

INVENTION ANALYSIS AND CLAIMING: Begin from the Problem [Not the Embodiment]¹



BY RONALD SLUSKY

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Build a better mousetrap, it is said, and the world will beat a path to your door. It is nowhere as easy as all that, as we know.

Yet the invitation to build a better mousetrap embodies the idea that a good invention solves a problem that its predecessors solved less well or not at all. Thus answering the quintessential patent question *What is the Invention?* means answering the question *What is the Problem?* Until the problem is fully appreciated, the solution cannot be fully appreciated either.

Not all practitioners begin from the problem. Many begin from the solution—the inventor’s specific embodiment(s). A claim to the embodiment is drafted. The claim is then broadened through a process of “pruning and distilling.” Terms that are narrow are made general, and separately recited physical elements or method steps are coalesced into more all-encompassing elements or steps. Thus “screw” becomes “fastener” and the dual steps of “pointing [to an icon]” and “clicking” are distilled into the single step of “selecting.” Other limitations are removed altogether. Pruning and distilling continue until any further broadening would cause the claim to read on the prior art. That which remains is supposedly the broadest possible claim to the invention.

A claim edited in this way will certainly be broader than it was initially. However the inventive concept² may involve functions or relationships not present in the original claim. It is unlikely that these will find their way into the final version of claim if they weren’t present at the outset. Significant infringement loopholes can result.

OBJECT LESSON—THE KONA CLIP PAPER CLIP

Let’s look at an example of an embodiment-oriented, invention-analysis-by-claim-drafting approach that misses the broad invention. We will then see how the broad invention is readily uncovered by following the prescription *Begin from the Problem [Not the Embodiment]*.

Our example is an early form of paper clip, marketed as the Konaclip. The Konaclip and two prior art clips are shown in FIG. 1. Among the advantages touted for the Konaclip was the ability to hold a stack of paper securely while being easy to put on and take off without damaging the paper. This combination of properties had eluded the prior art, exemplified by the Vaaler and Perfection clips. The Vaaler clip did provide secure fastening; a corner of the paper stack was woven around and through the clip’s overlapping arm portion. However, this was tedious and permanently creased the paper. The Perfection clip was easy to put on and take off. And it was gentle on the paper. But its paper-holding power was quite poor.

Not that the Konaclip worked all that well either. Papers in the middle of the stack still tended to fall out. But the Konaclip did work better than the Perfection clip in that regard and, like the Perfection, did not damage the paper.³

Our ill-fated invention-analysis-by-claim-drafting approach begins by drafting a claim to the Konaclip embodiment. Claim

1 is such a claim. Note how it recites the Konaclip’s inwardly deflected leg extending down the middle of the clip. This is the Konaclip’s most distinctive physical feature and clearly distinguishes the Konaclip from the prior art Vaaler and Perfection clips.

1. A clip constructed of a single length of spring-steel wire bent to form an elongated frame having a pair of opposing rounded end portions, an end portion of the wire being deflected inwardly within and near one end of the frame and within the plane thereof, and extended longitudinally along and within substantially the full length of the middle of the clip, the end portion having a serpentine shape and terminating in a eye.

Claim 1 is, however, narrower than it has to be. Quite a few of its limitations can be pruned out of this claim while retaining its prior-art-distinguishing central leg, resulting in claim 2.

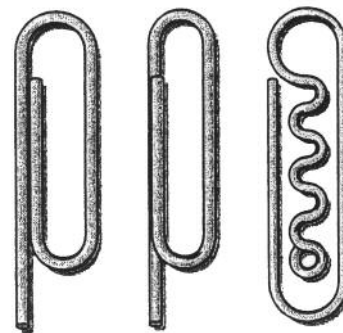
2. A clip constructed of a length of wire bent to form an elongated frame, an end portion of the wire being deflected inwardly within and near one end of the frame, and extended longitudinally along and within the middle of the clip.

Claim 2 is obviously much broader than claim 1. Yet the Konaclip embodies an underlying concept that is nowhere to be found in claim 2.

And therein lies the moral of this tale.

The Konaclip’s underlying concept readily reveals itself upon our following the prescription *Begin from the Problem [Not the Embodiment]*. Recall that the problem that the

Konaclip was intended to solve was that prior art paper clips were not able to fasten a stack of papers securely without damaging them. What is really going on in the Konaclip in an attempt to solve that problem? A little thought reveals the answer. Part of the clip on one side of the paper urges the paper against a pair of opposing rails of the frame on the other side of the paper, thereby providing a great deal of frame surface area against which the paper is urged, and to some extent tucking the paper into the space between the rails



Vaaler Perfection Konaclip

FIG. 1

because the two parts start out in the same plane.

Claim 3 is a claim drafted with that solution in mind. Note that this claim not only reads on the Konaclip, but also on the not-yet-invented but now ubiquitous Gem paperclip! FIG. 2 shows how both the Konaclip and the Gem incorporate this feature.

3. A clip constructed of a length of wire bent to form an elongated frame having a pair of opposing rails, an end portion of the wire being disposed inwardly within the frame and in the plane thereof, said end portion being so arranged as to cause a stack of paper inserted between said end portion and said opposing rails to be urged substantially equally against both of said opposing rails.

Had the Konaclip patent⁴ included a claim like claim 3, the Konaclip inventor could have collected significant royalties from Gem manufacturers, notwithstanding the commercial failure of his own product. Unfortunately, the Konaclip patent's claims focused solely on the Konaclip's geometry—its central leg—and not its underlying concept. Thus the potentially valuable Konaclip patent proved to be as worthless as the Konaclip itself.

There is little chance that any embodiment-based analysis of the Konaclip could ever result in claim 3. Without first considering what problem the Konaclip was

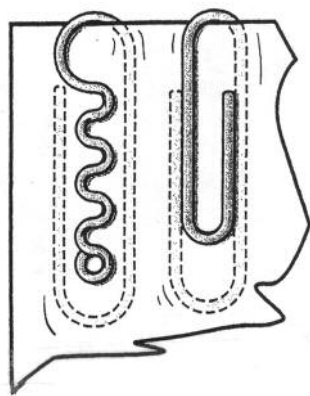


FIG. 2

intended to solve and how, broadly and functionally, the problem *was* solved, it is unlikely that words directed to the broad solution would ever find their way into the starting-point claim. Nor is it likely that such words would emerge as the result of any subsequent editing of the claim. Such an analysis is doomed from the start.

Scenarios like this are common. All too often, a patent application's broadest claim arrived at through an embodiment-based analysis falls short of the mark, even when the conceptual underpinnings of the invention were right there, waiting to be discovered. The inventive concept often lies just as close to the surface as in this example, and a problem-solution-based analysis will readily uncover it.

Pruning and distilling are invaluable tools for improving a claim. But what's

needed in the early going is not a claim drafting tool but an invention analysis tool. Sometimes we can get to where we need to be even when starting out from the embodiment. But there is little guarantee of that.

Drafting a broad claim that captures all of the inventor's embodiments is relatively simple. Much harder is drafting a claim that will capture others' future products even though we don't know what they are. Difficult or not, it is a task that must be tackled. To do otherwise is to leave open the possibility that an inventor's original embodiment will be overtaken in the marketplace by "new and improved" implementations not covered by any claim in the issued patent. The Konaclip example makes that quite evident, as well as illustrating how beginning from the problem, not the embodiment, can help avoid that result. **IP**

Next Month: Drafting claims based on the problem-solution statement.

ENDNOTES

1. Copyright © 2007 American Bar Association. Adapted with Permission. All Rights Reserved.
2. See last month's column in *Intellectual Property Today*.
3. A fascinating account of the development of the paper clip is presented in Henry Petroski, *The Evolution of Useful Things* (New York: Alfred A. Knopf, 1992).
4. U.S. Patent No. 648,841.

Morris, Manning & Martin Receives Summary Judgment in High Profile Patent Case

Morris, Manning & Martin, LLP has won a high profile patent infringement case filed against its client, General Protecht Group. General Protecht, based in China, recently announced that it will build a large manufacturing plant in Georgia.

"This is a significant win and a vindication of our client's rights," said Morris, Manning & Martin Partner Bryan Harrison, who litigated the case with partners John Fry and Tim Xia. "This excellent result is a testament to our dedicated patent litigation team at Morris, Manning & Martin," continued John Fry, who leads the firm's patent litigation practice.

Leviton sued several of General Protecht's U.S. customers, alleging infringement of a Leviton patent for a ground fault circuit interrupter, or GFCI, a small device that can reduce the risk of electrocution. GFCI devices are often used in kitchen and bath electrical outlets.

In April 2004, Leviton filed suit in New Mexico, where one of General Protecht's customers is located. General Protecht intervened in the case to lead the litigation. Federal Judge James Browning in Albuquerque awarded summary judgment of non-infringement on July 10, 2007, in favor of General Protecht. The order found that the General Protecht devices at issue do not infringe upon Leviton's asserted GFCI patent, either literally or under the doctrine of equivalence.

In May, Georgia Governor Sonny Perdue formally announced that General Protecht Group would build a new plant in Barnesville, Georgia. The electrical component factory is expected to employ 240 people at the conclusion of the first, \$30 million phase, with employment and investment expected to increase to approximately 350 employees and \$100 million. Attorneys from Morris, Manning & Martin, LLP were instrumental in bringing the plant to Georgia.

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