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**Datasheet for the decision
of 17 September 2018**

Case Number: T 0613/15 - 3.2.08

Application Number: 99959104.3

Publication Number: 1143872

IPC: A61C7/00

Language of the proceedings: EN

Title of invention:

ATTACHMENT DEVICES AND METHODS FOR A DENTAL APPLIANCE

Patent Proprietor:

Align Technology, Inc.

Headword:

Relevant legal provisions:

EPC Art. 100(c), 100(a), 56

Keyword:

Grounds for opposition - extension of subject-matter (no)
Inventive step - (yes)

Decisions cited:

Catchword:



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Case Number: T 0613/15 - 3.2.08

D E C I S I O N
of Technical Board of Appeal 3.2.08
of 17 September 2018

Appellant: Align Technology, Inc.
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Representative: Small, Gary James
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Decision under appeal: **Interlocutory decision of the Opposition**
Division of the European Patent Office posted on
10 February 2015 concerning maintenance of the
European Patent No. 1143872 in amended form.

Composition of the Board:

Chairman M. Alvazzi Delfrate
Members: C. Herberhold
C. Schmidt

Summary of Facts and Submissions

- I. By decision posted on 10 February 2015 the Opposition Division decided that European patent No. 1143872 as per auxiliary request IIIa then on file, and the invention to which it related, met the requirements of the EPC.
- II. The appellant (patent proprietor) lodged an appeal against that decision in the prescribed form and within the prescribed time limit.

The opponent likewise lodged an appeal against said decision, however, subsequently withdrew the appeal and opposition with letter dated 14 March 2017.

- III. Oral proceedings before the Board took place on 17 September 2018.
- IV. At the end of the oral proceedings the appellant requested:

That the decision under appeal be set aside and that a patent be granted on the basis of the main request as filed during the oral proceedings before the Board.

- V. The independent claims of the main request read as follows:

Claim 1

"In combination:

a dental repositioning appliance (105) comprising an elastic polymeric shell having tooth receiving cavities

removably placeable over at least one dental feature wherein the appliance is configured to engage an attachment device (100) mountable on the dental feature when the appliance is positioned over the dental feature to enable the repositioning appliance (105) to apply force to reposition the teeth from their current configuration; and,

a template fabricated from a mould of a patient's actual tooth configuration, for forming on a target tooth an attachment device (100) to anchor said dental repositioning appliance (105) in place on a patient's teeth to enable the repositioning appliance to apply force to reposition the teeth from their current configuration, the template having a cavity (401) conforming to a portion of the surface of the target tooth and a receptacle (302) to receive polymerisable material (400) to form the attachment device, wherein the template is of a design which is unsuitable for said repositioning appliance or is of a configuration which differs from the tooth configuration of said repositioning appliance, and wherein the template is arranged to allow an external stimulus (402) to be applied to the receptacle (302) via the template, wherein the external stimulus is light."

Claim 2:

"In combination:

a template fabricated from a mould of a patient's actual tooth configuration, for forming on a target tooth an attachment device (100) to anchor a dental repositioning appliance (105) having tooth receiving cavities in place on a patient's teeth to enable the repositioning appliance (105) to apply force to

reposition the teeth from their actual configuration, the template having a cavity (401) conforming to a portion of the surface of the target tooth and a receptacle (302) to receive polymerisable material (400) to form the attachment device; and

a polymerisable material (400) inserted in the receptacle (302) to form the attachment device."

Claim 17:

"A method of manufacturing a dental attachment mould, comprising:

forming a model of a dental feature (306) of a patient's teeth in a first configuration;

placing a model attachment device (100) at a desired location on the dental feature model (306) to form a modified dental feature model;

using the modified dental feature model to form a dental attachment mould having a receptacle (302) defined by the attachment device model to receive polymerisable material

wherein the receptacle (302) is suitable for forming, when the dental attachment mould is placed on the dental feature, an attachment device (100) for anchoring a repositioning appliance having tooth receiving cavities in place on a patient's teeth to enable the repositioning appliance to apply force to move the teeth from the first configuration to a second configuration and wherein the template is arranged to allow an external stimulus (402) to be applied to the

receptacle (302) via the template, wherein the external stimulus is light".

VI. The following documents played a role in the present decision:

D5: *In vitro* Depth of Cure of Photo-activated Composites, R. Tirtha et al., J Dent Res (1982), 61(10): 1184-1187;

D6: A Method for Light-Cured Indirect Bonding, M. Read, A. Pearson, JCO (1998), 32(8), 202-203;

D7: Indirect Bonding Using a Visible Light Cured Adhesive, M. Read et al., B. J Orthodont (1987), 14(3), 137-141;

D11: US5709548;

D13: US5055039;

D14: excerpt from book "Zähne: ein Wegweiser zur Mundgesundheit", Elmar Wendler; 1 Auflage (1993), pages 153-161.

VII. The essential arguments of the appellant can be summarised as follows:

Original disclosure

The template being of a configuration which differs from the tooth configuration of the repositioning appliance was disclosed, for example on page 9, lines 14 to 16 of the application as originally filed.

With the tooth configuration of a repositioning appliance being necessarily different from the actual tooth configuration of the patient, there was no extension of subject-matter in claim 1 explicitly defining that the template was of a design which

differed from the tooth configuration of the repositioning appliance.

Therefore, the subject-matter of independent claim 1 did not extend beyond the content of the application as originally filed.

Inventive step

The subject-matter of claim 1 differed from the disclosure of document D13 at least in that the template was arranged to allow an external stimulus to be applied to the receptacle via the template, wherein the external stimulus was light. This allowed application of light to the receptacle in order to induce curing of a curable polymer within the receptacle to form the attachment devices on the surface of the tooth, thus solving the technical problem to improve forming of the attachment device.

This was different from the disclosure of D13, in which a fast set adhesive was used to attach pre-existent attachment devices to the surface of the tooth. If the D13 template were provided to allow light to be applied to the receptacle, this would only improve attachment of the pre-existent attachment device on the surface of the tooth, rather than improving formation of the attachment devices. What such a modification would solve was an objective technical problem relating to fixing of pre-existing coupling members to the dental features.

Such a technical problem - as used in the opposition division's reasoning - could however not be formulated on the basis of the technical effect of the claim feature in the context of the patent. Rather it was

formulated in the context of a hypothetical modification to the disclosure of the prior art, which could only be derived by hindsight.

Therefore, the opposition division's reasoning could not establish that the subject-matter of claim 1 did not involve an inventive step.

On the other hand, starting from prior art D13, the person skilled in the art had no reason to apply to the transfer matrix disclosed in that document a modification, which aimed at improving attachment member formation. Indeed, as D13 used pre-existing attachment members, such a modification would make no sense.

Therefore, the subject-matter of claim 1 involved an inventive step.

Reasons for the Decision

1. Original disclosure
 - 1.1 The opposition division considered the subject-matter of claim 1 of the patent as granted to extend beyond the application as filed because of "the possibility of having a configuration of the template which is different than the patient's actual tooth configuration (appealed decision, point 19)". This objection would apply likewise to the subject-matter of the present main request.
 - 1.2 However, as correctly pointed out by the appellant, claim 1 explicitly defines "a template fabricated from a mould of a patient's actual tooth configuration". A

template having a configuration different than the actual tooth configuration is thus not part of the claimed subject-matter.

- 1.3 It is true that at the end of claim 1, in one alternative, the template is further defined to be "of a configuration which differs from the tooth configuration of said repositioning appliance."

This statement does not, however, extend the subject-matter beyond the original disclosure.

Firstly, it finds support on page 9, line 14-16.

Secondly, the "tooth configuration of the repositioning appliance" is the desired tooth configuration, which needs to be different from the actual tooth configuration (otherwise the repositioning device would not be necessary and it would not exert forces on the teeth in the actual tooth configuration). There is thus no contradiction between "a template fabricated from a mould of a patient's actual tooth configuration" and "a configuration which differs from the tooth configuration of said repositioning appliance". Indeed, the last feature is broader and thus possibly redundant, this being, however, a problem of conciseness which is not objectionable as it is not introduced by the amendment to granted claim 1 (G 3/14, Order).

2. Inventive step:

- 2.1 Introductory remarks

The invention relates to the field of dental repositioning appliances, which apply force to

reposition the teeth from their current configuration. Attachment devices are provided on preselected attachment points on the teeth. The repositioning appliance engages the attachment devices in order to apply force to reposition the teeth.

In the prior art (D13), pre-formed attachment devices are glued to the teeth with a fast-set adhesive. In order to ensure proper placement of the attachment devices, these are held in receptacles of a "transfer matrix" which allows for correct placement of the attachment devices on the teeth before being glued.

The invention takes a different approach in that the attachment devices are directly formed on the teeth from a polymerisable material. To that effect, the polymerisable material is held in receptacles of a template, brought in contact with the teeth surfaces and then allowed to polymerise directly on the teeth.

2.2 The receptacles of the transfer matrix according to D13 are - although intended for receiving pre-formed attachment members - suitable to receive polymerisable material in the same way as the template according to the present invention.

2.3 However, D13 does not clearly and unambiguously disclose the template being arranged to allow an external stimulus to be applied to the receptacle via the template, wherein the external stimulus is light.

As can be seen from Figures 5 and 6 of D13, the transfer matrix 64 is built from two parts: Impression material segments are held by a holder 66 made from a thermoformable material (column 8, line 61 - column 9, line 40). There is no indication in D13 as to whether

the impression material ("a silicone putty commercially available under the trade designation BondoSil") or the thermoplastic material used for the holder are arranged to allow light to be applied to the receptacles (recesses 68). Nor can it be clearly and unambiguously derived from the disclosed materials ("BondoSil" and "thermoplastic material") that these allow light transfer as an intrinsic property. This is even more so in view of the transfer matrix's overall thickness and two part structure (see Figure 6).

- 2.4 The technical effect of said feature is to initiate polymerisation of a curable material held in the receptacle, thus molding an attachment device into a desired shape and connecting it to the tooth, such that the attachment base may conform to the dental surface (patent, paragraph [0042], [0043])
- 2.5 With respect to D13, the problem to be solved may thus be considered as improving conformity of the attachment devices (which are to be formed by the light induced curing process) with the teeth, i.e. it relates to an improved formation of the attachment devices.
- 2.6 As D13 uses pre-formed attachment devices, there is no motivation in D13 to allow for light to be applied initiating attachment device formation.

Likewise, none of the further prior art documents discloses forming attachment devices from a polymerisable material *in situ* on the teeth. The prior art either relates to photo-activated materials for dental restoration (e.g. D5, D11, D14), or to light-cured adhesives for attachment of preformed elements (e.g. D6, D7), both giving no indication to their use for attachment device formation.

2.7 Furthermore, in aiming at solving a technical problem relating to attachment device formation, the person skilled in the art had no reason to modify the glue (and, as a consequence thereof, the transfer matrix) used in D13 for connecting the pre-formed attachment devices to the tooth.

2.8 In their argumentation as to lack of inventive step, the Opposition Division relied on a technical problem related to the better control of the curing process of the glue used to fix the attachment devices on the dental features. Such a technical problem cannot, however, be derived from the comparison between D13 and the patent, because in D13 no light curable adhesive is used and in the patent the curable material has not the function of an adhesive for gluing pre-existing attachment devices to the teeth, but serves as the very material from which the attachment devices are formed.

The problem used by the Opposition Division is thus derived from a hypothetical modification of D13 which has no basis in the comparison between prior art D13 and the invention. Such an approach has to be considered retrospective.

2.9 To conclude, the subject-matter of claim 1 involves an inventive step.

2.10 Claim 17 also comprises the feature that the template is arranged to allow an external stimulus to be applied to the receptacle via the template, wherein the external stimulus is light.

The arguments discussed above with respect to the subject-matter of claim 1 thus likewise apply to the subject-matter of claim 17.

- 2.11 Independent claim 2 combines the template with a polymerisable material inserted in the receptacle to form the attachment devices.

As pointed out in point 2.6 above, none of the prior art documents discloses or suggests the use of a polymerisable material in a template for forming attachment devices on the teeth in situ. In this respect the Board essentially concurs with the reasoning of the Opposition Division (point 31).

- 2.12 The subject-matter defined in the independent claims therefore involves an inventive step.

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 in the following version:
 - claims 1 to 18 of the main request, filed at the oral proceedings before the Board,
 - description, columns 1 - 16 as granted and
 - figures 1 - 18 as granted.

The Registrar:

The Chairman:



C. Moser

M. Alvazzi Delfrate

Decision electronically authenticated