

**UNITED STATES DISTRICT COURT
DISTRICT OF MASSACHUSETTS**

SOUNDTUBE ENTERTAINMENT, INC.,)	
)	
Plaintiff,)	
)	
v.)	Civil Action No. 01-11456-PBS
)	
BROWN INNOVATIONS, INC.,)	
)	
Defendant.)	
)	

MEMORANDUM AND ORDER

November 27, 2002

Saris, U.S.D.J.

INTRODUCTION

SoundTube Entertainment, Inc. moves for summary judgment that its loudspeakers do not infringe U.S. Patent No. 5,532,438 (the "'438 patent"), which claims spherical dome loudspeakers. The patent has been assigned to defendant Brown Innovations, Inc., which cross-moves for summary judgment of infringement under the doctrine of equivalents. After hearing, SoundTube's motion is **ALLOWED**, and Brown Innovations' motion is **DENIED**.

STANDARD OF REVIEW

"Summary judgment is appropriate when 'the pleadings, depositions, answers to interrogatories, and admissions on file, together with the affidavits, if any, show that there is no

genuine issue as to any material fact and that the moving party is entitled to judgment as a matter of law.'" Barbour v. Dynamics Research Corp., 63 F.3d 32, 36 (1st Cir. 1995) (quoting Fed. R. Civ. P. 56(c)). "To succeed [in a motion for summary judgment], the moving party must show that there is an absence of evidence to support the nonmoving party's position." Rogers v. Fair, 902 F.2d 140, 143 (1st Cir. 1990); see also Celotex Corp. v. Catrett, 477 U.S. 317, 325 (1986).

"Once the moving party has properly supported its motion for summary judgment, the burden shifts to the non-moving party, who 'may not rest on mere allegations or denials of his pleading, but must set forth specific facts showing there is a genuine issue for trial.'" Barbour, 63 F.3d at 37 (quoting Anderson v. Liberty Lobby, Inc., 477 U.S. 242, 256 (1986)). "There must be 'sufficient evidence favoring the nonmoving party for a jury to return a verdict for that party. If the evidence is merely colorable or is not significantly probative, summary judgment may be granted.'" Rogers, 902 F.2d at 143 (quoting Anderson, 477 U.S. at 249-50) (citations and footnote in Anderson omitted). The Court must "view the facts in the light most favorable to the non-moving party, drawing all reasonable inferences in that party's favor." Barbour, 63 F.3d at 36.

The standards are the same where, as here, both parties have moved for summary judgment. "When facing cross-motions for summary judgment, a court must rule on each motion independently, deciding in each instance whether the moving party has met its burden under Rule 56." Dan Barclay, Inc. v. Stewart & Stevenson Serv., Inc., 761 F. Supp. 194, 197-98 (D. Mass. 1991) (citing 10A Charles Alan Wright, et al., Federal Practice and Procedure § 2720 (2d ed. 1983)).

FACTS

There is no genuine issue as to any of the following facts:

I. Prosecution History of the '438 Patent

A. Original Patent Application

On November 4, 1993, Kevin Brown filed U.S. Patent Application No. 147,026 - entitled "Acoustic Imaging Sound Dome" - at the United States Patent and Trademark Office ("PTO"). Brown's application disclosed "an apparatus for providing pure stereo sound to a listener without the inconvenience of wearing a headphone set, without disturbing people in the vicinity and without completely isolating the listening region from surrounding regions with walls." Brown described the structure of his invention as:

[a]n acoustic imaging sound apparatus includ[ing] an

acoustically reflective dome for reflecting and focusing stereophonic sound waves from stereo speakers directed into the interior of the dome. The stereophonic sound waves are focused by the dome to a listening area to provide a listener with pure stereophonic sound.

According to Brown, his invention was "useful if separate audiences located near each other are listening to more than one sound source such as when evaluating musical recordings for purchase in a music store, or listening to a display at a museum."

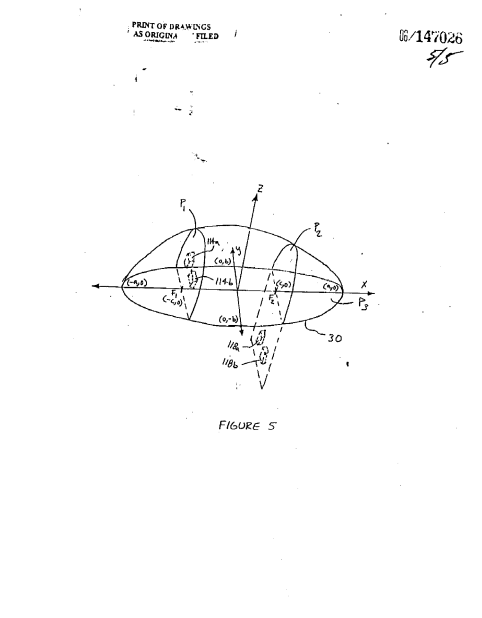
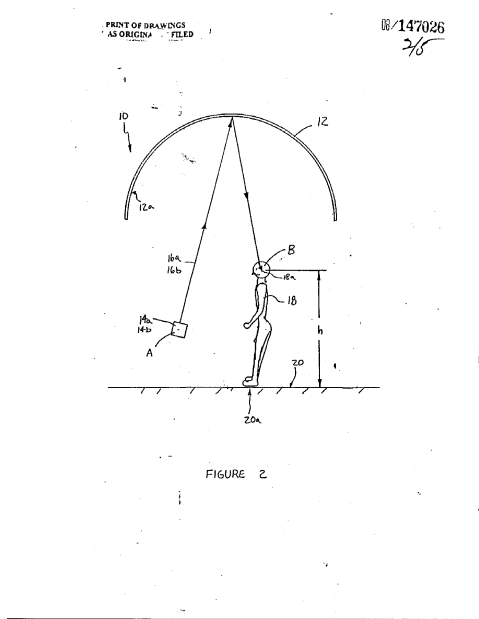
Brown's application had 19 claims. All of the independent claims (1, 7, 10, 11, and 17) included the element of "an acoustically reflective dome." Independent claims 7 and 17 and dependent claims 2 and 12 specified that the "interior surface of the dome is substantially spherical in shape."¹ Dependent claims 6 and 16 specified that "the interior surface of the dome is substantially ellipsoidal in shape."²

¹ A sphere is a globe, in which every point on the surface of the globe is an equal distance from the center of the globe. The radius is the distance from the center to any surface point. The cross sections of a sphere are circles.

Note that the spherical reflectors disclosed in the Brown patent application were not complete spheres; rather, each was a partial sphere, shaped like a part of a dissected complete sphere.

² An ellipsoid is a surface whose plane sections are ellipses. An ellipse is an oval, defined by reference to two focal points ("F₁" and "F₂") within the oval; the sum of the

The application contained five drawings. Figures 1-4 depicted spherical reflector domes, while Figure 5 depicted an ellipsoidal reflector dome. As examples, Figures 2 and 5 are set out below:



B. First Office Action

In an office action dated July 7, 1994, the PTO examiner rejected all of Brown's claims as unpatentable over the prior art. The examiner principally relied on U.S. Patent No. 5,268,539 - entitled "Acoustic Apparatus" - which names Hiroshi

distances to F_1 and F_2 is constant for each point on the oval.

Again, note that the ellipsoidal reflectors in the Brown application were not complete ellipsoids, but rather partial ellipsoids.

Ono as the inventor. The Ono patent application was filed on April 9, 1993, and issued as a patent on December 7, 1993. The Ono patent discloses

an acoustic apparatus with a reflector which is capable of amplifying sounds and focusing them so as to be heard only within a specific area without the user using an earphone, without needing to be worn by the user, and without affecting surrounding people and so on as in the case of a general speaker. . . .

(Col. 1, ll. 45-50.) Ono describes the structure of his invention as an "apparatus . . . arranged such that a sound source is disposed in one focus of a reflector having an ellipsoidal surface of revolution, and sounds are heard at the other focus." (Abstract.) Ono notes that in one embodiment, the reflector has "a central portion of an inner surface thereof constituted by a paraboloid of revolution, and [has] a peripheral portion thereof constituted by part of an ellipsoidal surface of revolution having two foci."³ (Col. 2, ll. 49-53.)

The Ono patent contains eight drawings. Figures 1-4 and 6-8 depict ellipsoidal reflectors, while figure 5 depicts a composite parabolic/ellipsoidal reflector. As examples, Figures 1-3 and 7-

³ A paraboloid is a surface whose plane sections are parabolas. A parabola is a curve, defined by reference to a fixed point and a fixed line; every point on the curve is equidistant from the fixed point and the fixed line.

well-known as evidenced by [inventor Sei] Jinsenji['s patent, U.S. Patent No. 3,908,095, issued on September 23, 1975]." The examiner found the Brown claims containing the microphone element were obvious - within the meaning of 35 U.S.C. § 103 - in light of Ono and Jinsenji.

C. First Amendment

On October 13, 1994, Brown filed an amendment to his claims. In the amendment, Brown cancelled claims 2 and 12, which specified that the interior surface of the reflecting dome was "substantially spherical in shape." Brown also cancelled claims 6 and 16, which specified that the interior surface of the reflecting dome was "substantially ellipsoidal in shape." Brown amended independent claims 1, 10, and 11 to add language specifying that the interior surface of the reflecting dome was "substantially spherical in shape"; the other two original independent claims (7 and 17) already had such language. Brown also added two new independent claims, 22 and 23. Claim 22 specified that "the interior surface of the dome includ[ed] a substantially spherical section having an apex and a radius," while claims 23 specified that "the interior surface of the dome ha[d] a substantially circular cross section." Brown's amendment resulted in every independent claim containing language

specifying that the reflecting dome was "substantially spherical" or "ha[d] a substantially circular cross section"; none of the amended claims specified an ellipsoidal dome.

In the remarks accompanying the amendment, Brown emphasized the substantially spherical nature of his reflecting dome, and contended that this feature distinguished his invention from Ono's:

[The original independent claims] have been amended to specify that the interior surface of the dome is substantially spherical in shape. . . .

The geometry of the substantially spherical dome in the present invention provides an acoustically reflective surface in which sound waves can be focused at a variety of different focal points by varying the location at which the sound waves are produced. . . .

The spherical shape of the dome in the present invention also makes it possible to increase the intensity of the sound waves generated by the sound wave generator. As a result, the size of the speakers in the present invention can be smaller than those used in conjunction with parabolic or elliptical reflectors since parabolic or elliptical reflectors do not increase the intensity of the sound waves.

In contrast, Ono discloses an acoustic apparatus for focusing sound including a reflector 11 having either an ellipsoidal surface or a composite ellipsoidal and parabolic surface. An ellipsoidal surface only has two focal points. This can be seen in [Ono's] FIGs. 1 and 2, where reflector 11 has two focal points A and B. The inclusion of a parabolic surface in reflector 11 merely serves to broaden the area of the two focal points A and B. Sound is produced by sound producing means 13 at focal point A and focused onto focal point B by reflector 11. As a result, stereophonic sound is not possible with Ono since the sound can be focused upon one focal point by reflector

11.

Accordingly, the present invention . . . is not anticipated by Ono since Ono does not disclose an acoustically reflective dome having a substantially spherical interior surface for focusing sound waves whereby the location at which the sound waves are focused can be varied by varying the location at which the sound waves are produced.

Brown also attempted to distinguish Jinsenji on the basis of the shape of Jinsenji's reflector:

Jinsenji discloses a microphone speaker device including a reflector 6 having either a parabolic or elliptical surface. . . . A parabolic reflector does not focus sound. Instead, a parabolic reflector reflects sound waves into a non-focusing beam of sound. Additionally, as discussed above, an elliptical reflector can only focus sound upon one focal point. The parabolic or elliptical reflector of Jinsenji cannot focus sound at more than one focal point at the same time and, therefore, cannot focus sound waves in stereo.

Brown iterated that "neither Ono nor Jinsenji teaches or suggests an acoustically reflective dome having a substantially spherical interior surface."

D. Second Office Action

In an office action dated December 5, 1994, the PTO examiner rejected all of Brown's amended claims. The examiner again decided that the amended claims were unpatentable over the prior art. The examiner found all of the independent claims were anticipated by Ono, and found the claims that included the

microphone element were obvious in light of Ono and Jinsenji.

The examiner also determined that the use of language such as "substantially spherical" or "substantially circular cross section" violated 35 U.S.C. § 112 in at least two ways: (1) the language did "not have support from the originally filed specification" or was "inaccurate in view of" the drawings, and (2) the language was "indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as his invention." The examiner stated:

With regard to [the independent claims], the language such as "substantially spherical in shape" (claims 1, 7, 10, 11, 17, 22) or "substantially [circular cross section]" (claim 23) is inaccurate and therefore, can not be ascertained. Further, when a word of degree such as "substantially" is used as a limitation, it is necessary to determine whether the specification provides some standard for measuring the degree. See Seattle Box Company, Inc. v. Industrial Crafting & packing, Inc., 731 F.2d 818, 221 USPQ 568 (Fed. Cir. 1984). In this case, the specification does not enable one skill [sic] in the art to reasonably establish what may be construed as being within the metes and bounds of the word of degree. Therefore, one of ordinary skill in the art would not be apprised as to the claimed invention's scope when the claims are read in light of the specification. See Ex parte Oetiker, 23 USPQ2d 1641.

E. Second Amendment

On March 9, 1995, Brown filed a second amendment to his claims. Brown deleted the term "substantially" - as in

"substantially spherical" - from each of the independent claims. Brown amended each of the independent claims to specify that the reflecting dome had "a constant radius."

In the remarks accompanying his second amendment, Brown noted that all of the independent claims "have been amended as suggested by the Examiner to overcome the rejections under 35 U.S.C. § 112 by deleting the term 'substantially.'" Brown highlighted the "constant radius" element in the amended claims:

A circle can be defined by the following equation:

$$X^2 + Y^2 = r^2$$

where:

the radius r is constant,

X = the X-coordinate of the circle, and

Y = the Y-coordinate of the circle.

As can be seen in the above equation, a circle has a constant radius. Accordingly, since a sphere is a circle rotated about an axis to form a three-dimensional figure, it follows that the spherical dome in the present invention has a constant radius. Additional support for the spherical dome having a constant radius is provided by Webster's New Twentieth Century Dictionary of the English Language, Second Edition, 1980, which defines a sphere as "any round body or figure having the surface equally distant from the center at all points."

Claims 1, 7, 10, 11, 17, and 22 have been amended to specify that the interior surface of the dome is spherical in shape with a constant radius. In addition, Claim 23 has been amended to specify that the interior surface of the dome has a constant radius.

Brown argued that the constant radius in his invention

distinguished it from Ono's:

In contrast, Ono discloses an acoustic apparatus for focusing sound including a reflector 11 having a surface that is elliptical in cross section, or alternatively, a surface with a cross-section that is an elliptical and parabolic composite. . . .

[A]n ellipse does not have a constant radius. As a result, the reflector 11 of Ono as can be seen in Figures 1 and 2, does not have a constant radius since the reflector 11 has an elliptical section. The lack of a constant radius in Ono causes the elliptical reflector 11 to have a totally different curvature than the spherical dome of the present invention. Accordingly, the elliptical reflector of Ono is structurally different than the spherical dome of the present invention.

Brown also attempted to use the constant radius feature to distinguish Jinsenji's invention:

Jinsenji discloses a microphone speaker device including a reflector 6 having either a parabolic or elliptical surface. . . .

[A] parabola does not have a constant radius. Therefore, it follows that a parabolic reflector in Jinsenji does not have a constant radius. By lacking a constant radius, a parabolic reflector has a totally different curvature than the spherical dome of the present invention which makes them structurally different. . . . Additionally, as discussed above, an elliptical reflector also does not have a constant radius.

Brown iterated that "neither Ono nor Jinsenji teaches or suggests an acoustically reflective dome having a spherical interior surface with a constant radius."

F. Issuance of Patent

The examiner allowed all of Brown's claims as amended. On July 2, 1996, Brown's application issued as the '438 patent. At some point Brown assigned the '438 patent to Brown Innovations, of which he is the founder and president.

II. SoundTube's Dome Speakers

SoundTube sells several models of dome speakers, which compete with dome speakers offered by Brown Innovations. According to SoundTube, each of SoundTube's dome speakers uses a "coaxial dual-parabolic sounds lens speaker system" patented by David Wiener, the founder and president of SoundTube. SoundTube describes this system as "us[ing] two parabolic reflectors, an upper and lower portion connected by a ledge, to reflect soundwaves to a column." SoundTube emphasizes that its reflectors do not have a constant radius. For example, SoundTube maintains that the reflecting surface in the upper portion of the 30" reflector dome deviates from the best fit sphere by approximately .16 inches, and the reflecting surface in the lower portion varies by over .11 inches.

Brown Innovations concedes that the SoundTube reflectors do not have a constant radius, but otherwise disputes SoundTube's characterization of SoundTube's reflectors. Brown Innovations contests SoundTube's contention that its reflectors are

parabolic, arguing that the SoundTube reflectors' shape is defined by a non-parabolic equation. Indeed, Brown Innovations argues that, to one schooled in the art, the SoundTube reflectors are "precision spherical reflectors." Brown Innovations argues that the "slight deviations between the SoundTube devices and an exactly spherical reflector with a constant radius" fall within "allowable tolerances for spheres."

LEGAL ANALYSIS

I. Overview of Infringement Analysis

Liability for patent infringement can arise through (1) literal infringement of every element of a claim in a patent, or (2) infringement under the doctrine of equivalents. See, e.g., DeMarini Sports, Inc. v. Worth, Inc., 239 F.3d 1314, 1322 (Fed. Cir. 2001). The doctrine of equivalents expands the scope of a patent beyond its literal terms to embrace all equivalents to the claims described. See Festo Corp. v. Shoketsu Kinzoku Kogyo Kabushiki Co., Ltd., ___ U.S. ___, 122 S.Ct. 1831, 1837 (2002). But "[e]ach element contained in a patent claim is deemed material to defining the scope of the patented invention, and thus the doctrine of equivalents must be applied to individual elements of the claim, not to the invention as a whole." Warner-Jenkinson Co., Inc. v. Hilton Davis Chem. Co., 520 U.S. 17, 29

(1997).

Conceding that SoundTube does not literally infringe the '438 patent because SoundTube's reflectors are not spherical reflectors "with a constant radius," Brown Innovations argues that SoundTube infringes under the doctrine of equivalents. SoundTube responds that Kevin Brown's amendment of his claims during the prosecution of the '438 patent estops Brown Innovations from invoking the doctrine of equivalents as to the '438 claim element requiring a spherical reflector with a constant radius. Because all of the independent claims in the '438 patent contain this element, if SoundTube prevails on prosecution history estoppel, SoundTube is entitled to summary judgment of non-infringement.

II. Prosecution History Estoppel

Under the rule of prosecution history estoppel, the patentee may not invoke the doctrine of equivalents where "the patentee originally claimed the subject matter alleged to infringe but then narrowed the claim in response to a rejection." Festo, 122 S.Ct. at 1838. The narrowing may arise from a formal amendment, but need not; where the patentee argues to the PTO that a claim should be construed narrowly, and this argument is made to secure patentability, the argument is considered tantamount to a

narrowing amendment for estoppel purposes. See, e.g., Cybor Corp. v. FAS Techs., Inc., 138 F.3d 1448, 1460 (Fed. Cir. 1998) (“The estoppel may arise from matter surrendered as a result of amendments to overcome patentability rejections or as a result of argument to secure allowance of a claim.”) (citations omitted). “Whether or not prosecution history estoppel precludes a particular action for infringement by equivalents is a question of law.” CAE Screenplates Inc. v. Heinrich Fiedler GmbH & Co. KG, 224 F.3d 1308, 1319 (Fed. Cir. 2000).

Under the Supreme Court’s recent Festo decision, the applicability of prosecution history estoppel to Brown Innovations turns on a two-part analysis. First, the Court must investigate whether Brown Innovations filed “a narrowing

narrow his claims through amendment may be presumed to be a general disclaimer of the territory between the original claim and the amended claim." Id. The patentee must overcome the presumption that "the patentee surrendered all subject matter between the broader and narrower language." Id.

A. Narrowing Amendment

Brown Innovations does not dispute - nor could it - that Kevin Brown filed a narrowing amendment to satisfy patentability requirements. In the first and second office actions, the PTO examiner rejected all of Brown's claims. In the first office action the grounds for rejection were anticipation under 35 U.S.C. § 102 and obviousness under 35 U.S.C. § 103; in the second office action the grounds for rejection were anticipation, obviousness, and non-compliance with 35 U.S.C. § 112. In response to both office actions Brown filed narrowing amendments.

For the present inquiry, the more significant amendment was the second, in which Brown narrowed his claimed speaker reflector from a "substantially spherical" dome to a "spherical" dome, specifying (redundantly) that each spherical reflecting dome had "a constant radius." In the remarks accompanying the second amendment, Brown stated that the claims "have been amended as suggested by the Examiner to overcome the rejections under 35

U.S.C. § 112 by deleting the term 'substantially.'" Moreover, Brown attempted to distinguish the prior art references by arguing that "neither Ono nor Jinsenji teaches or suggests an acoustically reflective dome having a spherical interior surface with a constant radius." Thus, Brown's own words demonstrate that the second amendment was made for reasons of patentability, i.e., to overcome the examiner's rejection based on 35 U.S.C. §§ 102, 103, and 112.

B. Surrender

The heartland issue is whether Brown's second amendment to his patent application surrendered the alleged equivalent, the SoundTube reflectors. As noted above, there is a presumption that in amending his claims to delete "substantially" and add "with a constant radius," Brown surrendered any rights to the SoundTube reflectors. See Festo, 122 S.Ct at 1842 ("[T]he patentee should bear the burden of showing that the amendment d[id] not surrender the particular equivalent in question."). Brown Innovations can overcome this presumption by showing that SoundTube's system was "unforeseeable at the time of the application," or that "the rationale underlying the amendment . . . bear[s] no more than a tangential relation to the equivalent in question," or "some other reason suggesting that the patentee

could not reasonably be expected to have described the insubstantial substitute in question." Id. at 1842.

Brown Innovations' principal argument is Brown could not have foreseen the SoundTube system during the prosecution of the patent and thus "one skilled in the art could not reasonably have been expected to draft claim limitations to literally encompass the SoundTube devices." This argument is predicated on Brown Innovations' contention that the SoundTube devices are "acoustically spherical," with slight deviations that fall "within allowable tolerance for spheres." Brown Innovations argues that to one skilled in the art there is no functional distinction between SoundTube's reflectors and perfectly spherical reflectors. In short, Brown Innovations argues that Brown could not have foreseen someone building a functionally-spherical reflector system using close-to-spherical geometry.

This argument is flawed. The prosecution history belies Brown Innovations' claim that SoundTube-type reflectors were unforeseeable and Brown could not have drafted his claims to capture such a system. See id. at 1839 ("Prosecution history may rebut the inference that a thing not described was indescribable."). Brown not only foresaw that reflectors could be structured in a "substantially spherical" way, he originally

claimed such reflectors. Brown elected to redefine his invention with mathematical precision as a sphere with a constant radius, to overcome close prior art - notably the Ono patent - and to address certain section 112 considerations. Brown Innovations has failed to show how SoundTube's reflectors do not fall within the territory Brown ceded during prosecution. "Where the original application once embraced the purported equivalent but the patentee narrowed his claims to obtain the patent or to protect its validity, the patentee cannot assert that he lacked the words to describe the subject matter in question." Id., 122 S.Ct. at 1838.

Brown Innovations also argues that the amendments at issue "are only tangentially related to the infringing aspects of the SoundTube devices." This argument is meritless. In the remarks accompanying his second amendment, Brown trumpeted the benefits of a constant radius, and argued that this feature distinguished his invention from the prior art and satisfied section 112 concerns. Brown Innovations cannot now dismiss the SoundTube reflectors' lack of a constant radius as a mere tangential characteristic; to do so would "avoid the PTO's gatekeeping role and [allow Brown Innovations] to recapture in an infringement action the very subject matter surrendered as a condition of

receiving the patent.” Id., 122 S.Ct. at 1839.

Brown Innovations also contends that SoundTube’s system “performs the same function in the same way to produce the same result as claimed in the ’438 patent.” But this conflates doctrine of equivalents analysis with prosecution history estoppel analysis. The Court can reach the doctrine of equivalents only if prosecution history estoppel does not apply.

Brown Innovations suggests the Court should not hold Brown Innovations estopped based on the amendments filed in response to the PTO examiner’s rejections because, had Brown known this would have been the result, “Brown might very well have appealed the subject rejections of the patent examiner.” But as the Supreme Court stated in Festo:

A rejection indicates that the patent examiner does not believe the original claim could be patented. While the patentee has the right to appeal, his decision to forgo an appeal and submit an amended claim is taken as a concession that the invention as patented does not reach as far as the original claim.

Id. at 1838 (citation omitted). Cf. Warner-Jenkinson, 520 U.S. at 33 n.7 (“We do not suggest that, where a change is made to overcome an objection based on the prior art, a court is free to review the correctness of that objection when deciding whether to apply prosecution history estoppel. . . . [S]uch concerns are

properly addressed on direct appeal from denial of a patent.”)
(citation omitted).

The Court concludes that SoundTube’s system falls within the subject matter Brown surrendered when he amended his claims to delete “substantially” and add “with a constant radius.”

ORDER

Plaintiff’s Motion for Summary Judgment of Non-Infringement (Docket No. 16) is **ALLOWED**, and Defendant’s Cross Motion for Summary Judgment of Infringement (Docket No. 24) is **DENIED**.

PATTI B. SARIS
United States District Judge