired quality by ensuring that the correct mixture enters the mixing chamber, so that no reservoir is foreseen after the mixing chamber. This is illustrated for example by D1 to D7. Therefore, these documents teach a different set-up and cannot be used

when trying to construct a mixer according to the new concept. They do not provide any information on the "initial amount" and do not disclose a reservoir according to the present invention so that the skilled person could not find any guidance there on how to ensure that the "initial amount" entering a reservoir is definitely stored there. The prior art indicates that certain types of mixers are especially suitable for components having specific viscosities (see paragraph [0001] of D7). However, there is no hint for the skilled person that would lead him to success in the present case; he is rather given the confirmation that viscosity of the components is also an important parameter to consider.

- 1.22 Consequently, to carry out the claimed invention (i.e. to construct the mixer according to claim 1), the skilled person, **in each single case** for the many variants falling within the scope of claim 1, would be faced with the problem of determining the suitable mixer features that might allow him to make sure that the "initial amount" is stored such that the subsequent amount exits the mixer and has the desired quality. However, neither the common general knowledge nor the patent in suit provides him with any information that would guide him in a systematic and reliable way towards the required construction that would allow the desired paste to be obtained when starting from specific components. Thus, the skilled person would **not have at his disposal any guidance leading necessarily and directly to success through the evaluation of failures that may occur**, so that he could only establish by trial and error in each single case whether or not particular features (e.g. size, shape

and position of the reservoir) will ensure that the "initial amount" is stored in the reservoir and the subsequent amount exits the mixer. That constitutes an undue burden.

1.23 In line with T 1358/07 (point 6.3 of the reasons), the functional definition of the mixer according to the present invention is thus no more than an invitation to perform a research programme in order to find a suitably configured mixer with reservoirs.

1.24 The objection under Article 100(b) EPC is therefore justified for claim 1 of the patent in suit. The main request is not acceptable.

2. Auxiliary request 1 - Article 83 EPC

Claim 1 of auxiliary request 1 also contains the functional feature mentioned above (see 1.4). The objections made for the main request concerning sufficiency of disclosure therefore also apply here.

The subject-matter of claim 1 of auxiliary request 1 does not fulfil the requirements of Article 83 EPC and said request must fail.

3. Auxiliary request 2 - Article 83 EPC

Claim 1 of auxiliary request 2 has been limited to the variant *"adapted such that the initial amount of mixture being prepared in said mixing chamber is diverted from said discharge opening, and the subsequent content of said mixing chamber is extrudable"*

from said discharge opening; and wherein said mixer comprises a reservoir for storing said initial amount".

The functional definition thus remains so that the objections made for the main request still apply. It is true that now potentially powdery and almost aqueous components are excluded from entering the reservoir, since claim 1 of this request is limited to the storing of the mixture prepared in the mixing chamber. However, the mixtures prepared in the mixing chamber can still vary considerably in viscosity so that the tasks identified in 1.17 remain the same. As explained for the main request, these tasks can only be accomplished by trial and error, which amounts to an undue burden.

The subject-matter of claim 1 of auxiliary request 2 does not fulfil the requirements of Article 83 EPC and said request must fail.

4. Auxiliary request 3 - Article 83 EPC

Claim 1 of this request was further specified with respect to claim 1 of auxiliary request 2 by the addition of a further clarification by means of another functional feature.

The major tasks identified in 1.17 above remain so that the objections made for the main request also remain valid here.

The subject-matter of claim 1 of auxiliary request 3 does not fulfil the requirements of Article 83 EPC and said request must fail.

5. Auxiliary request 4 - Article 83 EPC

This request is identical to auxiliary request 2 and is thus not allowable under Article 83 EPC either.

6. Auxiliary request 5 - Article 83 EPC

This request is identical to auxiliary request 3 and is thus not allowable under Article 83 EPC either.

7. Admissibility of requests

Although the second auxiliary request is identical to the fourth auxiliary request and the third auxiliary request is identical to the fifth auxiliary request, the question whether it is admissible to file the same request twice does not need to be debated here, since none of the requests is allowable.

Order

For these reasons it is decided that:

The patent is revoked.

The Registrar:

The Chairman:

C. Vodz

G. Rath