

HOW AMAZON GOT A PATENT
ON WHITE-BACKGROUND PHOTOGRAPHY

A Short Story
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Public Knowledge

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I.

THE PATENT EXAMINER SAT DOWN AT HER DESK and pulled up the next item on her examination docket. Patent application 13/292,359. “Studio Arrangement.”

“Right in my area,” she thought. She scanned the patent application text and flipped through the drawings. It seemed straightforward—a camera, a platform for holding an object, a couple of lamps, a backdrop. She’d seen all of this before.

She typed in a few search terms, looking for the prior art that would show this invention to be old and well-known. She browsed through a few old patents. Something triggered a vague memory of an old application she had examined years ago. Bits and pieces surfaced in her mind—a name here, a classification number there. She knew that she could find it, and after half an hour she did.

“Bingo!” she thought, placing the drawings from the old application next to the Studio Arrangement figures. Everything was lining up nicely. She began comparing the parts of each document, building up the legal argument that this arrangement of lamps and backgrounds could not be patented.

But then something caught her eye. A small sentence at the bottom of a page. Twenty-five words.

And those twenty-five words told her immediately that she could not reject the application over the prior art she found. She probably could not reject the application over *any* prior art she found.

She would have to grant the patent.



YOU ALREADY KNOW HOW THIS STORY ENDS: Amazon gets U.S. Patent No. 8,676,045 on taking a photograph of an object in front of a white background. The headline “Amazon Patents White-Background Photography” is all over the Internet, with people exasperated that a decades-old technique could become the subject matter of a patent in 2014.

How did this patent make it through examination?

Some have suggested that it slipped through the cracks, that the examiner was asleep at the wheel, or that the Patent Office is a rubber stamp that grants all applications that come in the door. I doubt that any of these is the case. As a patent attorney, I saw plenty of applications rejected, saw examiners finding remarkable prior art, and still saw plenty of patents issue on the

most obvious ideas.

The problem is not with the examiners, but with the law that governs that examination. That law makes it possible to get patents on ideas that any ordinary person would find old, well-known, and obvious.

This is a dramatization of how the patent came to be. Of course I was not in the room with the engineers, the patent attorneys, or the patent examiner; I don't know them and have no relationship with them. But I do have the public record of the documents filed with the Patent Office, the audit trails of the searches conducted by the examiner, and the correspondence between the examiner and the patent attorneys. This allows me to reconstruct the story of the patent.

Although the narrative is fiction, the background of law and facts is accurate. My hope is that, by injecting these bare facts with the probable thoughts of the people involved, a complete story will emerge to explain this patent.

We started with the end of the story, just as the patent was about to be granted. So let's jump back in time to the beginning, when the patent was just an idea in the inventors' minds.

II.

"WHAT'S NEW IN THE WORLD OF INVENTIONS?" the patent law firm partner asked as he sat down at the conference table, across from the three engineers. The group met once every few months, to collect any new ideas out of the R&D department and to pick some to turn into patents.

"Well," one of them said, "I don't know what you'll make of this, but we did come up with an interesting way to take pictures of products for our website."

"Sure, go on," said the partner, listening carefully.

"Basically, what usually happens is that we take a picture of a product, and then it's got shadows or the background is a little off color or something, and you have to do some retouching or Photoshopping to fix it up before you put it online. And that's kind of a pain. So we came up with this way of arranging things so that the background comes out completely white."

The engineer pulled out a few sketches. He walked the partner through them, and then asked one final question.

"So can we actually get a patent on this?"

The partner stopped to think for a second. "It depends really on what's out there already. You don't know if anyone has done something like this before, right?"

“Well of course people have taken pictures of things in front of a background before,” said the engineer. “But everything we know of requires us to do some retouching afterwards. This is the first time we’ve set it up so we don’t need to do the retouching.”

“In that case, it’s up to the patent examiner to find out if there is any prior art. There’s really no harm in trying.”

The engineer nodded in agreement, and the partner extended his arm for a handshake. “You’ll have a draft by the end of the month.”



PATENTS ARE INTIMATELY TIED WITH INVENTIONS. Patents are meant for the great advances in technology that change industries or lives. When we think of patents, we think of things like the lightbulb, the airplane, and the automobile.

Criticized patents tend to be those granted on simple ideas that anyone with an ounce of skill could have come up with in the right situation. One-click shopping, Internet gambling, scanning documents to email—these are all actual patents that have been derided for being too elementary and thus unworthy of patenting.

This intuition of “worthiness” of patents is known in legal parlance as *obviousness*. This is the central question in the debate over the Studio Arrangement patent. Most people have complained that photography against a white background is taught in every photography textbook, rendering the patent obvious. Others believe that the patent actually covers a unique way of arranging objects, thus making the patent nonobvious.

The Patent Office issued the patent, which means they thought there was something nonobvious about it. But what? To answer that, let’s see how the idea from the client meeting turns into a written patent application.

III.

“SO WHAT DO YOU HAVE FOR ME TODAY?” The partner swiveled around in his chair to face the young associate closing the door to the office.

“It’s the studio arrangement patent application,” the associate said, shuffling through a stack of paper.

“Studio arrangement?” The partner was shuffling through his memory of the other matters from the month.

“We had the client meeting a few weeks ago? It was the one where they

had the white background, and the lamps, and—”

“Oh, that one!” The partner took the stack of paper and thumbed through the draft patent application. “Looks great so far—what about the claims?”

“Right here,” said the associate, pulling up the last page. Different from the narrative paragraphs of the rest of the application, the claim looked like a bullet point list, but without the bullets:

Claim 2. A studio arrangement, comprising:
a background comprising a cyclorama;
a front light source positioned in a longitudinal axis intersecting the background, the longitudinal axis further being substantially perpendicular to a surface of the background;
an image capture position located between the background and the front light source in the longitudinal axis;
an elevated platform positioned at a first distance from the elevated platform and between the image capture position and the background along the longitudinal axis, the front light source being directed toward the elevated platform; and
at least one rear light source positioned between the elevated platform and the background, the at least one rear light source directed towards the background; wherein
a top surface of the elevated platform reflects light emanating from the background such that the elevated platform appears a substantially similar color as the background and a rear edge of the elevated platform is substantially imperceptible to an image capture device positioned at the image capture position.

“It’s all here,” the associate continued. “We’ve got the white background here, the lamps here and here, the camera here, and the transparent platform here,” he said, pointing to various parts of the claim.

“And these are all the important features that those engineers talked about?”

“Yep, I’m pretty sure of it. They said that the key to the invention was that the object’s stand appeared invisible to the camera, so no retouching was necessary. And that last bit of the claim, where it says ‘the elevated platform appears a substantially similar color as the background,’ that’s where I put that feature.”

The partner looked up from the paper. “Looks like we’re in good shape,” he said. “Add a few dependent claims to fill things out, and we’ll send it out to the client by the end of the week.”



CLAIMS ARE THE LEGALLY OPERATIVE PART OF A PATENT. They are structured like a checklist, and each item of that checklist is called an “element” or “limitation.” Claim 2 from above has elements such as the background, the front light source, the image capture source, and so on.

And claims act much like a checklist: to prove that something infringes a claim, one must prove that the thing includes every element of the claim.

(In case you’re wondering about claim 1: that claim has a longer list of elements than claim 2, and examiners usually start by looking at the shortest claim first, which is why I do the same here.)

The claims also determine obviousness. To prove obviousness, one would have to show that every element of the claim would have been obvious to someone familiar with the general field of technology. This is precisely what the patent examiner is going to do once the application is filed: she will search for prior art for all the elements of the claim.

But before she does that, before she even receives the patent application, our associate must complete one final task: adding dependent claims to the application.

IV.

“DEPENDENT CLAIMS, DEPENDENT CLAIMS,” the associate thought as he sat down in front of his computer screen and opened up the patent application files. “All I need to do is find a few features to turn into elements for dependent claims.”

But what features?

The application documents, the drawings he had drafted, the notes from the client meeting—they all stared at the associate but remained silent. The one interesting feature about this studio arrangement idea—the part about the object platform appearing invisible to the camera—that was already in the claim he had written.

But all he needed now were dependent claims, and all that dependent claims needed were a couple of features from the patent application. So he opened up the draft he had written, found a somewhat interesting point, and typed out his first dependent claim. Twenty-five words.

Claim 3. The studio arrangement of claim 2, wherein the first distance is about 4.5–5.5 times a height of the top surface of the elevated platform.



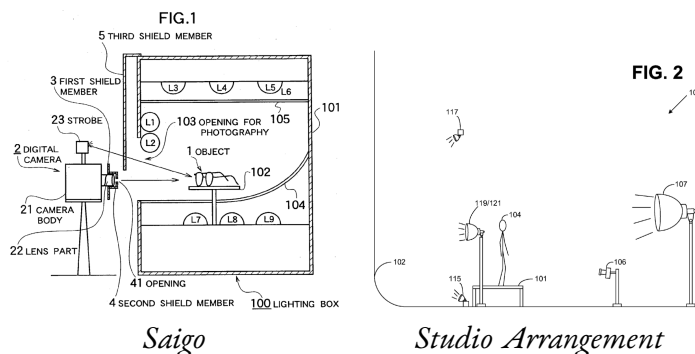
CLAIM 3 ABOVE IS WHAT IS CALLED A “DEPENDENT CLAIM.” This is because it refers to a “studio arrangement of claim 2,” which is a reference to the much longer claim presented in the last section.

As with all claims, a dependent claim is a checklist of elements, but the dependent claim effectively incorporates the checklist of the referenced claim. So, to prove claim 3 obvious, one would have to prove obvious all the elements of claim 2, plus the 4.5–5.5 distance ratio element.

The examiner must search and assess all claims, independent and dependent. And the crux of the Studio Arrangement patent is what happened when the examiner picked up those dependent claims. Thus, we now return to where our story began, with the examiner reviewing the patent application.

V.

“BINGO!” SHE THOUGHT, as she pulled up a 2003 patent application by Tsuyoshi Saigo. She placed the figures of the Studio Arrangement application to the right of those in Saigo:



Her eyes darted back and forth between the figures and the text of the Studio Arrangement claims. “It’s all here. We’ve got the white background here, the lamps here and here, the camera here, and the transparent platform here,” she said to herself. The rejection would be easy to write.

<i>Claim 2. A studio arrangement, comprising:</i>	
<i>a background comprising a cyclorama;</i>	<i>Saigo, fig. 1, element 104</i>
<i>a front light source...;</i>	<i>Saigo, fig. 1, L1 & L2 (lamps)</i>
<i>an image capture position...;</i>	<i>Saigo, fig. 1, element 2 (camera)</i>
<i>an elevated platform...; and</i>	<i>Saigo, fig. 1, element 102</i>
<i>at least one rear light source...;</i>	<i>Saigo, fig. 1, L5 & L6 (lamps)</i>
<i>wherein a top surface of the elevated platform reflects light...</i>	<i>Described in the text of Saigo</i>

And then she turned to claim 3.

In her younger years, when she was still an assistant examiner, she would have done the search. She would have looked for that prior art document that had the 4.5–5.5 distance ratio element. But now, after reading the patent court decisions, after years of fruitless searches, after countless rebukes from her supervisors, now she knew better.

No one would write an article with that exact distance ratio or file a patent application about it. No one would *want* to do so. It was too uninteresting a feature to have ever merited any attention. Who knew if Saigo had used that distance ratio—Saigo’s application didn’t say. Who knew how many other photographers had actually used that distance ratio before—it didn’t matter, since it wasn’t on paper before her. Who knew if some college dissertation mentioned the exact numbers—with only a few hours left, and with a stack of other applications to examine, this examiner would not find it.

It was a silly thing to grant a patent on, no? Photography against a white background is obvious, but photography against a white background *at a certain distance* is nonobvious? The examiner could perceive no reason why that 4.5–5.5 ratio was advantageous, and the text of the application revealed none. If this patent issued, it would not be because the invention was an improvement; it was because this Studio Arrangement claim was *different*. Not better, just different.

But, the law said, that was enough to grant a patent. And she would comply with the law.



WHY DID THE EXAMINER HAVE TO ALLOW CLAIM 3? It ultimately resulted from the law of obviousness. This is the law devised by the Court of Appeals for the Federal Circuit, the court that (barring the rare Supreme

Court case) adjudicates all of patent law.

The Federal Circuit's obviousness decisions consistently demand written, documentary evidence—published articles or patent applications that specifically include all the details of the claim. One might think that the 4.5–5.5 ratio might be obvious to try, based on the common sense or basic knowledge of an ordinary photographer. But the Federal Circuit's cases would expect that ratio to be documented on paper before the claim could be held obvious.

This is a particularly strict standard for obviousness. In fact, it is so strict that the Supreme Court intervened several years ago, ordering the Federal Circuit to loosen its standard and consider common sense and ordinary creativity that might not be recorded on paper. Supposedly the Supreme Court should be the final word on such things, but the Federal Circuit responded by tightening the standard up again.

The recent case *K/S HIMPP v. Hear-Wear Technologies* illustrates this retightening and this continued demand for paper documentation of obviousness. In fact, *Hear-Wear's* facts are almost precisely analogous to what happened with the Studio Arrangement patent.

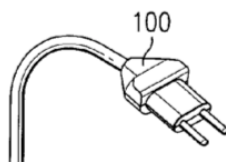
Hear-Wear was about a patent on hearing aids. The patent was being reconsidered by the Patent Office, and the independent claims had already been held unpatentable.

But a dependent claim further added an element about a wire coming out of the hearing aid:

Claim 3. The at least partially in-the-canal module for a hearing aid of claim 2 [of the Hear-Wear patent] wherein said insulated wiring portion is terminated by a plurality of prongs that provide a detachable mechanical and electrical connection to an audio processing module.

This is complicated language, so here's a visual to help:

FIG. 12C



Most people call this a plug: a plurality of prongs (those two things at the end) that provide a detachable mechanical (you can plug and unplug

it) and electrical connection (electricity flows across the prongs) to an audio processing module (whatever you plug it into, like your computer).

It is hard to believe that a patent could be granted for adding a multi-pronged plug to a well-known invention. “Every purchaser of electrical devices in the United States for the past 50 years or more is familiar with multipronged electrical connections,” wrote the lone dissenting judge in *Hear-Wear*. But the two judges in the majority would have none of that. As they said, the Patent Office “cannot accept general conclusions about what is ‘basic knowledge’ or ‘common sense’ as a replacement for documentary evidence for core factual findings in a determination of patentability.” Proving this patent obvious, according to them, required paper documentation.

And therein lies the rub. The Federal Circuit essentially expected a written document describing a wire attached to a hearing aid and ending with a plug with multiple prongs. What are the chances that a written reference will say this? What scientist would waste time writing an article entitled “The Benefits of Multi-Pronged Plugs for Hearing Aids”? What publisher would ever find such an article worthy of its journals? What reader would subscribe to a journal that published such banality? Yet such an article, such a simplistic, uninspiring, *obvious* article, is exactly what the Federal Circuit would demand to prove this claim obvious.

With this law, the Federal Circuit has created a world in which the most obvious ideas are the hardest to prove obvious.

The result in *Hear-Wear* explains the result in the Studio Arrangement patent application. In both cases, the inventive idea, embodied in the independent claim, was shown to be old and well-known by a prior art reference. And in both cases, a seemingly trivial add-on feature in a dependent claim ended up being the feature that tipped the balance from obvious to nonobvious—a multi-pronged plug in one, and a distance ratio in the other. Because in both cases, that trivial feature was so ordinary that no one would have taken the time to describe it in a printed publication, but without such a publication, according to the Federal Circuit’s rules, obviousness cannot be proved.

This, in my view, is why the examiner did not even attempt to reject claim 3. A distance ratio may seem trivial, unimportant, or uninventive, but absent a written prior art reference, that distance ratio can sustain a whole patent claim. However obvious such an element may sound, it remains nonobvious according to the letter of the law, and that is all that is needed for the patent application to leave the examiner’s desk and move to allowance.

EPILOGUE

THE STUDIO ARRANGEMENT PATENT ultimately did not issue on the distance ratio of claim 3, despite the fact that it very well could have. Instead, the patent attorneys selected a number of other claims, relating to multiple lamps and shields in front of the lamps—features that appear no more impressive than that distance ratio of claim 3, but possibly of more use to actual studio arrangements. (The only reason I chose to describe claim 3 is that it was right after claim 2.)

After the examiner completed her examination, the attorneys revised claim 2 to include the features of those other claims, which is the ordinary procedure. You can compare claim 2 of the issued patent to the version of claim 2 presented above, and see the additional features that were added.

Obviously, it is impossible to tell exactly what the engineers, the patent attorneys, and the examiner were thinking. Maybe the attorneys intentionally included all of those numerical ranges to prompt an easy allowance. Maybe the examiner allowed claim 3 not because of the legal reasons, but rather because of other motivations to allow the patent, such as agency-wide policies that favor allowing patents.

Based on my experience, though, my account seems the most likely. Examiners are far from the rubber stamps they are sometimes caricatured to be. Even the examiner of the Studio Arrangement patent found precisely the right reference to cite. But examiners work within a regime of law that constrains them to allow patents that we would not expect or desire. That systemic constraint needs to be corrected, if we are to stop the tide of obvious patents being issued.

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