UNITED STATES PATENT AND TRADEMARK OFFICE

BEFORE THE PATENT TRIAL AND APPEAL BOARD

Prime Time Toys LLC, Prime Time Toys Ltd.
and Easebon Services Ltd.,
Petitioners,

v.

Spin Master, Inc.,
Patent Owner.

Case IPR2023-01339

PATENT NO. 8,640,683

PETITIONERS' NOTICE OF APPEAL

Pursuant to 35 U.S.C. §§ 141(c), 142, and 319, and 37 C.F.R §§ 90.2(a) and 90.3(a), Petitioners hereby appeal to the United States Court of Appeals for the Federal Circuit from the Patent Trial and Appeal Board's Final Written Decision entered on October 10, 2025, in IPR2023-01339 (Paper 46) concerning U.S. Patent No. 8,640,683 ("the '683 Patent"), and from all underlying findings, determinations, orders, decisions, rulings, and opinions that are adverse to Petitioners. A copy of the Final Written Decision is attached to this Notice.

In accordance with 37 C.F.R § 90.2(a)(3)(ii), Petitioners further indicate that the issues on appeal include, but are not limited to: the Board's determination that Petitioners did not show by a preponderance of the evidence that any one of the challenged, non-disclaimed claims of the '683 Patent (claims 4-9, 12, and 14) is unpatentable; any findings or conclusions by the Board supporting or related to the determination; and all other issues decided adversely to Petitioners including, without limitation, the Board's interpretation of the prior art, the Board's consideration of expert evidence and testimony, and the Board's application of the law.

The Board issued its Final Written Decision on October 10, 2025. This Notice of Appeal is therefore timely filed within sixty-three (63) days of the Board's decision, as prescribed by 35 U.S.C. § 142 and 37 C.F.R. § 90.3(a)(1).

Pursuant to 35 U.S.C. § 142 and 37 C.F.R. § 90.2(a), this Notice of Appeal is being filed with the Director of the United States Patent and Trademark Office, the Patent Trial and Appeal Board, and the Clerk's Office of the United States Court of Appeals for the Federal Circuit. Pursuant to Fed. Cir. R. 15(a), Federal Circuit Form 5 and the required docketing fee are also being filed with the Clerk's Office of the Federal Circuit.

Petitioners do not believe that any fees are due to the United States Patent and Trademark Office with this Notice of Appeal. However, if any such fees are due, the Director is authorized to charge the fees to Deposit Account No. 01-1785.

Respectfully submitted,

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Dated: December 9, 2025
New York, New York

By: /*Kenneth P. George*/
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Registration No.: 30,259

CERTIFICATE OF SERVICE

Pursuant to 37 C.F.R. § 42.6(e), I hereby certify that on this 9th day of December, 2025, a true copy of the foregoing PETITIONERS' NOTICE OF APPEAL was served via email on the Patent Owner at the following correspondence address of record.

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Pursuant to 37 C.F.R. § 90.2(a)(1), I hereby certify that on this 9th day of December, 2025, in addition to being filed electronically with the P-TACTS System of the Patent Trial and Appeal Board, a true copy of the foregoing PETITIONERS' NOTICE OF APPEAL is being provided to the Director of the

United States Patent and Trademark Office by sending it to the following email address.

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Pursuant to Fed. Cir. R. 15(a)(1), I hereby certify that on this 9th day of December, 2025, a true copy of the foregoing PETITIONERS' NOTICE OF APPEAL is being electronically filed with the Clerk's Office of the United States Court of Appeals for the Federal Circuit via CM/ECF with Federal Circuit Form 5 and the required fee.

United States Court of Appeals for the Federal Circuit
717 Madison Place, N.W.
Washington, DC 20439

Dated: December 9, 2025
New York, New York

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Paper: 46
Date: October 10, 2025

UNITED STATES PATENT AND TRADEMARK OFFICE

BEFORE THE PATENT TRIAL AND APPEAL BOARD

PRIME TIME TOYS LLC, PRIME TIME TOYS LTD., and
EASEBON SERVICES LTD.,
Petitioner,

v.

SPIN MASTER, INC.,
Patent Owner.

IPR2023-01339
Patent 8,640,683 B2

Before HYUN J. JUNG, NEIL T. POWELL, and
BRENT M. DOUGAL, *Administrative Patent Judges.*

DOUGAL, *Administrative Patent Judge*.

JUDGMENT
Determining No Claims Unpatentable
35 U.S.C. § 318(a)

I. INTRODUCTION

A. Background and Summary

Petitioner, Prime Time Toys LLC, Prime Time Toys LTD., and Easebon Services LTD, filed a Petition to institute an *inter partes* review

challenging the patentability of claims 4–9, 12, and 14[1] (the "challenged claims") of U.S. Patent 8,640,683 B2 (Ex. 1001, "the '683 patent"). We initially denied institution (Paper 10), which decision was reversed by the Director (Paper 12). We then instituted an *inter partes* review. Paper 14.

Patent Owner, Spin Master, Inc. (through its exclusive licensee, Hasbro Inc. (Paper 4, 2)), filed a Response (Paper 19 (sealed), 20 (redacted), "PO Resp."), Petitioner filed a Reply (Papers 24 (sealed), 25 (redacted) "Reply")[2], and Patent Owner filed a Sur-reply (Paper 33, "Sur-reply"). An oral hearing was held on May 16, 2025, and a copy of the transcript is in the record. Paper 42 ("Tr.").

We have jurisdiction under 35 U.S.C. § 6. This Decision is a Final Written Decision under 35 U.S.C. § 318(a) and 37 C.F.R. § 42.73 as to the patentability of the challenged claims. Having reviewed the arguments and supporting evidence, we that Petitioner has not shown by a preponderance of the evidence, that the challenged claims are unpatentable.

B. Related Matters

The parties identify that the '683 patent is subject to an action in the United States International Trade Commission: *In the Matter of Certain Soft Projectile Launching Devices, Components Thereof, Ammunition, and Products Containing Same*, Investigation No. 337-TA-1325 (ITC) ("ITC proceeding"). Pet. 7; Paper 4, 2. We note that IPR2023-01348 and IPR2023-01461 involve related patents.

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[1] Claims 1–3 and 10–11 have been disclaimed. Ex. 2014.
[2] Within this Decision, we cite to the public, redacted version, as we do not rely on any of the confidential information under seal.

C. The '683 Patent

The '683 patent is entitled, "Soft-Projectile Launching Device," and is directed to a projectile launching device with ammunition made from super absorbent polymer ("SAP"). Ex. 1001, code (54), 1:12–16. SAPs are polymers that can absorb an extremely large amount of water relative to their own mass. *Id.* at 3:46–53.

The '683 patent describes using SAPs as ammunition in projectile launching devices to provide advantages compared to projectiles that were previously known, such as paint balls, plastics (e.g., as found in "airsoft" guns), and foams (e.g., as found in NERF® guns). *Id.* at 1:20–67, 3:58–4:3. For example, certain SAP projectiles have beneficial characteristics, in part because SAPs break down at different pressures based on their composition. *Id.* at 4:4–18. Hydrated SAP projectiles can be made to have sufficient cross-linking density such that they are projected from a projectile launching device without breaking apart. *Id.* at 4:19–21. At the same time, because hydrated SAP projectiles rupture when subjected to excessive pressure, such as when impacting a target after being launched from a projectile launcher, the force at impact is spread over a much wider surface area, thus reducing the likelihood of injury when the target is a person. *Id.* at 3:67–4:3, 4:21–24.

D. Illustrative Claim

All of the challenged claims depend from claim 1. Claims 1 and 5 are reproduced below:

> 1. A projectile launching system, comprising:
>
> ammunition comprising a plurality of substantially spherical soft-projectiles formed from hydrated super absorbent polymer; and
>
> a projectile launcher for launching the ammunition in free flight.

> 5. The system of claim 1, wherein the projectile launcher includes a feed chamber for loading the soft-projectiles within [the] projectile launcher.

Ex. 1001, 9:39–43 (paragraphing added), 10:3–5.

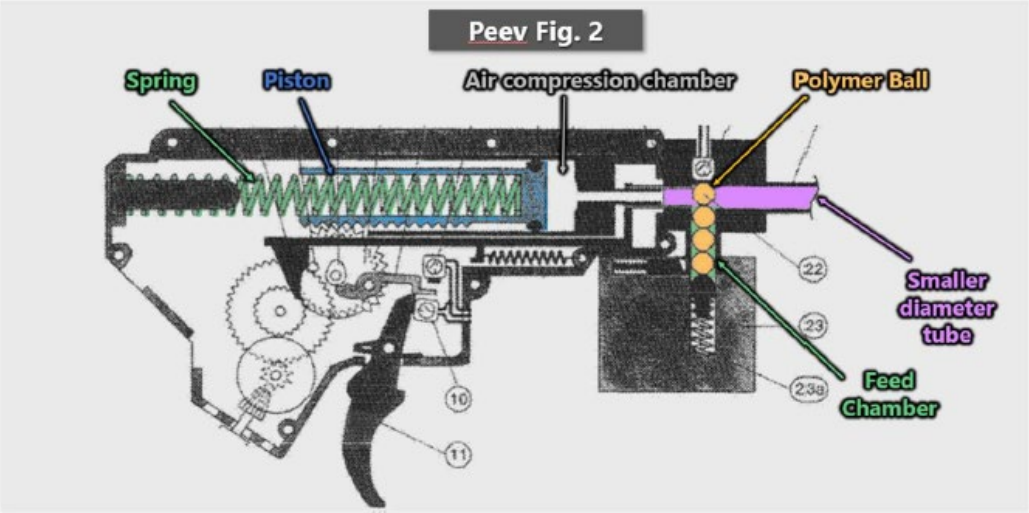
E. Evidence

Petitioner's grounds of unpatentability rely on the following evidence:

Name	Patent & Non-Patent Documents	Exhibit
Spitballs	ThinkGeek Spitballs Internet Archive Webpage, Nov. 30, 2009	1002, 17–22[3]
Peev	Bulgarian Patent No. BG110343 (July 31, 2009)	1003[4]

1. Peev (Ex. 1003)

Peev discloses an "electric airsoft gun [that] finds application in the sporting gun industry and is used for military simulations or training, or for entertainment in airsoft guns." Ex. 1003, code (57). Reproduced below is Petitioner's annotated Figure 2 from Peev. Pet. 22.



[3] Exhibit 1002 includes a declaration from the Records Request Processor at the Internet Archive, as well as multiple copies of the Spitballs webpage and related category pages. Petitioner clarifies that it defines the prior art reference "Spitballs" as pages 17–22. Pet. 13–14.
[4] Includes an English language translation.

Peev's Figure 2, as annotated by Petitioner, shows a cross-section of an electric airsoft gun, with labels for a spring, piston, air compression chamber, feed chamber, smaller diameter tube, and polymer ball. Pet. 22; Ex. 1003, 29.

2. Spitballs (Ex. 1002)

Spitballs is a product listing from the ThinkGeek website, as recorded by the Wayback Machine. Ex. 1002, 17–22. The product listing includes the below picture. *Id.* at 18.

The above picture from Spitballs shows the product packaging with the balls in a small state in the packaging and the balls presumably in a larger state outside of the packaging. The packaging also states "Fun to Throw!," "Grows 200x Their Size!," and "They Slip, Slide, Bounce & Explode!"

F. Asserted Grounds

Petitioner asserts the following grounds of unpatentability (Pet. 15), supported by the declarations of Joel Delman (Ex. 1016) and Dr. Mauren T.F. Reitman (Ex. 1017):

Claim(s) Challenged	35 U.S.C. §	Reference(s)/Basis
4–9, 12, 14[5]	103(a)[6]	Peev, Spitballs

II. ANALYSIS

A. Legal Standards

Petitioner bears the burden to demonstrate unpatentability. *Dynamic Drinkware, LLC v. Nat'l Graphics, Inc.*, 800 F.3d 1375, 1378 (Fed. Cir. 2015).

A claim is unpatentable as obvious under 35 U.S.C. 103(a) if "the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains." *KSR Int'l Co. v. Teleflex Inc.*, 550 U.S. 398, 406 (2007) (quoting 35 U.S.C. § 103(a)). We resolve the question of obviousness based on underlying factual determinations, including: (1) the scope and content of the prior art; (2) any differences between the prior art and the claims; (3) the level of skill in the art; and (4) when in evidence, objective indicia of obviousness or nonobviousness. *See Graham v. John Deere Co.*, 383 U.S. 1, 17–18 (1966).

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[5] Claims 1–3 and 10–11 have been disclaimed. Ex. 2014.
[6] The Leahy-Smith America Invents Act ("AIA"), Pub. L. No. 112-29, 125 Stat. 284, 285–88 (2011), revised 35 U.S.C. § 103 effective March 16, 2013. We refer to the pre-AIA version of § 103.

B. Level of Ordinary Skill in the Art

We review the grounds of unpatentability in view of the understanding of a person of ordinary skill in the art at the time of the invention (POSA). *Id.* at 13, 17.

Petitioner does not expressly present a position as to the level of skill in the art. Pet. 19–20. Rather, Petitioner identifies three positions laid out in the ITC proceeding. *Id.* (citing Ex. 1015, 7–8). Petitioner states that "[t]he three definitions are similar," and the Administrative Law Judge in the ITC proceeding determined that: "Any differences among the definitions will have little, if any, effect on the claim construction analysis. Thus, all of the proposals are appropriate . . . ." *Id.* at 20 (citing Ex. 1015, 8).

Patent Owner does not address the level of skill in the art. *See generally*, PO Resp.

We agree that the three definitions are similar. The parties do not advocate for any particular definition. We also determine that no distinction between the definitions is material to this Decision. As such, we do not repeat all three definitions and accept Patent Owner's definition as most closely fitting the legal requirements:

> a bachelor's degree in mechanical engineering, industrial design, or equivalent, with at least one year of relevant experience designing projectile launching systems but would also be a member of a team, which would include a person with a bachelor's in materials science, chemistry, or equivalent (e.g., chemical engineering), or has at least one year experience working with materials for use in consumer products
>
> equivalent work experience may substitute for educational experience, and vice versa

Pet. 19 (quoting Ex. 1015, 8).

C. Claim Construction

In *inter partes* review, we construe claims using the same claim construction standard that would be used to construe the claim in a civil action under 35 U.S.C. § 282(b), including construing the claim in accordance with the ordinary and customary meaning of such claim as understood by one of ordinary skill in the art and the prosecution history pertaining to the patent. 37 C.F.R. § 42.100(b) (2023).

Petitioner identifies that the ALJ in the ITC proceeding construed two terms consistent with the plain and ordinary meaning. Pet. 20–21. The ALJ construed "super absorbent polymer" in claim 1 to mean "polymer that can absorb an extremely large amount of liquid relative to its own mass." *Id.* (citing Ex. 1015, 14). The ALJ construed "a firing mechanism that directly applies a force to the ammunition" in claim 14 to mean exactly what it says. *Id.* at 21 (citing Ex. 1015, 23).

Neither Petitioner or Patent Owner advocate for the construction of any particular claim term. Pet. 20–21; *see generally* PO Resp.

We determine that no terms require express construction. *See Realtime Data, LLC v. Iancu*, 912 F.3d 1368, 1375 (Fed. Cir. 2019) ("The Board is required to construe 'only those terms . . . that are in controversy, and only to the extent necessary to resolve the controversy.'" (quoting *Vivid Techs., Inc. v. Am. Sci. & Eng'g, Inc.*, 200 F.3d 795, 803 (Fed. Cir. 1999))).

D. 35 U.S.C. § 103(a) – Peev, Spitballs

Petitioner argues that the combination of Peev and Spitballs renders obvious claims 4–9, 12, and 14. Pet. 35–56. Generally, Petitioner argues that it would have been obvious to use SAP ammunition, as taught by Spitballs,

in an airsoft gun, as taught by Peev. *Id.* at 35–44. Patent Owner disagrees. *See generally* PO Resp.

For the reasons below, we determine that Petitioner fails to show by a preponderance of the evidence that Peev and Spitballs would have been combined for the reason asserted by Petitioner.

1. Reason to Combine

Petitioner argues that it would have been obvious to combine Peev and Spitballs because of the risk of injury with hard plastic ammunition used in airsoft guns such as Peev. Pet. 35–42. In particular, Petitioner quotes that, "[w]hen there is a design need or market pressure to ***solve a problem*** and there are ***a finite number of identified, predictable solutions***, a person of ordinary skill has good reason to ***pursue the known options within his or her technical grasp***." *Id.* at 35 (quoting *KSR*, 550 U.S. at 421).[7] Petitioner contends that one of ordinary skill in the art:

> (1) knew about the injury problem caused by airsoft guns (such as Peev), (2) knew one solution was to make the ammunition softer, (3) knew that there was prior art soft SAP ammunition available (Spit Balls) and few other alternatives, and (4) had the technical skill to combine this soft ammunition with Peev.

Id. at 41.

a) "solve a problem"

Petitioner does not persuade us by a preponderance of the evidence that its asserted solution of making airsoft gun ammunition "softer" by using SAP would have solved the asserted injury problem caused by airsoft guns. Pet. 35–41. Petitioner argues that "Spitballs were softer projectiles ('Will

[7] Petitioner explains that "our whole presentation has been based on this portion from *KSR*, what some people call the problem-solution approach." Tr. 6:3–5.

bounce and/or explode into mushy parts on impact'[)]that could be used in place of the hard spherical plastic ammunition." *Id.* at 39 (quoting Ex. 1002, 21) (citing Ex. 1016 ¶ 85).

We agree with Patent Owner that Petitioner presents insufficient evidence that one of ordinary skill in the art would have expected Spitballs to be safer than conventional airsoft rounds merely because Spitballs are softer. PO Resp. 1. Petitioner cites (Pet. 39) to testimony that opines, based on the description of Spitballs found at the Internet Archive, one of ordinary skill in the art would have understood that "Spitballs were softer projectiles" that "[w]ill bounce and/or explode into mushy parts on impact," and as such "could be used in place of the hard spherical plastic ammunition to address the injury problem" (Ex. 1016 ¶ 85). This testimony does not address whether the force of impact would be considered safer in comparison to the projectile that Peev uses. *See id.* It also does not cite to any other evidence in the record that shows SAP rounds would have been expected to be safer than conventional airsoft rounds. *See id.*

Petitioner also cites to other testimony that opines one of ordinary skill in the art would have been motivated to use Spitballs in place of Peev's hard projectiles and that a hydrated SAP particle could have been tailored to desired softness, shape, and size. Pet. 39 (citing Ex. 1016 ¶ 86; Ex. 1017 ¶¶ 46–48). These additionally cited opinions do not address whether one of ordinary skill in the art would have expected Spitballs to be safer than conventional airsoft rounds. *See* Ex. 1016 ¶ 86; Ex. 1017 ¶¶ 46–48.

Patent Owner, on the other hand, argues and presents evidence that, in the combination proposed by Petitioner, Spitballs would have been more massive than airsoft rounds and would have increased the capacity to injure, and that softer ammunition does not equate to safer ammunition, in the

manner argued by Petitioner. PO Resp. 1, 14–16. Patent Owner further argues that reduced injuries from Spitballs is not self-evident because Spitballs are explicitly designed to grow in size and weight as it absorbs water and, thus, able to carry more kinetic energy and cause more potential injury. *Id.* at 17 (citing Pet. 25–26; Ex. 1016 ¶¶ 66–67, 73; Ex. 1017 ¶¶ 53, 66; Ex. 2015 ¶ 59). Patent Owner, therefore, argues that, even if Petitioner had shown an injury problem with airsoft guns, one of ordinary skill in the art would not have considered Spitballs as a solution to that problem, because of its greater kinetic energy. *Id.* (citing Ex. 2015 ¶¶ 59, 62).

Patent Owner's declarant uses the sizes calculated by Petitioner's declarant Dr. Reitman and calculates that Spitballs with a 0.6 in diameter and a mass of 1.844g "are <u>more than 14 times heavier</u> than lightweight airsoft rounds" and "would have <u>more than 14 times</u> as much muzzle energy as a lightweight 0.12g airsoft round." Ex. 2015 ¶ 59.

We credit the testimony that the kinetic energy analysis done by Patent Owner's declarant is "a conventional approach for evaluating safety of projectile launching devices of all sorts." Ex. 2015 ¶¶ 56–58. The record supports that the same kinetic energy analysis would have been used to evaluate the safety of Petitioner's proposed modification of Peev to use Spitballs. Ex. 1019, 9, 10; Ex. 2016 ("The Airsoft Question and Answer Book"), 9; Ex. 2029 ("Standard Specification for Low Energy Air Guns (Less Than 1 Joule)"), 2, 3, 6; *see also* Ex. 1037 ¶ 35 (Petitioner's declarant stating that "[p]rior to 2010, it was known to a [person of ordinary skill in the art] that the damage/injury potential of a launched projectile is related to its kinetic energy" and that the "mass and velocity of a small projectile are relevant to injury potential"). Petitioner does not dispute that the kinetic

energy analysis is highly relevant to an evaluation of the safety of the proposed modification. *See* Reply.

We, therefore, credit the testimony that one of ordinary skill in the art "conducting this kind of basic muzzle energy analysis—a conventional, even industry standard technique at the time—would not have concluded that the polymer balls that Spitballs teaches are a safer form of ammunition simply because they are softer than lightweight airsoft rounds," because the record supports it. Ex. 2015 ¶ 59.

Petitioner, however, argues that Spitballs were a known safer ammunition because they bounced and exploded into parts on impact and Patent Owner's declarant ignores that Spitballs can scatter on impact, thereby reducing the potential for injury. Reply 9–14 (citing Pet. 39; PO Resp. 14–18; Ex. 1002, 15; Ex. 1037 ¶¶ 16, 56–66, 76; Ex. 2015 ¶¶ 42–43). Petitioner also argues that Patent Owner's declarant conceded on cross-examination that breaking down on impact would reduce the likelihood of injury. *Id.* at 11 (citing Ex. 1036, 90:14–91:15, 93:14–22). Petitioner further argues that, when the deformability of the projectile is comparable to the deformability of the target, the projectile will deform, thereby increasing the contact area and reducing the kinetic energy per unit contact area. *Id.* at 11–12 (citing Ex. 1023; Ex. 1037 ¶¶ 51, 52, 59).

Even if Spitballs deformed, increased its contact area, and scattered on impact to reduce the kinetic energy per unit contact area, Petitioner does not provide sufficient evidence to determine if the reduction in kinetic energy would have been enough so that one of ordinary skill in the art would have considered Spitballs to be a solution to the asserted injury problem caused by airsoft guns. Reply 9–14; Ex. 1037 ¶¶ 16, 51, 52, 56–66, 76. The cited testimonial evidence relates to Spitballs bouncing or exploding on impact

and SAP deforming on impact to reduce kinetic energy. Ex. 1037 ¶¶ 16, 51, 52, 56–66, 76. The testimony, however, does not address if the reduction would have overcome the 14-fold increase in mass and kinetic energy over the airsoft round used by Peev. *See id.*; Ex. 2015 ¶ 59 (calculating that Spitballs with 0.6 in diameter and a mass of 1.844g "would have more than 14 times as much muzzle energy as a lightweight 0.12g airsoft round").

In other words, Petitioner does not squarely address the testimonial evidence that the softness of Spitballs would not have been equated with safety, because of its higher weight and kinetic energy. Ex. 2015 ¶¶ 44–55. We agree with Patent Owner that Petitioner does not assert fragmentation and deformation would have overcome the greater kinetic energy of the heavier Spitballs, and that Petitioner's declarant admitted such calculation was not done. PO Sur-reply 7 (citing Ex. 2121, 48:11–49:7); Ex. 2121, 48:11–49:7 (Petitioner's declarant testifying that calculations of how much kinetic energy is absorbed when Spitballs bounce or explode were not done). Petitioner's declarant also identified that back splatter can create an additional safety concern. Ex. 2121, 101:14–104:4.

We agree with Patent Owner that Petitioner failed to discuss the deformation and fragmentation of Spitballs in its Petition and declarations. PO Sur-reply 6 (citing Reply 11–12; Ex. 1037 ¶ 43). We also agree that Petitioner did not explain how one of ordinary skill in the art could have reliably assessed the safety of Spitballs and airsoft rounds. *Id.*; *see also* Ex. 2121, 47:1–48:10 (Petitioner's declarant testifying that experimentation would be the best way to quantify how much kinetic energy is absorbed through deformation and fragmentation of a given projectile).

Regarding 6 mm Spitballs, as argued by Patent Owner, its declarant focused on the mass and diameter calculations provided by Petitioner's

declarant, and Petitioner has the burden to analyze a projectile other than the one disclosed in Spitballs, not Patent Owner. PO Sur-reply 11 (citing Reply 13–14; Ex. 1017 ¶ 66; Ex. 2015 ¶ 59). Petitioner failed to do such an analysis of a 6mm Spitball or SAP projectile.

Regarding Petitioner's reliance on deposition testimony from the ITC proceedings, as argued by Patent Owner, its declarant agreed that making ammunition softer would make injury less likely, *if all other parameters were equal*, not larger and heavier like a substitution with Spitballs. PO Resp. 18 (citing Pet. 38–39; Ex. 1004, 531:25–532:9; Ex. 2015 ¶¶ 60–61); Ex. 1017 ¶ 64 (Petitioner's declarant opining that Spitballs can "grow up to 200 times their original size" to reach a mass of 1.844g); Ex. 1037 ¶ 39 (Petitioner's declarant agreeing that "when all other variables are held constant, heavier is less safe, meaning injury potential is increased"); Ex. 2015 ¶¶ 54–59 (Patent Owner's declarant opining that heavier and softer ammunition can pose more injury risk); Ex. 2016, 11 (indicating that airsoft ammunition typically comes in weights from 0.12g to 0.25g).

We, thus, agree with Patent Owner that Petitioner fails to prove that the ordinarily skilled artisan would have viewed "Spitballs as a suitable and safer kind of airsoft ammunition," the "predicate to its motivation theory" and that one of ordinary skill in the art would not have been motivated to combine Peev and Spitballs because the proposed combination, as presented, "offered no predictable safety benefit." PO Resp. 18; PO Sur-reply 1–2.

Additionally, Patent Owner's other examples of softer ammunition support our determination that Petitioner fails to show sufficiently that merely making airsoft gun ammunition softer would have been a solution to the asserted injury problem caused by airsoft guns. Patent Owner likens Spitballs to paintballs that are also softer than airsoft ammunition but have

caused injuries that are more likely to result in hospitalization. PO Resp. 14 (citing Ex. 1019, 9; Ex. 2015 ¶¶ 42–58). The cited testimonial evidence discusses examples of softer projectiles, such as a potato from a potato gun and paintballs, that undercut Petitioner's assertion that "one solution was to make the ammunition softer." Pet. 39; Ex. 2015 ¶¶ 42–51. The cited testimony explains that softer ammunition is not safer ammunition, because of other considerations, particularly its weight. Ex. 2015 ¶¶ 42–51 (citing Ex. 1019, 8, 9; Ex. 2015 ¶¶ 42–51; Ex. 2016, 9, 11; Ex. 2116 ("Video Measurement of the Muzzle Velocity of a Potato Gun"), 1, 4, 11; Ex. 2117 ("Standard Specification for Paintballs Used in the Sport of Paintball" designated ASTM F1979–10), 1, 2, 3; Ex. 2118 ("Nonpowder Firearms Injuries to Children Treated in Emergency Departments"), 1, 5). We credit that testimony because the cited portions of the record support it.

The full record also shows that paintballs hit harder even though they are softer than plastic airsoft ammunition, as Patent Owner argues, because they are more massive and carry more kinetic energy. PO Resp. 14–17 (citing Ex. 1002, 21; Ex. 1017 ¶ 66; Ex. 2015 ¶¶ 54–59; Ex. 2016, 9); Ex. 2015 ¶¶ 54–59 (Patent Owner's declarant opining that heavier and softer ammunition can pose more injury risk); Ex. 2016, 9 ("paintballs . . . [are] going to hit harder in almost all cases."), 11 (indicating that airsoft ammunition typically comes in weights from 0.12g to 0.25g).

For the reasons discussed above, we agree with Patent Owner that Petitioner does not explain why Spitballs with its larger mass and more kinetic energy would have been safer (or why one of skill in the art would consider them safer) than lighter plastic airsoft ammunition and that Petitioner only addresses the softness of Spitballs. PO Resp. 16–17 (citing Ex. 1016 ¶ 85; Ex. 1017 ¶ 12; Ex. 2030, 16:13–21). Therefore, based on the

full record, Petitioner fails to show that one of ordinary skill in the art would have expected Spitballs to be safer than conventional airsoft rounds merely because Spitballs are softer and that its asserted solution of making airsoft gun ammunition "softer" by using SAP would have solved the asserted injury problem caused by airsoft guns.

b) "identified, predictable solutions"

For the reasons above, we determine that Petitioner fails to show that one of ordinary skill in the art would have expected Spitballs or SAP to be safer than conventional airsoft rounds. Petitioner also argues that one of ordinary skill in the art "knew that there was prior art soft SAP ammunition available (Spit Balls) and few other alternatives." Pet. 39. Petitioner does not persuade us by a preponderance of the evidence that SAP was an identified solution, because the record does not show it was a known alternative airsoft ammunition.

We find that neither Peev nor Spitballs teaches, suggests, or discloses that Spitballs or SAP were known, suitable, and safer alternatives to the conventional ammunition used in Peev's electric airsoft gun. We agree with Patent Owner that the full record lacks evidence that "highly absorbent spherical polymer balls like those in Spitballs had ever been used or contemplated . . . as a viable, much less 'safer,' kind of airsoft ammunition" or that they "were among a limited number of known alternatives to conventional plastic airsoft ammunition." PO Resp. 11 (citing Pet. 35–42).

We agree with Patent Owner that Petitioner fails to provide evidence that "Spitballs polymers were among the field of 'identified' prior art solutions to the alleged injury risk problem," and "Spitballs had ever been used as ammunition for any type of gun that . . . Peev teaches." PO Resp. 13.

We also agree that Petitioner fails to establish that "Spitball polymers were at least art-recognized 'suitable option.'" *Id.* at 14.

Thus, based on the full record, Petitioner fails to persuade us by a preponderance of the evidence that one of ordinary skill in the art considered Spitballs, or SAP, as one of a "number of identified, predictable solutions."

c) "a finite number of identified, predictable solutions"

Petitioner also does not persuade us by a preponderance of the evidence that there were "a finite number of identified, predictable solutions." Petitioner argues that "[t]here was a finite number of ammunition options that a [person of ordinary skill in the art] could have considered that would have a reasonable expectation of success, including rubber, cork, foam, and soft plastics, such as SAPs." Pet. 39; Ex. 1016 ¶ 86.

As argued by Patent Owner, beyond hard plastics for airsoft ammunition, "the design space was vast" and "applicable industry standards . . . only <u>excluded</u> two kinds of potential ammunition—metallic objects and <u>liquid-filled objects like Spitballs</u>." PO Resp. 12 (citing Pet. 39; Ex. 1016 ¶ 86). The full record shows that the applicable standard required airsoft ammunition to be "spherical, of 6 mm (.24 cal) diameter, non-metallic and non-liquid filled" and the standard would have excluded ammunition with water. *Id.* at 19–20 (citing Ex. 1002, 21; Ex. 1017 ¶ 61; Ex. 2015 ¶¶ 65–66); Ex. 2015 ¶¶ 65–66. Petitioner agrees with Patent Owner that the standard leaves open other materials. Reply 16.

In view of the applicable standard, we agree with Patent Owner that "many other compliant materials were readily available," and the standard shows that "the airsoft industry had turned <u>away from</u> liquid-filled projectiles like the Spitballs polymers." PO Resp. 21. As pointed out by Patent Owner, Petitioner turns to a declarant that is not a chemist, and, thus,

we give little weight to the opinion of Dr. Courtney on whether Spitballs would have been considered liquid filled by one of ordinary skill in the art. Reply 16; PO Sur-reply 18; Ex. 1037 ¶ 55; Ex. 2121, 61:12–13; *see also* PO Sur-reply 14–15 (arguing that Dr. Courtney does not meet the adopted level of ordinary skill in the art).

We agree with Patent Owner that Petitioner's list of "rubber, cork, foam, and soft plastics, such as SAPs" "does not exclude all of the other types of materials Petitioner failed to address—e.g., the gelatin materials used to make paintballs." PO Resp. 25 (citing Ex. 2117, 1). The "open-ended" list "has no meaningful evidentiary support" because the cited paragraphs from its declaration "make no reference at all to potential airsoft ammunition." Pet. 39; PO Resp. 25; Ex. 1016 ¶ 86; Ex. 1017 ¶¶ 36–39, 46–48. Petitioner's declarant Dr. Reitman also "acknowledged that airsoft considerations are beyond the scope of her testimony." Ex. 2030, 117:17–118:20. We agree with Patent Owner that Petitioner's list would include "countless distinct polymers." PO Resp. 26; Ex. 2120, 27–28.

Petitioner fails to respond to the asserted flaws in its arguments regarding a finite number of alternatives to conventional airsoft ammunition. Pet. 39; PO Resp. 24–27; Reply 17; PO Sur-reply 13. The full record indicates that, even if Spitballs were a type of airsoft ammunition, one of ordinary skill in the art would not have been presented with limited options. Also, for the reasons above, Petitioner fails to show Spitballs would have been considered a suitable option for airsoft ammunition and that Spitballs would have solved the asserted airsoft injury problem.

Based on the full record, Petitioner fails to provide evidence that "toy polymer balls" were ever used as ammunition for an airsoft gun and the ordinarily skilled artisan would have considered such polymer balls "to be

within the design space of suitable airsoft ammunition." PO Resp. 29–30. We, thus, determine that Petitioner fails to show that there were a "a finite number of identified, predictable solutions."

2. Alternative Rationales to Combine

Petitioner argues that one of ordinary skill in the art "would also have been motivated to combine Peev with Spitballs," and "Peev and Spitballs are in the same field of endeavor, namely, launchers and ammunition use for fun." Pet. 41 (citing Ex. 1016 ¶ 89); *see also id.* at 43 (arguing that one of ordinary skill in the art "would have been motivated to use the plurality of soft projectiles having the same spherical shape (Spitballs) in place of the plurality of hard projectiles of Peev having the same spherical shape") (citing Ex. 1016 ¶ 93; Ex. 1017 ¶ 49).

We agree with Patent Owner that the above-quoted rationales to combine are deficient. PO Resp. 32–33. As argued by Patent Owner, Petitioner's same field of endeavor arguments do not explain why one of ordinary skill in the art would have combined Peev and Spitballs. *Id.* at 32 (citing Pet. 41). The cited paragraphs of the Delman and Reitman Declarations likewise fail to explain why Peev and Spitballs would have been combined, because they merely opine that the two references are in the same field of endeavor, there would have been a motivation to combine without further explanation, and that SAP could have been tailored to a desired shape and size. Ex. 1016 ¶¶ 89, 93; Ex. 1017 ¶ 49.

We give little weight to the cited paragraphs of the Delman Declaration, because they lack record support. Ex. 1016 ¶¶ 89, 93. Petitioner also does not further address why one of ordinary skill in the art would have been motivated to combine Peev and Spitballs and why merely being in the same field of endeavor provides a reason to combine the references. *See*

Reply; *see also* Ex. 2007, 71 (determining that "it is not clear from the record that a person of ordinary skill would even likely start with an airsoft gun (or reference)").

Based on the full record, we determine that insufficient argument and evidence support Petitioner's asserted motivation to combine. Pet. 41; Ex. 1016 ¶¶ 89, 93; Ex. 1017 ¶ 49.

Petitioner also argues that one of ordinary skill in the art

> would have recognized combining air guns, such as Peev's toy gun with Spitballs' hydrated SAP projectiles, is a simple substitution of one known element (spherical hydrated SAP soft-projectiles) for another known element (Peev's spherical hard bullets) to obtain predictable results (a safer air gun that preserves the fun of the gun).

Pet. 41–42 (citing Ex. 1016 ¶ 90). Patent Owner responds, and we agree, that this alternative reason to combine is also deficient. PO Resp. 33.

As pointed out by Patent Owner, Petitioner's simple substitution argument fails because "Petitioner has not presented any credible evidence that ammunition for an airsoft gun was an 'established function' of a polymer product like the one taught by Spitballs." *Id.* The above-quoted argument from the Petition substantially repeats the cited paragraph from the Delman Declaration, and that paragraph does not provide any further explanation or cite any record evidence for support. Ex. 1016 ¶ 90. We, therefore, give no credit to that testimony. Petitioner also does not further address its simple substitution rationale. *See* Reply. Also, as discussed above, Petitioner fails to provide sufficient argument and evidence that Spitballs and SAP were known alternatives to the conventional ammunition used in Peev's electric airsoft gun.

Based on the full record, we determine that insufficient argument and evidence support Petitioner's asserted simple substitution rationale. Pet. 41–42; Ex. 1016 ¶ 90.

3. Simultaneous Invention

Petitioner argues that Korean Patent Publication No. 20-2010-0004855 to Kim (Ex. 1022) and a video from YouTube (Exs. 1023, 1024, "Vat19") are evidence of simultaneous invention supporting a finding of obviousness. Pet. 57–60 (citing Ex. 1016 ¶¶ 126–131). Patent Owner responds that neither discloses all claimed features, specifically that Kim does not disclose SAP and Vat 19 only shows Spitballs blown out of a tube. PO Resp. 61–64 (citing Pet. 57–60; Ex. 1004, 302:7–22; Ex. 1016 ¶¶ 127–128; Ex. 1022, 8; Ex. 1024; Ex. 2015 ¶¶ 236–239).

Petitioner replies that Kim shows that there was a safety problem and that softer ammunition was a possible solution and that Vat19 shows Spitballs exploding on contact with a person without harm. Reply 28–30 (citing Paper 12, 16–17; PO Resp. 63). However, we agree with Patent Owner, that Kim and Vat19 do not disclose all of the limitations of the claims. PO Resp. 61–62; PO Sur-reply 26; Ex. 1004, 302:7–22; Ex. 1022, 8, 9; Ex. 1024; Ex. 2007, 100 (ALJ concluding "there is ***no*** disclosure that [Kim's] gel material is a SAP"); Ex. 2015 ¶¶ 236–239. Petitioner makes no assertions to the contrary. *See* Pet. 57–60; Reply 28–30.

As discussed above, the full record does not support that one of ordinary skill in the art would have combined Peev and Spitballs for the reasons asserted by Petitioner. Petitioner's insufficient evidence of simultaneous invention does not overcome that deficiency.

4. Petitioner Fails to Show by a Preponderance of the Evidence that Claims 4–9, 12, and 14 are Unpatentable

Based on the full record and for the reasons above, Petitioner fails to show by a preponderance of the evidence that one of ordinary skill in the art would have combined Peev and Spitballs for the reasons asserted by Petitioner. Petitioner, therefore, fails to show by a preponderance of the evidence that claims 4–9, 12, and 14 are unpatentable over Peev and Spitballs.

III. CONCLUSION

For the foregoing reasons, we determine that Petitioner has not proven under the preponderance of the evidence that the challenged claims are unpatentable, as summarized below.

Claims	35 U.S.C. §	Reference(s) /Basis	Claims Shown Unpatentable	Claims Not shown Unpatentable
4–9, 12, 14	103(a)	Peev, Spitballs		4–9, 12, 14

IV. ORDER

In consideration of the foregoing, it is hereby ORDERED that:

Claims 4–9, 12, and 14 of U.S. Patent 8,640,683 B2 have not been shown to be unpatentable; and

Parties seeking judicial review of this Final Written Decision must comply with the notice and service requirements of 37 C.F.R. § 90.2.

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