

**Study Questions for**

**Invention Analysis  
and Claiming**  
*A Patent Lawyer's Guide*

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## USING THIS MATERIAL

1. This publication presents chapter-by-chapter study questions and exercises for *Invention Analysis and Claiming: A Patent Lawyer's Guide* by Ronald D. Slusky (American Bar Association 2007) (the “main text”). Questions for each chapter are arranged under three headings:
  - a. **Confirm Your Understanding**: Questions that are readily answered based on material in the corresponding chapter of the main text.
  - b. **Questions for Further Thought**: Questions that relate to the material in the corresponding chapter of the main text, but call for analysis, legal research, opinions or out-of-the-box thinking on the part of the reader. These questions were designed for classroom or collegial discussion.
  - c. **Sharpen Your Skills**: Invention analysis and claim drafting exercises based on the material in the corresponding chapter of the main text. Maximum benefit will be derived if the reader's answers are evaluated by an instructor or other experienced patent practitioner.
2. **Page References**: Except as otherwise noted, page references are to pages of the main text.
3. **Printing**: This PDF document has been formatted for double-sided printing in standard book layout form, with the questions for each chapter always beginning on a right-hand (odd-numbered) page
4. **Answer Guide**: An answer guide is available to law professors at no charge. Contact:

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ABA Book Publishing, 321 N. Clark St., Chicago, IL 60610  
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# CHAPTER ONE

## Inventions Are Concepts

### Confirm Your Understanding

1. Why is it important for a patent's claims to capture the invention's underlying concept?
2. What is the harm in including a claim limitation that any practical embodiment is going to have to have anyway?

### Questions for Further Thought

3. How is it possible to reconcile the idea of claiming the inventive concept with the principle that abstract ideas are not the proper subject of a patent claim? See, generally, *Diamond v. Diehr*, 450 U.S. 175, 209 USPQ 1 (1981); *State Street Bank & Trust Co. v. Signature Financial Group, Inc.*, 149 F.3d 1368, 47 USPQ2d 1596 (Fed. Cir. 1998).
4. None of Loud's ballpoint pen claims (p. 7)<sup>1</sup> encompass the felt-tip pen. Assuming that a claim could be drafted that would cover both ball point and felt-tip pens, while not reading on the prior art fountain pens and quills, do you think Loud should have been entitled to such a claim?
5. Do you agree with the author's contention that claims 1.2 and 1.3 (P. 7) would be patentable today, assuming no ball point pen prior art existed? Why or why not?

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<sup>1</sup> Except as otherwise indicated, page references are to the main text, *Invention Analysis and Claiming: A Patent Lawyer's Guide* by Ronald D. Slusky (American Bar Association 2007).

6. How would you respond if an examiner were to reject claims 1.2 and 1.3 (p. 7) based on
- a. 35 USC 101 as not being directed to an inventive “manufacture” but only a concept?
  - b. 35 USC 112, ¶2 as being “vague and indefinite”?

**Sharpen Your Skills**

Identify the problem solved and inventive concept(s) underlying the inventions listed below, based on the prior art indicated

<b>Invention</b>	<b>Prior Art</b>	<b>Problem Solved</b>	<b>Inventive concept</b>
Ball point pen	Quills; fountain pens	Pen can't write on rough surfaces	Pen with a spheroidal marking-point
Bubble pack	Shredded paper; packing peanuts	?	?
Pocket door	Hinged door	?	?
Computer spreadsheet	Pencil and paper; word processing	?	?

## CHAPTER TWO

### Begin from the Problem [Not The Embodiment]

#### **Confirm Your Understanding**

1. Explain why “pruning and distilling” a claim does not necessarily result in the broadest definition of the invention?

#### **Questions for Further Thought**

2. Why should the patent system allow someone like the Konaclip inventor to claim an invention so broadly as to capture something the inventor didn't actually think of, e.g., the Gem paperclip?
3. When might it be desirable to have claims(s) directed to the embodiment(s), i.e., claims that are narrower than made necessary by the prior art?

#### **Sharpen Your Skills**

4. Prune and distill (p. 12) the claims below to broaden them without the claims reading on the stated prior art. Are you happy with the breadth of the claims that result?

STUDY QUESTIONS—INVENTION ANALYSIS AND CLAIMING—CHAPTER 2

<b>Problem</b>	People may carry dangerous items into a restricted area, e.g., airport boarding area, school, etc.
<b>Prior Art</b>	“Pat down” people by hand
<b>Inventor’s Embodiment</b>	Walk-through metal detector
<b>Claim</b>	<p>Apparatus for detecting the presence of metal carried by a human being, comprising an archway through which a person can pass,</p> <p>means disposed within the archway for generating an electromagnetic field that is changed when a metal object is passed through the archway,</p> <p>means for detecting changes in the magnetic field, and</p> <p>means responsive to detection of said changes for sounding an alarm.</p>

<b>Problem</b>	Foreign language films cannot be understood by viewers who only speak English
<b>Prior Art</b>	Bi-lingual movie companion translates aurally in real time
<b>Inventor’s Embodiment</b>	Add subtitles to film
<b>Claim</b>	A reel of a motion picture in which the dialog is in other than English, the motion picture film having printed thereon written translations of the dialog into English

## CHAPTER THREE

### The Problem-Solution Statement

#### **Confirm Your Understanding**

1. Since a problem-solution statement is not a claim, what difference does it make if the problem-solution statement reads on the prior art?
2. Why bother with a problem-solution statement? Why not proceed directly to claiming the invention and be done with it?
3. What are the benefit(s) of starting early to hypothesize what the broad invention is, as opposed to waiting until the inventor has explained everything about the embodiment(s) and *then* begin the analysis?
4. What does the author mean when referring to the “naked notion” of an invention?
5. The patent attorney’s job is to advocate for the non-obviousness of the invention. Why, then, is it appropriate for the attorney to be a skeptic on the question of non-obviousness in his initial discussions with the inventor? Why not just wait to see what the examiner says?
6. What is the danger in combining multiple solutions to multiple problems in the patent application’s broadest claims?
7. Why is it important to get a good handle on the prior art as soon as possible?
8. What are the two main ways in which the breadth of a problem-solution statement needs to be “tried on for size”? Why are they both important?
9. What are the dangers in postponing consideration of what the real invention is until the first Office action is received?

**Questions for Further Thought**

10. Thinking Big (p. 21) often results in a characterization of the invention that is far broader than the inventor had ever contemplated. Does/should this make the patent attorney a co-inventor?
11. Patent attorneys who Think Big often come up with embodiments of the inventive concept that the inventor-client never dreamed of. How should the patent specification be prepared, and the invention claimed, in order to best protect the client's interests in such a case?
12. An old device that inherently solves a previously unappreciated problem is not a patentable invention. See, for example, *Abbott Labs. v. Baxter Pharm. Prods. Inc.*, 80 USPQ2d 1860 (Fed. Cir. 2006). Why, then, do we bother to define the invention in terms of both a problem and a solution? That is, if the solution portion of the problem-solution statement reads on the prior art, why aren't we "dead in the water" no matter what the problem portion says?
13. Does being able to broadly characterize an invention in more than one way, as in the case of Loud's ballpoint pen (p. 7), mean that there is more than one invention?
14. In the coffee maker example (p. 23), the author asserts that the inventor who was first to teach the desirability of shutting off the flow of coffee in the absence of the carafe would have been entitled to a claim that encompasses all ways of doing that, even though the inventor's only embodiment was the pin-and-valve approach.
  - a. How does the author's assertion square with the provision of 35 USC 112 ¶6 stating that a means-plus-function recitation—e.g., "means for shutting off the flow of liquid if the carafe is not in place"—shall be construed to cover

the corresponding structure, material, or acts described in the specification *and equivalents thereof* [emphasis added].

That is, is a mechanical pin-and-valve shut-off the "equivalent" of, say, a photocell?

15. The author refers to the domain of exclusivity granted by a patent as a “*parcel* of intellectual property.” In what way(s) is this real property analogy an apt one? Can you think of another legal construct to which a patent claim might be analogized?
16. The book explains the dangers of lumping together two or more inventive solutions in one claim. What options might be pursued if the client does not, at least initially, want to pay for multiple patent applications to cover the various inventive solutions?

**Sharpen Your Skills**

17. Following the prescription to *First Be a Skeptic, Then Be an Advocate*, try to think of way(s) to advocate for the patentability of the following ideas, given the prior art shown and any other prior art that you think would be “problematic.”

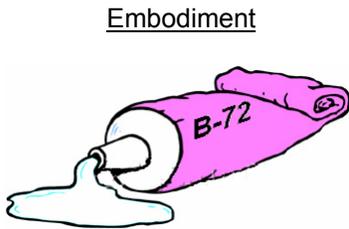
**a. Repeated Subway Ads**

Embodiment	Prior Art
 <p>All ads on at least one side of the interior of a subway car advertise the same product, e.g., Bud Light® Beer.</p>	 <p>In the prior art, the ads are for different products/services.</p>

**b. Upside Down Ketchup Label**

Embodiment	Prior Art
 <p data-bbox="186 583 584 766">Upside down ketchup label allows the bottle to be stood upside down so that ketchup will always be near the mouth of the bottle but the label will be right-side up.</p>	

**c. Art Restorer's Adhesive**



Material called B-72 is discovered to be a great adhesive for repairing valuable museum objects. It is most useful to restorers as an adhesive when dispensed from a tube, because in a tube it will stay fresh for a long period of time



B-72 was known in the prior art, but only came in solid pellets that were mixed with a solvent by the user to form a liquid that was used only as a varnish, not as an adhesive. B-72 will quickly dry out when kept in a jar due to air exposure

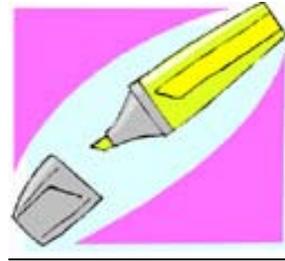
**d. Word Processor Highlighting**

Embodiment



red a visionary of considerable insight to the technology required to manufacture However, it does not require a visionary to r. Indeed, the patent attorney's task is to 's value *despite* such advances if improved ginal work.

Prior Art



A “highlighting function” in a word processor allows the writer to highlight selected words.



## CHAPTER FOUR

### The Problem-Solution Statement— Reaching for Breadth

#### **Confirm Your Understanding**

1. What does the author mean by the “Opposing Team?” Why is it important to focus on the Opposing Team when analyzing an invention?
2. What is the danger in including a particular implementational detail in a problem-solution statement (or claim) based on the inventor’s assurance that, as a practical matter, the invention cannot be implemented without that detail?
3. How does dreaming up “farfetched embodiments” help identify the inventive concept?
4. Since the inventive method or apparatus is defined in the “solution” portion of the problem-solution statement, why should the process of reaching for breadth involve looking to possibly broaden the “problem” portion?
5. Some practitioners are taught to discover the broad invention by listing the individual elements of the inventor’s embodiment and then separating those that aren’t necessary to distinguish the invention from the prior art (the “how’s”) from those that are (the “what’s”). What is the danger in using this technique as one’s primary approach to identifying the inventive concept?

**Questions for Further Thought**

6. How is analysis of the invention helped along by thinking, as the author suggests (p. 32), “more functionally than structurally, in gerunds rather than nouns, in method steps rather than structural elements?”
7. In what way is the search for breadth enhanced when the patent attorney has a strong technical background?
8. Is it realistic to be concerned about dinosaurs and birds being prior art to the Wrights’ flying machine (p. 35)?
9. Experienced attorneys have many ways of thinking about the process of reaching for breadth (pp. 40-44). Ask some experienced colleagues in your workplace how *they* do it.

**Sharpen Your Skills**

10. Reach for breadth in drafting a problem-solution statement for the following inventions:

<u>Invention</u>	<u>Prior art</u>
Public restroom paper towel dispenser that uses an electric eye to dispense a fixed amount of paper from a continuous roll.	Dispenser responsive to user pulling down on one side of a looped cloth towel to expose a fixed amount of unused towel.
Car radio antenna or defroster wires embedded in car window	Wire-reinforced glass in armored car

## CHAPTER FIVE

### The Problem-Solution Statement— Reining In Overbreadth

#### **Confirm Your Understanding**

- 1) The book urges the reader to evaluate a problem-solution statement or claim as an examiner will in assessing whether the problem-solution statement is too broad. Isn't this working against ourselves? Why not just go with the broad definition we initially come up with and "tweak up" the claims after the first Office action?
- 2) A possible approach to narrowing an overly broad problem-solution statement is to look for a feature of the inventor's embodiment(s) not shown in the prior art and add that to the problem-solution statement. Why does the author characterize this as a "recipe for disaster"?
- 3) Since the inventive structure is defined in the "solution" portion of the problem-solution statement, why should the process of reining in overbreadth involve looking to possibly narrow the "problem" portion?

#### **Question for Further Thought**

- 4) It is said that a patent applicant can be her own lexicographer. How does this square with the author's assertion (p. 46) that "the meaning that will be ascribed to language used to define an invention is not necessarily as narrow as the patent applicant intended...[and] ...can be virtually anything that is lexically reasonable?"

**Sharpen Your Skills**

- 5) Each of the following problem-solution statements is too broad. State why, based on prior art you are aware of, and re-draft the problem-solution statement into the patentable realm.
- a) Sunscreen: *The problem of people getting sunburned is solved by covering the skin with a material that blocks sun rays.*
  - b) Public restroom paper towel dispenser that uses an electric eye to dispense a fixed amount of paper from a continuous roll: *The problem of wastage of hand-drying material in a public restroom is solved by apparatus that dispenses a discrete amount of hand-drying material at a time.*
  - c) Cellular telephone: *The problem of the lack of portability of a voice communication instrument is solved by the voice communication instrument being arranged to communicate with another voice communication instrument using electromagnetic energy.*
  - d) Tear-back tab on disposable coffee cup lid: *The problem of being able to get ready access to the liquid in a disposable beverage container while minimizing spillage when the container is being carried is solved by a lid for the container having a perforated tab.*

## CHAPTER SIX

### Fallback Features and the Planned Retreat

#### Confirm Your Understanding

1. Why do we develop a Planned Retreat when deciding how we will claim an invention?
2. Why spend the time to develop a Planned Retreat when preparing the patent application when we can always amend the claims during prosecution after the full extent of the prior art becomes clear?
3. What is meant by a) “claim scope” b) “fallback feature”?
4. What are the two components of an effective Planned Retreat? Why are both important?
5. How is the problem-solution paradigm used to develop a Planned Retreat?
6. Why subject the inventor of the chair of FIG. 6-3 (p. 56) to the costs of a second patent to claim the concept of the seat back when the seat back could be recited in a claim dependent from the broad (“elongated support member”) chair claim?
7. Give two reasons that an initially identified fallback feature may ultimately be deemed not worthy of being included in the Planned Retreat scheme for a particular invention.
8. What criteria should be used in determining where a particular fallback feature should be positioned within an overall Planned Retreat scheme? Why might certain features show up in more than one claim?

**Questions for Further Thought**

9. Why does the problem-solution paradigm work as well when identifying an invention's fallback features as it does for identifying the broad invention?
10. Why is the inventor's input important to the development of an effective Planned Retreat?
11. Assuming we've identified a significant number of embodiment features, why bother to do any further Planned Retreat analysis given that we can include each of them in its own dependent claim?
12. Which is more worthwhile, if one had to choose—a) a highly novel fallback feature with low likelihood of use by others or b) a close-to-obvious fallback feature with a high likelihood of use by others? (N.B. This is an opinion question with no "right answer," involving consideration of a lot of issues and many unknowable contingencies. Thinking about this question, however, can help develop the reader's Planned Retreat analysis skills.
13. Rather than trying to second-guess which fallback features will prove to be the ones that consumers will want and including them in the claims when the patent application is first filed, why not just keep the prosecution alive by filing a string of continuations until the "winning" features emerge in the marketplace and then direct claims to those particular features?

**Sharpen Your Skills**

14. Keeping in mind the dual criteria of the Planned retreat (p. 55), outline a Planned Retreat, as illustrated on p. 61, for each of the inventions below. Use the problem-solution paradigm (pp. 58-59) to identify the fallback features.

<p><b><u>Inventive Concept</u></b></p> <p>Traffic signal having automatically synchronized indicia for first and second roadways (p. 71).</p>	<p><b><u>Embodiment</u></b></p> 
<p><b><u>Inventive Concept</u></b></p> <p>Telephone that communicates with the telephone network over a wireless channel.</p>	<p><b><u>Embodiment</u></b></p> 
<p><b><u>Inventive Concept</u></b></p> <p>Money drawer has compartments for different denominations of coins and bills.</p>	<p><b><u>Embodiment</u></b></p> 



## CHAPTER SEVEN

### Problem-Solution-Based Independent Claims

#### **Confirm Your Understanding**

1. What are the three steps of problem-solution-based claim drafting?
2. In drafting a claim based on the problem-solution statement, why is
  - a. the problem-related language removed?
  - b. the language defining the environment or context retained?
  - c. the stitching step made so constraining?
3. How is it possible for the cookbook-like procedure offered in this chapter to bypass the critical thinking that is traditionally required to draft a valid broad claim?

#### **Questions for Further Thought**

4. What is the benefit of converting a narrative definition of the invention (i.e., a problem-solution statement) into claim form as compared to just “diving in” and drafting the claim directly?
5. An unwritten rule in the USPTO is to find some way to reject a claim if it is “too short.” How is it in the client’s interest, then, to spend the time to draft very compact claims—such as those typically resulting from the methodology presented in this chapter—and/or to prolong the prosecution in order to fight for their allowance? Or is it, in fact, in the client’s interest to do so?

### **Sharpen Your Skills**

6. Convert the following problem-solution statements into claim form using the technique described in this chapter. Try to draft at least two claims in each case, using various stitching options and/or by claiming the invention in different settings (pp. 72-74).

#### **a. Computer auto-dialing**

*The problem (inconvenience) of having to manually dial a telephone number after having looked it up in a computer is solved by a telephony-enabled computer that automatically dials the telephone number in response to an indication from a user [e.g. a mouse point-and-click] that a call to that number is desired.*

#### **b. Spreadsheet program**

*The problem of having to manually update values in a paper-based spreadsheet is solved by a computer program that stores mathematical relationships between dependent and independent variables as defined by a user and, upon a user inputting a new value for at least one of the independent variables, updates and displays the values of at least one of the dependent variables whose value was affected by the change in the independent-variable value.*

#### **c. Electric-Eye-Operated Restroom Apparatus (Paper Towel Dispenser, Water Faucet, Toilet Flusher, etc)**

*The problems of resource wastage and/or the spreading of germs in a public restroom are solved by operable restroom apparatus that operates automatically in response to at least one of a) the presence of a person in the restroom or the movement of a person in the restroom.*

## CHAPTER EIGHT

### Inventive-Departure-Based Independent Claims

#### **Confirm Your Understanding**

1. What is meant by the statement that “the ideal broad claim is perfectly congruent with the boundaries of the invention.”
2. What are the dangers in defining the broad invention in only way?
3. What is meant by “inventive departure?”
4. What are the three steps of inventive-departure-based claiming?
5. What are the benefits of writing a claim “backwards,” i.e., beginning from the inventive departure and then “filling in” the rest of claim afterwards.
6. List some ways to identify the inventive departure.
7. An inventive-departure-based claim is fleshed out by adding only so much additional language to the inventive departure as is need to do two things. What are they?
8. What is meant by “pack only what you need” when drafting a claim.
9. Why is it necessary to closely scrutinize descriptive labels and modifiers when reviewing a claim?
10. What is the danger in a claim reciting a) advantages and b) intended uses of the invention?
11. What is the benefit of such claim drafting constructs as “as a function of” and “in such a way that”?
12. Why is it desirable to minimize the number of structural elements or method steps in a claim?

13. What is the danger in using the following claim limitations:
- “generating a video signal” in a claim directed to a video processing chip
  - “measuring the temperature inside the oven” in a claim directed to an industrial fabrication method
  - “summing A and B” in a claim that goes on to do a calculation based on the sum A+B.
14. What is the benefit of drafting claims without referring to the drawings as one does so?

**Questions for Further Thought**

15. What advantages (if any) and disadvantages (if any) do you see in the practice of routinely giving a name of the claimed invention in the preamble, e.g., “An automobile floor mat comprising....?”
16. What are the dangers in claim recitations that state
- the advantage of the invention or what it is “good for;”
  - how the recited combination can integrate with the external environment;
  - motivations (e.g., for doing a particular step or including a particular element);
  - how to carry out a recited function where the recitation of the function itself imbues the claim with patentability;
  - how inputs get generated;
  - the source of something that the claimed method or apparatus works on.
17. Examiners sometimes reject claims containing recitations such as “doing X in such a way that Y happens” (p. 93) on the grounds that a proper claim cannot merely recite a desired object but, rather, must recite the structure or affirmative steps that achieve the object. In what situations might such a rejection be proper? Improper?

18. Although modifiers (e.g. “foldable,” “variable,” “concurrently”) are often surplusage in a claim, such a modifier may sometimes be the hook for patentability, i.e., may define the inventive departure. For example, in the first digital watches the colon between the hours and minutes indications was static and users were not necessarily sure that their watch was actually running, leading someone to invent the blinking colon, which could have been defined as follows:

1. A numeric time display having a blinking indicator between the hours indication and the minutes indication

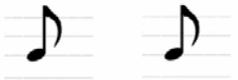
Sketch out a claim or problem-solution statement for at least three everyday devices or methods that can be distinguished from some assumed prior art using a single modifier.

19. What is the danger in including a recitation in a parent claim solely for the purpose of providing antecedent support for terminology in a dependent claim?

### **Sharpen Your Skills**

20. Draft an inventive-departure-based claim for the following inventions using the methodology presented in this chapter. Be particularly mindful of assessing the breadth of the invention when assembling the words that define the inventive departure, including the possibility that the underlying concept might have applicability beyond the specific context of the embodiment, as in the case of the zipper (pp. 37-39).

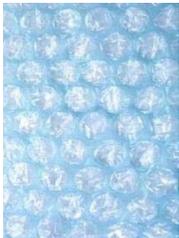
**a. Conference call tones**

<u>Embodiment</u>	<u>Prior Art</u>
 <p data-bbox="285 411 613 443">Enter call      Leave call</p> <p data-bbox="285 470 662 606">A two-pitch sequence when someone enters or leaves a conference call goes low-to-high when someone joins the call and high-to-low when someone leaves..</p>	 <p data-bbox="708 411 1019 443">Enter call      Leave call</p> <p data-bbox="708 470 1084 527">The same pitch is used for entering or leaving the call</p>

**b. Bicycle Lock**

<u>Embodiment</u>	<u>Prior Art</u>
 <p data-bbox="415 993 557 1024">U-style lock</p>	 <p data-bbox="792 1003 1003 1035">Padlock and Chain</p>

**c. Bubble Pack**

<u>Embodiment</u>	<u>Prior Art</u>
	 <p data-bbox="805 1339 984 1371">Crumpled Paper</p>  <p data-bbox="789 1493 1000 1524">Packaging peanuts</p>

## CHAPTER NINE

### Intermediate- and Narrow-Scope Claims

#### **Confirm Your Understanding**

1. What is a claim of intermediate scope? Narrow scope? What functions do such claims serve?
2. What is a fallback feature claim?
3. What are three ways that recitations in a fallback feature claim can be used to limit a parent claim?
4. What is the danger in relying on a claim differentiation claim to ensure that a parent claim is interpreted with the intended breadth?
5. Why is it desirable to include independent embodiment claims in the overall claim suite, given that one can always include embodiment details in one or more dependent claims?
6. What does it mean to balance patentability and “infringeability” when drafting an independent embodiment claim?
7. What are “marketed product” claims and how do they contribute to the goals of the Planned Retreat?

#### **Questions for Further Thought**

8. The book asserts that every claim should be written with a goal in mind. How many such “goals” can you think of?
9. The drafting of maximized royalty base claims is an example of preparing a patent application with licensing and/or litigation in

mind. In what other ways should the composition of the overall claim suite be guided by licensing and/or litigation considerations?

**Sharpen Your Skills**

10. Draft an independent embodiment claim for the vehicular air bag.
  - a. A broad independent claim for this invention is provided below, along with a narrative describing various features of the inventor’s embodiment that can be looked to to supply details for the independent embodiment claim.
  - b. Explain why you chose the particular features you included in the independent embodiment claim.

Broad Independent Claim

1. An occupant-restraining device for a vehicle, comprising  
an inflatable cushion, and  
means for inflating the cushion in response to a rapid deceleration of the vehicle.

Embodiment Details

The vehicle is an automobile and the air bag, or “cushion,” is so positioned, and is of such a size, as to restrain movement of an occupant of the vehicle at the time of impact (or other rapid deceleration) and inflation of the cushion.

The cushion has a mouth that is affixed to a support frame that, in turn, is affixed to the steering wheel of the automobile. The cushion is made of nylon, neoprene, polyester or rayon and has a volume of about 3 to 3.5 cubic feet when fully inflated. Small holes in the cushion allow it to deflate almost immediately after being inflated so as to minimize the severity of the impact of the occupant against the cushion.

Mounted within a suitable housing within the automobile is a weight whose momentum causes the weight to be displaced forwardly when deceleration of the automobile is sufficiently rapid as to potentially cause injury to the occupant. The displacement of the weight closes an electrical switch. This causes an igniting signal to be generated.

Responsive to the igniting signal, a three-stage pyrotechnic system generates a volume of propellant gas that inflates the cushion within 1/10 second. The pyrotechnic system comprises a) an igniter charge which is set off by the igniting signal, b) an enhancer charge that is set off by the igniting charge and that generates sufficient heat to set off, c) a heat-responsive propellant charge that generates the propellant gas.

The igniting charge, enhancer charge and propellant charge are, respectively, a) a mixture of zirconium and potassium perchlorate, b) a mixture of boron and potassium nitrate, and c) sodium azide.

The amount of propellant gas that is generated is proportional to the severity of the collision so as to minimize injury to the occupant from the cushion itself. The volume of the cushion when inflated is also proportional to the severity of the collision. The latter feature is implemented by providing a fold in the cushion that is secured with breakaway stitching. The breakaway stitching fails at higher propellant gas pressures.



# CHAPTER TEN

## Definition Claims

### Confirm Your Understanding

1. What is the difference between a fallback feature claim and a definition claim?
2. What are the two main functions served by definition claims?
3. What is meant by the terms “invention-relevant” prior art and “invention-irrelevant” prior art?
4. Which provisions of 35 USC motivate the inclusion of definition claims in the overall claim suite?
5. What are the two main considerations in deciding whether to include a definition claim in the overall claim suite?

### Questions for Further Thought

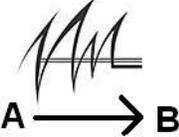
6. Consider the thermostat example in this chapter (pp. 116-118). Does the duty of candor imposed by 37 CFR 1.56 require citation of the wall switch prior art if we knew about it at the time of filing?
7. Claim language is supposed to be interpreted in light of the specification. *Phillips v. AWH Corp.*, 415 F.3d 1303, 75 USPQ2d 1321 (Fed. Cir. 2005) (en banc); *Bancorp Servs., L.L.C. v. Hartford Life Ins. Co.*, 359 F.3d 1367, 69 USPQ2d 1996 (Fed. Cir. 2004) Why, then, are we concerned about a) claim terms being interpreted in irrelevant ways that bear no relationship to their use in the specification (e.g., “bimetallic” switch (pp. 117-118)), or b) claim terms being deemed indefinite if one could go to the specification to divine their meaning?

**Sharpen Your Skills**

8. Explain why the underlined terms in the following claim phrases are prime candidates for being backstopped with a definition claim.

Claim phrase	Disclosed Embodiment
a. determining if said parameter is greater than a predetermined <u>industry-standard value</u>	Parameter in question is specified in the MPEG-4 audio/video compression standard
b. eliminating the <u>most expensive</u> data lines from said list	The data lines in question are particularly prone to malfunctioning, thereby engendering a lot of expense to continually monitor and repair them
c. processing said data if it is in a <u>predetermined pattern</u> , ....	The predetermined pattern is 001100110011...
d. said adhesive being <u>superior to</u> rubber cement	Claimed adhesive does not lose its holding power over time as does rubber cement
e. a <u>car</u> capable of <u>traversing</u> a railroad track	Automobile outfitted with railroad wheels so that it can travel on railroad tracks
f. <u>aesthetically pleasing</u> user interface	The user interface uses a color palette that people in focus groups said was pleasing to them
g. <u>interleaving</u> the bits of said bytes	byte1: 00000000 byte2: 11111111 interleaved bits: 01010101010101
h. said structure comprising <u>brick or like material</u>	Specification discloses brick and cinder block as possible materials for the structure
i. <u>translated</u> software	The software in question has been translated from the computer language Java to the computer language C++

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<p>j. communicating an <u>alarm signal</u> from A to B...</p>	
<p>k. communicating said stock quotes <u>electronically</u></p>	
<p>l. three or more <u>interconnected</u> computers</p>	
<p>m. wherein X and Y are <u>self-contained</u> in a single <u>portable</u> unit.</p>	
<p>n. a <u>concave</u> disk</p>	
<p>o. said at least one nut being <u>associated with</u> said at least one bolt</p>	



# CHAPTER ELEVEN

## Assembling the Dependent Claims

### Confirm Your Understanding

1. What is meant by “chained” and “non-chained” dependent claims?
2. Complete the following table by inserting the main advantage and disadvantage of dependent claims being chained and not chained.

	ADVANTAGE	DISADVANTAGE
CHAINED		
NON-CHAINED		

3. Explain the rationale behind each of the following rules presented in this chapter:
  - a. Dependent claims independently imparting patentability to an (independent or dependent) parent claim should be non-chained relative to one another;
  - b. Dependent claims imparting patentability to a parent claim in combination with one another should be chained;
  - c. Dependent claims not imparting patentability to a parent claim in combination with one another should not be chained;

- d. Dependent claims should be positioned within the claim family hierarchy based on their contribution to the Planned Retreat.
4. State four factors that militate in favor of a particular dependent claim being positioned relatively high within a claim family.
  5. In order to keep to a reasonable number of claims, one might choose to put different combinations of dependent claims into different claim families (claims headed by respective independent claims). What is the potential danger in doing this?
  6. What is the potential danger of Markush group claiming?
  7. How can a Markush group be effectively used in a definition claim?

**Question for Further Thought**

8. In many patents one finds the same set of dependent claims depending from each of a number of independent claims. What advantages and/or disadvantages do you see in this practice?

**Sharpen Your Skills**

9. Assume that your client is the inventor of the first vehicular air bag. Using the principles presented in this chapter, create a family of claims for this invention headed up by the independent claim presented on p. 32 of this booklet (not the main text), per the following guidelines.
  - a. Draw your fallback features from the narrative on pp. 32-33 of this booklet.
  - b. Include definition claims where appropriate. If you don't know a definition for a particular term X, the definition claim can be in skeleton form, e.g., "The invention of claim 1 wherein said X is ..."

- c. Explain the rationale for where you positioned each feature or definition within the claim family and why you thought particular terms needed defining.

# CHAPTER TWELVE

## Invention Settings and Direct Infringers

### Confirm Your Understanding

1. What is an invention setting?
2. What is meant by a “commercially significant” invention setting, and why is it important for an invention to be claimed in all of its commercially significant settings?
3. What does it mean to “maintain the integrity of the invention setting boundary?”
4. Contributory infringers and those who induce others to infringe are liable as indirect infringers (35 USC 271(b)(c)). Why, then, is it desirable to draft claims that will capture the activities of direct infringers?
5. Parties can be sued as joint infringers. Why, then, is it desirable to draft claims that will capture the activities of individual infringers?
6. Why may a “system claim” be difficult to enforce?
7. What are the legal and practical problems in enforcing claims requiring action by the consumer, i.e., a method step like “clicking on said displayed icon?”
8. How does taking on an Opposing Team mindset help the claim drafter recognize potential infringement loopholes brought about by a particular setting in which an invention may be claimed?

**Questions for Further Thought**

9. Assume that the key blank for the lock invention discussed in this chapter (p. 144) would be indistinguishable from prior art key blanks. Why can't the invention nonetheless be claimed in the key blank setting with a claim such as
- A key blank adapted to be cut for use as a key in a tumbler lock of a type in which at least one tumbler is rotated upon insertion of the key.
10. Do you agree with the author's assertion that "receiver" claim 12.1 (p. 146) would be patentable even though the structure of the recited two "means" would be obvious given a knowledge of the (assumedly novel/non-obvious) format of the video signal generated at the transmitter?
11. What is the harm in calling for "an energy source" in a claim directed to an electrical or electronic device, given that, as a practical matter, every such device requires a source of energy in order to operate?

**Sharpen Your Skills**

12. Invention settings
- a. Think of at least two settings for each of the inventions below. Remember that an invention is not claimed in different settings just because the claims are in different statutory classes, e.g., method and apparatus (pp. 144-145).
- i) Web application for take-out restaurants that uses instant messaging to allow customers to obtain menu information and/or to place orders.
  - ii) Structure for a shoe
  - iii) Spreadsheet program
  - iv) Method of drying fruit
  - v) Coding format that prevents making unauthorized copies of downloaded music

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- vi) Method that forwards e-mails received at a user's personal computer to the user's PDA by way of a relaying server
  - vii) Blade for use in a multi-blade razor
  - viii) Software compiler program (converts software written in a source code language, like Java, into object code (0's and 1's) that a computer can read and execute
- b. Who are the likely infringers of the invention in each setting?
- c. Which settings(s) are likely to be the most important from the standpoint of patent enforcement?



# CHAPTER THIRTEEN

## Statutory Claim Types

### Confirm Your Understanding

1. What is dangerous about drafting only method claims for an invention that could also be claimed as apparatus?
2. What is dangerous about drafting only apparatus claims for an invention that could also be claimed as a method?
3. What is dangerous about drafting only composition claims for an invention that could also be claimed as a method that uses the composition?

### Questions for Further Thought

4. Many practitioners include computer-readable medium claims as a matter of routine for every invention that can be implemented by computer. Can you think of situations where such a claim, while possible to draft, would be of little or no value?
5. As the book notes (p. 171), some cases have held that a product defined by a product-by-process claim does not infringe the claim if the competitor uses a different method to produce it. Other cases hold that the claim is infringed no matter what method is used. Which theory makes more sense to you?

6. After the book went to press, the CAFC decided *In re Nuijten*, 500 F.3d 1346, 84 USPQ2d 1495 (Fed. Cir. 2007), holding that propagated signal claims (pp. 168-169) are non-statutory.
  - a. Read the Court's decision, which can be found at [www.uspto.gov/go/com/sol/fedcirdecision/06-1371.pdf](http://www.uspto.gov/go/com/sol/fedcirdecision/06-1371.pdf)
  - b. Nuijten notwithstanding, do you think that inventors ought to be able to claim their inventions using propagated signal claims? Why or why not?

# CHAPTER FOURTEEN

## Claim Diversity

### **Confirm Your Understanding**

1. What are the characteristics of a diverse claim suite?
2. Why is a diverse claim suite desirable?
3. Name at least three approaches to arriving at diverse ways of defining the broad invention. What are the advantages of the various approaches?

### **Questions for Further Thought**

4. Functional claims like claim 14.3 (p.174) are not infrequently rejected by examiners as being improper. Which section(s) of 35 USC, if any, could properly be brought to bear in support of such a rejection?
5. The book advises using different terminology in different claims a way of achieving claim diversity. Do you see any potential problems in doing this? If so, how would you deal with them?
6. Try to think of some format choices other than those presented in the book that could be used to further the goal of claim diversity.

### **Sharpen Your Skills**

7. Try out some of the enforced-format options presented in this chapter (or others) to draft at least three claims for the inventions described below. (Further explanation of these inventions can be

found, for example, at wikipedia.com.) For each claim, indicate the format choices that you “enforced” on yourself.

a. Web Cache

A web page, once downloaded (“served”) to a user’s computer (“client”), it is stored in one or more temporary memories (“caches”) in the client itself, at the user’s internet service provider (ISP), and/or in one or more intermediate “proxy” servers between the client and the original source of the page (“origin server”). When the client re-requests the page (e.g., via the browser’s “back” button), or when the page is requested by another client served by the same proxy server or ISP, the page is served from one of these caches if it is found there—looking first in the cache in the client itself—rather than the request being sent all the way back to the origin server. This use of caches reduces the load on the origin server, speeds up delivery of the page to the requester and reduces the overall level of internet traffic.

b. Bubble Sort

An array of numbers is sorted into numerical order by making multiple passes through the array and comparing adjacent numbers. If they are already in the right order (e.g., lowest number first for a sort into ascending order), move on. If they are in the wrong order, swap their positions and then move on. Repeat this process until a pass through the array results in no swaps are made.

c. Video Compression—Interframe Coding

Instead of transmitting every pixel of a video image, compare the pixel values within blocks of pixels that are at corresponding spatial locations of successive video frames.

- i) If the pixel values for a block at a particular spatial location in a current frame are the *same as* the pixel values at the corresponding spatial locations in the previous frame, do not transmit pixel information, but

only a message indicating that the pixel values for the block have not changed;

ii) If the pixel values for the block are *different from* those in the previous frame, transmit information indicating how the pixel values differ.

This methodology exploits the great deal of redundancy in a video signal from one frame to the next to reduce the amount of information needed to store or transmit the video signal while preserving all of its picture information.

8. Evaluate the claims of some issued patents in terms of their claim diversity.
9. Take a patent for which you found that there is little or no claim diversity and draft two additional independent claims that would make the claim suite more diverse.



## CHAPTER FIFTEEN

### Claim Review with Enforcement in Mind

#### **Confirm Your Understanding**

1. What are the issues to be considered when reviewing the overall claim suite as a whole?
2. What are the issues to be considered when reviewing each individual claim?
3. Why does the author recommend reviewing the claims with only one issue (e.g. proper antecedents) in mind at a time?

#### **Sharpen Your Skills**

4. Evaluate the claims of one or more issued patents based on the criteria presented in this chapter:



## CHAPTER SIXTEEN

### Writing the Background and Summary

#### **Confirm Your Understanding**

1. According to the author, what are the hallmarks of an effective Background of the Invention (“Background”)?
2. Why might it be desirable for a Background to be long and detailed.
3. When is it preferable to introduce the problem solved by the invention in the Summary of the Invention (“Summary”) rather than the Background?
4. What are the two main Summary styles? What are the arguments for and against using each style?
5. According to the author, what are the hallmarks of an effective Summary?
6. What is meant by “closing the problem/solution loop” in the Summary?

#### **Questions for Further Thought**

7. Since the boundaries of the patented invention are defined by the claims, not the specification, why does the book insist that the Summary (indeed, the entire specification) must make clear that fallback features or other embodiment details that it mentions are only illustrative or optional?
8. Why does constructing the Summary in the “inverted pyramid” style (pp. 204-206) help the patent drafter to tease out the inventive concept from the inventor’s embodiment(s)?

**Sharpen Your Skills**

9. Evaluate the Background and Summary of one or more issued patents based on the following criteria presented in this chapter:

Background

- a. Does the Background make clear what problem(s) are solved by the invention?
- b. Is the Background of suitable length?
- c. Does Background avoid giving away inventor discoveries to the prior art?

Summary

- d. Is it clear from the Summary what it is that solves the problem(s), broadly speaking?
  - e. Is the inventive concept stated as functionally as possible?
  - f. Does the Summary make clear what features of the disclosed embodiment(s) are merely optional or preferred, as opposed to being inherent in the broad invention?
  - g. Does the Summary close the problem-solution loop?
10. Use the precepts discussed in this chapter to edit or re-write the Background and/or Summary of a patent for which some number of the above criteria are not met.

# CHAPTER SEVENTEEN

## Writing the Detailed Description

### **Confirm Your Understanding**

1. According to the author, what are the hallmarks of an effective Detailed Description in a patent application?
2. What difference does it make how the Detailed Description is constructed as long as it satisfies the “enablement” and “best mode” requirements of 35 USC 112, ¶1?
3. What advantages can flow from writing the Background and Summary first, i.e., before writing the Detailed Description? What disadvantages can flow from writing the Detailed Description first?
4. Why does the book admonish the patent drafter to use the word “invention” carefully?
5. Why is it desirable to have the invention well in hand before beginning to write the Detailed Description?
6. What is the rationale for the prescription: *Be Detailed Where the Invention Lives*?

### **Question for Further Thought**

7. The author writes the claims last when preparing a patent application. Since the invention is what the claims say it is, how does this practice jibe with the author’s assertion that it is desirable to have the invention well in hand before the Detailed Description is written?

**Sharpen Your Skills**

8. Evaluate the Detailed Description of one or more issued patents based on the following criteria presented in this chapter. Specifically, does the Detailed Description
  - a. Point out the inventive concept?
  - b. Use the word “invention” carefully and appropriately?
  - c. Follow the prescription *Be Detailed Where The Invention Lives?*

## CHAPTER EIGHTEEN

### Claim Rejections: Amend or Argue?

#### **Confirm Your Understanding**

1. What are the four questions to ask oneself when deciding how to respond to the rejection of a claim under 35 USC 102-103?
2. What are the six options that can be taken based on the answers to the four questions?
3. Why do we need to specifically determine whether a rejected claim reads on the prior art, given that the examiner has already made that determination?
4. Since the patent attorney should be an advocate for the inventor and the invention, what is the point in trying to “see it the examiner’s way” in assessing whether a rejected claim reads on the prior art?
5. What is the danger is relying solely on the inventor’s reading of the prior art in assessing whether it anticipates a claim?
6. A claim that reads on prior art is too broad, whether or not the prior art is invention-relevant (discloses the inventive concept) or is invention-irrelevant (does not disclose the inventive concept). Why, then, is it important to assess whether or not the cited art discloses the inventive concept?
7. Why is it the best practice to not swear behind a reference under 37 CFR 1.132 (“Rule 132 Declaration”) if a) prior art cited in a §103 rejection is arguably non-obvious, or b) the cited prior art is not “invention-relevant?”

#### **Questions for Further Thought**

8. Using your answers to questions 1 and 2 above, try to reconstruct from memory the flowchart that ties them together.

9. A patentee is allowed to act as his/her own lexicographer. See, e.g., *Chef Am., Inc. v. Lamb-Weston, Inc.*, 358 F.3d 1371, 69 USPQ2d (Fed.Cir. 2004). How, then, is it that examiners are allowed to ignore the clear intended scope of a claim term when reading a claim on the prior art?

### **Sharpen Your Skills**

10. Using the flowchart of FIG 18-1, plan out a strategy for responding to an Office action on your docket at work or a sample Office action that your instructor will provide.

# CHAPTER NINETEEN

## Claim Amendments

### Confirm Your Understanding

1. Assume we have concluded that a claim rejection based on prior art is proper. Why is it important to then rethink the invention before rethinking the claim? Why not simply retreat to one of the narrower claims already in the application?
2. Why does the way in which we amend a claim depend on whether the cited prior art is invention-relevant or invention irrelevant?
3. When adding limitations to a claim in response to a prior art rejection, why might it be desirable to eliminate one or more other limitations?

### Questions for Further Thought

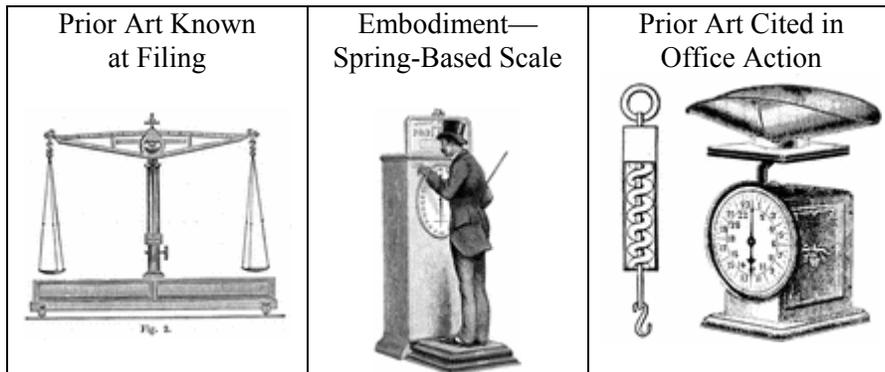
4. An Office action may indicate that a particular dependent claim would be allowable “if rewritten in independent form to incorporate the limitations of the base claim and any intervening dependent claims.” Upon rewriting the allowable claim in independent form, why might it be desirable to eliminate certain of the limitations in the base claim and/or intervening dependent claims? (One would, of course, point out to the examiner that that’s what has been done.)
5. The bar coding example presented in the book narrows claim 19.5 (p. 231) into the patentable realm by stating that the bar-coded item is a “retail product.” What potential problem(s) do you see with the resulting claim 19.6? How would you address that problem? How could following the specification-oriented prescription *Be Detailed Where the Invention Lives* (pp. 214-215) prove to be a life-saver in this situation?

6. The book suggests that a proper analysis of the bar-coding invention could result in a claim that would cover radio-interrogatable printed electronics (p. 232). What are some arguments for and against a court allowing such a claim to be enforced against the printed electronics embodiment?

**Sharpen Your Skills**

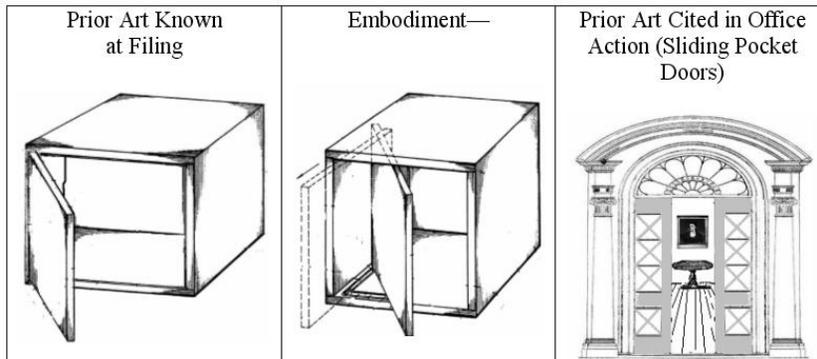
7. For each of the following examples, re-think the originally-claimed invention in view of prior art cited in the first Office action. How you would amend the claim to avoid reading on the cited art? (For purposes of this exercise, do not consider other prior art that may come to mind, nor any questions of obviousness.)

**a. Scale**



1. (Original) A scale comprising  
a spring,  
a platform adapted to be displaced against a restoration force of the spring in response to the placing of an object to be weighed on the platform, and  
means for indicating the weight of the object as a function of the amount of displacement of the platform

**b. Cabinet with “Disappearing” Door**



1. (Original) A door for an enclosure having an opening, the door having a first position in which the door extends across at least a portion of the opening and the door being slidable to a second position in which the opening is fully uncovered.



# CHAPTER TWENTY

## Working with the Inventor

### **Confirm Your Understanding**

1. Compare “classroom-style learning” to “self-directed learning” as presented in this chapter
2. What does the author mean by the prescriptions
  - a. Begin From a Known Starting Place
  - b. Proceed Slowly and Carefully
  - c. Don’t Let Any Necessary Detail Get By

What are the benefits of following these prescriptions?

### **Question for Further Thought**

3. The attorney-directed interview methodology described in this chapter precludes the inventor from describing the invention in her own way. However, some attorneys advise that is desirable to do just that—letting the inventor describe her invention in whatever way she wants and to then going back to ask questions. What do you see as the advantages and disadvantages of each approach?

### **Sharpen Your Skills**

4. If you are already working in the field, interview the inventor of the next patent application that you start on using the principles of self-directed learning presented in this chapter. It may be useful to explain those principles to the inventor before you start.

Alternatively, have someone play the part of an inventor coming to talk to you about patenting her invention. The “inventor” should

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study the disclosure of an issued patent so that she will be able to sketch a drawing, come forth with lots of details, etc. The following U.S. patents have relatively simple disclosures and would be suitable:

4,128,616	4,153,944
4,479,115	4,534,776
5,065,309	5,091,931
5,267,304	5,440,620
6,009,138	6,373,229

Do not review the disclosure yourself ahead of time, the idea being to try to recreate a realistic inventor-attorney interaction.