

UNITED STATES PATENT AND TRADEMARK OFFICE

BEFORE THE DIRECTOR

In the Matter of:

Inter Partes Review No. IPR2024-00221

Patent No.: US 6,760,720

Title: *Search-On-The-Fly/Sort-On-The-Fly Search Engine For Searching
Databases*

Patent Owner: Dr. Joseph L. De Bellis

Pro Se

Petitioner: Oracle Corporation

Final Written Decision Entered: June 4, 2025

PATENT OWNER'S PETITION FOR DIRECTOR REVIEW

PETITION FOR DIRECTOR REVIEW

Pursuant to the United States Patent and Trademark Office (USPTO) Director Review procedure, Patent Owner Dr. Joseph L. De Bellis respectfully petitions for Director Review of the Final Written Decision entered in Inter Partes Review No. IPR2024-00221 on June 4, 2025.

I. INTRODUCTION

This Petition seeks review of the Patent Trial and Appeal Board's ("Board") Final Written Decision (FWD) that found certain claims of U.S. Patent No. 6,760,720 unpatentable. The Petition is timely filed within 30 days of the FWD and complies with the requirements of the USPTO Director Review process.

II. DECISION FOR WHICH REVIEW IS SOUGHT

The Decision for which review is sought is the FWD issued by the Board on June 4, 2025, in IPR2024-00221, holding claims 1 – 7, 15 – 20, and 27 - 30 of U.S. Patent No. 6,760,720 unpatentable.

III. GROUNDS FOR DIRECTOR REVIEW

Director Review is warranted in this case for at least the following reasons:

A. The Board's Claim Construction of at Least One Claim Term Ignores a Key Claim Construction Rule

On page 12, the FWD, in discussing construction of claim 1, Limitation 1D, namely "determining a number of entries in the selected database field" asserts that "[t]he '720 patent discloses embodiments that use preset or specified limits to determine the number of entries in the database field for display" and that the limits need not be determined during a search. However, claim 1 limitation 1d term in question says nothing about determining "the number of entries in the database field for display." In other words, the Board has read an unrelated feature from the

specification into claim 1. The Board's error negatively affected Patent Owner's assertions of conception and reduction to practice to antedate the Zellweger reference.

B. The Board Failed to Consider All of Patent Owner's Evidence of Conception and Reduction to Practice

The Board improperly disregarded substantial and corroborated evidence of conception and actual reduction to practice presented by Patent Owner. Specifically, the Board failed to give adequate consideration to the actual content of my Declaration (Exhibit 2001) and that of Ms. De Bellis (Exhibit 2002) in view of the limitations of the claims, and particularly the limitations of independent claims 1 and 3. The Board also failed to analyze or address critical documentary exhibits and supporting declarations that demonstrate a date of invention earlier than the Zellweger reference. The Board further failed to properly consider Petitioner's arguments at the Oral Hearing in contradiction to Petitioner's Reply allegations related to conception and reduction to practice. Finally, the Board failed to address Petitioner's misstatements of Federal Circuit law as to conception and reduction to practice.

These oversights constitute a significant departure from standard USPTO procedure and violates the Board's obligation to weigh all relevant evidence under 37 C.F.R. § 42.65 and Federal Circuit precedent (e.g., *Apator Miitors ApS v. Kamstrup A/S*, 887 F.3d 1293 (Fed. Cir. 2018)).

C. The Final Written Decision (FWD) Includes Conclusions as to Patentability Are Based on Arguments That Are Not Part of the Record

The Board, in ruling on conception of claim 1, limitation 1D ("determining a quantity of entries"), and claim 3, limitation 3C ("determining a first quantity indicative of entries") asserts that "the closest conception evidence we find for these limitation is Patent Owner's statement that he described a system ... that would 'truncate search results' and 'would display all of the results on one page.'" FWD 20. The Board then comments "[h]owever, there are ways that these actions could be performed without determining the quantities of entries (e.g., grouping search results

alphabetically by their first letters).” *Id.* The Board’s comment is not based on any allegations raised by Petitioner. Furthermore, the Board provides no examples as to what these “ways” could be, and thus the Board’s comment is, at best, just speculation. For at least these two reasons, Patent Owner has been deprived of any opportunity to challenge the legitimacy or accuracy of the Board’s statements as to this limitation of both claims 1 and 3.

With respect to claim 1, limitation 1A (“determining a database schema), the Board states “we find no mention of this in Patent Owner’s evidence.” *Id.* However, the Board’s statement ignores Patent Owner’s clear evidence as to database structures (a database schema is the same as a database structure) presented in the Declaration of Dr. De Bellis, including in paragraphs 46 and 47.

With respect to claim 1, limitation 1B and claim 3, limitation 3A, the Board states “Patent Owner’s evidence has only one mention of ‘data fields’ and [w]e find no evidence ... that his activity relates to conception for these claim limitations.” *Id.* However, the Board’s statement similarly ignores the Patent Owner’s evidence in paragraphs 46 and 47 of Exhibit 2001, as well as the corroborating evidence provided in Exhibit 2002.

D. Conclusion

The Director should provide clarification or policy guidance to ensure consistent treatment of conception, corroboration, and reduction to practice evidence across IPR proceedings. The exclusion or dismissal of Patent Owner’s evidence contradicts the USPTO’s objective of a full and fair adjudication based on the totality of the evidence.

IV. RESPONSE

A. Claim Construction

On page 12, the FWD, in discussing construction of claim 1 limitation 1D, “determining a number of entries in the selected database field” asserts that “[t]he ’720 patent discloses embodiments that use preset or specified limits to determine the number of entries in the database field” and that the limits need not be determined during a search. The FWD goes on to state that the ’720 Patent at 7:43-45 and 7:61-62 discloses embodiments that use preset or specified limits to determine the number of entries in the database field for display, which need not be determined during a search. FWD, at 12.

The Board’s careless reading of these passages from column 7, and its equally careless application to claims 1 and 3, led the Board to a completely unsupportable conclusion with respect to claim construction, and ultimately to conception and reduction to practice, and further, to patentability of claims 1 and 3 under 35 U.S.C. § 103.

Simply put, the ’720 Patent passages cited by the Board CLEARLY disclose that, rather than a display limit being determined automatically based on the characteristics of the terminal’s display, a user can manually limit the number of entries to be displayed either by choosing a numerical limit, or by using a predetermined numerical. But this disclosure says nothing about determining the number of entries in the selected database field. The two concepts, “display limits,” and “determining a number of entries in a data base field” are NOT THE SAME, yet the Board treats the former as a variation of the latter. In fact, the search-on-the-fly search program always determines the number of entries in the selected data field because doing so is a predicate to “truncating the search results” to fit an automatically determined limit of the display or to fit a manually determined limit made or selected by a user.

In summary, a basic tenant of claim construction is that claim limitations and terms are to be given their plain and ordinary meaning, absent a specific definition provided by the patentee, in view of the specification. The “in view of the specification” terminology does not mean that limitations from the specification, particularly irrelevant limitations, are to be read into the claims, which the Board has clearly done in the FWD.

B. Conception, Corroboration, and Reduction to Practice

Claims 1 and 3 are directed to computer-implemented methods for searching databases. However, claims 1 and 3 do not recite identical limitations, and the Board’s discussion of conception, corroboration, and reduction to practice addresses only three limitations of claim 1 and two limitations of claim 3, concluding that that Patent Owner’s “evidence [was] insufficient to demonstrate conception of claim 1’s limitations 1A, 1B, and 1D, and claim 3’s limitations 3A and 3C prior to Zellweger’s filing date”

Since the Board concluded that less than all of the claim 1 and claim 3 limitations were conceived of before the Zellweger filing date, I confine the discussion below to only those limitations.

Contrary to the FWD, my Declaration, Exhibit 2001, clearly describes my complete conception and corresponding disclosure of all aspects of the inventive concepts recited in limitations 1A, 1B, and 1D of claim 1, and limitations 3A and 3C of claim 3 as early as January 1999, which is prior to the Zellweger filing date. That is, the evidence I presented was sufficient to demonstrate conception of claim 1’s limitations 1A, 1B, and 1D, and claim 3’s limitations 3A and 3C prior to Zellweger’s filing date.

1. Claim 3, Conception and Corroboration

My discussion of claim 3 is directed to limitations 3A and 3B since these are

the only claim 3 limitations that the Board asserted do not meet the requirements for prior conception.

a. “generating a list of data fields”

This limitation refers to specific data fields within a database, with each specific data field being searchable. In January 1999, I described these data fields, metaphorically, as akin to facets or panes in a body of revolution, such as a cube or a geodesic dome. In my experience, this “body of revolution” metaphor makes visualization of a database structure (visualization of the database according to its schema) more intuitive and understandable. My Declaration, Exhibit 2001, recounts my conversation with Ms. De Bellis:

I described to [Ms.] De Bellis ... a database management product that would be intuitive and flexible ... for use in my medical practice ... [as] a system that would allow users to search beginning with criteria of their choice but with options to filter using other criteria so that the search process would be more intuitive for the user. To do this, I envisioned a database as a three-dimensional body having a number of facets or panes; each facet representing a view into the database. I further envisioned increasing the number of panes, changing, for example, a cubic form database to something like a geodesic dome; the greater the number of “panes,” the more granular the search capability. ... I explained to Ms. De Bellis that by using the system and methods [described in paragraph 46 of my Declaration] ... we would have much better visibility into the data for a given patient. Ex2001. ¶45-47.

Paragraphs, 45 - 47 perfectly and completely encapsulate my concept of generating a list of data fields, that is, a list of the individual panes or facets in the metaphorical “body of revolution” that, in my mind, is the best way to visualize or represent a database. My search

concepts later were given the moniker “faceted search,” because the concepts allow a user to search a database unconstrained by any pre-formatted search queries.

The record shows that Ms. De Bellis corroborates my inventive concepts of generating a list of data fields; specifically Ms. De Bellis states in her Declaration that in January 1999 “Dr. De Bellis described that he wanted to be able to make different views of the data, what he referred to as ‘rolling and tumbling’ the data.” Ex 2002, ¶9. The “views” Ms. De Bellis references are, of course, the data fields. Ms. De Bellis’ corroborating testimony aligns exactly with my testimony in paragraphs 45 – 27, quoted above, namely the views are the data fields.

Furthermore, at the time of my invention, databases were searched using a search concept in which a user provided search terms or used pre-formatted search terms.

Petitioner, perhaps unwittingly, admits that my January 1999 disclosure of my inventive concepts addresses limitation 3A of claim 3. During the March 19, 2025 Oral Hearing, Petitioner stated “Ms. De Bellis, says [] that in January 1999, Dr. De Bellis purportedly wanted to be able to search and sort data according to any topic or term, rather than being constrained by existing database software.” Transcript of Oral Hearing, p. 15, lines 21 – 24. The import of Petitioner’s admission is that in January 1999, I recognized and disclosed to Ms. De Bellis my concept that to improve database search processes, one would need to generate a list of data fields from which one data field could be selected to initiate a search of a database. In essence, generating a list of data fields is a predicate step in my search-on-the-fly (faceted) search process.

Notably, the Board did not recognize this clear, if inadvertent, admission by Petitioner.

Thus, prior to Zellweger’s filing date, I had fully conceived of this aspect of my inventions, namely “generating a list of data fields,” and had clearly disclosed that aspect to Ms. De Bellis. All that remained was to adapt existing computer code, or, failing that, write new computer code,

to bring this aspect of my inventions to life – that is, to reduce my inventive concepts to actual practice. Figure 10, reproduced below, from the '720 Patent is an example of application of my inventive concepts to an actual database. That is, I reduced to actual practice a computer program to produce what Figure 10 illustrates. Finally, my concept of “faceted search” was later adopted by many large corporations, including Endeca and IBM.

b. “determining a first quantity indicative of a number of entries in the selected data field”

Limitation 3C of claim 3 is a predicate step for implementing my concept of truncation. I described this step to Ms. De Bellis in January 1999. Truncation, in turn, is a predicate step to my concept of allowing a user (e.g., Ms. De Bellis) to “view all the available search results on one page of the terminal, which would allow her to recognize the results.” Exhibit 2001, ¶47. That is, truncation to effect reduction in the displayed search results “to representations that would trigger and take advantage of the user’s power of recognition” was one of the seminal conceptual aspects of my inventions. I realized that a user’s “power of recognition” is maximized when the user is able to view all search results on a “single page,” that is, for example, on a single screen of a terminal. However, the amount of required truncation that the computer executes cannot be known in advance of the search results being determined. Thus, the computer determines the number of entries, and if the determined number is too large, the computer executes a truncation routine.

Note that the '720 Patent discloses one, and only one, process for fitting search results to an available display, namely truncation. Figures 18 – 20 of the '720 Patent clearly show the process for determining entries and truncating based on the number of “determined entries.” I add this comment to point out the Board’s inappropriate statement on page 20 of the FWD that “these actions could be determined without determining the quantity of entries.”

Thus, prior to Zellweger's filing date, I had fully conceived of this aspect of my inventions, and had clearly disclosed that aspect to Ms. De Bellis. All that remained was to generate or adapt the computer code to bring this aspect of my invention to life – that is, to reduce it to actual practice.

2. Claim 1, Conception and Corroboration

Limitations 1B and 1D of claim 1 are similar in all material respects to limitations 3A and 3C of claim 3. Thus, the showing of conception for claim 3 limitations 3A and 3C, provided above, applies equally to claim 1 limitations 1B and 1D, respectively. Accordingly, the discussion that follows is directed to claim 1, limitation 1A only, a similar limitation not appearing in claim 3.

a. “determining a database schema”

The '720 Patent provides a precise definition of “determining a database schema”:

The search engine 125 may identify a database schema by simply using a trial and error process. Alternatively, the search engine 125 may use other techniques known in the art. '720 Patent, 5:4-6.

These two mechanisms disclosed in the '720 Patent are, in fact, prior art methods. Accordingly, the invention of claim 1 relies on processes that existed prior to the January 1999 conceptive activity described in my Declaration, and disclosed at that time to Ms. De Bellis. Thus, it was not necessary that I conceive of a novel and non-obvious process for determining a database schema. Nonetheless, my January 1999 discussions with Ms. De Bellis, recounted in Exhibits 2001 and 2002, do in fact, disclose my inventive concepts including “determining a database schema.” In Exhibit 2001 I describe determining a schema when I disclosed to Ms. De Bellis that my “search on the fly system was created [based on the requirement to be] able to navigate large data sets with the ability to flexibly narrow and expand the data set.” EX2001, ¶42. Ms. De Bellis corroborated this concept: Dr. De Bellis “wanted to be able to make different views of the data.” Ex2002, ¶9.

Thus, prior to Zellweger’s filing date, I had fully conceived of this aspect of my invention as recited in claim 1. Furthermore, I clearly disclosed this inventive aspect of claim 1 to Ms. De Bellis. As with claim 3, all that remained was to generate or adapt the computer code to bring the invention of claim 1 to life – that is, to reduce it to actual practice.

3. Reduction to Practice of the Inventions of Claims 1 and 3

The Patent Owner’s Response explains that I “described his concept [to Ms. De Bellis] for his search-on-the-fly system” and that the system “would allow users to search using criteria of their choice ... and truncate results to allow all results to be ... displayed.” Response at 18. Ms. De Bellis explained that I wanted “to be able to search and sort data according to any topic or term, rather than being constrained by the existing database software.” Ex. 2002 ¶5. These features are recited in, for example, claim 1.

Petitioner excoriates Ms. De Bellis’ Declaration for referring to Figure 10 of the ’720 Patent. Reply at 11. However, as paragraph 27 of Exhibit 2002 states, Figure 10, is “a reproduction of a screenshot of the search-on-the-fly system developed and demonstrated by Dr. De Bellis and Mr. Freire” during a presentation to Dr. De Bellis’ attorneys in December, 1999. Necessarily then, the search-on-the-fly program existed prior to the December meeting, and Figure 10 (reproduced below) demonstrates a fully developed program whose execution corresponds to claims 1 and 3.¹

Reference 201 is a list of available data fields. Note that there are five (5) available data fields from which to select, with the selection (in Figure 10, data field City is selected as shown in Reference 201) producing a search result list representing the content of the City data field. Reference 203 is the search result list for searching data field City. As can be seen in the City

¹ The example of Figure 10 displayed above is from a later continuation patent application, but is identical in all respects to Figure 10 of the ’720 Patent. The later filed Figure 10 is used here because the original Figure 10 is difficult to read.

search result list of Reference 203, the number of cities is too large to be displayed, and the City search results therefore are truncated. However, the user recognizes from the City search result list, city names that start with “A,” and so the user submits an additional City search for cities that start with “A.” The result of this second City search is City search result list 205.

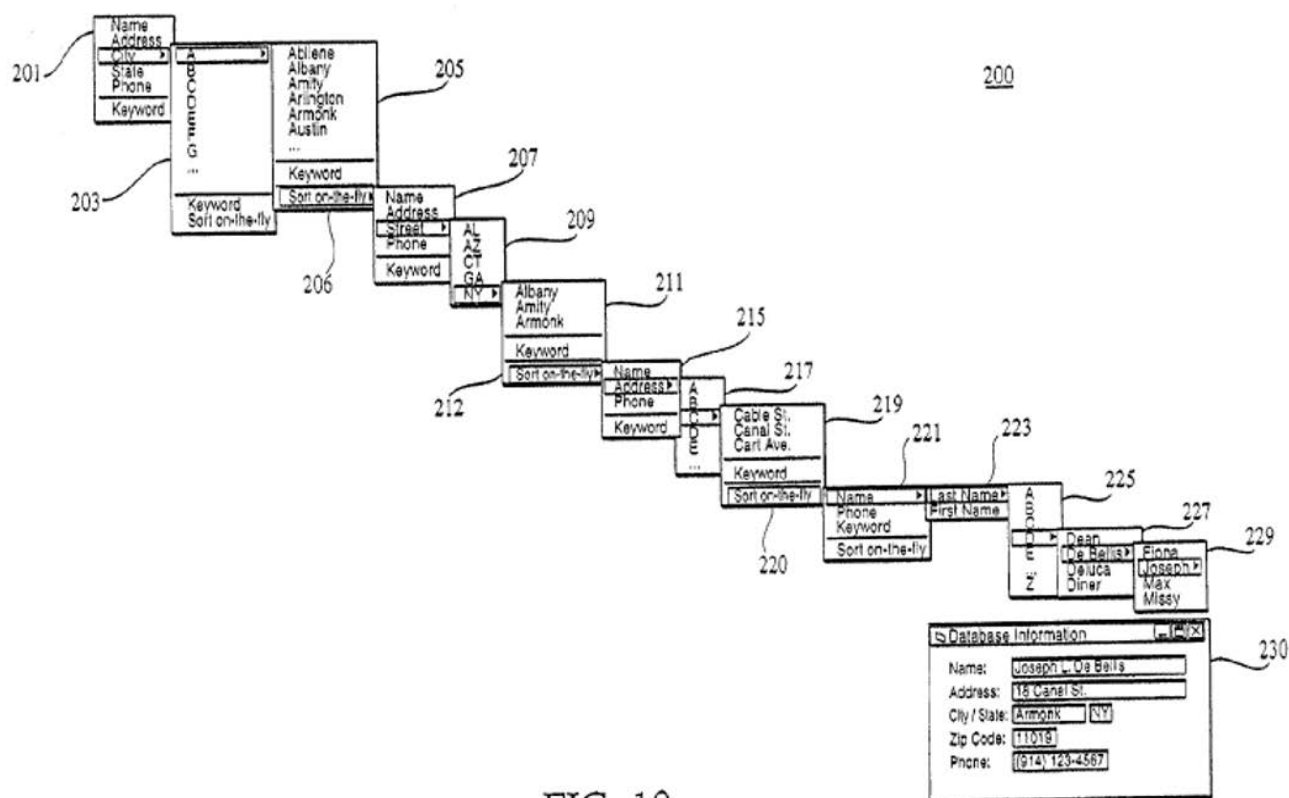


FIG. 10

Thus, Reference 201 discloses providing (claim 1), or generating (claim 3), a list of data fields and receiving a data field selection (City is selected). Reference 203 shows determining the City search results are too large (i.e., too many Cities), requiring truncation of the data.

Reference 205 shows the results of this second “step” of the City name search begun in Reference 201, with full city names for six (6) cities. Thus, References 201 – 205 illustrate a complete search cycle, from receiving or generating a list of data fields to receiving a final City list of full city names. The user would have known from the Reference 205 search result list that the database being searched has only six cities whose names start with the Letter “A.”

Reference 207 shows providing or generating another list of data fields, namely Name, Address, State, and Phone. The data field City is not provided in Reference 207 because the disclosed search-on-the-fly search engine, which in an actual implementation produced the content of Figure 10, compiled the data fields **DYNAMICALLY**, and data field “City” had been used in the first search cycle of the search illustrated in Figure 10.

In a second search cycle, Reference 207 shows selection of data field “State.” Reference 209 shows five State names, truncated to two letters, with truncated state name “NY” selected. Reference 211 shows full city names for three New York cities starting with the letter “A.”

In a third search cycle, Reference 215 shows generation or reception of the three previously unselected data fields, as well as selection of data field “Address,” resulting in the truncated address list of search results shown in Reference 217.

The search illustrated in Figure 10 continues through additional search cycles until the user has located data for Joseph L. De Bellis, in Armonk New York, as shown in Reference 230.

Thus, the Declaration of Ms. De Bellis, did show sufficient and specific evidence of actual reduction to practice of all the inventive concepts of both claim 1 and claim 3. Ex. 2002 ¶27.

4. Diligence

While I conceived of all aspects of his inventions by January 1999 as explained above, I also diligently worked to reduce those concepts to actual practice, and ultimately to constructive practice. To be clear, I achieved actual reduction to practice in November 1999, prior to constructive reduction to practice on February 25, 2000. Nonetheless, whether actual or constructive, reduction to practice was pursued with reasonably continuous diligence as Federal Circuit case law defines those terms.

However, the Board did not address either (1) reduction to practice; or (2) reasonably continuous diligence. The Board did point out the standards by which reasonably continuous diligence is to be measured:

A reference is prior art under pre-AIA 35 U.S.C. § 102(e) if “the invention was described in . . . a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent.” *Medtronic, Inc. v. Teleflex Innovations S.A.R.L.*, 68 F.4th 1298, 1302–03 (Fed. Cir. 2023). A patent owner may antedate an asserted prior art patent by showing conception and actual reduction to practice of the claimed invention prior to the effective date of the reference, or by prior conception followed by “reasonably continuous diligence” from just before the reference’s effective date to actual or constructive reduction to practice. *Id.* (citing *ATI Techs. ULC v. Iancu*, 920 F.3d 1362, 1369 (Fed. Cir. 2019)); “Inventor declarations submitted to antedate a reference must be corroborated . . . [using] a ‘rule of reason’ standard” requiring consideration of all pertinent evidence. *Id.* (citing *Perfect Surgical Techs., Inc. v. Olympus Am., Inc.*, 841 F.3d 1004, 1007–09 (Fed. Cir. 2016)). FWD, 16.

My Declaration described that I began working on reducing my inventive concepts to actual practice at least as early as January 1999 by first focusing on adapting/modifying existing software programs. Ex2001, ¶¶45-48. However, I was unable to make the necessary modifications, and in May 1999, I turned to writing program language myself, focusing on, *inter alia*, faceted search and truncation. I continued in that endeavor into the summer of 1999. *Id.*, ¶¶48-49. Petitioner assails my efforts because I admit in my Declaration that progress was slow and frustrating. Petitioner’s Rely, 5. Petitioner suggests that my concepts were not sufficiently

developed that “only routine skill was required to reduce them to practice.” *Id.*, 5 - 6. However, what the Petitioner intentionally neglected to tell the Board was that the frustration and slowness resulted from by lack of experience in writing software code, which I clearly state in my declaration. Ex2001, ¶49.

My efforts at actual reduction to practice took off in early August 1999 when I discussed my concepts with Adriano Freire, a computer programmer from Brazil. EX2001, ¶¶50 – 53, and Figures 1 – 12. I hired Mr. Freire in August 1999 for the express purpose of writing the computer code. Ex2002, ¶14. By November 1999, Mr. Freire and I had assembled several searchable databases, and Mr. Freire, in consultation with me, completed a search-on-the-fly software program that could search those databases using my concepts from January 1999. *Id.*, ¶24. This search-on-the-fly software program was, in fact, an actual reduction to practice of my inventive concepts.

My experiences were not unlike those of Dr. Mahurkar, as recited in the *Mahurkar* opinion:

Dr. Mahurkar offered evidence at trial to show that he invented the subject matter of the patent before publication of the Cook reference. He met his burden of production. Consequently, this court turns to an evaluation of the evidence offered by Dr. Mahurkar under the proper burden of persuasion in this infringement action and the rules of law relating to invention dates.

Dr. Mahurkar testified that he conceived and began work on dual-lumen, flexible, hemodialysis catheters, including the '155 catheter, in 1979. From late 1980 through early 1981, Dr. Mahurkar constructed polyethylene prototype catheters in his kitchen. ... During this time period, he also tested polyethylene prototypes and used them in flow and pressure drop tests in his kitchen. These tests

used glycerine to simulate blood. These tests showed, to the limit of their design, the utility of his claimed invention.

Dr. Mahurkar designed these tests to show the efficiency of his structure knowing that polyethylene catheters were too brittle for actual use with humans. ...

Dr. Mahurkar adequately showed reduction to practice of his less complicated invention with tests which "[did] not duplicate all of the conditions of actual use."

Gordon v. Hubbard, 347 F.2d 1001, 1006, 146 USPQ 303, 307 (CCPA 1965).

In summary, the record of this IPR shows that I provided ample evidence of conception and corroboration prior to the Zellweger filing date, and reasonably continuous reduction to actual practice, also with corroboration.

IV. NO REHEARING REQUEST FILED

Patent Owner has elected not to file a Request for Rehearing under 37 C.F.R. § 42.71(d).

V. RELIEF REQUESTED

Patent Owner respectfully requests that the Director:

1. Grant Director Review of the Final Written Decision;
2. Reverse or vacate the Board's unpatentability findings as to the claims affected;
3. Remand for reconsideration, with specific instructions to evaluate the evidence of conception, corroboration, and actual reduction to practice submitted by Patent Owner.

VI. CONCLUSION

For the reasons stated above, Director Review is warranted to correct a substantial error of procedure and to promote consistent application of law and policy.

Respectfully submitted,

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