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Datasheet for the decision of 19 March 2025

Case Number: T 0364/24 - 3.2.08

Application Number: 05725724.8

Publication Number: 1734884

IPC: A61C5/42

Language of the proceedings: EN

Title of invention:
ENDODONTIC FILES

Patent Proprietor:
Guidance Endodontics, LLC

Opponent:
Dentsply Sirona Inc.

Relevant legal provisions:
EPC Art. 54, 56, 84
RPBA 2020 Art. 13(2)

Keyword:
Main request - novelty (no)
Auxiliary requests 1 to 3 - inventive step (no)
Auxiliary request 4 - claims - clarity (no)
Amendment after summons - taken into account (no)

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Case Number: T 0364/24 - 3.2.08

D E C I S I O N
of Technical Board of Appeal 3.2.08
of 19 March 2025

Appellant: (Patent Proprietor)	Guidance Endodontics, LLC 7520 Montgomery Blvd, E-1 Albuquerque NM 87109 (US)
Representative:	Schneiders & Behrendt München Schneiders & Behrendt PartmbB Patentanwälte München Mühlthaler Straße 91c 81475 München (DE)
Appellant: (Opponent)	Dentsply Sirona Inc. 13320-B Ballantyne Corporate Place Charlotte, NC 28277 (US)
Representative:	Finnegan, Henderson, Farabow, Garrett & Dunner, LLP Thierschplatz 6 80538 München (DE)
Decision under appeal:	**Interlocutory decision of the Opposition Division of the European Patent Office posted on 2 January 2024 concerning maintenance of the European Patent No. 1734884 in amended form.**

Composition of the Board:

Chairwoman	P. Acton
Members:	C. Vetter
	C. Schmidt
	M. Foulger
	K. Kerber-Zubrzycka

Summary of Facts and Submissions

I. The appeals were filed by the patent proprietor (appellant) and the opponent (appellant) against the interlocutory decision of the opposition division finding that, on the basis of auxiliary request 3 then on file, the patent in suit met the requirements of the EPC.

II. The opposition division had decided, *inter alia*, that the subject-matter of the claims of this request was novel and involved an inventive step.

The opposition division had further decided that the subject-matter of the main request (patent as granted) and auxiliary requests 1 and 2 then on file was not novel over an alleged public prior use named "ProTaper file F1".

III. Oral proceedings were held before the Board.

IV. The appellant (patent proprietor) requested that the decision under appeal be set aside and that the patent be maintained as granted (main request) or on the basis of one of the auxiliary requests 1 to 4, filed with the letter setting out the grounds of appeal dated 2 May 2024.

The appellant (opponent) requested that the decision under appeal be set aside and that the patent be revoked.

V. Claim 1 of the main request reads as follows (feature designation added by the Board):

F1) An endodontic file (100) comprising:
F1.1) a tip (101),
F1.2) a shank (105) and
F1.3) a working length (106), that extends from a tip region (102), which is adjacent to the tip (101), to a shank region (104), which is adjacent to the shank (105), wherein
F1.3.1) the working length (106) includes at least one helical region adjacent to a cutting edge (110),
F1.3.2) the cutting edge (110) defined by a rake angle on one side of the cutting edge (110) and a clearance angle on the opposite side of the cutting edge (110), wherein
F1.4) the taper configuration of the file includes at least two different rates of taper,
F1.4.1) the taper configuration of the file arranged such that a rate of taper closer to the shank is smaller than a rate of taper closer to the tip,
characterized in that
F1.5) the rake angle varies between the tip region (102) and the shank region (104).

Claim 1 of auxiliary request 1 differs from claim 1 of the main request in that the following features were added:

F1.6) wherein the taper configuration of the file includes at least two different rates of taper at least one of which decreases one of linearly or nonlinearly at some portion of the file from the tip to the shank, and
F1.7) the file defines a cutting edge, the cutting edge having an upsharp edge without a land.

Claim 1 of auxiliary request 2 differs from claim 1 of auxiliary request 1 in that the following feature was added:

F1.8) wherein the clearance angle increases in the direction from tip to shank.

Claim 1 of auxiliary request 3 differs from claim 1 of auxiliary request 2 in that the following feature was added:

F1.9) wherein the rake angle increases from the tip region (102) of the endodontic file (100) to the shank region (104) of the endodontic file (100).

Claim 1 of auxiliary request 4 differs from claim 1 of auxiliary request 3 in that the following feature was added:

F1.10) wherein the cutting edge (110a) is formed as to have a second side (1102) of the cutting edge (110a) that immediate curves inwardly relative to the curve defined by a circle (120).

VI. In the present decision, reference is made to the following documents:

D1: US 5,882,198 A
D2: WO 02/062251 A2
D3: US 4,932,815 A

VII. The arguments of the parties relevant to the decision are set out below in the Reasons for the Decision.

Reasons for the Decision

1. Main request - novelty

1.1 Admittance of objection into the proceedings

1.1.1 The proprietor argued that the objection of lack of novelty of the main request over D1 had been abandoned by the opponent during the opposition proceedings and therefore this objection was not part of the appeal proceedings.

1.1.2 In the proceedings before the opposition division, the objection of lack of novelty with respect to D1 was raised in writing in the notice of opposition dated 16 March 2022 and repeated in the opponent's letter dated 4 October 2023. There was no need for the opponent to repeat the novelty objection based on D1 during the oral proceedings before the opposition division, since the opposition division had already come to the conclusion that the main request was not novel with respect to the alleged public prior use "ProTaper file F1". The Board is therefore of the opinion that the objection was not abandoned.

1.1.3 In the appeal proceedings, lack of novelty of the subject-matter of claim 1 of the main request was argued in the opponent's reply to appeal under point III.2. This was the earliest point in time at which this argument could be raised in the appeal proceedings, since the main request (patent as granted) was not at issue until the proprietor's statement setting out the grounds of appeal.

1.1.4 Therefore, the objection with respect to lack of novelty of the main request over D1 is part of the appeal proceedings.

1.2 Novelty over D1

1.2.1 Document Dl pertains to files used in performing root canal procedures (Dl, column 1, lines 6 to 8) and discloses in Figures 5A to 5E and column 9, lines 9 to 14 (references in parentheses refer to D1):

> **F1)** An endodontic file (200) comprising:
> **F1.1)** a tip (250),
> **F1.2)** a shank (204) and
> **F1.3)** a working length (206), that extends from a tip region, which is adjacent to the tip (250), to a shank region, which is adjacent to the shank (204).

1.2.2 D1 further discloses in column 9, lines 21 to 29 that the endodontic file 200 includes helical flutes 224, 226 and helical lands 216, 218 [correctly: 216, 220] that intersect one another to define sharp leading edges 228, 232 for removal of tissue from the root canal as the instrument is rotated. Hence, D1 also discloses that

> **F1.3.1)** the working length includes at least one helical region (224, 226) adjacent to a cutting edge (228, 232).

1.2.3 Regarding the taper, D1 discloses in column 10, lines 35 to 40 that

> **F1.4)** the taper configuration of the file includes at least two different rates of taper.

According to column 3, lines 16 to 18 and claim 2 of D1,

F1.4.1) the taper configuration of the file is arranged such that a rate of taper closer to the shank is smaller than a rate of taper closer to the tip.

1.2.4 D1 further discloses in column 9, lines 43 to 46 that

F1.5) the rake angle varies between the tip region and the shank region.

1.2.5 The disclosure of the above features in D1 has not been put into question by the proprietor.

1.2.6 The proprietor argued that in D1 the cutting edge was not "defined" by a rake angle on one side of the cutting edge and a clearance angle on the opposite side. In the proprietor's view, D1 did not disclose a clearance angle.

1.2.7 However, the "clearance angle" within the meaning of feature **F1.3.2** is nothing more than a *name* for the angle between the clearance face (the opposite side in the wording of claim 1) of the cutting edge and a tangent to a circle that circumscribes all three cutting edges, measured at the point where the cutting edge meets said circle (patent, paragraph [0055], last half-sentence; paragraph [0060]). Notably, claim 1 of the patent in suit does not exclude a clearance angle of 0 degrees (patent, paragraph [0013], penultimate sentence; paragraph [0071], second sentence).

1.2.8 In D1, this clearance face is referred to as the helical lands (see above point 1.2.2). Inherently, these helical lands in D1 define a clearance angle with respect to the tangent to said circle. In the embodiment shown in Figures 5A to 5E of D1, the value of the clearance angle is 0 degrees (see in particular Figure 5D).

It follows that D1 also discloses feature **F1.3.2**, according to which

> **F1.3.2)** the cutting edge (228, 232) [is] defined by a rake angle on one side (224, 226) of the cutting edge (228, 232) and a clearance angle on the opposite side (216, 220) of the cutting edge (228, 232),

wherein the clearance angle is 0 degrees.

1.2.9 As a consequence, the subject-matter of claim 1 of the main request is not novel with respect to the disclosure of D1.

2. Auxiliary request 1 - inventive step

2.1 Claim 1 of auxiliary request 1 additionally contains features **F1.6** and **F1.7**, according to which

> **F1.6)** the taper configuration of the file includes at least two different rates of taper at least one of which decreases one of linearly or nonlinearly at some portion of the file from the tip to the shank, and
> **F1.7)** the file defines a cutting edge, the cutting edge having an upsharp edge without a land.

2.2 It is undisputed that D2 discloses the following:

F1) An endodontic file (claim 1; Figures 3A to 3D: 31, 32, 33, 34) comprising:
F1.1) a tip (40),
F1.2) a shank and
F1.3) a working length, that extends from a tip region, which is adjacent to the tip (40), to a shank region, which is adjacent to the shank, wherein
F1.3.1) the working length includes at least one helical region adjacent to a cutting edge (page 8, lines 32 to 35),
F1.3.2) the cutting edge (Figure 7A: 122, 124, 126) defined by a rake angle on one side of the cutting edge and a clearance angle on the opposite side of the cutting edge, wherein
F1.4) the taper configuration of the file includes at least two different rates of taper (page 5, last line to page 6, line 3; page 10, lines 12 to 14),
F1.4.1) the taper configuration of the file arranged such that a rate of taper closer to the shank is smaller than a rate of taper closer to the tip (page 10, lines 14 to 15 and 22 to 25), wherein
F1.6) the taper configuration of the file includes at least two different rates of taper at least one of which decreases one of linearly or nonlinearly at some portion of the file from the tip to the shank (Figure 3A; page 10, lines 14 to 15 and 22 to 25), and
F1.7) the file defines a cutting edge, the cutting edge having an upsharp edge without a land (Figure 7A).

2.3 It is common ground that the subject-matter of claim 1 differs from the disclosure of D2 in Feature **F1.5**, according to which

> **F1.5)** the rake angle varies between the tip region and the shank region.

2.4 Regarding the objective technical problem, which is to be formulated on the basis of the technical effect resulting from the distinguishing features, the proprietor referred to paragraph [0008] of the patent, which contains the general statement that

> there is a need for an endodontic file, or a series of endodontic files, that perform satisfactorily when used during an endodontic surgical procedure such as a root canal procedure.

However, this statement does not explain what is meant by satisfactory performance in terms of a technical effect, nor does it provide a link to the distinguishing feature. Therefore, it is not suitable for formulating the objective technical problem according to the problem-solution approach.

2.5 Paragraph [0057], last sentence of the patent in suit describes the effect resulting from a varying rake angle as follows:

> Having a rake angle that increases from the tip region 102 of the endodontic file 100 to the shank region 104 of the endodontic file 100 may provide for increased cutting efficiency of the endodontic file 100 as the endodontic file 100 is gradually inserted into the canal of the root.

Therefore, the objective technical problem is to be formulated as providing an endodontic file with increased cutting efficiency.

2.6 The proprietor objected to this formulation of the objective technical problem as allegedly being inspired by D3, column 2, lines 6 to 9 and therefore involving hindsight.

2.7 However, this is not the case. Rather, the formulation of the objective technical problem is based on the above-quoted passage of the patent in suit, which describes the effects that the distinguishing feature objectively achieves. It also does not contain any pointer to the claimed solution.

2.8 Document D3 describes a tool in the form of a tapering borer or reamer (D3, Abstract). It aims at providing a tapering tool which provides an enhanced level of cutting efficiency by appropriately guiding the flow of chip material away from the tool (D3, column 2, lines 7 to 9).

2.9 The proprietor argued that the skilled person, starting from D2, would not have considered the teaching of D3, because D3 related to a different tool than D2 in terms of shape and purpose. According to the proprietor, the file of D2 comprised at least two different rates of taper, whereas the reamer of D3 had a linear configuration. Furthermore, the file of D2 was a very thin tool that required a certain flexibility and a particular shape in order to follow the root canal of a tooth, while the reamer of D3 was a rather massive and rigid tool for working metal. Moreover, the file of D2, when in use, was rotated at significantly lower speed than the reamer of D3, and chip removal was not an

issue in root canals. In addition, D2 pertained to cleaning and not just drilling, so that sharpness and cutting efficiency of the file were not the main considerations of the skilled person. All in all, the reamer of D3 was incompatible with the file of D2.

2.10 However, it is common ground that cutting efficiency is also an issue in the field of endodontics. As explained in paragraph [0005] of the patent and acknowledged by the proprietor, frictional forces are exacerbated when tissue becomes clogged within the helical flutes of the file and tissue is unable to be moved out of the root canal. While the patent even mentions the possibility of file breakage due to sufficiently high torque forces, it is common ground that such forces will at least slow down the drilling and thereby make the cutting process less efficient.

In this respect, the field of endodontics is no different from other technical fields where a cutting tool is rotated in a hole, and a tooth is no different from a "workpiece".

The skilled person would therefore not have been dissuaded from considering the teaching of D3. This is all the more true since the teaching of D3 does not require any modification of the characteristics of the file of D2 which are specific to endodontic files. In fact, when the teaching of D3 is applied to the file of D2, the file can retain its size, thinness, flexibility and shape, e.g. the at least two different rates of taper. Also, the intended use of the file is not affected, i.e. the file of D2 can still be used not only for drilling but also for cleaning and can be rotated at relatively low speeds. At least to this extent, the teaching of D3 pertaining to a reamer is

compatible with the file of D2, and the skilled person, starting from D2, would have considered the teaching of D3.

2.11 As mentioned above (see point 2.8), D3 identifies appropriately guiding the flow of chip material away from the tool as the key to increased cutting efficiency. To achieve this effect, D3 teaches in column 3, lines 24 to 26, and Figure 3 configuring the rake angle such that it increases from longitudinal portions of small diameter to longitudinal portions of large diameter.

An explanation of this effect is given in column 3, lines 29 to 35 (see also D3, column 5, lines 7 to 11):

> The fact that the rake angle of each cutting face varies along the length of the tool not only provides for an improvement in the removal of chip material from the workpiece to be machined, but at the same time also provides for the flow of chip material away from the tool being directed in the radial and in the longitudinal direction of the tool.

Consequently, the skilled person, starting from the file of D2 and trying to solve the above mentioned objective technical problem, would have modified the file of D2 according to this teaching of D3, thereby arriving at the claimed subject-matter in an obvious manner.

2.12 Therefore, the subject-matter of claim 1 of auxiliary request 1 is not based on an inventive step.

3. Auxiliary request 2 - inventive step

3.1 Claim 1 of auxiliary request 2 differs from claim 1 of auxiliary request 1 in that feature **F1.8** has been added, according to which

> **F1.8)** the clearance angle increases in the direction from tip to shank.

3.2 This feature is not disclosed in D2 and is therefore another distinguishing feature.

3.3 Regarding the technical effect resulting from this distinguishing feature, the proprietor again referred to paragraph [0008] of the patent and the general statement contained therein.

However, as mentioned before (see point 2.4 above), said general statement does not explain what is meant by satisfactory performance in terms of a technical effect. Furthermore, it does not provide a link to this additional distinguishing feature either.

3.4 The patent in suit states in paragraph [0014]:

> The clearance angle may increase in the direction from tip to shank. Alternatively, the clearance angle may decrease in the direction from tip to shank.

In either case, the patent in suit does not disclose, nor has the proprietor claimed, any consequence or effect whatsoever.

3.5 It follows that an increasing clearance angle from tip to shank is just as good as a decreasing one. Thus, the

claimed configuration is arbitrary and therefore was obvious to the skilled person.

3.6 Consequently, the subject-matter of claim 1 of auxiliary request 2 is also not based on an inventive step.

4. Auxiliary request 3 - inventive step

4.1 Claim 1 of auxiliary request 3 differs from claim 1 of auxiliary request 2 in that feature **F1.9** has been added, according to which

> **F1.9)** the rake angle increases from the tip region of the endodontic file to the shank region of the endodontic file.

4.2 This feature is also not disclosed in D2 and is therefore an additional distinguishing feature.

4.3 Similarly to feature **1.5**, the objective technical problem is to be formulated as providing an endodontic file with increased cutting efficiency (see point 2.5 above).

4.4 As discussed before, D3 teaches the claimed solution to this problem in column 3, lines 24 to 26, and Figure 3 (see point 2.11 above).

4.5 Admittance of late filed arguments

4.5.1 During the oral proceedings, the proprietor argued that claim 2 of document D3 stated that the cutting angle was constant, so that an increasing rake angle from tip to shank would result in a *decreasing* clearance angle

from tip to shank, contrary to feature **F1.8** of claim 1 of the patent.

4.5.2 The opponent objected to this submission as being late filed and requested that it not be admitted into the proceedings.

4.5.3 Article 13(2) RPBA 2020 provides that any amendment to a party's appeal case made after notification of a communication under Article 15(1) RPBA 2020, shall, in principle, not be taken into account unless there are exceptional circumstances, which have been justified with cogent reasons by the party concerned.

4.5.4 It is undisputed that the above quoted argument was raised for the first time during oral proceedings before the Board.

4.5.5 The proprietor neither provided any reasons nor brought forward any exceptional circumstances as to why this argument was only raised at this stage of the proceedings.

4.5.6 Therefore, the Board decided not to admit this argument into the proceedings.

4.5.7 The proprietor then referred to the opponent's letter setting out its grounds of appeal, page 31, lit. f, where, in the proprietor's view, it was conceded that the skilled person would embody the file of D2 with a cutting edge according to D3. The proprietor concluded that the skilled person could not arrive at the claimed subject-matter, because D3 stated that the cutting angle was constant, so that an increasing rake angle from tip to shank would result in a *decreasing* clearance angle from tip to shank. Hence, in the

proprietor's view, said argument was already in the proceedings.

4.5.8 However, the passage of the opponent's letter, to which the proprietor referred, only discusses features **F1.5** and **F1.9**. Therefore, it remains the argument of the *proprietor* that the skilled person, applying the teaching of D3 to the file of D2, would not arrive at a configuration according to feature **F1.8** due to a *decreasing* clearance angle from tip to shank.

4.5.9 As stated before, this argument was raised for the first time during oral proceedings before the Board, and the proprietor neither provided any reasons nor brought forward any exceptional circumstances as to why this argument was only raised at this stage of the proceedings.

4.5.10 Consequently, the Board decided not to admit this argument into the proceedings also in view of the proprietor's reference to the opponent's letter.

4.6 No further arguments regarding inventive step of auxiliary request 3 were presented by the proprietor. Therefore, the subject-matter of claim 1 of auxiliary request 3 is also not based on an inventive step.

5. Auxiliary request 4 - clarity

5.1 In claim 1 of auxiliary request 4 the following feature from paragraph [0058] of the patent was added:

> **F1.10)** wherein the cutting edge (110a) is formed as to have a second side (1102) of the cutting edge (110a) that immediate curves inwardly relative to the curve defined by a circle (120).

5.2 The claim already defines the two sides of the cutting edge as the "one side" and the "opposite side" in feature **F1.3.2.**

5.3 The proprietor argued that it was clear to the skilled person from the wording of the claim that the second side mentioned in feature **F1.10** is the opposite side mentioned in feature **F1.3.2.**

5.4 However, for the skilled person, introducing a second side in feature **F1.10** rather means that something other than the previously defined opposite side of the cutting edge is referred to.

5.5 In addition, the "curve defined by a circle" is arbitrary because the circle is not defined in terms of its location or size.

5.6 The proprietor argued that column 13, lines 12 to 15, and column 14, lines 26 to 30, as well as Figures 2 and 4, provided a definition of the circle 120.

5.7 However, the claims must be clear in themselves when read by the skilled person, without reference to the content of the description or drawings. This is not the case with amended claim 1 because the claim does not provide a definition of where said circle runs. As a result, it is not clear with respect to what the second side immediately curves inwardly.

5.8 Claim 1 of auxiliary request 4 is therefore not clear within the meaning of Article 84 EPC.

Order

For these reasons it is decided that:

1. The decision under appeal is set aside.

2. The patent is revoked.

The Registrar: The Chairwoman:

C. Moser P. Acton

Decision electronically authenticated