

UATP IP, LLC (Petitioner)
v.
SLICK SLIDE LLC (Patent Owner)

Petitioner's Demonstratives

Case No. PGR2024-00054
U.S. Patent Nos. 11,998,854
Before Hon. Mitchell G. Weatherly, Kristina M. Kalan, Brian D. Range
Administrative Patent Judges

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The '854 Patent

The '854 Patent

'854 Patent

(12) **United States Patent**
Schmit

(54) **LOW-FRICTION RECREATIONAL SLIDE SYSTEM**

(71) Applicant: **Slick Slide LLC**, Phoenix, AZ (US)

(72) Inventor: **Gary Schmit**, Phoenix, AZ (US)

(73) Assignee: **Slick Slide LLC**, Phoenix, AZ (US)

(*) Notice: Subject to any disclaimer, the term of this patent is extended or adjusted under 35 U.S.C. 154(b) by 0 days.

(21) Appl. No.: **18/349,347**

(22) Filed: **Jul. 10, 2023**

(10) Patent No.: **US 11,998,854 B1**

(45) Date of Patent: **Jun. 4, 2024**

USPC 472/88
See application file for complete search history.

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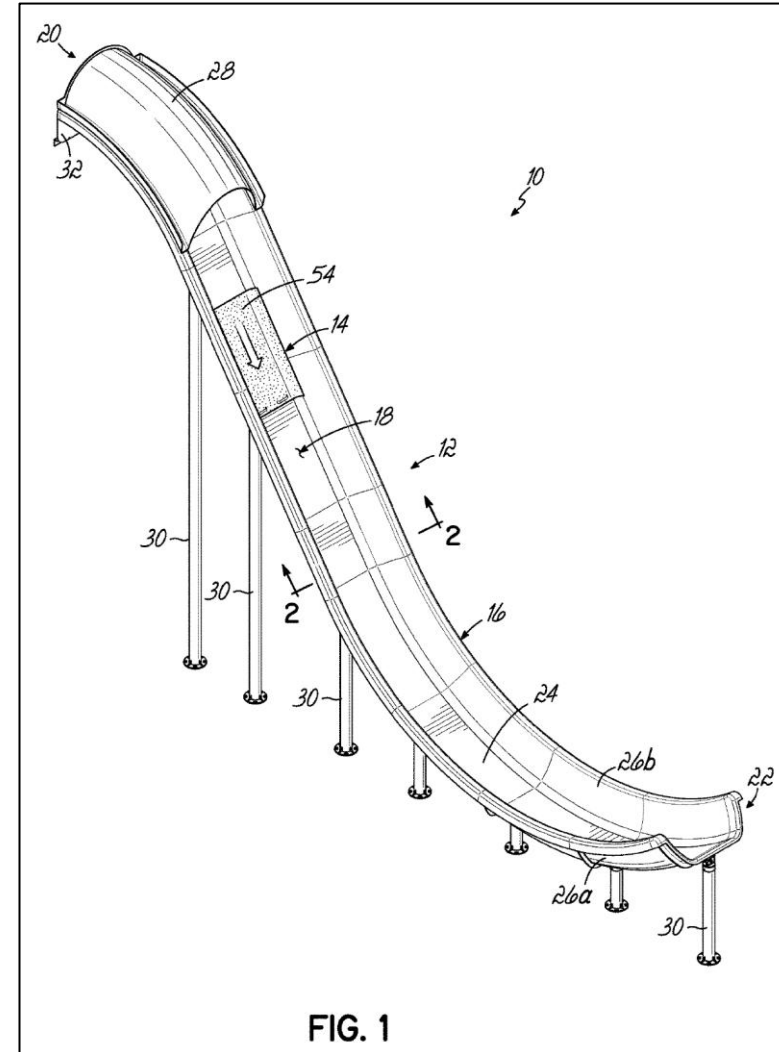
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1. A recreational slide system, comprising:
a slide including a slide body with a non-wet lubricated slide surface that extends between a top entrance of the slide and a bottom exit of the slide; and
a ride vehicle configured to support a rider down the slide,
the ride vehicle including a top surface configured to contact the rider and a mesh layer that forms a bottom surface configured to contact the slide surface;
wherein a coefficient of friction between the mesh layer of the ride vehicle and the non-wet lubricated slide surface is within a range of between about 0.03 to about 0.2.



The '854 Patent – Technology Background

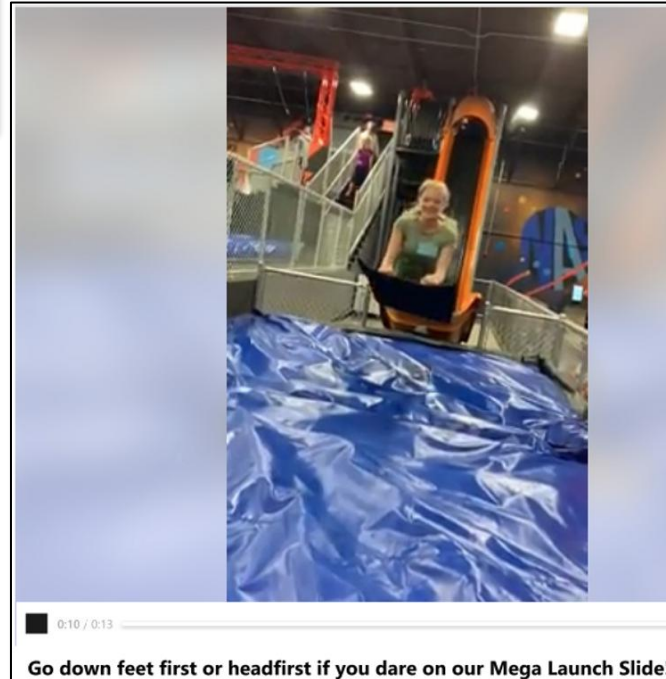
'854 Patent – Claim 1

1. A recreational slide system, comprising:
a slide including a slide body with a non-wet lubricated slide surface that extends between a top entrance of the slide and a bottom exit of the slide; and
a ride vehicle configured to support a rider down the slide, the ride vehicle including a top surface configured to contact the rider and a mesh layer that forms a bottom surface configured to contact the slide surface;
wherein a coefficient of friction between the mesh layer of the ride vehicle and the non-wet lubricated slide surface is within a range of between about 0.03 to about 0.2.

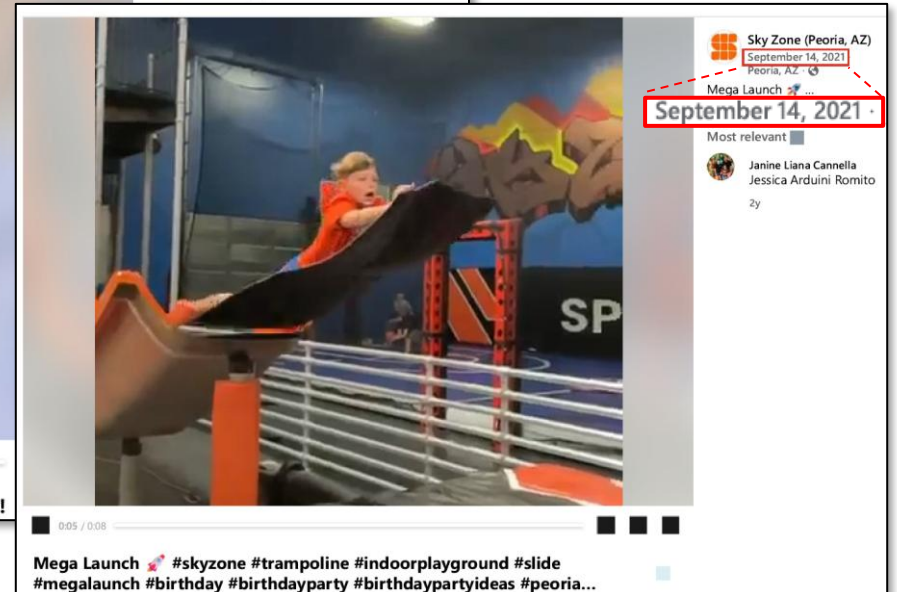
Issue 1: Claim construction – “Mesh layer” does not exclude woven material permeable through interstitial openings.

Issue 2: A POSITA was motivated to implement Phillips’ nylon as a “mesh layer,” with a reasonable expectation of success.

Issue 3: Secondary considerations are deficient.



UATP-1059, 1063, 1067; Reply, 25



The '854 Patent – Technology Background

Dr. Wang

42. The coefficient of friction can be altered by changing the materials of the two objects rubbing against one another, or by adding another material, like a lubricant which “can reduce the effects of friction” or adding an intervening

Comparing the speeds achieved for a rider on a slide with a low coefficient of friction (e.g., 0.1) between slide and rider to a slide with a high coefficient of friction (e.g., 0.6) between slide and rider, “[c]learly the slippery slide is faster.” UATP-1020, 8.

46. Materials like Teflon and nylon were well-known to be slippery and “low friction” materials. UATP-1011, 5 (describing Fluorocarbons (e.g., PTFE) and polyamides as having a characteristic of “low coefficient of friction”). The coefficients of friction between these and other common materials are known and published. Sliding (kinetic) coefficients of friction are important in a variety of fields, and have been documented and published as a result. See UATP-1026, 8-9

43. The materials of the slide, or coatings applied to the slide, were well-known to impact the speed of descent, and were selected to lower the coefficient of friction between the slide and the rider or ride vehicle. For example, it was well-known by the Critical Date to use low-friction materials in slide surfaces and ride vehicle bottoms to form a slide that would be slippery to provide a fast ride.

UATP-1004, Abstract (describing a sliding recreational device formed from “low friction sheeting material”); UATP-1005, Abstract (describing a dry recreational slide including “a low-friction sliding surface” formed from a “flexible substrate coated with a low-friction material”); UATP-1022, 3:10-16 (describing a wax coating to “provide a very slippery interface between” a sled and slide). Similarly,

UATP-1003 , ¶42, 43, 46; Pet., 3-5

Issue 1A

Claim Construction – “a mesh layer that forms a bottom surface configured to contact the slide surface” (Element [1b-iii])

Claim Construction – “mesh layer” (Element [1b-iii])

Patent Owner

These portions of the specification and claim language demonstrate to a POSITA that “mesh layer” means a layer of mesh material which is characterized by open spaces between threads. EX2031, ¶8; EX2030, ¶8. The passages in the

POR, 12

Dr. Rust

Would a .1 percent open area preclude the material from being a mesh layer?

MR. SCHATZ: Objection to form. Objection. Outside the scope.

THE WITNESS: All right. So to be a mesh layer means that the material is characterized by openings, and that means that there is a technical specification that -- that indicates the size of the opening or the percent of open area.

So when you talk about smaller and smaller sizes and larger and larger sizes, what distinguishes it from being a mesh or being sheeting is whether it's characterized by those open spaces.

The burlap example that you brought up earlier is a prime example. That example lists clearly how it's characterized. It's characterized by fabric weight as 10 ounces. Okay? It's not characterized by the openings or the size of the openings; and, therefore, it's not a mesh.

UATP-1045, 55:10-56:3; Reply, 3-4

Claim Construction – “mesh layer” (Element [1b-iii])

EX2012

Burlap fabric is a coarse, slightly sheer, and durable fabric. Sourced from thick, fibrous, sustainable, and hypoallergenic, 100% jute fibers, Burlap is woven in a loose plain, 1-over-1 style weave. This means the fabric causes less skin reactions than synthetically made fabrics, it is moisture-resistant, breathable, and it is slightly see-through where the woven yarns meet. Measuring 60/61 inches wide, Burlap fabric is 0.95 millimeters thick, has a 325 GSM, and weighs approximately 18 ounces per linear yard.

Patent Owner

Grounds. In addition to the fact that burlap is irrelevant, Dr. Rust correctly testified that a POSITA would characterize, or refer to, burlap by its fabric weight. EX1045, 55:7-56:8. Neither Petitioner nor Petitioner’s expert offers any evidence to the contrary, and they offer no evidence that burlap is characterized by its open spaces.

Sur-Reply, 5

Dr. Rust

EX2012; Reply, 4

THE WITNESS: Slightly -- slightly see-through
I would say refers to the fact that there are holes in the structure.
BY MR. DEUTSCH:
Q. And by that do you mean that there are holes or open areas that are large enough to see through visibly?
MR. SCHATZ: Objection to form. Objection. Outside the scope.
THE WITNESS: That's how it's described here.

Claim Construction – “mesh layer” (Element [1b-iii])

EX2018 (ASTM F1918)

3.1.14 *fabric, mesh, n*—a woven fabric with a permeable network made from interlacing threads or mono filament fibers.

EX2018, 2; Reply, 4

Dr. Wang

54:19-56:12; 56:17-24. Patent Owner’s interpretation is inconsistent with the ’854 Patent and ordinary usage to the extent that Patent Owner excludes woven materials that have open passages (e.g., such that the material is permeable). Patent Owner’s interpretation does not allow for consistent determination of whether a material is a mesh layer or not.

UATP-1044, ¶19; Reply, 4

EX2018, 2. This definition comports with common usage of the term. Patent Owner’s interpretation, however, is much narrower and excludes materials that are plainly encompassed by this well-understood and conventional understanding reflected by the ASTM definition. Indeed, the ASTM definition does not expressly

UATP-1044, ¶23; Reply, 4

’854 Patent

the ride vehicle in a widthwise direction. In one aspect, the mesh layer may include a plurality of interstitial openings that define an open area of the mesh layer. The open area of

UATP-1001, 2:49-50 ¶24; Reply, 6

Dr. Wang

24. Ultimately, based on my review of the ’854 patent and evidence of record, and my knowledge and experience, the claimed “mesh layer” encompasses woven material that is permeable through interstices (e.g., regardless of whether adjacent threads, such as parallel warp threads, are in physical contact).

UATP-1044, ¶24; Reply, 4

Claim Construction – “mesh layer” (Element [1b-iii])

Patent Owner: “all experts in this case agree that a POSITA understands this lower limit”

Dr. Wang

POR, 13. But in doing so, Slick Slide never provided an indication of how that determination would be made. Slick Slide’s assertion that a POSITA “understands” the difference does not provide a workable determination of what is a mesh layer and what is not. Instead, it highlights the ambiguity in its definition where even woven materials that are permeable due to passages between threads would be excluded from Slick Slide’s interpretation. Slick Slide remains silent as to criteria for making this distinction, in an attempt to narrow the claims and exclude woven, permeable materials that have relatively small openings but that would have been understood as a mesh layer according to the ’854 patent and industry usage reflected in ASTM definitions (EX2018, 2), for example.

UATP-1044, 22-23; Reply, 3-4

Dr. Rust

POR, 13

Would a .1 percent open area preclude the material from being a mesh layer?

MR. SCHATZ: Objection to form. Objection. Outside the scope.

THE WITNESS: All right. So to be a mesh layer means that the material is characterized by openings, and that means that there is a technical specification that -- that indicates the size of the opening or the percent of open area.

So when you talk about smaller and smaller sizes and larger and larger sizes, what distinguishes it from being a mesh or being sheeting is whether it's characterized by those open spaces.

UATP-1045, 55:10-22; Reply, 3-4

Claim Construction – “mesh layer” (Element [1b-iii])

Dr. Wang

20. Slick Slide’s interpretation of “mesh layer” improperly excludes embodiments that are expressly described by the ’854 patent. Notably, the ’854 patent describes an embodiment where the mesh layer has little or no open spaces. The specification explains that “the mesh material 46 is a woven mesh that comprises a weave of threads” and “includes a number of warp threads 70 which extend generally perpendicular to a number of weft threads 72.” EX1001, 10:17-50. The “density of the warp threads 70 is approximately 22 threads per centimeter” and the “diameter of each warp thread 70 may be within a range of between about 0.1 mm to about 0.6 mm.” EX1001, 10:61-11:14. At a density of 22 threads per centimeter, a maximum diameter of each thread is approximately 0.45mm. This dimension is squarely within the range of warp thread diameters expressly disclosed by the ’854 Patent. In such an embodiment, warp threads are arranged side-by-side. Such a construction includes interstices (e.g., open spaces) between threads, and is a mesh layer consistent with the ’854 specification, but yet is improperly excluded by Patent Owner’s application that implicitly demands open separation between parallel threads.

UATP-1044, ¶120; Reply, 5-6

’854 Patent

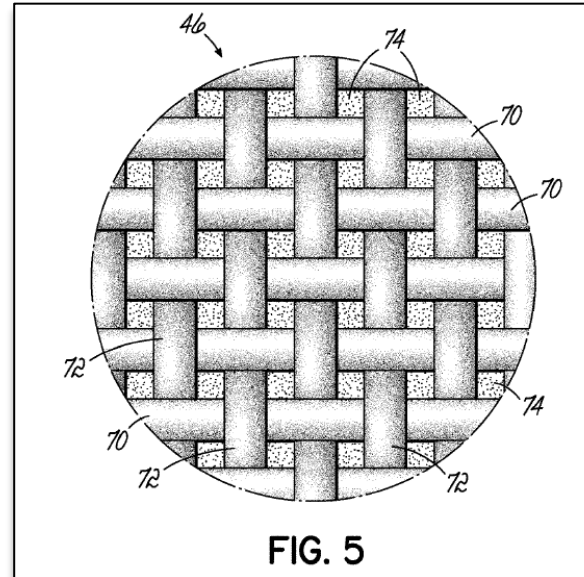
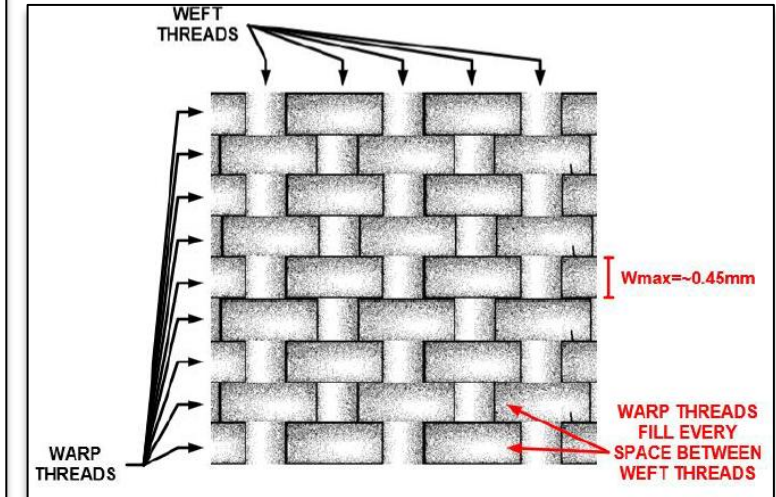


FIG. 5
UATP-1001, FIG. 5; Reply, 5-6

’854 Patent – FIG. 5 (modified)



UATP-1044, ¶120; Reply, 5-6

the ride vehicle in a widthwise direction. In one aspect, the mesh layer may include a plurality of interstitial openings that define an open area of the mesh layer. The open area of the mesh layer may be within a range of between about 35% to about 50%.

UATP-1044, ¶121; UATP-1001, 2:37-53; Reply, 5-6

Claim Construction – “mesh layer” (Element [1b-iii])

Rebuttal to: *And, while Petitioner argues otherwise, going so far as to accuse Patent Owner of a “false assertion,” Petitioner’s expert did in fact testify that a POSITA understands when a fabric is characterized by open spaces. EX2029, 85:1-25.”*
Sur-Reply at 8

Dr. Wang (EX2029, 85:1-25):

Q Dr. Wang, do you have sufficient experience with fabrics to understand what a mesh layer is?

A I believe so.

Q Do you -- do you have sufficient experience to understand when a fabric is characterized by open spaces?

A Yes, I do.

Q So do you have -- do you contend that you have sufficient experience to understand the difference between a tightly-woven fabric that is not characterized by open spaces versus a mesh that is characterized by open spaces?

MR. ROZYLOWICZ: Objection. Scope.

A I understand -- I understand the range of just how tight the yarns are packed. So from something really, really jammed to something open.

Q You understand the difference between the two?

A I understand the full range of the fabrics.

Q And you understand the difference between the two?

A Yeah. I understand the -- yeah, fact of openness on the structures and certain properties.

Issue 1B

Claim Construction – “coefficient of friction”
(Element [1c])

Claim Construction - “coefficient of friction” (Element [1c])

'854 Patent

The coefficient of friction between surfaces of the mesh material **46** and the slide surface **18** may be determined using the American Society for Testing and Materials International (ASTM) Coefficient of Friction ASTM D1894 standard test method (July, 2023), which may be used to determine both kinetic (moving) and static (starting) coefficient of friction of one surface being dragged across another. The ASTM D1894 test method can be found at

UATP-1001, 11:31-38; Reply, 7

'854 Patent

As will be understood by a person skilled in the art, the coefficient of friction between the ride vehicle and the slide surface is the ratio of the frictional force between two surfaces to the normal force pressing the surfaces together. That is, Coefficient of Friction (μ)=Force of Friction (F)/Normal Force (N). The coefficient of friction between the surfaces of the mesh material and the slide surface may be described in terms of both the static and kinetic coefficients of friction.

UATP-1001, 4:38-46; Reply, 7

Issue 2A

A POSITA would have been motivated to implement
Phillips' nylon as a mesh in accordance with
WN0400
(Ground 1B)

The Phillips-WN0400 Combination

Phillips

The present invention is directed to an exercise apparatus and recreational system composed of a plurality of interconnecting parts which include a slide having a low friction, durable top layer upon which a user can traverse in both a wet or dry condition. The sliding aspects of this invention may be

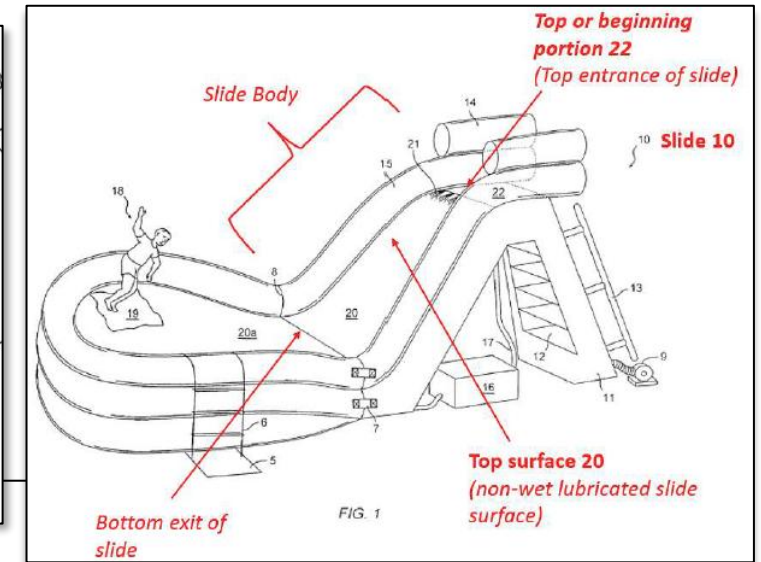
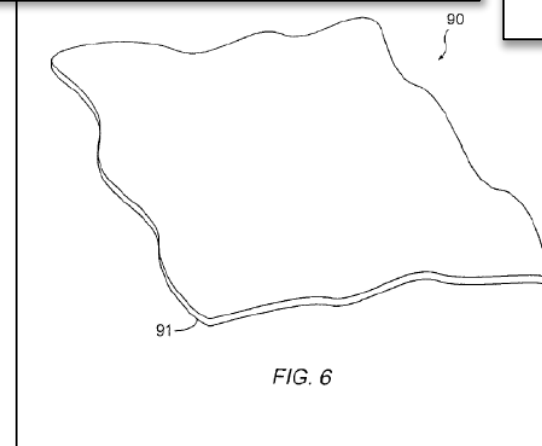
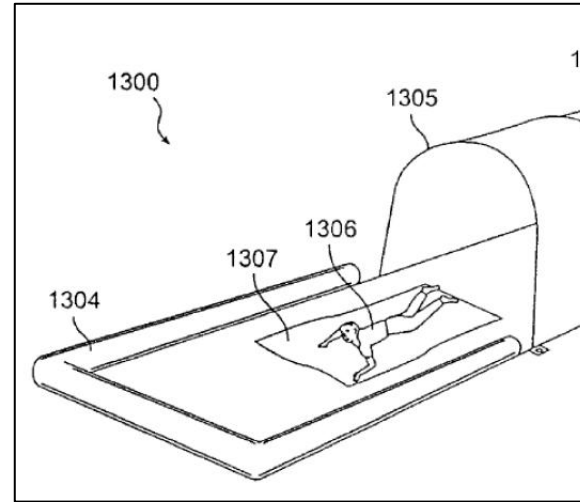
UATP-1004, 1:13-17; Pet., 18

additional encumbrances. The invention can also be considered a recreational device whereby a user can slide upon a surface which can be inclined while being supported by a low friction, durable membrane either attached to a sports board or as stand-alone sheeting material. The sliding surface of the

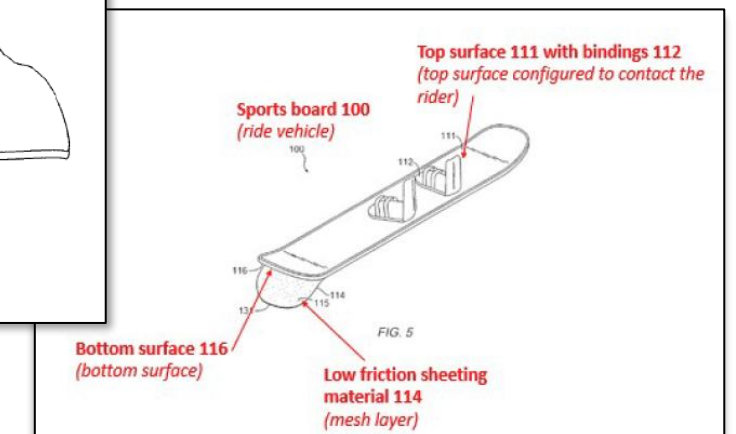
UATP-1004, 1:21-25; Pet., 18

employing slide 10 as a recreational device. In this instance, user 18 is supported by membrane 19 in the form of low friction durable sheeting material as more clearly depicted in FIG. 6 and discussed hereinafter with regard to that figure. Both membrane 6 and top surface 20 can each be composed of low friction high durable material such as a member selected from the group consisting of nylon, Teflon, sailcloth, Dacron, vinyl, artificial turf, synthetic carpet and polyester resins.

UATP-1004, 4:38-49; Pet., 18



Pet., 20; UATP-1003, ¶¶84, 95; UATP-1004, FIG. 1, 13



Pet., 22; UATP-1003, ¶¶90; UATP-1004, FIG. 5, 6 17

The Phillips-WN0400 Combination

WN0400



**WN0400 - 400
Micron Nylon
Mesh 45% Open
Area**

SKU: WN0400

CONTACT US FOR CUSTOM SIZES OR
MINIMUM ORDER REQUIREMENTS

UATP-1006, 1; Pet., 36-37

Product Description

- Monofilament Nylon 6 fiber 42 threads per inch
- 400 micron hole opening with 45% open area
- Excellent resistance to wear
- Good resistance to alkalis
- Softening point of 190° C
- Weighs 3.7 ounces per square yard
- Maximum roll width 72" or custom converted using hot knives

Sold by the lineal foot

Nominal Specifications

UATP-1006, 2; Pet., 40-41

The Phillips-WN0400 Combination Renders Obvious The Challenged Independent Claims

Dr. Wang

with Phillips' suggestions. UATP-1011, 5 (describing nylon as having the characteristics of being durable and low friction); *see* also UATP-1006, 2 ("Excellent resistance to wear"). A POSITA would have found the commercially available mesh material described in WN0400 (or any number of others like it) and would have understood that it was a suitable option for providing a woven textile low-friction bottom for the ride vehicle. Moreover, a POSITA would have been motivated to implement Phillips' "nylon" bottom surface in accordance with WN0400 to facilitate sourcing by utilizing a material commercially available from nylon mesh suppliers. UATP-1006, 1 (including button to inquire about purchase).

UATP-1003, ¶136; Pet., 39-40

Dr. Wang

35. I note that the Patent Owner's Response never specifically disputes that "a POSITA would have been motivated to implement Phillips' "nylon" bottom surface in accordance with WN0400 to facilitate sourcing by utilizing a material commercially available from nylon mesh suppliers," as described in the Petition and my original analysis. Pet., 40. This rationale provides an independent reason why a POSITA would have been motivated to combine Phillips and WN0400 and is never disputed in the Patent Owner's Response.

UATP-1044, ¶35; Reply, 8

The Phillips-WN0400 Combination Renders Obvious The Challenged Independent Claims

Dr. Wang

135. First, a POSITA would have been motivated to implement a nylon mesh bottom of the ride vehicle based on the teachings of Phillips and WN0400 to provide a vehicle with “low friction” between the slide and vehicle. See e.g., UATP-1004, 2:19-24. A POSITA would have recognized such construction as promoting fast sliding that enhances a user’s excitement and enjoyment when using the slide system, furthering Phillips’ express objectives. UATP-1004, Abstract (“sliding exercise apparatus and recreational device for entertainment and incline”), 1:36-37 (“the thrills of a rapid descent down an incline”). Phillips describes “nylon” as a material to implement its “low friction” ride vehicle bottom surface, and a POSITA would have recognized the nylon mesh described by WN0400 as providing a low-friction/slippery surface to implement Phillips teachings. UATP-1004, 1:22-25 (“a user can slide upon a surface which can be

UATP-1003, ¶135; Pet., 39

Phillips

FIG. 1 further illustrates an infant as user 18 clearly employing slide 10 as a recreational device. In this instance, user 18 is supported by membrane 19 in the form of low friction durable sheeting material as more clearly depicted in FIG. 6 and discussed hereinafter with regard to that figure. Both membrane 6 and top surface 20 can each be composed of low friction high durable material such as a member selected from the group consisting of nylon, Teflon, sailcloth, Dacron, vinyl, artificial turf, synthetic carpet and polyester resins. This enables user 18 to traverse top surface 20 in a dry state without need for an optionally induced wet surface through the injection of water through jets 21.

UATP-1004, 4:38-49; Pet., 18; Reply, 8

UATP-1011

Fluorocarbons (PTFE or TFE)	Teflon Fluon Halar Hostaflon TF Neoflon	Chemically inert in almost all environments, excellent electrical properties; low coefficient of friction; may be used to 260°C (500°F); relatively weak and poor cold-flow properties
Polyamides (nylons)	Nylon Baylon Durethan Herex Nomex Ultramid Zytel	Good mechanical strength, abrasion resistance, and toughness; low coefficient of friction; absorbs water and some other liquids

UATP-1011, 5; Pet., 38

The Phillips-WN0400 Combination Renders Obvious The Challenged Independent Claims

Dr. Wang

137. Third, a POSITA would have understood that selecting a “looser” mesh fabric (e.g., a more open weave) has the advantage of sliding with low friction over a surface because of the spacing of the threads. “The differences in frictional forces acting between fabrics woven from filament yarns are dependent on the morphology of the fabrics and the rubbing direction.” UATP-1010, 1.

higher coefficient of friction than the coarsest mesh (15) in all cases). Indeed, mesh fabrics with relatively larger apertures between strands were known to have an advantageously lower coefficient of friction (e.g., compared to more tightly woven fabrics). *Id.* A POSITA would have looked for nylon meshes that have larger apertures to take advantage of the lower frictional coefficients, while still covering the bottom surface of the ride vehicle with durable nylon material. A POSITA

Pet., 40; UATP-1003, ¶137; Pet., 40

UATP-1009

13	0.375	0.349	0.642	0.575	0.250	0.244
14	0.358	0.276	0.618	0.564	0.298	0.283
15	0.292	0.260	0.406	0.397	0.229	0.225

Dr. Wang

known to slide with lower friction over a surface. UATP-1003, ¶137; Pet., 40-41. A POSITA knew both that mesh coarseness impacted coefficient of friction and that coarse mesh constructions often promoted lower coefficient of friction as compared with fine mesh. UATP-1009, 4, Table 2. Kothari (UATP-1009), which I cited in my first declaration, corroborates the POSITA’s knowledge on this point. Kothari

meshes having a higher coefficient of friction than the coarsest meshes”). Indeed, Kothari reports data indicating that the coarsest nylon mesh has the lowest coefficient of friction, and the finest nylon mesh has the highest coefficient of friction, according to more than one measure (i.e., Fabric-to-Fabric, Fabric-to-Leather, Fabric-to-Metal). UATP-1009, 4, Table 2 (Fabric No. 15 exhibits lower

UATP-1044, ¶137; Reply, 9

Group IV

13	Fine mesh nylon monofilament bolting fabric
14	Medium mesh nylon monofilament bolting fabric
15	Coarse mesh nylon monofilament bolting fabric

Among the nylon monofilament fabrics, the fabric 13 having highest ends and picks densities shows maximum (F/N) value, because the mesh size reduces with the increase in warp and weft densities and offers more surface resistance to the flow of fabric. Thus, the frictional value increases as the mesh size reduces. The reduced specific surface area of the fabric made of higher linear density yarns will also lower the friction values in case of fabric 15.

UATP-1009, 3-4; Reply, 9

The Phillips-WN0400 Combination Renders Obvious The Challenged Independent Claims

Dr. Wang

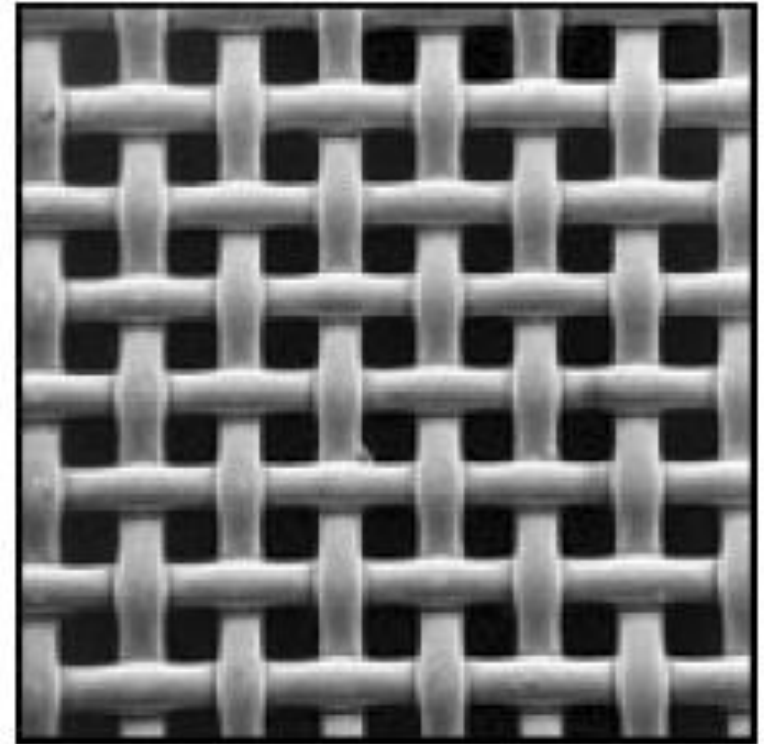
138. Fourth, a POSITA would have understood that a monofilament mesh fabric may also provide an advantage in sliding over surfaces. Textured fabrics have “high surface hairiness and loops” that can interact with surfaces that the fabric slides over, increasing the frictional coefficient of such fabrics over a variety of surfaces. UATP-1009, 4. In contrast, “[m]onofilament yarns are a single continuous filament which produces a relatively smooth surface” and “the straight-through pores of monofilament fabrics offer minimal flow restriction and surface loading of particles.” UATP-1007, 1. **A POSITA would have been motivated to use the WN0400 which is formed from monofilament threads to achieve these advantages** of a smoother thread surface leading to a lower frictional coefficient between the fabric and surfaces that the fabric slides over, as well as minimal flow restriction. UATP-1007, 1.

UATP-1003, ¶138; Pet., 41-42

UATP-1007

The construction of plastic cloth is determined by the yarn type, yarn size and thread count. **Monofilament yarns are a single continuous filament which produces a relatively smooth surface.** In plain weave constructions the straight-through pores of monofilament fabrics offer minimal flow restriction and surface loading of particles.

UATP-1007, 1; Pet., 41



UATP-1007, 1; Pet., 41

The Phillips-WN0400 Combination Renders Obvious The Challenged Independent Claims

Dr. Wang

38. I understand that Dr. Spiegelberg asserted that the “lowest density mesh has the highest coefficient of friction, which is the opposite of Dr. Wang’s interpretation of this Exhibit.” EX2026, ¶198. This is a mischaracterization of my opinion and of Kothari. Such an assertion is premised on a mistaken use of “fabric weight” as a measure of “mesh density,” instead of “sett.” The ’854 patent defines “density” as a measure of threads per centimeter, a parameter likewise identified in UATP-1009 and referred to as “sett.” UATP-1046, 81:23-82:6, 88:19-24. This sett parameter, consistent with the ’854 patent’s usage of “density,” corroborates the trend a POSITA would have recognized and expected of mesh constructions—lower density, higher coarseness meshes tend to have lower coefficients of friction on a variety of surface types.

UATP-1044, ¶138; Reply, 9-10

UATP-1009

Sett (threads/cm)		Linear density (tex)		Yarn crimp (%)		Fabric weight (g/m ²)
Warp	Weft	Warp	Weft	Warp	Weft	

UATP-1009, 3; Reply, 9

Dr. Spiegelberg’s Deposition testimony

Q. Dr. Spiegelberg, would you agree that the density, as defined in this portion -- these two sentences, the '854 patent, measured in threads per centimeter is the same as the measurement as the sett parameter in Exhibit 1009?

A. Yes.

UATP-1046, 88:19-24; Reply, 10

'854 Patent

widthwise direction. In the embodiment shown, the density of the warp threads 70 is approximately 22 threads per centimeter of mesh material 46. The density of the weft threads 72 is approximately 13 threads per centimeter of mesh material 46.

UATP-1001, 11:10-14 23

The Phillips-WN0400 Combination Renders Obvious The Challenged Independent Claims

Patent Owner: “a POSITA would not be motivated to consider a mesh . . . because the lowest CoF for any mesh relied upon by Petitioner’s expert is 0.26.”

Dr. Wang

For example, Phillips explains that the surface of a slide can be any one of a list of materials including “Teflon” and “nylon,” and that the ride vehicle bottom can include one or more of these same materials. UATP-1004, 4:38-49. The Petition explains that nylon-Teflon interactions (as well as Teflon-Teflon, nylon-nylon, etc.) have very low coefficients of friction, as low as 0.04. UATP-1021, 1; UATP-1026, 5, 7; UATP-1027, 4. Instead of considering Petitioner’s extensive record concerning

UATP-1044, ¶41; Reply, 10-11

“Dacron,” for example. UATP-1004, 4:43-46. A POSITA would have understood that these materials provide low kinetic friction when sliding against a wide variety of materials, and would have further understood that nylon would provide a suitable low-friction and highly durable bottom surface for a ride vehicle, and that Teflon would provide a suitable material for forming the sliding surface of the slide as it is well-known to low friction coefficients when interacting with most materials. UATP-1021, 1; UATP-1027, 4-5; UATP-1011, 5. While Phillips is

UATP-1003, ¶196; Pet., 37-39

Dr. Rust

POR, 54

Q. Dr. Rust, I believe you provided testimony that Teflon was known to be a low-friction material; is that correct?

A. That is correct.

Q. And nylon was also known to a POSITA as being low friction, albeit not as low as Teflon; is that correct?

A. Yes.

UATP-1046, 76:14-21; Reply, 8, 15

UATP-1026

Nylon	Nylon	Clean and Dry	0.15 - 0.25	
Polytetrafluoroethylene (PTFE) (Teflon)	Polytetrafluoroethylene (PTFE)	Clean and Dry	0.04	0.04

UATP-1027

UATP-1026, 5, 7; Reply, 11

Nylon 6/6	Nylon 6/6	TW	0.06	0.07	16
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UATP-1027, 4; Reply, 11

UATP-1021

Teflon on nylon	0.05	0.04
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UATP-1021, 1; Reply, 11

The Phillips-WN0400 Combination Renders Obvious The Challenged Independent Claims

Patent Owner: “Petitioner’s own expert admits that a POSITA would not consider WN0400 with Phillips, as doing so would yield a significantly higher CoF and therefore markedly worse sliding performance.”

POR, 2

Dr. Wang

therefore markedly worse sliding performance” (POR, 2). As I discussed in my previous analysis, first deposition, and herein, this statement in the Patent Owner Response is incorrect because the coefficient of friction performance would not be “markedly worse” and would have been expected by a POSITA to be much better, and because even if the coefficient of friction was not the lowest possible, there were still many benefits that would have motivated a POSITA to utilize a nylon mesh like WN0400 (e.g., as set forth in the Petition and my original analysis).

UATP-1044, ¶139; Reply, 10

Dr. Rust

Q. Assuming that the coefficient of friction is different between two low-friction, high-durability materials on Phillips's list, would a POSITA understand from Phillips that it could be justified to pick the higher coefficient of friction material?

A. Considering other parameters such as durability, yes.

UATP-1045, 67:21-68:4; Reply, 10

The Phillips-WN0400 Combination Renders Obvious The Challenged Independent Claims

Dr. Wang

139. Fifth, a POSITA would have understood that there are a variety of available options for suitable nylon meshes that could be used as a bottom surface of a ride vehicle, and would have sought out a commercially available nylon mesh that had large apertures between threads. A POSITA would have found, for example, a variety of nylon meshes available from commercial suppliers (e.g., Industrial Netting) and would have been prompted to utilize a nylon mesh having characteristics described by WN0400 – 400 Micron Nylon Mesh 45% Open Area mesh as a suitable option. UATP-1006, 1-3; UATP-1033, 1-5 (showing multiple nylon mesh products available). A POSITA would have recognized WN0400 as a suitable durable, low friction option for forming the bottom surface of Phillips ride vehicle (i.e., sports board or membrane) based on Phillips' description of appropriate materials and characteristics. UATP-1004, 4:43-46, 5:12-16, 7:9-27,

“And contrary to the Board’s suggestion, [Petitioner] never had to show that replacing [Reference A’s] secondary cache with [Reference B’s] secondary cache was an ‘improvement’ in a categorical sense.”

Intel Corporation v. PACT XPP Schweiz AG, 61 F.4th 1373, 1381 (Fed. Cir. March 13, 2023).

The Phillips-WN0400 Combination Renders Obvious The Challenged Independent Claims

Patent Owner: “Phillips uniformly and repeatedly teaches a ‘sheeting material,’ which is the opposite of a mesh layer.”

Dr. Wang

44. Second, Slick Slide’s purported distinction is contrary to Phillips. Nothing in Phillips excludes a mesh implementation from its express teaching of a “nylon” bottom for the ride vehicle, which a POSITA would have been motivated to implement based on the teachings of Phillips and WN0400. *Id.* Phillips provides a list of example materials for the bottom surface having very different characteristics (e.g., sailcloth, artificial turf, synthetic carpet, etc.), and its recitation of “nylon” is not limited to a particular format/material construction. Simply put, Phillips’ example list of materials are not limited in a way that excludes woven, permeable material. Patent Owner fails to provide any reason that Phillips’ nylon must be a sheeting (to the exclusion of a mesh) while other materials in Phillips list are plainly not sheeting according to Patent Owner’s definition of sheeting. Nylon, artificial turf, and synthetic carpet are each part of the same list of materials that Phillips describes as “sheeting” and “low friction high durable material.” UATP-1004, 4:38-49.

UATP-1044, ¶44; Reply, 11

Phillips

POR, 42

Both membrane 6 and top surface 20 can each be composed of low friction high durable material such as a member selected from the group consisting of nylon, Teflon, sailcloth, Dacron, vinyl, artificial turf, synthetic carpet and polyester resins. This enables user 18 to traverse top surface 20 in a dry state without need for an optionally induced wet surface through the injection of water through jets 21.

Dr. Rust

UATP-1004, 4:38-49; Reply, 11

Would you consider a small section of artificial turf of the type that Phillips describes being appended to clothing as being an example of sheeting?

A. I would not.

UATP-1045, 74:19-23

Q. And is synthetic carpet an example of sheeting?

A. No.

UATP-1045, 75:11-13

The Phillips-WN0400 Combination Renders Obvious The Challenged Independent Claims

Dr. Wang

43. First, Patent Owner's proposed distinction is contrary to a POSITA's ordinary understanding of both "sheeting" and "mesh." This is demonstrated by

Patent Owner's own extrinsic dictionary definitions. Patent Owner presented definitions of "sheeting" that refer to "material in the form of sheets," "plain-woven cloth," and "bedsheets," and Dr. Rust further confirmed that bedsheets, for example, have a woven, permeable construction. EX2005; EX2007; UTAP-1045, 43:19-45:16. Not only does such material construction not exclude "mesh," but it in fact aligns squarely with the ASTM standard defining "fabric, mesh" as "a *woven* fabric with a permeable network made from interlacing threads or mono filament fibers." EX2018, 2. Based on my knowledge and experience, a POSITA simply would not understand Phillips' use of the term "sheeting" as prohibiting a "mesh" layer, especially in view of the ASTM definition of mesh that recites "woven" and "permeable" material that aligns with "sheeting," including "bedsheets."

UATP-1044, ¶144; Reply, 11

Dr. Rust

Q. Sure. I can rephrase that.

Are bedsheets typically constructed to be permeable to water vapor?

A. They are.

UATP-1045, 44:19-22; Reply, 38

Q. So in some cases, the weave is such that voids are large enough for water vapor to pass through between the warp and weft threads, correct?

MR. SCHATZ: Objection. Beyond the scope.

THE WITNESS: That may be true.

UATP-1045, 46:6-10; Reply, 38

The Phillips-WN0400 Combination Renders Obvious The Challenged Independent Claims

UATP-1029



Pet., 2; 1029, 1, 8

Dr. Wang

threads such that the material was “see through.” UATP-1045, 40:4-41:23. Nylon mesh has a similar weave construction with open spaces between threads and was widely available at the time leading up to the ’854 patent. Based on my knowledge and experience and my review of Phillips and WN0400, a POSITA would have readily utilized this known construction using a nylon in accordance with Phillips, effectuating Phillips’ “low friction high durable” ride vehicle bottom.

UATP-1044, ¶45; Reply, 12

EX2012

Burlap fabric is a coarse, slightly sheer, and durable fabric. Sourced from thick, fibrous, sustainable, and hypoallergenic, 100% jute fibers, Burlap is woven in a loose plain, 1-over-1 style weave. This means the fabric causes less skin reactions than synthetically made fabrics, it is moisture-resistant, breathable, and it is slightly see-through where the woven yarns meet. Measuring 60/61 inches wide, Burlap fabric is 0.95 millimeters thick, has a 325 GSM, and weighs approximately 18 ounces per linear yard.

EX2012; Reply, 4

Dr. Rust

THE WITNESS: Slightly -- slightly see-through
I would say refers to the fact that there are holes in the structure.

BY MR. DEUTSCH:

Q. And by that do you mean that there are holes or open areas that are large enough to see through visibly?

MR. SCHATZ: Objection to form. Objection.
Outside the scope.

UATP-1045, 41:14-23; Reply, 12

The Phillips-WN0400 Combination Renders Obvious The Challenged Independent Claims

Mr. Schmit

matter of the '854 patent. In fact, one of Slick Slide's recreational slide systems, which includes Slick Slide's flagship Launch slide, is precisely one of the embodiments of the recreational slide system illustrated in the patent figures.

EX2033, ¶42; POR, 92

demonstrates that this success derives from the patented features. Since the introduction of Slick Slide's first installations, core inventive components of its recreational slide systems have remained the same: a non-wet lubricated slide surface working in combination with a ride vehicle incorporating a woven mesh bottom surface.

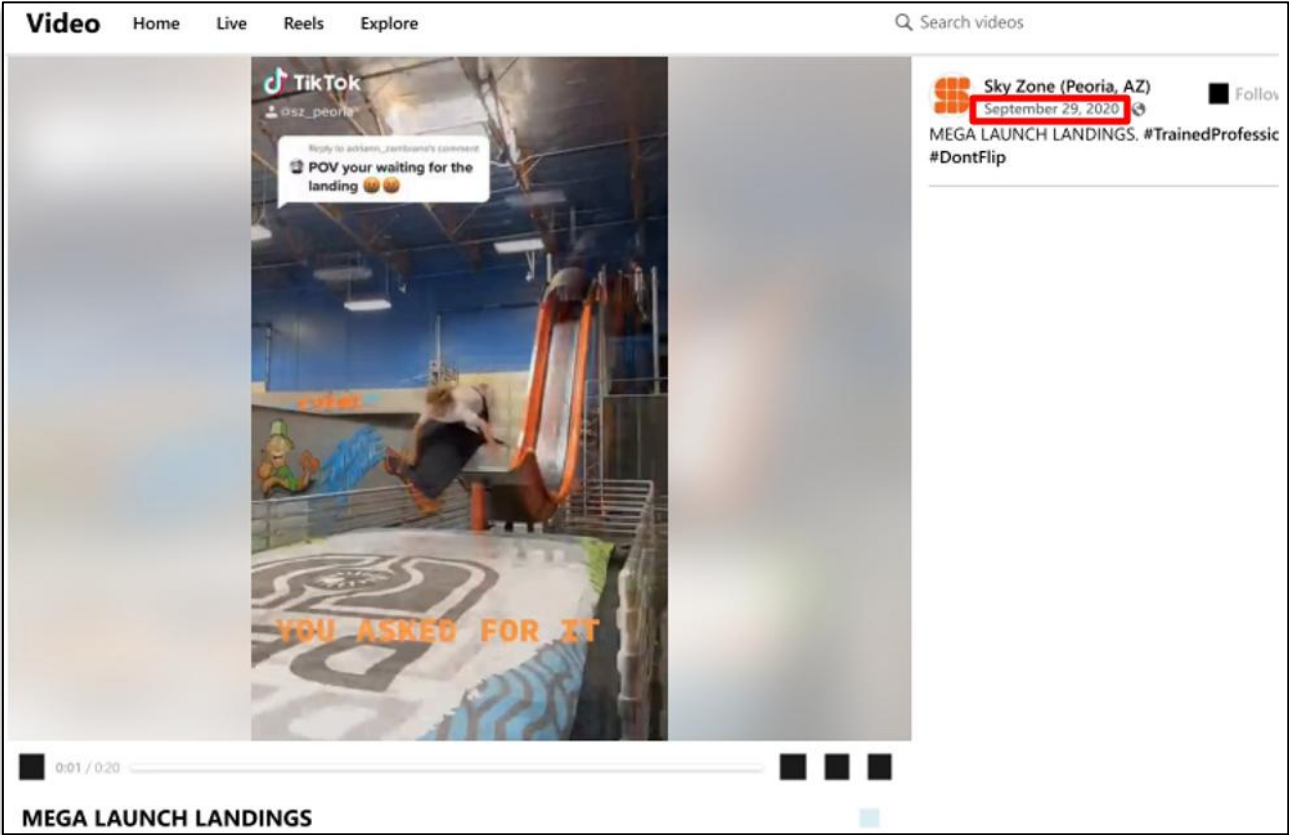
EX2033, ¶43; Reply, 26

Do you recall who Slick Slide first delivered its Launch Slide to?

A. Yes. Sky Zone LLC or CircusTrix LLC, I guess by technical terms, is the first one that purchased a slide from us.

UATP-1047, ¶28:9-13; Reply, 25

UATP-1065



UATP-1065, 1; Reply, 25

The Phillips-WN0400 Combination Renders Obvious The Challenged Independent Claims

EX2005

sheeting noun

sheet·ing ('shē-tīŋ)

Synonyms of sheeting >

1

: material in the form of sheets or suitable for forming into sheets: such as

a

: a sturdy plain-woven cloth usually of cotton used especially for bedsheets

b

: material (such as a plastic) in the form of a continuous film

2

: a lining (such as wood or steel) used to support an embankment or the walls of an excavation

EX2005, 1

EX2007

sheeting 1. Usually made with carded yarns in a wide range of constructions that vary from about 40 × 38 to about 64 × 68 for industrial sheeting. Can be made in higher counts and/or combed yarns for domestic uses such as bed sheets. See MUSLIN BED SHEETING, PERCALE BED SHEETING. It is made in medium and heavy weights in the following classifications: coarse, ordinary, lightweight, narrow, soft-filled,

EX2007, 1

Dr. Rust

Are bedsheets typically constructed to be permeable to water vapor?

A. They are.

Q. So in some cases, the weave is such that voids are large enough for water vapor to pass through between the warp and weft threads, correct?

MR. SCHATZ: Objection. Beyond the scope.

THE WITNESS: That may be true.

UATP-1045, 44:20-22, 46:6-10

ASTM F1918

3.1.14 *fabric, mesh, n*—a woven fabric with a permeable network made from interlacing threads or mono filament fibers.

EX2018, 2

Phillips Does Not Teach Away From A Mesh Layer

Patent Owner: “Phillips consistently teaches ‘sheeting material,’ not mesh, and expressly distinguishes it from ‘nylon netting.’”

Dr. Wang

49. I note that Patent Owner’s assertion that sheeting and mesh are mutually exclusive is not remedied by its statement that Phillips “expressly distinguishes” sheeting material from “nylon netting.” POR, 53. Phillips does not distinguish the “nylon” of the bottom surface of the ride vehicle from “nylon netting” or any other kind of mesh. Phillips explains that the membrane of the ride vehicle in Phillips can

be composed of “nylon” in some embodiments but does not expressly preclude any structural morphologies such as mesh. UATP-1004, 4:38-49.

50. In another context, Phillips explains that two slide elements can be connected by “nylon netting.” UATP-1004, 9:37-55. But Phillips never suggests that the membrane cannot include netting or another kind of mesh when the membrane is composed of nylon. UATP-1004, 4:38-49; *Infra*, §V.A. Because Phillips does not exclude its ride vehicle from having a mesh layer on the bottom surface and indeed discloses contemplates using a mesh layer, a POSITA would have been motivated to implement Phillips’ ride vehicle with the nylon mesh of WN0400.

UATP-1044, ¶49-50; Reply, 12

Phillips

POR, 52

FIG. 1 further illustrates an infant as user 18 clearly employing slide 10 as a recreational device. In this instance, user 18 is supported by membrane 19 in the form of low friction durable sheeting material as more clearly depicted in FIG. 6 and discussed hereinafter with regard to that figure. Both membrane 6 and top surface 20 can each be composed of low friction high durable material such as a member selected from the group consisting of nylon, Teflon, sailcloth, Dacron, vinyl, artificial turf, synthetic carpet and polyester resins. This enables user 18 to traverse top surface 20 in a dry state without need for an optionally induced wet surface through the injection of water through jets 21.

UATP-1004, 4:38-49

same purpose. In addition, various sliding elements 1606 can be added end-to-end or side-to-side to slide element 1602 in order to create slides of additional length and/or width. Attachment can be by any well-recognized means such as through the use of Velcro hook and loop connectors, snaps, zippers, ropes, springs, nylon netting and similar expedients.

UATP-1004, 9:37-55

The Phillips-WN0400 Combination Renders Obvious The Challenged Independent Claims

Patent Owner: “the durability of any mesh layer is significantly worse than sheeting, primary because sheeting incorporates more fibers.”

Dr. Wang

52. Nylon is well known to be a material for woven sailcloth, and nylon woven sailcloth is known for durability. For example, one high end sailcloth is described as being “[w]oven from high tenacity nylon” and is described as being “[i]mpregnated and coated for...durability.” UATP-1054, 3. Woven sailcloth is a mesh, as I described above. *Supra*, §VI.A.2. A POSITA would have been motivated to implement Phillips’ ride vehicle bottom with a nylon mesh layer, because doing so would provide a low friction high durability material.

53. To be clear, even if a POSITA could have theoretically implemented a more durable Nylon (which Slick Slide never identifies), doing so does not undermine the motivations for use of a Nylon mesh set forth in the Petition—namely to promote a low coefficient of friction and promote sourcing using a readily available known material. Here again, Slick Slide’s position is premised on an artificial distinction between sheeting and mesh (*supra*, §VI.A.2) and an unsupported and incorrect assumption that “any mesh layer” has significantly worse durability than sheeting. As described above, meshes are often sold in “sheets” and are correctly characterized as sheeting (e.g., consistent with Phillips’ characterization of woven sailcloth as a sheeting). Slick Slide ignores that durability

UATP-1044, ¶51-53; Reply, 12-13

WN0400

POR, 55

Product Description	Nominal Specifications
• Monofilament Nylon 6 fiber 42 threads per inch • 400 micron hole opening with 45% open area • Excellent resistance to wear • Good resistance to alkalis • Softening point of 190° C • Weighs 3.7 ounces per square yard • Maximum roll width 72" or custom converted using hot knives	
Sold by the lineal foot	

Phillips

UATP-1006, 2; Pet., 40

FIG. 1 further illustrates an infant as user 18 clearly employing slide 10 as a recreational device. In this instance, user 18 is supported by membrane 19 in the form of low friction durable sheeting material as more clearly depicted in FIG. 6 and discussed hereinafter with regard to that figure. Both membrane 6 and top surface 20 can each be composed of low friction high durable material such as a member selected from the group consisting of nylon, Teflon, sailcloth, Dacron, vinyl, artificial turf, synthetic carpet and polyester resins. This enables user 18 to traverse top surface 20 in a dry state without need for an optionally induced wet surface through the injection of water through jets 21.

UATP-1004, 4:38-49; Pet., 18

Attaching A Mesh To The Ride Vehicle Was Routine For a POSITA

Patent Owner: “a POSITA would know from Phillips that adhesive would need to be utilized to adhere WN0400 to the bottom of the ride vehicle.”

Phillips

gravity-induced sliding thereon. The top surface is further characterized as having a low friction, durable sheeting layer which enables a user to traverse thereon whether the top surface is wet or dry and an additional low friction, durable sheeting layer appended to and supported by the bottom of the sports board such that each low friction, durable sheeting layer is designed to engagingly contact one another as a user is supported by the sports board for sliding on the top surface.

UATP-1004, 3:16-23;

board. However, in this instance, removable wheels 2003 can be appended to the bottom surface of the skateboard in a traditional fashion. When done, there is no need for use of a

UATP-1004, 10:18-20

FIG. 5 depicts a sports board such as that shown as board 82 of FIG. 4. In this instance, board 100 having bindings 112 is of the shape of a snowboard having a rigid top surface 111, bindings 112 and bottom surface 116. As noted previously, durable low friction sheeting material 114 can be applied to bottom surface 116 by applying adhesive 115 to sheeting material 114 and adhering it to board 111. As an alternative to

UATP-1004, 10:18-20

Dr. Wang

POR, 56

providing adhesive attachment as an example. UATP-1004, 3:19-22, 10:18-20. A POSITA would have understood from Phillips that there are many ways to append a mesh layer such as the nylon mesh of WN0400 to a ride vehicle so that the mesh layer represents the bottom layer of the ride vehicle. For example, one way was to wrap a ride vehicle with the nylon mesh and make a seam on the top of the ride vehicle to connect ends of the mesh, resulting in a seamless bottom surface of the mesh material. Another method of adhering the nylon mesh was attaching ends of the nylon mesh to sides of the ride vehicle where there is no contact with the slide surface. These are just examples, and a POSITA would have considered these and other methods in addition to applying an adhesive to the bottom of the ride vehicle. Slick Slide's assertions fail for this independent reason as a POSITA would have appended the mesh to the ride vehicle using any of a number of known techniques, consistent with Phillips teachings. *Id.*

Dr. Rust

UATP-1044, ¶54; Reply, 13-14

Q. Was the phenomenon of wicking known to a POSITA prior to the '854 patent?

A. Yes.

UATP-1045, 73:17-19; Reply, 13-14

Attaching A Mesh To The Ride Vehicle Was Routine For a POSITA

Dr. Wang

in the mesh and “becomes the friction bearing surface, rather than the mesh.” *Id.* A POSITA would have recognized, however, the extent to which adhesive would wick through open pores depends on several factors, including the thickness of the adhesive, the viscosity of the adhesive, the size of the pores, etc. A POSITA would surface. For example, a POSITA would have selected adhesive characteristics, volume, and application technique so that the adhesive penetrates less than halfway through the pores, meaning that the mesh layer remains the friction bearing surface.

58. To be clear, a POSITA would have readily considered any number of conventional techniques for adhering a mesh without adhesive wicking through the open spaces, such as by utilizing a pressure-sensitive adhesive (which a POSITA would have recognized was not vulnerable to the issue of “wicking” that the POR alleges), partially curing the adhesive to limit viscosity, and/or utilizing a thin layer of adhesive (e.g., less than a thickness of the mesh layer). UATP-1045-69:20-70:14;

UATP-1044, ¶56-58; Reply, 13-14

Patent Owner: “a POSITA would know from Phillips that adhesive would need to be utilized to adhere WN0400 to the bottom of the ride vehicle.”

Dr. Rust

POR, 56

In your opinion, what factors impact the amount of wicking that occurs in this example?

A. Proximity of the individual structures, threads, or the gold parts. The material, the adhesive material, the material of the threads, the amount of material. Yeah.

Q. When you say “the amount of material,” are you referring to the amount of the adhesive material?

A. Yes.

Q. Would the viscosity of the adhesive impact wicking?

A. Yes.

Q. Would the viscosity of some adhesives change as the adhesive cures?

A. Yes.

UATP-1045, 71:12-72:1; Reply, 14

Issue 2B

Phillips-WN0400 *Renders Obvious Element [1c]*
(Ground 1B)

The Phillips-WN0400 Combination Provides Element [1c]

'854 Patent

1. A recreational slide system, comprising:
a slide including a slide body with a non-wet lubricated slide surface that extends between a top entrance of the slide and a bottom exit of the slide; and
a ride vehicle configured to support a rider down the slide, the ride vehicle including a top surface configured to contact the rider and a mesh layer that forms a bottom surface configured to contact the slide surface;
wherein a coefficient of friction between the mesh layer of the ride vehicle and the non-wet lubricated slide surface is within a range of between about 0.03 to about 0.2.

UATP-1001, 12:13-23, Pet., vii

between a rider or the ride vehicle and the slide surface. A dry slide, as a result of not having a flow of lubricant down the slide surface, typically cannot generate the same slide speed as a same-sized water slide. The coefficient of friction between a rider (or ride vehicle) and the slide surface of a typical dry slide is often within a range of between 0.15 to 0.3, and is typically about 0.25. Furthermore, dry slides are

UATP-1001, 1:43-56, Reply, 14

Dr. Wang

61. The '854 patent itself acknowledges that the “coefficient of friction between a rider (or ride vehicle) and the slide surface of a typical dry slide is often within a range of between 0.15 to 0.3.” UATP-1001, 1:43-56; UATP-1047, 25:5-9. That is, the claimed range includes “typical” dry slides that didn’t include a lubricant in the slide surface. A POSITA would have readily implemented the slide surface using Teflon and nylon and been motivated to do so based on Phillips teachings, to achieve a coefficient of friction that was “low friction.” UATP-1004, 4:38:49; UATP-1045, 76:14-21. This is especially the case in view of the coefficient of friction values of “typical” slides that lacked Teflon or other lubricant.

UATP-1044, ¶61; Reply, 14-15

UATP-1026

Nylon	Nylon	Clean and Dry	0.15 - 0.25	
Polytetrafluoroethylene (PTFE) (Teflon)	Polytetrafluoroethylene (PTFE)	Clean and Dry	0.04	0.04

UATP-1026, 5, 7; Reply, 11

UATP-1021

Teflon on nylon	0.05	0.04
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UATP-1021, 1; Reply, 11

UATP-1027

Nylon 6/6	Nylon 6/6	TW	0.06	0.07	16
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UATP-1027, 4; Reply, 11

The Phillips-WN0400 Combination Provides Element [1c]

Dr. Wang

115. Even if not anticipated by Phillips (which it is), a POSITA would have found it obvious from Phillips' teachings to select materials for the slide surface coating and ride vehicle from Phillips' list to achieve low friction below 0.2. I note here again that Phillips expressly advocates for "low friction," which would have prompted a POSITA to reduced coefficient of friction in order to promote a fast and exhilarating sliding experience. *Supra* §VI.B.2. As described above, "the primary objective of any slide construction is to provide speed on a downward incline." UATP-1022, 1:28-29; *see also* UATP-1018, 2 (stating "Faster equals more fun"). As the '854 patent itself acknowledges in the Background section, a POSITA knew that even "typical" slides had a coefficient of friction of 0.15 (UATP-1001, 1:48-51), and a POSITA would have been motivated based on Phillips' teachings to achieve low friction when implementing a slide system according to Phillips' teachings.

Pet., 30-31; UATP-1003, ¶115

Dr. Wang

60. As an initial matter, I note that the Patent Owner's Response does not address the analysis in the Petition and my first declaration that "a POSITA would have been prompted to select Teflon and nylon materials that achieve low friction between slide surface and vehicle (e.g., below the 0.15 coefficient of friction value that was "typical" of dry slides)," to promote a fast and exhilarating sliding experience. Pet., 30-31. This obviousness rationale provides an independent basis why the combination includes Element [1c].

UATP-1044, ¶60; Reply, 14

The Phillips-WN0400 Combination Renders Claim 1 Obvious

Dr. Wang

For example, Phillips explains that the surface of a slide can be any one of a list of materials including “Teflon” and “nylon,” and that the ride vehicle bottom can include one or more of these same materials. UATP-1004, 4:38-49. The Petition explains that nylon-Teflon interactions (as well as Teflon-Teflon, nylon-nylon, etc.) have very low coefficients of friction, as low as 0.04. UATP-1021, 1; UATP-1026, 5, 7; UATP-1027, 4. Instead of considering Petitioner’s extensive record concerning

UATP-1044, ¶41; Reply, 10-11

“Dacron,” for example. UATP-1004, 4:43-46. A POSITA would have understood that these materials provide low kinetic friction when sliding against a wide variety of materials, and would have further understood that nylon would provide a suitable low-friction and highly durable bottom surface for a ride vehicle, and that Teflon would provide a suitable material for forming the sliding surface of the slide as it is well-known to low friction coefficients when interacting with most materials. UATP-1021, 1; UATP-1027, 4-5; UATP-1011, 5. While Phillips is

UATP-1003, ¶196; Pet., 37-39

Dr. Rust

Q. Dr. Rust, I believe you provided testimony that Teflon was known to be a low-friction material; is that correct?

A. That is correct.

Q. And nylon was also known to a POSITA as being low friction, albeit not as low as Teflon; is that correct?

A. Yes.

UATP-1046, 76:14-21; Reply, 8, 15

UATP-1026

Nylon	Nylon	Clean and Dry	0.15 - 0.25	
Polytetrafluoroethylene (PTFE) (Teflon)	Polytetrafluoroethylene (PTFE)	Clean and Dry	0.04	0.04

UATP-1026, 5, 7; Reply, 11

UATP-1021

Teflon on nylon	0.05	0.04
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UATP-1021, 1; Reply, 11

UATP-1027

Nylon 6/6	Nylon 6/6	TW	0.06	0.07	16
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UATP-1027, 4; Reply, 11

The Phillips-WN0400 Combination Provides Element [1c]

Patent Owner: “according to Petitioner and Petitioner’s expert, the lowest CoF that could be achieved by the combination is 0.26”

POR, 3

Dr. Wang

64. The Patent Owner’s Response at page 3 incorrectly states that, according to “Petitioner’s expert, the lowest CoF that could be achieved by the combination is 0.26.” POR, 3. This statement is both incorrect and mischaracterizes my testimony. This sentence is not followed by any citation. Importantly, the combination would plainly result in a coefficient of friction of less than 0.2 **in view of Phillips’ straightforward teachings about the use of Teflon and nylon materials, well-known to result in low friction below 0.2.** This is especially the case where the POSITA would have implemented the system to have a relatively low friction based on Phillips express teachings. Elsewhere, the Patent Owner’s Response asserts that “the lowest CoF” for any nylon mesh is “0.26,” but **this ignores the actual combination which involves interaction between nylon mesh and a Teflon surface.** Numerous references cited by the Petition and in my first declaration confirm that nylon-Teflon interactions (and Teflon-Teflon, nylon-nylon) are typically lower than 0.2, and often significantly lower (e.g., 0.04), corroborating a POSITA’s motivation to achieve the claimed range, with a reasonable expectation of success. *Supra*, §IV.A.

UATP-1044, ¶164; Reply, 15

The Phillips-WN0400 Combination Provides Element [1c]

Patent Owner: “None of the reported results can be relied upon and would not be relied upon by a POSITA, because they do not comply with the ASTM standards set forth in the ‘854 patent.”

POR, 51

Dr. Wang

65. Slick Slide asserts that the coefficient of friction tables that I cited do not comply with ASTM D1894” and that “[s]uch results would not be relied upon by a POSITA.” POR, 65; EX2026, ¶¶61-69. This is incorrect and inconsistent how a POSITA would understand the ‘854 patent and these coefficient of friction values. For example, UATP-2027 includes tables of coefficient of friction data compiled by Oak Ridge National Laboratory, a federally funded research institution which a POSITA would have understood is a reliable source of such data. Notably, EX2026 describes the same equation for the coefficient of friction that is described in the ‘854 patent, consistent with the conventional understanding of coefficient of friction that all of the values I cite are based on. A POSITA would have understood that the

UATP-1044, ¶65; Reply, 15

UATP-1026

The frictional force can be expressed as

$$F_f = \mu N \quad (1)$$

where

F_f = frictional force (N, lb)

μ = static (μ_s) or kinetic (μ_k) frictional coefficient

N = normal force between the surfaces (N, lb)

UATP-1026, 1; Reply, 15

The Phillips-WN0400 Combination Provides Element [1c]

Patent Owner: “Further, Phillips’s slide is inflatable, and therefore deformable. Petitioner’s expert agrees. EX2029, 95:18-20”

POR, 38-39

Dr. Wang

67. I disagree with the assertions in the Patent Owner’s Response that coefficient of friction values would necessarily be higher such that the combination does not provide Element [1c] because Phillips’ slide is inflatable and purportedly “deformable.” POR, 52. As an initial matter, Phillips describes that the slide “can be inflatable,” indicating that an inflatable configuration is optional. UATP-1004, 2:52-54; cl. 12. Indeed, Phillips likewise explains that the slide can be “fixed to a rigid frame,” and can be “made to reside in a fixed location.” UATP-1004, 2:44-60; 1:27-30 (“structural frames”). Accordingly, the premise in the Patent Owner’s Response that the Phillips slide is necessarily “deformable” in a meaningful way that impacts coefficient of friction is unsupported and contrary to Phillips. Even as to an inflatable

UATP-1044, ¶167; Reply, 15

Phillips

surface is wet or dry. The slide can be inflatable or padded and can be optionally fixed to a rigid frame or made free standing without a frame. It can be made to reside in a fixed location or

UATP-1004, 2:44-50 1; Pet., 16

Q So the slide is deformable; correct?

MR. ROZYLOWICZ: Objection. Form.

Objection. Scope.

A Well, just in terms of deformable, you know, no material is not deformable. So everything is deformable. But, so, certainly, the inflatable was more deformable than what it mentioned, the other alternative, basically, the other -- the rigid frame. So that's less deformable.

UATP-2029, 95:21-96:5; POR, 38-39

Issue 3

Phillips (Ground 1A)

Phillips Anticipates Element [1b-iii]

Dr. Wang

100. For example, a POSITA would have understood that sailcloth is a type of fabric traditionally used to make sails for boats. In fact, the dictionary definition of sailcloth is “any of various fabrics, as of cotton, nylon, or Dacron, for boat sails or tents” UATP-1034, 1. A POSITA would have understood that the fabric of sailcloth is a woven material (e.g., a fabric made of cotton, nylon, or Dacron) and that it a woven material comprises a mesh. *Id.*, see also UATP-1037, 1 (dictionary definition of mesh is “any knit, woven, or knotted fabric of open texture”); UATP-1038, 1 (dictionary definition of fabric is “a cloth made by weaving, knitting, or felting fibers”). A POSITA would have understood that a “mesh” fabric includes a fabric that is woven so that there are holes between the woven threads, and that for some fabrics, like sailcloth, the holes formed by the woven threads may be very small in size. UATP-1007, 1 (describing that a “precision weaving process creates fine mesh woven fabrics with apertures (hole sizes) as small as 50 micron”).

UATP-1003, ¶100; Pet., 24

Dr. Rust

Similarly, I can't respond to 1 percent or -- or 10 percent as it is, or it is not a mesh because it depends on whether the fabric is characterized as to the size of the opening.

UATP-1045, 56:4-7; Reply, 3

is nothing in Phillips that excludes meshes. *Id.* Slick Slide's argument that Phillips does not disclose the claimed mesh layer is premised on an assumption that nylon, by virtue of inclusion in a list of low friction “sheeting material,” thus cannot be a mesh. But as I noted above, Phillips list includes materials that are not even a sheeting based on Patent Owner's interpretation of “sheeting.” UATP-1045, 74:15-75:13 (acknowledging that artificial turf and synthetic carpet are not sheeting).

UATP-1044, ¶68; Reply, 16

POR, 32. As I described above, Slick Slide cited the ASTM standard definition of “fabric, mesh” as “a woven fabric with a permeable network made from interlacing threads or mono filament fibers.” EX2018, 2. Sailcloth squarely fits this definition, because sailcloth is made from woven interlacing threads and is permeable. UATP-

UATP-1044, ¶69; Reply, 16

71. There is no dispute that nylon was known to exist as a mesh by the Critical Date of the '854 patent. UATP-1006, 1; UATP-1007, 1. A POSITA would have understood that Phillips' nylon material be a mesh, especially as Phillips enumerates it together with sailcloth, which is squarely encompassed by the ASTM definition of the term “mesh” cited by Patent Owner. UATP-1006, 1; UATP-1007,

UATP-1044, ¶71; Reply, 16

The Phillips-Fallgatter Combination

Rebuttal “By contrast, ‘sheeting,’ as understood by a POSITA, neither allows for nor is characterized by open spaces as is required of to: the mesh layer claimed in Claim 1.” Sur-Reply at 20 (emphasis added)

Dr. Wang:

42. The analysis in the Patent Owner’s Response attempts to draw a distinction between “sheeting” and “mesh.” I disagree with this purported distinction, which incorrectly asserts that “Phillips uniformly and repeatedly teaches a ‘sheeting material,’ which is the opposite of a mesh layer.” POR, 42, 53-55.

UATP-1044, ¶42; Reply, 11

43. First, Patent Owner’s proposed distinction is contrary to a POSITA’s ordinary understanding of both “sheeting” and “mesh.” This is demonstrated by Patent Owner’s own extrinsic dictionary definitions. Patent Owner presented definitions of “sheeting” that refer to “material in the form of sheets,” “plain-woven cloth,” and “bedsheets,” and Dr. Rust further confirmed that bedsheets, for example, have a woven, permeable construction. EX2005; EX2007; UTAP-1045, 43:19-45:16. Not only does such material construction not exclude “mesh,” but it in fact

UATP-1044, ¶43; Reply, 11

Dr. Rust:

Q. And what is it about the woven construction of bedsheets that allows water vapor to pass through the material some?

Q. I'm sorry. Go ahead, Dr. Rust.

A. So for water vapor to pass through the bedsheet, there must be voids large enough to allow a water molecule to pass through.

UATP-1045, 44:23-45:8; Reply, 11

Would you consider a small section of artificial turf of the type that Phillips describes being appended to clothing as being an example of sheeting?

A. I would not.

UATP-1045, 74:19-23

Q. And is synthetic carpet an example of sheeting?

A. No.

UATP-1045, 75:11-13

Phillips Anticipates Element [1c]

Dr. Wang

105. Phillips describes a slide system that provides a coefficient of friction between the mesh layer of the ride vehicle and the non-wet lubricated slide surface that is within the range of between about 0.03 and about 0.2. I note that Phillips expressly advocates for “low friction” between slide and ride vehicle, and specifies materials that achieve “low friction.” Phillips describes that the slide system may be used as a substitute for a snowy or icy slope to allow users to practice snow sports year round (UATP-1004, 1:50-2:32, 4:25-32, 4:64-7:5); snow and ice are well-known to have very low friction coefficients in interactions with a variety of materials. UATP-1027, 7; UATP-1026, 3 (interactions between ice and brass); 5 (interactions between ice samples), 7 (interactions between snow and PTFE). Phillips’ description of the slide as a device for practicing snow sports emphasizes what Phillips’ intends when describing a “low friction” interaction between the slide and ride vehicle.

Pet., 26; UATP-1003, ¶105

106. For example, Phillips describes use of “Teflon” for the slide surface and “nylon” for the ride vehicle bottom. UATP-1004, 4:43-46. Phillips describes that “[b]oth membrane 6 and top surface 20 can each be composed of low friction high durab[ility] material such as a member selected from the group consisting of nylon, Teflon, sailcloth, Dacron, vinyl... and polyester resins.” *Id.* Phillips’ description that the slide surface and bottom of the ride vehicle should be a “low friction” materials and direction to use materials like nylon and Teflon provides a frictional coefficient within the claimed range. UATP-1021, 1.

Pet., 26; UATP-1003, ¶106

material for the ride vehicle bottom. Teflon and nylon were known to POSITA as having very low friction, which is further confirmed by Phillips’ express description as such. A POSITA would have been motivated to implement the Teflon and nylon surfaces in a manner to effectuate Phillips “low friction” objectives, and would have reasonably expected that implementing these materials would result in a low coefficient of friction. This is especially the case given that the low friction

UATP-1044, ¶175; Reply, 16

Issue 4

Phillips-Fallgatter and Phillips-Fallgatter-
WN0400 (Grounds 2A-2B)

The Phillips-Fallgatter Combination

200. First, a POSITA would have been motivated to combine the teachings of Phillips and Fallgatter to provide a recreational slide with a low numerical coefficient of friction between the slide and the ride vehicle, in accordance with Phillips' and Fallgatter's express objectives, to enhance system performance by providing a fast and fun ride experience to users. UATP-1004, Abstract ("sliding

Dr. Wang

205. Accordingly, a POSITA would have been motivated to make the combination because Fallgatter provides additional details for implementation of Phillips' system.

1005, [0012], [0006]. For example, POSITA would have been motivated to implement a "woven" fabric for the ride vehicle bottom based on Fallgatter's express teaching to use a "woven textile substrate." UATP-1005, [0006]

("Vehicles can also be made of the
UATP-1003, ¶200-210; Pet., 60-64

210. Sixth, a POSITA would have been prompted to combine Phillips and Fallgatter because doing so was the application of known techniques (Fallgatter's teaching of an appropriate CoF for a low friction coating and a ride vehicle) to a known device (Phillips' recreational slide system) ready for improvement to yield predictable results (benefits articulated above). As described above, recreational

The Fallgatter Combinations Provide Additional Express Teachings Rendering Obvious The “Mesh Layer” [1b-iii]

Dr. Wang

206. Third, a POSITA would have been motivated to predictably combine Phillips and Fallgatter to utilize a material for the ride vehicle bottom that promotes low friction with the slide surface. A POSITA would have understood that selection of materials for a low friction slide coating and low friction ride vehicle bottom determines the coefficient of friction between the coating and vehicle. *Supra* §VIB.3. A POSITA would have been motivated to combine the teachings of Phillips and Fallgatter to guide the selection of materials, consistent with Phillips’ and Fallgatter’s suggested materials. UATP-1004, 4:43-46; UATP-1005, [0012], [0006]. For example, POSITA would have been motivated to implement a “woven” fabric for the ride vehicle bottom based on Fallgatter’s express teaching to use a “woven textile substrate.” UATP-1005, [0006] (“Vehicles can also be made of the same or similar material”). A POSITA would have thus predictably utilized a “woven” nylon, Dacron, sailcloth, etc. UATP-1004, 4:43-46; UATP-1005, [0011]. In fact, the dictionary definition of sailcloth is

UATP-1003, ¶206; Pet., 62

Fallgatter

[0006] The slide body is made of a low-friction textile, most preferably a woven textile substrate such as a woven nylon, polyester or polyethylene with a low friction coating such as a silicone coating. The coating defines the sliding surface upon which riders may slide, and preferably has a coefficient of friction of about 0.25 or less. Most preferably the dry slide includes one or more vehicles which participants can use to distribute weight and/or which include low-friction surfaces so as to enhance the sliding experience. Vehicles can include, for example, plastic vehicles that can distribute the weight of a rider sitting or otherwise disposed thereon, and can also include a low-friction surface. Vehicles can also be made of the same or similar material as used to make the slide body. Such a textile vehicle can include a front pouch in which a rider can place their feet or which can receive a front end of a secondary vehicle, such as an inflatable vehicle, so as to take advantage of the weight-distribution and comfort of the secondary vehicle but also provide the low-friction surface of the textile vehicle.

UATP-1005, [0006]; Pet., 62

The Fallgatter Combinations Provide Additional Express Teachings Rendering Obvious The “Coefficient of Friction”– Element [1c]

Dr. Wang

materials. UATP-1021, 1; UATP-1027, 4-5; UATP-1011, 5. While Phillips is clear that the surface is “low friction” and provides specific materials that provide known coefficients of kinetic friction (e.g., Teflon and nylon, which exhibit coefficient of friction of about 0.05 (*supra*, §VIII.B.2.[1.c] (Ground 1A)), Phillips does not expressly articulate numerical values of the coefficient of friction. Fallgatter provides a straightforward suggestion of numerical frictional coefficient between the slide and vehicle in a slide system. UATP-1005, [0006] (“The coating

UATP-1003, ¶196; Pet. 58-59

198. It would have been obvious to a POSITA to select materials from the list provided by Phillips that would achieve a coefficient of friction between the slide and the ride vehicle within the range that Fallgatter provides, and further, making such a material selection would have been well within the POSITA’s level of skill. *Supra* §VI.A; UATP-1004, 4:43-46; UATP-1005, [0006], [0012]-[0013],

UATP-1003, ¶198; Pet. 59

197. In the resulting system, the slide surface includes a “low friction” coating (e.g., “Teflon”/PTFE) and a fabric bottom vehicle, based on Phillips’ teachings, to achieve a numerical coefficient of friction suggested by Fallgatter. UATP-1004, 4:43-46; UATP-1005, [0006], [0012]-[0013], [0016], [0036], [0042]. In the Phillips-Fallgatter combination, the slide would have been implemented using materials selected to achieve a friction coefficient between the coated slide and the bottom of the ride vehicle of less than 0.21, as Fallgatter teaches is an appropriate frictional coefficient to strive for in the low-friction relationship between a recreational slide and slide vehicle. UATP-1004, 4:43-46; UATP-1005, [0006], [0012]-[0013], [0016], [0036], [0042].

UATP-1003, ¶197; Pet. 59

The Fallgatter Combinations Provide Additional Express Teachings Rendering Obvious The “Coefficient of Friction”—Element [1c]

Rebuttal to: *“... simply arguing that the Fallgatter CoF values can be applied to or achieved by Phillips does not demonstrate that the Phillips system could or would in fact achieve those values, and Petitioner offers no explanation as to how or why it would.”*
Sur-Reply at 23

Dr. Wang:

221. Phillips-Fallgatter provides [1c]. As described above (§VIII.D.2 (Phillips-Fallgatter Combination)), Phillips-Fallgatter is implemented with the slide surface and ride vehicle bottom formed from materials selected from Phillips’ list to achieve a coefficient of friction between the materials of less than 0.21, as Fallgatter teaches is an appropriate value for a recreational slide. UATP-1005,

UATP-1003, ¶221; Pet. 68

friction that “must therefore exceed 0.25.” POR, 68. There are many ways to achieve a coefficient of friction less than 0.25. Phillips provides a known, suitable technique to achieve a coefficient of friction significantly lower than 0.25—by using Teflon for the slide surface and using nylon for the ride vehicle bottom, which a POSITA would have been motivated to implement to achieve a coefficient of friction less than “typical” slides, for example. The record reveals that these two materials would produce a coefficient of friction far less than 0.25, and often as low as 0.05. UATP-1021, 1; UATP-1026, 5, 7; UATP-1027, 4.

analysis. Phillips already discloses materials to reach the claimed coefficient of friction range, and Fallgatter provides a suggestion of a numeric value for the coefficient of friction—including that it is “even more preferable” to achieve a coefficient of friction that is “0.21 or less” because this would result in the benefit of a faster ride. UATP-1005, [0012], [0042].

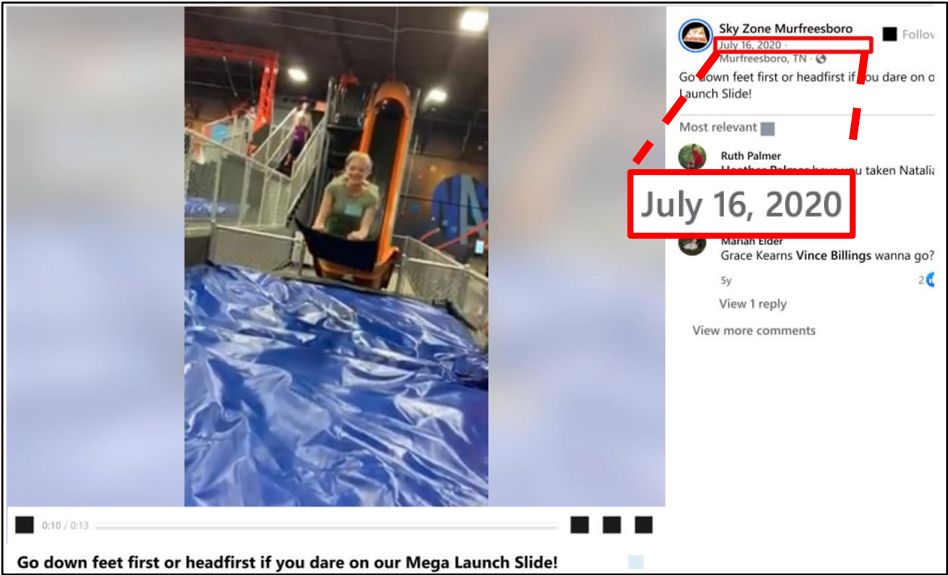
UATP-1044, ¶90-91; Reply, 19

51

Issue 5

Patent Owner's Secondary Considerations Are
Deficient

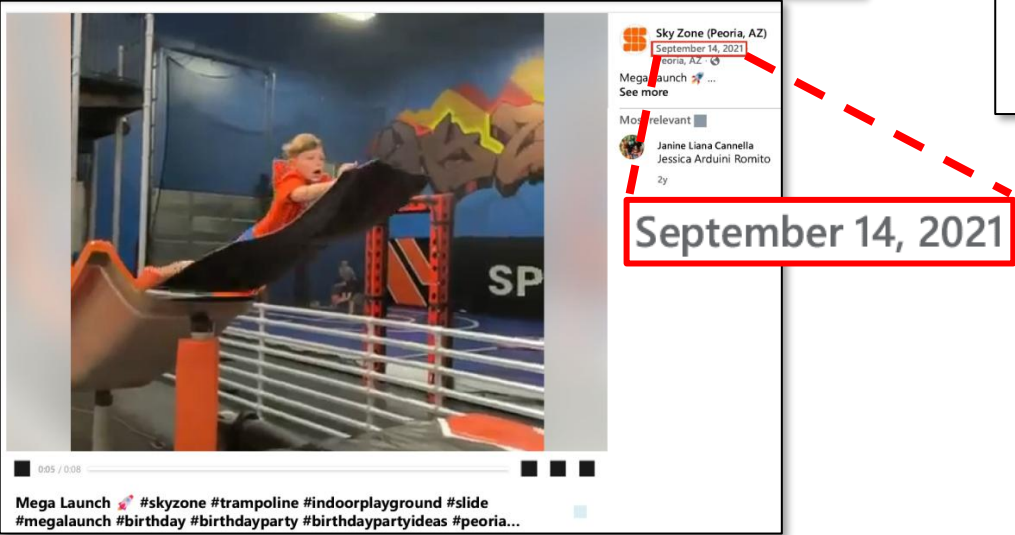
Secondary Considerations – Patent Owner’s Launch Slide Pre-Dates the '854 Patent



43. The sales and market share data discussed above not only evidence the raw commercial success of Slick Slide’s recreational slide systems, but their context also demonstrates that this success derives from the patented features. Since the introduction of Slick Slide’s first installations, core inventive components of its recreational slide systems have remained the same: a non-wet lubricated slide surface working in combination with a ride vehicle incorporating a woven mesh bottom surface.

Mr. Schmit

EX2033, ¶143; Reply, 25



THE WITNESS: The slides would not function without '854.

Q. Without the technology claimed in the '854 patent having been incorporated into those slides, then the slides would not operate properly?

A. They wouldn't --

THE WITNESS: They wouldn't get off the end of the slide.

Secondary Considerations – Patent Owner's Launch Slide Pre-Dates the '854 Patent

UATP-1066 Video (Sept. 10, 2020)

Mr. Schmit

Q. Without the technology claimed in the '854 patent having been incorporated into those slides, then the slides would not operate properly?

A. They wouldn't --

THE WITNESS: They wouldn't get off the end of the slide.

UATP-1047, 164:7-24 (objection omitted); Reply, 24



Secondary Considerations – Patent Owner's Launch Slide Pre-Dates the '854 Patent

After its founding in 2021, Slick City's first location opened in Denver in early 2022. Launsby said the idea for the concept came to him in 2020, when he installed a slide feature at the Sky Zone trampoline park he formerly owned.

The equipment, built by Slick Slides, was a fast hit, and it led Launsby to approach its developer, Gary Schmit, about a new business venture.

UATP-1050, 1-2 (annotated); EX2045, 6-7; Reply, 23.

THE WITNESS: We've been very successful since the beginning of this product, so...

THE WITNESS: Yes. Yeah, we've -- we've sold many slides to Sky Zone over the years. So, yeah, the feedback has been positive.

BY MR. DEUTSCH:

Q. And has that consistently been the case since your launch?

A. Yeah. It's been pretty consistent, so yeah.

UATP-1047, 66:23-68:15; Reply, 24.

Secondary Considerations – Patent Owner's Launch Slide Pre-Dates the '854 Patent

Mr. Schmit

Q. So paragraph 18 says, "Since the launch of its first recreational slide system installations, Slick Slide has generated over 40 million in sales of its recreational slide systems."

Did I read that correctly?

A. Correct.

Q. And so I don't see a timeframe, but that would be going back to the -- the original Launch Slide that we had talked about earlier through -- is it through 2024 or sometime in 2025?

A. Sorry, through -- I guess this would be to when I signed the declaration, I assume.

UATP-1047, 138:22-139:9-23; Reply, 31.

Secondary Considerations – There is no presumption of nexus because the purported embodying products are not “coextensive with” the ’854 claims

Fox Factory, Inc. v. SRAM, LLC, 944 F.3d 1366, 1377–78 (Fed. Cir. 2019).

Although we do not require the patentee to prove perfect correspondence to meet the coextensiveness requirement, what we do require is that the patentee demonstrate that ***the product is essentially the claimed invention***.

As we explained, the purpose of the coextensiveness requirement is to ensure that nexus is only presumed when the product tied to the evidence of secondary considerations “***is*** the invention disclosed and claimed.” *Demaco*, 851 F.2d at 1392 (emphasis added). Thus, ***if the unclaimed features amount to nothing more than additional insignificant features***, presuming nexus may nevertheless be appropriate.

Fox Factory, Inc. v. SRAM, LLC, 944 F.3d 1366, 1377–78 (Fed. Cir. 2019).

Reply, 24-27.

Brown & Williamson Tobacco Corp. v. Philip Morris, Inc., 229 F.3d 1120, 1130 (Fed. Cir. 2000).

However, if the marketed product embodies the claimed features, **and is coextensive with them**, then a nexus is presumed and the burden shifts to the party asserting obviousness to present evidence to rebut the presumed nexus.

Secondary Considerations – No showing of “coextensiveness” – Patent Owner Did Not Demonstrate Commercial Products Include Element [1c]

Dr. Spiegelberg

Dr. Spiegelberg, for the samples that you tested in preparing your report, do you know the material composition of the mesh samples?

A. No.

Q. Dr. Spiegelberg, in the testing prepared in support of your affidavit, do you know the material composition of the epoxy resin sample?

A. No.

UATP-1046, 69:4-71:16; Reply, 25-26.

POR

of between about 0.03 to about 0.2.” The coefficient of friction between the mesh layer of Slick Slide’s ride vehicle and the non-wet, lubricated slide surface of Slick Slide’s slides, as measured in accordance with ASTM D1894, is between 0.047-0.090. EX2030, ¶54.

POR, 86

Q. Dr. Spiegelberg, do you know if the epoxy sample you tested was an epoxy resin?

A. It appeared to be.

Q. Okay. Dr. Spiegelberg, in the context that we're -- of this conversation and what you tested being an epoxy risen, how would you define the term risen?

A. A polymeric material.

Q. Okay. Dr. Spiegelberg, how many types of polymeric materials are you aware of?

A. Hundreds, if not thousands.

EX2039

Data Summary	
Run	Averaged COF (not including static COF)
1	0.047
2	0.076
3	0.068
4	0.090
min	0.047
max	0.090
Average of:	0.064

EX2039, 1; POR, 86

Secondary Considerations – No showing of “coextensiveness” – The commercial products use an unclaimed liquid oil lubricant

EX2045

“When we clean them, we don’t use water,” said Pina. “We use acetone. Plus, if we see a slide performing slower, we can use a special oil. We call it the ‘slick sauce.’”

UATP-2045, 52; Reply, 26.



“we also oil the slide with a special oil”

UATP-1049, 3:25 ; Reply, 26.

Dr. Wang

I note that application of a liquid oil between the ride vehicle bottom and the slide surface would impact the interaction between those surfaces. In particular, a POSITA would have recognized the presence of the oil to **impact the coefficient of friction between the slide surface and ride vehicle**. Silicone oil was known to a POSITA to act as a lubricant, and would have been expected by a POSITA to **reduce frictional interaction between the slide surface and ride vehicle**.

UATP-1044, ¶ 112; Reply, 26.

Secondary Considerations – No showing of “coextensiveness” – The commercial products use an unclaimed liquid oil lubricant

Patent Owner Sur-Reply

C. Petitioner’s Argument Regarding Oil Lubricant Is Irrelevant

Petitioner argues that a special oil is sometimes used in connection with slide operations. Reply, 28. That in no manner discredits Dr. Spiegelberg’s analysis or his conclusion that the products he analyzed, for which there is no evidence of any special oil, practices the ‘854 patent. That is, Dr. Spiegelberg’s analysis demonstrates that the commercially successful products practice the ‘854 patent without any special oil. Petitioner does not explain or demonstrate through any evidence that any commercial success is attributable to any special oil.

Sur-Reply, 28-29

As we explained, the purpose of the coextensiveness requirement is to ensure that nexus is only presumed when the product tied to the evidence of secondary considerations “is the invention disclosed and claimed.” *Demaco*, 851 F.2d at 1392 (emphasis added). Thus, ***if the unclaimed features amount to nothing more than additional insignificant features***, presuming nexus may nevertheless be appropriate. *Fox Factory, Inc. v. SRAM, LLC*, 944 F.3d 1366, 1377–78 (Fed. Cir. 2019).

Secondary Considerations – The purported embodying products are not “coextensive”

EX2043

LAUNCH SLIDE

Exhilarating speed combined with airtime make the Launch incredibly unique. The Launch Slides ranges in size from a 25' entrance down to a 14' entrance. The Launch can also have between a 3' down to a 1' AFF at it's lowest point allowing the higher AFF models to provide for longer launch airtime for the rider. The Launch is covered by U.S. Design Patent No. D973,821.

EX2043, 2; Reply, 27.

Mr. Schmit

Q. Okay. And so the -- the -- well, I guess taking a step back. So it's fair to say that one of the attractions with the Launch Slide is this aspect of becoming airborne after exiting the slide. Is that fair?

A. Absolutely, yes.

UATP-1047, 105:3-8; Reply, 27.

Secondary Considerations – The purported embodying products are not “coextensive”

EX2043



BOWL SLIDE

Exactly how it sounds, the Bowl Slide is a giant bowl! The Bowl Slide ranges in size from a 25' entrance down to a 16' entrance.

EX2043, 2; Reply, 27.

Mr. Schmit

Q. What is the ride experience the Bowl Slide is intended to create?

A. So the slider would come down the flume from the entrance that's at the highest point there in the photo and come around in a circular motion, kind of like a toilet bowl, and then drop out into an airbag that's located in the middle there indicated in black.

UATP-1047, 108:7-14; Reply, 30.

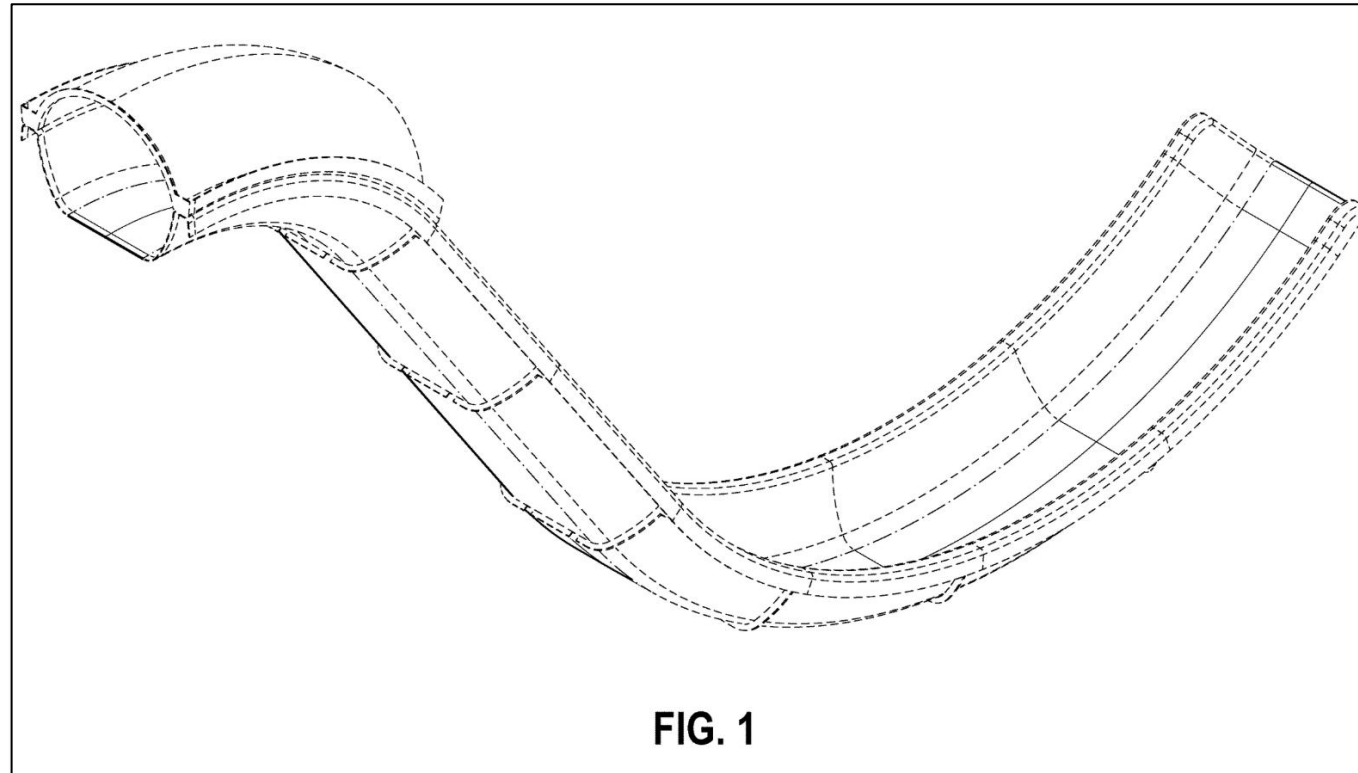
Q. With that in mind, would the audience potentially be different where someone might enjoy the Family Slide that isn't looking for the sensation of going airborne?

THE WITNESS: Yeah. Everyone has got their own kind of favorite and what appeals to them, in my opinion.

UATP-1047, 115:16-24; Reply, 30. 62

Secondary Considerations – The purported commercial slides are not “coextensive”

U.S. D1,065,407



Reply, 27

Secondary Considerations – There is no nexus because the purported secondary considerations are not reliable and are not tied to the Challenged Claims

Fox Factory, Inc. v. SRAM, LLC, 944 F.3d 1366, 1373–74 (Fed. Cir. 2019).

A finding that a presumption of nexus is inappropriate does not end the inquiry into secondary considerations. See *In re Huang*, 100 F.3d 135, 140 (Fed. Cir. 1996). To the contrary, the patent owner is still afforded an opportunity to **prove nexus by showing that the evidence of secondary considerations is the ‘direct result of the unique characteristics of the claimed invention.’**”

Reply, 30.

Secondary Considerations – Alleged Praise is Based on Its Own Marketing Materials

EX2045

This is a paid press release. Contact the press release distributor directly with any inquiries.



Slick City Action Park Celebrates Highest Average Growth in 2024, Plans More Aggressive Expansion

Slick City Franchise Group LLC
April 1, 2025 • 5 min read

EX2045, 47; Reply, 30.

Slick City Action Park Begins O Revolutionary Indoor Slide Park Franchises



Mr. Schmit

I'm turning to page 34 of Exhibit 2045, the same -- same exhibit.

And would this be another example of -- of what you're describing, a press release that Slick City prepared?

MR. SCHATZ: Object to form.

THE WITNESS: Yes. Myself or Slick Slide was never taking part in any sort of press release or marketing whatsoever.

UATP-1047, 102:4-12; Reply, 30.

EX2045, 34; Reply, 30.

Secondary Considerations – Alleged Praise is Based on Its Own Marketing Materials

Rebuttal to: *“... Petitioner then (incorrectly) argues that this extensive evidence ‘is based on [Patent Owner’s] own press releases and marketing materials,’ but that is simply not true. EX1047, 161:15-162:19 (explaining that the news articles are all created by third parties, but collected by Petitioner as part of its normal course of business).” Sur-Reply at 30*

Mr. Schmit

Q. Are you familiar with Exhibit 2045?

A. I'm not.

Q. So I take it then you didn't compile Exhibit 2045?

A. Correct.

UATP-1047, 97:24-98:3; Reply, 31

Q. To clarify, that would be done by Slick City; and so when you say yourself, you just mean you aren't directly responsible for communicating with them, but it was done by Slick City, right?

A. Correct.

UATP-1047, 102:14-18; Reply, 31

Mr. Schmit

Q. Now, am I right, you don't know who created those articles, correct?

A. I do not know who wrote them, correct?

Q. But did Slick Slide write them?

A. No, we provided them.

BY MR. SCHATZ:

Q. So these are news articles that were -- as best you know, were created by third parties?

A. My understanding, yes.

Q. Okay. Where did the articles come from to be part of this dispute?

A. We provided them to Lou and you.

UATP-1047, 161:15-162:19

Secondary Considerations – Alleged Praise is Based on Its Own Marketing Materials

EX2045

"One of our brand taglines, 'Fast as Friction,' while fun, also alludes to the scientific nature of our slides and the coefficient of friction between the slide surface and the mat material," Launsby told *Amusement Today*. "Through extensive research involving the field of tribology, analysis utilizing professors at **MIT**, consultation with former astrophysicists at **NASA**, and loads of trial and error, we've developed a coefficient of friction with the experience of

EX2045, 52; Reply, 30.

Mr. Schmit

Q. So going back to page 52 of Exhibit 2045 in the beginning of that sentence, was Professor Lawson one of the individuals that is referenced in this sentence?

A. I -- I assume that's who they were referring to. I didn't write this. I don't -- I don't know who wrote this. We've got a PR company and a marketing department and all sorts of other stuff. So it would be tough -- I don't recall if he was MIT or -- seemed like a little bit of fluff to me.

THE WITNESS: That's -- that's okay. I don't know who wrote this. We have a PR company and a marketing department and people that work on the Slick City side of things, so I can't vouch for this.

UATP-1047, 99:3-100:5; Reply, 30.

Secondary Considerations – Purported Commercial Success Is Not Based On Sales or Market Share Tied To Challenged Claims.

Mr. Schmit

Q. You don't have any financial records that are cited here submitted with the declaration; is that correct?

A. Not that I can recall.

Q. So you're not -- you're not sure what the timeframe is for the sales number?

A. I'm not.

Q. Okay. How about the sales that are included in this? Does this include global sales?

A. Yeah. I think my statement here is base -- this -- I'm assuming that this -- based on what I said here, this is just kind of total sales to date of when this was signed. So total revenue in equipment sales to date. That's -- that's how I'm reading it.

UATP-1047, 139:9-23; Reply, 31.

Q. Okay. So this isn't based on that input from Kevin and not on any financial records that you reviewed?

A. He is my financial records.

UATP-1047, 143:1-4; Reply, 30.

Secondary Considerations – Purported Commercial Success Is Not Based On Sales or Market Share Tied To Challenged Claims.

Mr. Schmit

Q. Is the high-performance dry recreational slide system market a subset of the dry recreational slide system market?

A. I believe so. I believe it's something that we created and pioneered. When I say 70 percent, the other 30 percent are copycats at this point.

Q. Is the -- is that a category that's tracked within the family entertainment center market?

A. (Inaudible.)

(Court reporter requested clarification.)

THE WITNESS: I said that would -- that would just be based on my experience and opinion.

UATP-1047, 145:16-21; Reply, 32.

In re Applied Materials, Inc., 692 F.3d 1289, 1300 (Fed. Cir., 2012) (“units sold without evidence of the market share is only weak evidence of commercial success.”)

Secondary Considerations – Purported Commercial Success Is Not Based On Sales or Market Share Tied To Challenged Claims.

Mr. Schmit

Q. Have you ever seen that decline extend for multiple months after an initial opening period?

A. Through initial opening period, there's -- and this is standard for the industry. There's usually kind of a honeymoon period, and then there's traditionally a little bit of a drop-off and a plateau. It's very seasonal.

So it depends on the time of year, the time of opening. There are so many variables that go into that -- that metric. So that's kind of a -- like, the answer to the question is, yes, I've seen drop-offs.

the answer to the question is, yes, I've seen drop-offs.

Q. And for those franchise locations that you mentioned that may have opened in 2024 or 2025, they haven't been open long enough to see what the plateau recedes to; is that fair?

A. It's fair. There -- correction. There wasn't open in '24. The first one -- the first one of five that are now open opened in '25.

UATP-1047, 152:16-153:9; Reply, 32.

Secondary Considerations – Purported Commercial Success Is Not Based On Sales or Market Share Tied To Challenged Claims.

Rebuttal to: *“At the same time, the evidence also shows that the sales of Slick Slide’s recreational slide systems, and by extension the success of Slick City, are driven by the patented features of the products rather than advertising. EX2033, ¶17.” Sur-Reply at 30*

Mr. Schmit

Q. And so in other words, you don't need to advertise to generate a large portion of the 40 million in sales below?

A. It's definitely over the last couple of years evolved to where we don't even do conventions anymore as of last year. So **there's zero dollars being spent on marketing currently because we are vertically integrated and exclusive to our own franchise network.**

UATP-1047, 147:7-148:1; Reply,
32

Q. Do you expect Slick City's advertising spend to change in 2025?

I'm sorry, the audio didn't come through.

A. So, yes, exponentially. With our growth, we've got 30 to 40 parks slated to open. So, yeah, **the advertising spend is going to be going up immensely.**

Q. Do you know what that percentage number is currently in 2025?

A. I don't.

Q. What's the marketing obligation on the -- under the franchise agreement?

A. I believe it's 1 percent for the national fund, **which is pretty standard.** I could be wrong.

Q. And is there another amount of local advertising spend?

A. Again, I could be wrong, but I think that's **up to the operator.**

Secondary Considerations – Purported Commercial Success Is Not Based On Sales or Market Share Tied To Challenged Claims

Rebuttal *“Petitioner argues otherwise, once again mistakenly arguing that Patent Owner’s commercial success is somehow related to sales predating the priority date.” Sur-Reply at 31*

Mr. Schmit

Q. So paragraph 18 says, "Since the launch of its first recreational slide system installations, Slick Slide has generated over 40 million in sales of its recreational slide systems."

Did I read that correctly?

A. Correct.

Q. And so I don't see a timeframe, but that would be going back to the -- the original Launch Slide that we had talked about earlier through -- is it through 2024 or sometime in 2025?

A. Sorry, through -- I guess this would be to when I signed the declaration, I assume.

Q. Am I understanding correctly that the seller in those instances would be Slick Slide LLC and the buyer would be Slick City Franchise Group?

A. Correct. Or corporate, you know. We purchase from ourselves as well.

Q. Are the sale prices or terms different when you're selling to Slick Slide Franchise Group versus a third party?

A. I can't speak to that. I'm not sure.

UATP-1047, 147:7-148:1; Reply, 32

Secondary Considerations – Purported Commercial Success Is Not Based On Sales or Market Share Tied To Challenged Claims

Mr. Schmit (UATP-1055)

Q. And do you recall when Slick Slide first started using the term, quote/unquote, launch slide?

A. Since before Slick Slide was even Slick Slide, we -- it's a general term that is kind of referred to for this type of slide.

Q. So you didn't coin the term launch slide?

A. No.

Q. It's because of what it does?

A. Exactly.

Q. It functions that way because of the relationship between the slide design and the parameters that you put into the simulator; right?

MR. SCHATZ: Object to form.

THE WITNESS: I mean, there's a lot of different ways you could do it and that it's being done. We're not, you know, the first people to do this.

Issue

Claims 8-12 are not enabled (Ground 3A)

Claims 8-12 are not enabled

Claims 8 and 9

8. The recreational slide system of claim 3, wherein the dry lubricant material includes a resin, a lubricant, a thermal conductor, and a hardener.
9. The recreational slide system of claim 8, wherein the dry lubricant material applied to the slide surface comprises:

20% to 30% by weight of the resin;

30% to 50% by weight of the lubricant;

1% to 5% by weight of the thermal conductor; and

20% to 30% by weight of the hardener.

UATP-1001, 12:41-49

283. These frictional coefficient values on the lowest end of the claimed range – between 0.03 to 0.06, for example – are not enabled by the specification in the context of a dry lubricant coating on the slide, the dry lubricant “includ[ing] a resin, a lubricant, a thermal conductor, and a hardener” as claim 8 requires. As mentioned above, the very lowest of these values are reported only for interactions involving ice and snow. UATP-1027, 7; UATP-1026, 3 (interactions between ice

UATP-1003, ¶283, Pet., 87-88

Dr. Wang

281. Claims 8-13 are unpatentable due to lack of enablement by the specification of the '854 patent, because the '854 patent lacks details that would explain to the POSITA how to achieve the full claimed range of frictional coefficients (“a range of between about 0.03 to about 0.2” see claim 1) while also using the dry lubricant composition recited in claim 8 and further specified in claims 9-13.

UATP-1003, ¶281, Pet., 86-89

EX2039

Data Summary

Run	Averaged COF (not including static COF)
1	0.047
2	0.076
3	0.068
4	0.090
min	0.047
max	0.090
Average of :	0.064

EX2039, 1; Reply, 2

Claims 8-12 are not enabled – Additional materials influence CoF

Dr. Wang

35. However, the commercial epoxies suggested by the '854 patent for use in the slide coating would not provide the lowest claimed range of frictional coefficients – they contain additional components that temper the low friction properties of included lubricants.⁵ Although the '854 patent states “[t]he lubricity of the dry coating 34 and the resulting coefficient of friction between the slide surface 18 and the ride vehicle 14 is primarily influenced by the lubricant present in the dry lubricant material,” a POSITA would have understood that the frictional coefficient is influenced by other materials present in the coating.

UATP-1003, ¶285, Pet., 88-89

Mr. Schmit

Q. Am I understanding correctly that if you changed one thing, that could affect one of the other variables?

A. Absolutely.

UATP-1047, 33:12-15; Reply, 21-22

Dr. Spiegelberg

33. CoF measurements are dependent upon the condition of the contacting surfaces. These measurements are also dependent upon the chemistry of the contacting surfaces and testing setup. And, as explained above, morphology of the contacting surfaces would also affect CoF measurements. Indeed, Petitioner's expert relies upon a reference that states that there are at least ten (10) different factors that influence coefficient of friction data. EX1027. This is based on

Mr. Schmit

Ex2030, ¶32

THE WITNESS: Again, I go back to: I wouldn't be able to comment on that. I'm not an expert, and there's just -- again, there's so many variables that come into play when you're dealing with different materials.

UATP-1047, 43:14-18; Reply, 21

Brita LP, v. ITC, No. 2024-1098 (Fed. Cir. Oct. 15, 2025)
(affirming non-enablement where interrelated variables result in unpredictability)

Claims 8-12 are not enabled – Lowest CoF achievable under particular conditions

Patent Owner: “A POSITA would understand CoF values between 0.03 and 0.06 are known and achievable.”

Dr. Spiegelberg

example, the low end of the claimed range, about 0.03, is well known and understandable to a POSITA. Such a claimed range can and is achievable by a POSITA, including with respect to air pockets formed between the interacting materials. For example, molybdenum disulfide, a commonly used dry lubricant, can achieve coefficient of friction levels in this range (Vazirisereshk, M.R. et al, “Solid lubrication with MoS₂: A Review, Lubricants, 7, 57, 2019) (Ex. 2023). Similarly, diamond-like carbon is used as a solid lubricant with reported values from 0.001-0.05. (Berman, D., “Graphene: a new emerging lubricant,” Materials Today, vol 17(1), 30 2014) (Ex. 2024).

EX2026, ¶251

Dr. Wang

POR, 73

Yet, a more detailed review of Dr. Spiegelberg’ testimony in paragraphs 251-254 reveals that (1) this range in EX2024 was for diamond-like carbon materials that nevertheless fall above the claimed range at .05 and (2) that the source relied on by the Patent Owner in EX2026 is in fact relying on “A review of the state of the art and perspectives on future research”.¹ Nowhere does the Patent Owner acknowledge that diamond-like carbon materials should be used in slides. Patent Owner also fails

UATP-1044, ¶95; Reply, 20-21

97. Further, the Patent Owner fails to acknowledge the complexity of the art to address this range. UATP-1043, §6 (noting that addition of molybdenum disulfide (MoS₂) powder may initially lower then wear rate below 4%, which then increases above 4%); UATP-1043, §7 (temperature and presence of curing agent impact coefficient of friction); UATP-1043, §8 (maximum coefficient of friction with lubricant is .09). As I outlined in my supplemental declaration and later

UATP-1044, ¶97; Reply, 20-21

Claims 8-12 are not enabled – Commercial epoxies do not provide CoF in the claimed range

Patent Owner: “The patent ... describes commercial silicone/PTFE epoxies suitable for slide coatings.”

POR, 73

Dr. Wang

17. Commercial epoxies designed for particular applications, such as coatings for watercraft and aircraft may include added fillers like silicone or PTFE to provide a lower coefficient of friction (against air, water, or biofouling materials, for example), but a POSITA would not have expected even these commercial epoxies to have coefficients of friction in the 0.03-0.06 range, contrary to Patent Owner’s claim. See UATP-1039, 8 (Fig. 5B showing 100% by weight

UATP-1043, ¶17; UATP-1044, ¶98; Reply, 20

Critical Date. See e.g., UATP-1039, UATP-1040, UATP-1041. Further, the ’854 patent’s reference to the presence of an unknown amount of silicone or PTFE in the commercial epoxies—without any mention of an expected friction coefficient of the epoxy itself—would not have indicated to a POSITA that the listed commercial epoxies have a particular coefficient of friction, contrary to Patent

UATP-1043, ¶11; Reply, 20

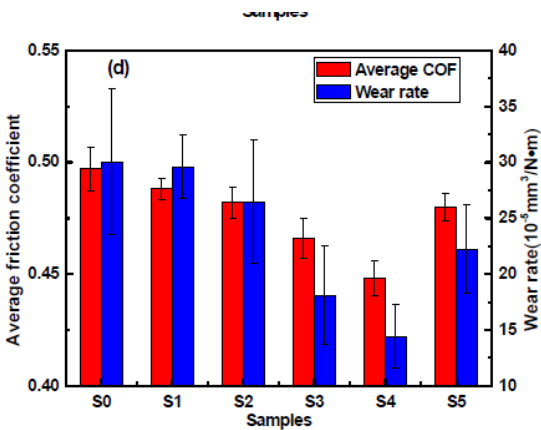
only achieved in systems involving ice and snow). Unlike the ideal conditions involving ice and snow that may give rise to the lowest range of frictional coefficients, a POSITA would have understood that under normal conditions “epoxy is a poor tribological material.” UATP-1041, 1; see also UATP-1039, 1 (“due to [epoxy’s] three-dimensional network structure and poor surface properties, [epoxy] cannot be directly used as a wear-resistant material.”).

UATP-1043, ¶16; Reply, 20

Table 1. Ingredients of epoxy composites.

Sample	Fillers (wt.%)		EP (wt.%)
	SiC	MoS ₂	
EP	0	0	100
SE	50	0	50
S0	55	0	45
S1	54	1	45
S2	53	2	45
S3	52	3	45
S4	51	4	45
S5	50	5	45

UATP-1039, Table 1 (p. 3), Fig. 5D (p. 7);
UATP-1044, ¶98



Claims 8-12 are not enabled – No guidance on composition provided in the patent

Patent Owner: “It would be a simple and routine matter for a POSITA to determine how much additional lubricant should be added.”

Dr. Wang

POR, 75

19. First, it is not true to say that one can calculate based on theory the amount of lubricant to be added to an epoxy to achieve a particular frictional coefficient, as Patent Owner has admitted. See Prelim. Resp., 38 (“coefficient of friction is a property that depends on more than just the chemistry of the two surfaces”); see also EX2026, ¶171. A POSITA would have been aware of the

UATP-1043, ¶19; Reply, 20.

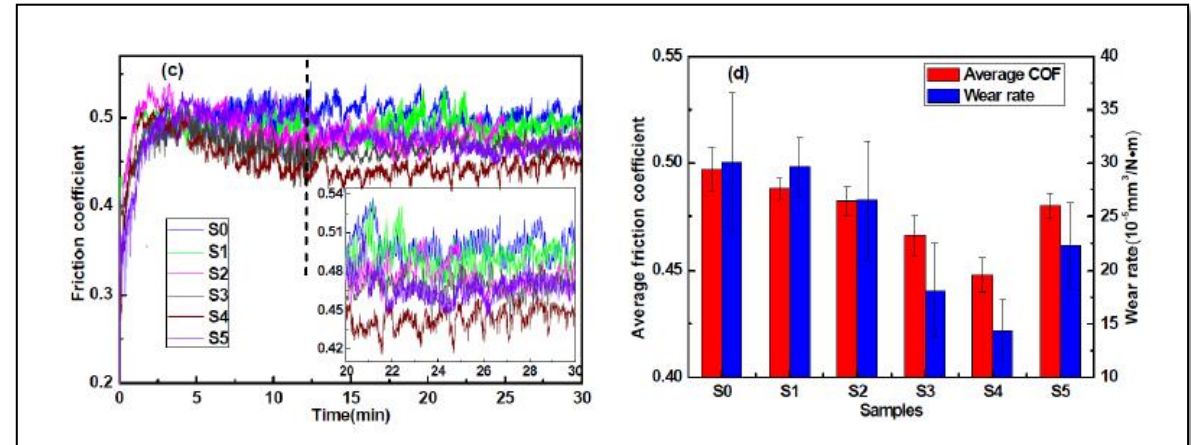
20. These additional factors that influence a coefficient of friction measured between two surfaces mean that a POSITA cannot theoretically derive or determine a lubricant content of a composite that would have a desired frictional coefficient. For example, as illustrated in UATP-1039, Figs. 5C-5D, a linear

UATP-1043, ¶20; Reply, 20.

25. Additionally, a POSITA would have understood that the addition of fillers for the purpose of improving tribological performance can have unexpected consequences on other characteristics of the compound, such as decreasing mechanical hardness or flexural strength relative to un-filled epoxy. UATP-1041,

UATP-1043, ¶25; Reply, 20

UATP-1039



Dr. Wang

UATP-1039, 7; UATP-1043, ¶19; Reply, 20.

21. Indeed, UATP-1039 explains that it is important to have “the appropriate amount” of lubricant filler in an composite to optimize friction and wear characteristics without having excess, weakly-bonded, lubricant particles to decrease these properties. UATP-1039, 12. A POSITA would have understood that such an “appropriate amount” cannot be determined theoretically, and can only be determined with significant experimentation.

UATP-1043, ¶21; Reply, 20; UATP-1039, 12.

Claims 8-12 are not enabled – No guidance on process provided in the patent

Patent Owner: “the ‘854 patent ... is understood by a POSITA to provide extensive direction from the inventor.”

Dr. Wang

22. Second, it is neither “simple” nor “routine” to add lubricant to an epoxy to achieve a particular frictional coefficient because adding components to an epoxy composite changes more than just the frictional coefficient of the composite. UATP-1003, ¶¶284-286. Either determination of an amount of filler

recreational slide. A POSITA would have been aware that producing a compound using a commercial epoxy and a lubricant (in addition to a hardener and thermal conductor) would require more than simply mixing a lubricant into a vessel of epoxy – and the ‘854 patent provides no guidance on how to account for such additional considerations.

UATP-1039

UATP-1043, ¶22, Reply 20

this paper, EP composites with different proportions of SiC and MoS₂ were prepared. Due to the significant differences in chemical structure and physical form, and a lack of affinity between inorganic fillers and EP resin, surface modification of fillers is essential to make them combine better with polymer and have good dispersion, especially when the filler content is higher, which cannot be well dispersed in the polymer, even through mechanical stirring [25,26]. Therefore, an important silane coupling agent, KH560 (c-glycidoxy propyl

UATP-1039, 2; UATP-1043, ¶22-23

Dr. Spiegelberg

Sur-Reply, 25

Q. Okay. But, Dr. Spiegelberg, so my question is, does this paragraph describe how they would be combined?

A. It does not provide any information about how they are mixed together.

Q. This -- this -- does this paragraph describe the process by which they'd be combined?

A. No.

Q. Does it describe the order of -- with which the materials may be combined?

A. No.

UATP-1046, 130:2-11; Reply, 21-22

Is there any description in this portion as to -- as to the process by which as to how to make the formulation using the four materials would achieve the coefficient of friction of within the claimed range?

A. There's no description of how to combine these materials in this paragraph or in this section that we just read.

UATP-1046, 132:11-17; Reply, 21-22

Claims 8-12 are not enabled – Extraordinary experimentation required

Mr. Schmit

THE WITNESS: I experimented with hundreds of different materials over many, many years.

UATP-1047, 27:7-8; Reply, 21

When did you arrive at a slide surface that you thought would be effective?

A. Gosh, I -- I don't know the time period. It's such a long evolution and failure after failure after failure. It would be hard to -- to hit a date for that.

UATP-1047, 27:13-18; Reply, 21

introduced as early as, I believe, '21. But it's -- again, it was continued failure after failure, back to the drawing board that went on for many years. So

UATP-1047, 27:26-28:3; Reply, 21

THE WITNESS: Correct. And with so many variables, that's why it's hundreds of different combinations.

UATP-1047, 33:8-10; Reply, 21

THE WITNESS: There's -- there's just too many to list. I mean, it goes -- obviously I'm seeking out low coefficient of friction materials and combining the two and experimenting and failing and experimenting and failing and -- just kept going and going.

UATP-1047, 33:19-24; Reply, 21

Q. I imagine that was fairly time consuming?

A. Years.

UATP-1047, 36:16-17; Reply, 21

Claims 8-12 are not enabled – Test results are not relevant to claimed composition

Dr. Spiegelberg

Dr. Spiegelberg, for the samples that you tested in preparing your report, do you know the material composition of the mesh samples?

A. No.

Q. Dr. Spiegelberg, in the testing prepared in support of your affidavit, do you know the material composition of the epoxy resin sample?

A. No.

UATP-1046, 69:4-11; Reply, 27

EX2039

Data Summary

Run	Averaged COF (not including static COF)
1	0.047
2	0.076
3	0.068
4	0.090
min	0.047
max	0.090
Average of:	0.064

EX2039, 1; Reply, 2

Dr. Spiegelberg, do you know if these four materials were present in the epoxy that you tested?

A. I didn't do that analysis.

UATP-1046, 135:16-18; Reply, 21-22, 27

Q. Okay. Dr. Spiegelberg, in the context that we're -- of this conversation and what you tested being an epoxy risen, how would you define the term risen?

A. A polymeric material.

UATP-1046, 71:4-7; Reply, 21-22, 27

Q. Okay. Dr. Spiegelberg, how many types of polymeric materials are you aware of?

A. Hundreds, if not thousands.

UATP-1046, 71:14-16; Reply, 21-22, 27

Claims 8-12 are not enabled – Inventor “material science’s rabbit hole” testimony confirms the Petition’s *Wands* analysis

Mr. Schmit

108. When asked about the formulation of the coating compositions and where he obtained the chemicals, Mr. Schmit simply noted that they used, “[e]xisting products” or they were “creating our own, the list goes on. Again, hundreds over the course of years. ... There’s things that go wrong, like temperature, velocity, wear and abrasion. Just -- there – there’s so many -- there's so much room for error that it just -- it takes a lot when you start going down the material science's rabbit hole.”

UATP-1044, 108; Reply, 22

Issue

Claims 5 and 26 are indefinite (Ground 3B)

Claims 5 and 26 are Indefinite

Claim 5

5. The recreational slide system of claim 4, wherein the dry lubricant coating includes a thickness that is within a range of between about 1 micron to about 5 micron.

UATP-1001, 12:31-33

Dr. Wang

294. The '854 patent does not provide details that make clear the intended meaning of “wherein the dry lubricant coating includes a thickness that is within a range of between about 1 micron to about 5 micron” as claim 5 recites. The '854 patent describes that “the dry lubricant coating 34 includes a thickness T which may be substantially constant over at least the sliding surface 38 of the base wall 14” and that “[t]he thickness T of the dry lubricant coating 34 may be within a range of between about 1 micron to about 5 micron...” UATP-1001, 6:22-26, 6:46-47. This description merely mirrors the claim language and does not provide any guidance as to the interpretation of the claim. Additionally, the '854 patent

UATP-1003, ¶294, Pet., 89-90

been able to choose between, and for that reason claim 5 is indefinite. As a first example, the claim could be understood to require that there are at least some regions of the dry lubricant coating that have the claimed thickness, because the coating “includes a thickness” within a particular range. Such an interpretation

UATP-1003, ¶291, Pet., 89-90

292. Alternatively, the claim could be understood to require that the dry lubricant coating has a thickness in the claimed range across the entirety of the coating. This understanding interprets the word “includes” to mean something like

UATP-1003, ¶292, Pet., 89-90

293. As a third possibility, the claim could further be understood to mean that the dry lubricant coating may have any thickness that is 1-5 microns or greater, given that a coating thicker than 1-5 microns would necessarily “include[] a thickness ... within the range of between about 1 micron to about 5 micron” as the claim recites, because the coating would include and surpass the required thickness. This understanding interprets the word “includes” to mean something

UATP-1003, ¶293, Pet., 89-90

Claims 5 and 26 are Indefinite

Dr. Wang

110. I note that in the testimony of Mr. Schmit, he noted that multiple coatings may be applied during their testing. When asked, “when you were doing that – that testing, did they apply the slide coating, or did they provide the bare fiberglass substrate of the slide and you prepared and applied the slide surface?”, Mr. Schmit responded, “we generally would either overapply or reapply or strip down. So, yeah, we just had a fiberglass substrate that we worked from.” UATP-1047, 36. Based on this testimony, it is unclear whether Mr. Schmit intended claim 5 to recite overapplied coatings, reapplied coatings, or coatings that were applied after being stripped down. I maintain that claim 5 remains indefinite, for this additional reason.

UATP-1044, ¶110, Reply, 22-23

Mr. Schmit

Q. And so when you were doing that -- that testing, did they apply the slide coating, or did they provide the bare fiberglass substrate of the slide and you prepared and applied the slide surface?

MR. SCHATZ: Objection. Outside the scope of Mr. Schmit's declaration.

THE WITNESS: That's -- that's correct because of so many different trials, we generally would either overapply or reapply or strip down. So, yeah, we just had a fiberglass substrate that we worked from.

UATP-1047, 36:4-14

Claims 5 and 26 are Indefinite

Claim 26

26. The ride vehicle of claim 22, wherein the central core is surrounded by a fabric liner that is positioned between the central core and the fabric layer and the woven mesh layer.

UATP-1001, 14:24-26

Dr. Wang

298. It is unclear from the language of claim 26 (“wherein the central core is surrounded by a fabric liner that is positioned between the central core and the fabric layer and the woven mesh layer”) **how to interpret the positioning of the fabric liner with regard to the other components of the ride vehicle.** A first potential meaning of the claim is that the claimed fabric liner (1) is positioned between the central core and the fabric layer and (2) is additionally and separately positioned between the central core and the woven mesh layer. This would look like a club sandwich, with the layers from the bottom up being the mesh layer, the fabric liner, the core, the fabric liner, and the fabric layer. To meet this meaning of the claim, for example, the central core could be enclosed by a fabric liner, and the central core and fabric liner could be positioned within an envelope with a top surface formed from the fabric layer and a bottom surface formed from the mesh. A POSITA would have understood this to be a possible understanding of the claim language based on the specification.

UATP-1003, ¶298, Pet., 90-91

299. Alternatively, the language of claim 26 (“wherein the central core is surrounded by a fabric liner that is positioned between the central core and the fabric layer and the woven mesh layer”) could be understood to mean that the fabric liner **must be positioned between the fabric layer and the woven mesh layer.**

UATP-1003, ¶299, Pet., 90-91

300. Yet another example of the possible meaning of the language of claim 26 (“wherein the central core is surrounded by a fabric liner that is positioned between the central core and the fabric layer and the woven mesh layer”) is that the fabric liner is **formed as a belt that surrounds a perimeter outer edge of the core and spans between the fabric layer and the woven mesh layer at the edges of the ride vehicle.** A fabric liner formed as an outer edge of the ride vehicle (see UATP-

UATP-1003, ¶300, Pet., 90-91

301. Accordingly, a POSITA would have understood that claim 26 is unclear because there are multiple possible meanings of the claim language and the ’854 patent specification **does not provide clarity** that would have allowed the POSITA to confidently choose the appropriate meaning of the claim. Thus, the scope of claim 26 is unclear and the claim is unpatentable because it is indefinite.

UATP-1003, ¶301, Pet., 90-91

Issue

POSITA

Dr. Wang more than meets the POSITA standard

Patent Owner: “Petitioner’s expert identifies zero personal experience or graduate education related to measurement and analysis in the field of coefficient of friction.”

POR, 37; see also POPR, 22

Dr. Wang

than twenty years ago.” POR, 37. This is simply incorrect. I have extensive coefficient of friction experience, including experience that directly relates to fibers and fiber science. First, my academic work has focused directly on fiber science and coefficient of friction, and I have authored numerous papers on these subjects. Second, I was a member of ASTM for eight years, and I served on three committees that dealt directly with friction testing. Slick Slide’s incorrect assertions concerning

UATP-1044, ¶78; Reply, 34

have done so repeatedly. Because of my educational background in Mechanical Engineering and my decades of experience publishing academic papers and teaching collegiate courses where coefficient of friction is a fundamental concept, my experience with coefficient of friction amounts to multiple decades—significantly more than the five years Slick Slide claims is necessary. More generally, I note that, the result of my analysis does not change under either party’s definition of POSITA. I am qualified to speak to a POSITA’s perspective even if PO’s heightened level of skill is applied. I note that Patent Owner’s proposed level of skill (POR, 23-26) is

UATP-1044, ¶32; Reply, 34

5. I have authored numerous academic articles that deal with coefficient of friction, textiles, fibers, or a combination of these. These publications include the

6. In addition to the Editorial Board memberships that I listed in my first declaration (UATP-1003, Appendix A), I also served as a member of *Textile Science and Research Journal*.

7. In addition to the Professional Societies & Activities that I listed in my first declaration (UATP-1003, Appendix A), I have served as a member of the American Society for Testing and Materials (ASTM) for eight years, between 1994 and 2002. While a member of ASTM, I served on the following committees:

Petitioner’s Reply

UATP-1044, ¶¶5-7; Reply, 34

this is false. POR, 37. Dr. Wang’s extensive CoF experience exceeds even PO’s proposed POSITA definition. UATP-1044, ¶¶78-82.

Patent Owner's declarations are entitled to little weight

Dr. Rust

in my opinions. And obviously I failed to do that. It just demonstrates the fact that I was the one that -- that wrote the declaration.

UATP-1045, 34:23-25; Reply, 34-35

Q. And so when you say no one but yourself, you didn't communicate with Dr. Spiegelberg, for example, in preparing your declaration?

A. To the best of my recollection, I had no communication with Dr. Spiegelberg until after my declaration had been submitted.

UATP-1045, 18:22-19:3; Reply, 34-35

Q. Do you recall how you became aware of Dr. Spiegelberg's opinions?

A. Provided to me by counsel.

UATP-1045, 23:21-23; Reply, 34-35

Q. And is it -- is it fair to say where the text of your declaration is the same as Dr. Spiegelberg's declaration, that that's an example of where you're relying on his expertise?

MR. SCHATZ: Objection to form.

THE WITNESS: In part.

UATP-1045, 23:11-16; Reply, 34-35

Q. Did you review Dr. Spiegelberg's opinions before your declaration was filed?

A. I'm not sure.

Q. So could you clarify, Dr. Rust, how you relied on his expertise?

A. In communication with counsel, specifically on issues of addressing aspects of coefficient of friction, I relied on Dr. Spiegelberg's opinions.

Q. You're not sure if you've reviewed Dr. Spiegelberg's opinions before submitting your declaration?

A. I must have because -- yeah, I must have. I just don't recall when specifically.

UATP-1045, 23:2-14; Reply, 34-35

Patent Owner's POSITA definition is inconsistent with the '854 patent

Patent Owner

Contrary to Petitioner's suggestion, a person of ordinary skill in the art as of the Critical Date ("POSITA") would have had at least (1) a Bachelor's degree in engineering, materials science, or a related field, with (2) experience in textile design, engineering, or fiber science.

With respect to claims 1-17 and 27-28 of the '854 patent, a POSITA would also require at least 5 years of measurement and analysis experience in the field of coefficient of friction. EX2026, ¶45. This is necessary because the morphology of fabrics has a decisive effect on the

Preliminary Response, 21

'854 patent

- (54) **LOW-FRICTION RECREATIONAL SLIDE SYSTEM**
- (71) Applicant: **Slick Slide LLC**, Phoenix, AZ (US)
- (72) Inventor: **Gary Schmit**, Phoenix, AZ (US)
- (73) Assignee: **Slick Slide LLC**, Phoenix, AZ (US)

Mr. Schmit

If starting from a typical slide surface without a lubricant and adding a lubricant to the polymer, would a person of ordinary skill expect that the coefficient of friction would go down?

MR. SCHATZ: Object to form. Object. Outside the scope of Mr. Schmit's declaration.

THE WITNESS: I wouldn't be qualified to answer that.

UATP-1047, 26:9-10; Reply, 34

THE WITNESS: Again, I -- it's -- that's a very general question I'm not qualified to answer.

UATP-1047, 26:16-17; Reply, 34

Does a nylon mesh ride vehicle always result in a low coefficient of friction with a slide surface, or would it also depend on the characteristics of the slide surface?

MR. SCHATZ: Object to form. Objection. Outside the scope of Mr. Schmit's declaration.

THE WITNESS: Again, I go back to: I wouldn't be able to comment on that. I'm not an expert, and there's just -- again, there's so many variables that come into play when you're dealing with different materials.

UATP-1047, 43:8-18; Reply, 34

Q. Did -- and so the characteristics of the ride vehicle bottom are important, but those alone wouldn't ensure a sufficiently low coefficient of friction, correct?

A. Don't know if I'm qualified to answer that.

Q. So you don't -- you don't know what details would ensure a sufficiently low coefficient of friction?

A. I do not.

UATP-1047, 74:2-10; Reply, 34

THE WITNESS: I don't know if I'm -- I'm not qualified to answer that.

UATP-1047, 77:10-11; Reply, 34