

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' REPLY BRIEF UNDER
35 U.S.C. § 316(a)(13) AND 37 C.F.R. § 42.23**

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EXHIBIT LIST

<u>EXHIBIT NO.</u>	<u>DESCRIPTION</u>
1001	U.S. Patent No. 8,640,683
1002	Publication Declaration of Nathaniel E. Frank-White and ThinkGeek Spitballs Internet Archive Webpage (“Spitballs”)
1003	Bulgarian Patent No. BG110343 and translation (“Peev”)
1004	Transcript of Hearing in ITC Case 337-TA-1325
1005	“Airsoft Guns: A Double-Edged Sword,” Bleacher Report (2008), available at https://bleacherreport.com/articles/46402-airsoft-guns-a-double-edged-sword
1006	Patent Owner’s Notice of Patent Priority Dates and Dates of Conception
1007	ThinkGeek Form 10-Q (https://www.sec.gov/Archives/edgar/data/1096199/000114420409057449/v165221_10q.htm).

<u>EXHIBIT NO.</u>	<u>DESCRIPTION</u>
1008	<i>ThinkGeek: The nerd company at a crossroads - The Washington Post</i> https://www.washingtonpost.com/lifestyle/magazine/thinkgeek-the-nerd-company-at-a-crossroads/2013/12/11/c7d579ba-4b12-11e3-9890-a1e0997fb0c0_story.html
1009	“Not your kid brother's toy gun” – CNET (2006), available at https://www.cnet.com/culture/not-your-kid-brothers-toy-gun/
1010	“Tech: Desk Toys,” Wall Street Journal (2006), available at https://www.wsj.com/articles/SB116684498725258456
1011	“USB Airsoft Turret,” Inventgeek (2006), available at www.inventgeek.com/usb-airsoft-turret/
1012	“R/C Missile Launcher – Unstoppable Cube Welfare,” The Green Head (2006), available at https://www.thegreenhead.com/2006/05/rc-missilelauncher-unstoppable-cube.php
1013	3.31.2023 Deposition Transcript of Ronald Brawer
1014	U.S. Patent No. 6,386,293 to Bartlett
1015	Order No. 28: Construing Certain Terms of the Asserted Claims
1016	Declaration of Joel Delman
1017	Declaration of Maureen Reitman, Ph.D.

<u>EXHIBIT NO.</u>	<u>DESCRIPTION</u>
1018	Prosecution History of the '683 Patent
1019	California Senate Office of research, May 2005 (Revised)
1020	“Not Your Dad’s BB Gun,” Washington Post (2004), available at https://www.washingtonpost.com/archive/lifestyle/2004/11/26/not-yourdads-bb-gun/6ccffa5e-a5bb-45e2-9a5c-a17de827267c/
1021	10.25.2022 Infringement Contentions Chart US8640863 for Prime Time Toys (excerpted)
1022	Korean Patent Publication No. KR 20-2010-0004855 (“Kim”)
1023	“Spitballs Grow up to 200 times their original Size,” YouTube (2010), available at https://www.youtube.com/watch?v=n-Wje1G1wBA
1024	Screenshot of “Spitballs Grow up to 200 times their original Size,” YouTube (2010)
1025	U.S. Patent No. 8,371,282
1026	Translation of Bulgarian Patent Law Section 46(c)(2)
1027	Declaration of Velislav N. Dramov
1028	Bulgarian Patent Office Bulletin Issue No. 7 dated July 31, 2009 and English translation
1029	Reserved

<u>EXHIBIT NO.</u>	<u>DESCRIPTION</u>
1030	Reserved
1031	Gerald G. Fuller Personal and Professional Vitae
1032	“Real Crimes, Unreal Weapons”, <i>The New York Times</i> , April 8, 2007
1033	“Ball bearing (BB) gun injuries”, <i>Hong Kong Journal of Emergency Medicine</i> , Vol. 17(5), November 2010
1034	“Ball bearing (BB) guns, ease of purchase and potential for significant injury”, <i>The Annals of The Royal College of Surgeons of England</i> , 88:402-404 (2006)
1035	Excerpts from Transcript of the Deposition of Dr. Gerald Fuller
1036	CONFIDENTIAL Transcript of the Deposition of Dr. Barry Kudrowitz
1036	PUBLIC Transcript of the Deposition of Dr. Barry Kudrowitz
1037	Rebuttal Declaration of Amy Courtney, Ph.D., CAISS
1038	Reserved
1039	Jerry D. Wilson, Anthony J. Buffa, and Bo Lou, “Annotated Instructor’s Edition—COLLEGE PHYSICS,” sixth edition (2007) Pearson Education, Inc., pages 148, 149, 155, 156, 178, 182, 184, and 185.
1040	Ferdinand P. Beer et al., “MECHANICS OF MATERIALS,” fifth edition (2006) McGraw-Hill, pages 693-694.

<u>EXHIBIT NO.</u>	<u>DESCRIPTION</u>
1041	Stefan M. Duma et al., “Determination of Significant Parameters for Eye Injury Risk from Projectiles,” <i>The Journal of TRAUMA® Injury, Infection, and Critical Care</i> , Vol. 59, No. 4 (October 2005), pages 960-964.
1042	Jill Aliza Bisplinghoff, “BIOMECHANICAL RESPONSE OF THE HUMAN EYE TO DYNAMIC IMPACT,” Master’s Thesis submitted to Virginia Polytechnic Institute and State University (April 10, 2009).
1043	William J. Fienup and Barry M. Kudrowitz, “The Exploration of Concepts for Projectile Toys,” Master’s Thesis submitted to Massachusetts Institute of Technology (June 2006).
1044	Robert E. Berger, “System for Assessing Eye Injury Potential of Propelled Objects,” <i>Journal of Research of the National Bureau of Standards</i> , Vol. 84, No. 1 (January-February 1979) pages 9-19.
1045	Eric Samuel Oglesby, “HARD TARGET PERFORMANCE TESTING OF NON-LEAD, FRANGIBLE AMMUNITION,” Master’s Thesis submitted to University of Tennessee, Knoxville (May 2003).
1046	Yoshimi Tanaka, Yoshihiro Yamazaki, and Ko Okumura, “Bouncing gel balls: impact of soft gels onto rigid surface,” <i>Europhysics Letters</i> , arXiv:cond-mat/0302167v2 (May 15, 2003), pages 1-7.
1047	Eric A. Kennedy et al., “Risk Functions for Human and Porcine Eye Rupture Based on Projectile Characteristics of Blunt Objects,” <i>Stapp Car Crash Journal</i> , Vol. 50 (November 2006), pages 651-671.
1048	Johannes C. Fleischhauer et al. “Ocular Injuries Caused by Airsoft Guns,” <i>ARCH OPHTHALMOL</i> , Vol. 117 (October 1999), pages 1437-1439.

Petitioners submit this Reply to Patent Owner's ("PO") Response (Paper19) submitted in this IPR of U.S. Patent No. 8,640,683 ("683 Patent").

I. INTRODUCTION

PO argues against the motivation to combine, claiming that a POSITA would not have expected the *softer* Spitballs to be safer than *hard* plastic airsoft ammunition because Spitballs are allegedly massive compared to airsoft ammunition and therefore have more kinetic energy. Paper19, pp.1, 14-18. But PO conveniently ignores the teaching that Spitballs will "*bounce* and/or explode into *mushy parts* on impact." Ex.1002, p.15.¹ As explained by Petitioners' rebuttal expert, Dr. Amy Courtney, because Spitballs bounce or break apart on impact, kinetic energy is dissipated and the force of impact is spread over a much wider surface than hard plastic airsoft ammunition, thus reducing the likelihood of injury. Ex.1037, ¶¶56-66. This was known to a POSITA before 2010 and is consistent with the later teaching of the '683 Patent.

Next, PO argues that a POSITA would not have expected the soft Spitballs to be suitable ammunition for the airsoft gun of Peev. Paper19, p.1. PO ignores that a POSITA had access to a chemist and the *unrebutted* testimony of Petitioners' expert Dr. Reitman that before 2010, this chemist *knew how* "to

¹ All emphases added unless otherwise indicated.

increase crosslink density to increase *resistance to fracture*” and this was “*well known* and straightforward.” Ex.2030, p.124:8-15. PO’s SAP expert in the ITC case agreed. Ex.1035, pp.150:18-151:11.

PO also complains that a POSITA would be faced with too many choices of SAPs. But as explained by *both* Petitioners’ and PO’s SAP experts, this was not an issue. *See infra*, Section II.E. In fact, the ‘683 Patent does not provide a single example of either a SAP or a cross-linker. Ex.1001, Col.4:4-27, Col.7:18-23.

PO downplays the injury risk posed by airsoft guns in 2010, focusing *solely* on their use in military/police training and supervised games. PO ignores the other airsoft users, namely, teenagers/young adults and the well-documented injury problem with these users prior to 2010 (Ex.1048, pp.1437-1438):

[W]e observed ... an escalating number of ocular *injuries* caused by “airsoft” or “softgun” toy weapons. ... These toy guns have gained popularity among *youngsters*...

The innocent name and misleading marketing contribute to the *danger of airsoft guns*.

Under *KSR*, injuries to “*youngsters*” (the patients were 11-17 years old; *id.*, p.1438) were a problem faced by a POSITA. PO ignores this problem.

As to *just three* of the challenged claims (5, 8-9), PO argues that *objective*

evidence (commercial success and praise) supports nonobviousness and that the abilities of the Xploderz to achieve “more distance” and “more ammo” were the reasons for the success and praise. Paper19, pp.46-47, 55. However, the amount of ammo that the launcher holds and the distance that the ammunition travels are **unclaimed features**. Thus, PO is unable to show a nexus **to a claimed feature** as required by the Federal Circuit. *Ormco Corp. v. Align Tech., Inc.*, 463 F.3d 1299, 1311-12 (Fed. Cir. 2006).

Moreover, to the extent PO relies on the combination of the “as-claimed” launcher with SAP ammunition, PO ignores the testimony of Oded Ben-Ezer (Maya Group’s CEO) that [REDACTED]

[REDACTED]

[REDACTED] Ex. 2032, pp.230:12-231:22.

II. THERE WAS A MOTIVATION TO COMBINE PEEV AND SPITBALLS

A. Peev And Spitballs Appealed To Teens/Young Adults

PO argues that Peev and Spitballs are a “mismatch” because (1) Peev is directed to “realistic” airsoft guns that are used in police and military training and in airsoft games (which are “typically simulated military skirmishes”) and (2)

Spitballs are a “novelty polymer product” found in the “Science Toys” department. Paper19, pp.4-10. PO argues that this mismatch weighs against combining Peev and Spitballs.

PO misses the point. Both airsoft guns (Peev) and Spitballs appealed to and were used by teenagers and young adults. Spitballs were advertised in the “Cube Warfare” section of ThinkGeek.com. “Cube” is reference to workplace cubicles. Spitballs teaches launching them at your “coworkers” from “the comfort of your own cube.” Ex.1002, pp.18, 21, 24. The below screenshots from the VAT19 video show young adults engaging in cube warfare by playing with Spitballs. Ex.1023: 52secs, 1.15secs.





Airsoft guns also appealed to teenagers and young adults. PO does not dispute the teachings in the 2008 article entitled “Airsoft Guns: A Double-Edged Sword” that notwithstanding the risk of injury, airsoft guns were fun and popular with young boys:

But beyond all the risks and dangers associated with airsoft guns, there is also a *really fun* aspect to them. They *look and behave exactly like real guns* so that it feels like you’re firing a real gun. ... It doesn’t take a rocket scientist to figure out why *young boys like them so much*.

Ex.1005, p.3. Additional publications also demonstrate this point. A 2007 New York Times article explains that airsoft guns were “slightly more *popular with teenagers* than adults” and were expected to become “even *more popular with*

teenagers because of their accessibility and low cost.” Ex.1032, p.2. PO goes to great lengths to explain how airsoft guns are made to look and operate *like real guns*, but this is *exactly why* they appealed to teenagers:

That’s the attraction for some buyers. The guns, which can be bought on the Web or at gun shops and sporting goods stores for as little as \$25, have the *same color, design and markings of popular handgun models* made by Smith & Wesson, Sig Sauer and Glock, among others. “The attention to detail on these guns is amazing” ...

Id.; see also Ex.1033, p.488 (airsoft guns “represent a significant cause of injury especially among *children and teenagers.*”); Ex.1048, p.1437 (Airsoft guns “have gained popularity among *youngsters* since they are relatively *cheap*, ... and look *real.*”).

The evidence shows that airsoft guns (*e.g.*, Peev) match well with Spitballs.

B. PO Ignores That Teens/Young Adults Were Getting Injured By Airsoft

PO attempts to place airsoft gun use into just two categories, (1) low-powered guns used as toys by young children which allegedly do not cause injuries, and (2) high-powered guns used for police/military training and supervised airsoft games, where the person being hit is supposed to feel it.

Paper19, pp.27-32. Under these two scenarios, PO argues there is no injury problem.

But PO and its expert ignore the evidence relied upon by the Director “showing it was known that airsoft guns could *cause harm*, and that such harm could occur even at *low muzzle velocities*.” Paper12, p.9 (citations omitted). The Director then details this evidence. *Id.*, pp.11-12 (“Indeed, the current record includes detailed articles and reports documenting the danger of injuries, as well as *admissions by Patent Owner’s expert, Dr. Kudrowitz*, that persuasively point to the opposite conclusion—that safety *was* a concern for airsoft guns...”).

PO’s two scenarios conveniently *ignore the critical third scenario*, namely, use of both low- and high-powered airsoft guns by teenagers/young adults and the resulting injuries. There is still more evidence of this problem:

[W]e observed ... an escalating number of ocular *injuries* caused by “airsoft” or “softgun” toy weapons. ... These toy guns have gained popularity among *youngsters*...

The innocent name and misleading marketing contribute to the *danger of airsoft guns*.

Ex.1048, pp.1437-1438.

“Although most BB [airsoft] guns² fire *low-velocity* missiles, some can still shoot to *penetrate the abdomen, thorax, facial sinuses and even the cranium*.[□] A *pellet* with a velocity of *45 m/s* [*i.e.*, 148 fps] can penetrate human skin and a velocity reaching *60 m/s* [*i.e.*, 197 fps] can fracture bone.” Ex.1033, p.490, citing articles from 1986, 1995, 1996 and 2004.

PO’s attempt to draw a bright line between “children’s toys” and “military-grade projectile devices” (citing ASTM standards for children’s toys) is irrelevant. There is no bright line:

- “Although *considered toys by most*, these [airsoft] weapons have been associated with *serious injuries*.” Ex.1034, p.402.
- “BB and pellet [airsoft] guns are *more than toys*.” Ex.1033, p.491.
- “You can’t give a kid an airsoft for Christmas and tell him to go out and play with it. *It's not a toy*.” Ex.1032, p.2.
- Even Dr. Kudrowitz is unclear on this point: “Prior to 2010, I would *not* characterize *Airsoft as toy guns*” vs. “*toy Airsoft guns*” must have an orange band. Ex.1036, pp.125:22-126:4, 129:3-8.

² This article states (1) airsoft guns are a “new type of BB gun” (p.489) and (2) “[m]ost BB pellets are made of plastic” (p.490).

Whether called a toy or not, airsoft injuries were a real problem for teenagers/young adults as of 2010. The evidence supports the Director’s finding that “Petitioner has shown sufficiently that safety concerns with airsoft guns, such as Peev’s, would have provided a motivation for a person of ordinary skill in the art to look to solutions, such as softer ammunition like Spitballs, to decrease the risk of injury.” Paper12, p.14.

C. Spitballs Were A Known Safer Ammunition

PO and Dr. Kudrowitz allege that the “*crux*” of Petitioners’ case is that *softer* ammunition equates to *safer* ammunition, and that such crux is *wrong*.

Paper19, p.14-18. Dr. Kudrowitz asserts:

Mr. Delman has taken the position that “[p]rior to 2010, Spitballs were *softer* projectiles ... that could be used in place of the hard spherical plastic ammunition [of Peev] to address the injury problem” with airsoft guns...

A POSITA would have understood that just because one kind of ammunition is *softer* than another *does not mean* the softer ammunition is *safer*.

Ex.2015, ¶¶42-43.

But PO and Dr. Kudrowitz ignore the *actual crux*, namely, that “Spitballs were softer projectiles” *because* they “[w]ill *bounce* and/or explode into *mushy*

parts on impact.” Paper2, p.39. This was explained in the Petition with *citations to Dr. Kudrowitz’s own testimony (id.)*:

Spitballs were softer projectiles (“Will bounce and/or explode into mushy parts on impact” Ex. 1002, 21 that could be used in place of the hard spherical plastic ammunition. Ex. 1016, ¶85. ***Dr. Kudrowitz admitted several times*** that the Spitballs packaging taught a POSITA that Spitballs break apart when they hit a target. Ex. 1004, 462:3-15, 475:13-15. (“Q. And, as you pointed out before, the SAP Spit Balls also explode on contact, correct? A. Correct.”).

Yet, Dr. Kudrowitz *specifically excised* the “bounce” and “explode” language from Mr. Delman’s declaration by replacing it with an ellipsis (see yellow highlighting above).

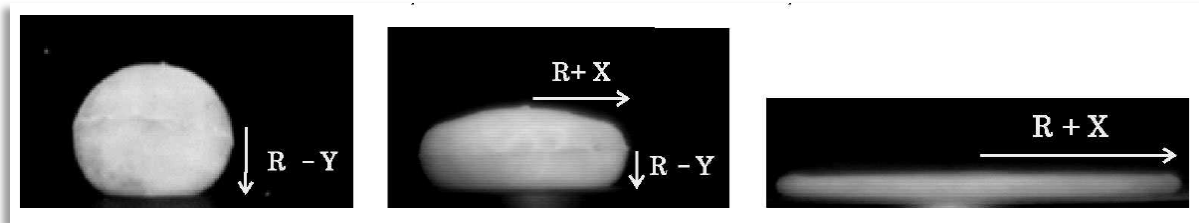
Dr. Kudrowitz’s analysis then ignores this critical language. Dr. Kudrowitz calculates the kinetic energy of a 15.24 mm Spitball and then assumes (incorrectly) that *all* of that kinetic energy is transferred from the SAP projectile to the tissue that it strikes. Based on this, PO argues that a POSITA would not have believed that Spitballs were less likely to cause injury. Paper19, p.16-18.

Dr. Kudrowitz ignores the fundamental principles of physics that the kinetic energy of a projectile can be dissipated in multiple ways, including by deformation, fragmentation, and scattering of the fragments. Ex.1037, ¶56. This is exactly what SAP projectiles (Spitballs) do when they strike a target, *i.e.*, they “**bounce** and/or explode into **mushy parts** on impact.” Ex.1002, p.15; Ex.1037, ¶¶16, 76. ***All of the kinetic energy used to deform, fragment and scatter the SAP projectile is not transmitted to the target (e.g., skin or eye). This reduces the injury potential of a SAP projectile compared to projectiles with similar kinetic energy but that do not deform, fragment, or scatter. *Id.*, ¶¶56-63.***

On cross-examination, Dr. Kudrowitz conceded that before 2010, a POSITA ***knew*** that if a SAP projectile “breaks down on impact, then the force at impact is spread over a much wider surface area, and this reduces the likelihood of injury.” Ex.1036, pp.90:14-91:15, 93:14-22. Yet Dr. Kudrowitz’s declaration and PO’s Response never address these basic principles of physics.

Further, as explained by Dr. Courtney, where the deformability of the projectile (*e.g.*, Spitballs) is comparable to (or more than) the deformability of the target (such as eye or skin), the projectile will deform. Ex.1037, ¶59. Such deformation increases the contact surface area and decreases the kinetic energy per

unit contact area. *Id.* The POSITA knew that prior to 2010, spherical, hydrated SAPs can deform (*e.g.*, when Spitballs “bounce”) to a nearly pancake shape when contacting a target, increasing the contact diameter to approximately twice the sphere diameter. *Id.*, ¶51. This deformation of a SAP sphere is shown sequentially below moving from left to right (*id.*):



This further reduces the injury potential of SAP projectiles. *Id.*, ¶52. A real-world example of this is shown in the VAT19 video where multiple SAP Spitballs are fired into the eyes and face without injury (Ex.1023, 00.35-00.56):



Dr. Kudrowitz’s attempt to equate SAP projectiles to paintballs is also

wrong. As Dr. Kudrowitz acknowledges, paintballs have a “*rigid* to semirigid” shell. Ex.2015, ¶47, quoting “EX2117 (ASTM F1979–10) p.1.” By contrast, Spitballs do not have any shell; they “bounce and/or explode into *mushy* parts on impact.” Ex.1002, p.15. Dr. Courtney explains that although paintballs rupture on impact, the force of the impact can cause significant bruising and laceration to the skin and serious damage to the eye. Ex.1037, ¶54. This is discussed at length in Dr. Kudrowitz’s declaration. Ex.2015, ¶¶50-57. Further, while the shell of the paintball ruptures or splits open on impact, the bolus of liquid paint still delivers much of the kinetic energy to the target surface. Ex.1037, ¶54.

In contrast, in SAP projectiles (Spitballs), the water molecules are physically held in place by the polymer chains, *i.e.*, the polymer and water form a gel. *Id.*, ¶55. When a SAP ball shatters upon impact, water molecules remain within the polymer fragments (Spitballs’ “mushy parts”). *Id.* Indeed, Dr. Kudrowitz admitted that “[w]ater doesn’t come out of a spitball when it strikes a target.” Ex.1036, p.109:14-17.

Finally, even if somehow relevant, Dr. Kudrowitz’s calculation of kinetic energy of Spitballs is flawed. Petitioners’ and Mr. Delman’s position is that a POSITA would have been motivated to make Spitballs the same 6 mm diameter as

airsoft ammunition. Paper2, pp.5-6. Ignoring this, Dr. Kudrowitz calculates the kinetic energy of a *more than twice as large* 15.24 mm diameter SAP projectile. Ex.2015, ¶62. Dr. Kudrowitz never calculated the kinetic energy for a SAP projectile having a 6 mm diameter. Ex.1036, p.103:12-16.

PO's position that a POSITA wouldn't have been motivated to make airsoft safer by using softer SAP ammunition is not supported by and is contrary to basic principles of physics. SAP projectiles (Spitballs) deform, fragment, and the fragments scatter. Although PO ignores this, these properties play a crucial role in determining the kinetic energy that contributes to a projectile's ability to cause injury. Because Spitballs "[w]ill bounce and/or explode into mushy parts on impact (depending on the force you throw them)" (Ex.1002, p.15), a POSITA would have known that SAP ammunition (Spitballs) was a safer ammunition than hard plastic airsoft ammunition and was less likely to cause injury. Ex.1037, ¶¶64-66.

D. The ASTM Standards Provide A Motivation To Combine

PO argues against a motivation to combine based on a strained reading of ASTM standards. However, these standards support the motivation to combine Peev and Spitballs. The first sentence of ASTM F2748-08 indicates that even "*low energy*" air guns "*can cause serious injury*" (Ex.2029, p.1, Introduction), but does

not provide a solution; it tells the reader to solve this injury problem:

This standard does not purport to address all of the safety concerns, if any, associated with its use. ***It is the responsibility of the user of this standard to establish appropriate safety*** and health practices...

Id., ¶1.4; Ex.2028, ¶1.4 (ASTM F2679-07 stating the same).

Another ASTM standard cited by PO actually ***requires*** the use of “***resilient***” projectiles in higher power (above 0.08 J) airsoft guns. Ex.2119, §§4.21.1.3, 4.31.1; Ex.1036, p.113:8-20 (Dr. Kudrowitz testifying that the ASTM standard says, “if it [kinetic energy] exceeds a certain limit, then it [the projectile] ***has to have*** an impact surface of ***resilient material***.”). Dr. Kudrowitz also admitted that resilient projectiles include those that can absorb the force of impact (*e.g.*, deform). *Id.* Spitballs’ ability to deform, bounce and break into mushy parts makes it resilient. Ex.1037, ¶45. Contrary to PO’s argument, the ASTM standards actually provide a motivation to combine airsoft guns (Peev) with ***resilient*** SAP ammunition (Spitballs).

Further, PO’s argument that the airsoft ASTM standard ***prohibits*** the use of Spitballs to solve this injury problem ***is wrong***. The definition of “projectile” cited by PO does not specify what airsoft ammunition is. It only distinguishes it from

metallic BBs and liquid filled paintballs:

3.1.8 *projectile (LEAG projectile), n*—spherical, commonly 6 mm (.24 cal), ***non-metallic*** and ***non-liquid filled*** projectile to be used in a low energy air gun, as specifically referred to in Specification F2679.

Ex.2029, §3.1.8. Contrary to PO’s argument, Spitballs are not “liquid filled” and are not excluded from the above definition. Spitballs are superabsorbent polymers that absorb water and become a ***gel*** (not a liquid) that will “explode into ***mushy parts*** on impact.” Ex.1002, p.15; Ex. 1037, ¶55. A paintball, by contrast, has a rigid outer shell and its inner cavity is filled with a liquid (paint). Ex.2015, ¶47. The paintball shell does not “explode into mushy parts on impact”; it instead cracks open and liquid spurts out. Ex.1037, ¶54.

PO is correct that the ASTM standard leaves open other materials that can be used in place of hard plastics. Paper19, p.20. These other materials include the superabsorbent polymer ammunition of Spitballs. Unlike the materials cited by PO (in Ex.2028), Spitballs were already known to a POSITA to be soft ammunition for projectile launchers. Ex.1002, p.18 (depicting launching of Spitballs from a tube). As noted by the Director, others (Kim) were also utilizing gels to solve the injury problem in airsoft guns. Paper12, p.16.

E. There Were A Finite Number Of Alternatives

On the issue of whether there were a finite number of alternatives to hard airsoft ammunition, PO ignores the fact that SAPs were already identified as ammunition for air powered launchers (e.g., a blowgun) and were known to be safe (“explode into mushy parts on impact”). Ex.1002, pp.15, 18. Indeed, PO disclaimed Claim 1 of the ‘683 Patent, which claimed a projectile launching system comprising SAP ammunition and a projectile launcher, in response to Petitioners’ argument that Spitballs anticipates Claim 1. Ex.2014.

Instead, PO makes the *attorney argument* that “rubber, cork, foam, and soft plastics” represent “countless distinct polymers” that were *known to be suitable for use* as ammunition. Paper19, p.26, citing Ex. 2120. However, Exhibit 2120 doesn’t say that such polymers were *suitable for use as ammunition* and PO offers *no expert testimony* in support of this *attorney argument*.

III. THERE WAS A REASONABLE EXPECTATION OF SUCCESS

PO argues that there was no reasonable expectation of success because:

(1) Spitballs “gives no clue as to what kind of chemistry, crosslinking, network topology, or manufacturing techniques were used to make” them and there were too many possibilities for SAPs with “no place to start”; and

(2) a POSITA would not think that Spitballs was suitable ammunition for

Peev's airsoft gun because it would be difficult for "the Spitballs polymers ... to possess sufficient strength to withstand the pneumatic and mechanical forces applied by Peev's high-powered electric airsoft gun, while at the same time retaining the softness characteristic." Paper19, pp.21-24, 35, 37 (underlines in original).

As to its *first argument*, PO ignores that a POSITA (under both parties' definitions) had access to a chemist. PO also ignores the ITC deposition testimony of *PO's own chemistry expert*, Dr. Gerald Fuller (Ex.1031), who testified:

Q ... So you do *agree with Dr. Reitman* that adjustments to size, strength, and durability of the gel were all routine and *easily accomplished by well-known methods* at the time of the invention of the asserted patents?

A *Of course*, it always takes some work ... But the *literature* available at the time would *provide such guidance*.

Q ... do you agree that a *POSITA would have known how to produce soft projectile SAP ammunition configured for use with a projectile launcher* as of the priority date of the asserted patents?

A *Yes*.

Ex.1035, pp.150:18-151:11.³ Dr. Fuller explained that the claim limitations directed to the SAP ammunition were “well-known”:

Q Do you agree that there was nothing related to the SAP limitation of the asserted claims that was not *well-known* at the time of the invention?

A I cannot think of any.

Id., p.148:3-6. In this IPR, PO ignores Dr. Fuller’s prior testimony and offers no other chemistry expert.

As confirmed by Dr. Reitman, prior to 2010, details as to what kind of chemistry, crosslinking, network topology, or manufacturing techniques would be required to make SAP projectiles were straightforward and routine to a chemist:

- “to make [SAP projectiles] stronger and not break apart, the chemist would increase the crosslink density”,
- doing so “would have been a straightforward routine thing to do”, “even though the ‘683 patent does not identify what SAP to use” or a “specific crosslinker to use” or “what polymer chemistry to use”, and
- “the knowledge to increase crosslink density to increase resistance to fracture increased strength was well known

³ This testimony is admissible under FRE 801(d)(2)(C),(D).

and straightforward and did not require having an example disclosed.”

Ex.2030, pp.123:17-125:2.

Finally, PO’s criticism that Spitballs does not describe a specific SAP or crosslinker (Paper19, p.35) rings hollow because, as Dr. Kudrowitz admitted, the ‘683 Patent also does not disclose specific chemistry, crosslinking, network topology, or manufacturing techniques for its own SAP ammunition. Ex.1036, pp.114:19-115:8.

PO’s *second argument* that Spitballs lacked sufficient strength to withstand the forces applied by Peev while *retaining the softness* characteristic also fails. The ‘683 Patent defines the term “soft-projectiles” as *any* projectile formed from SAP:

The present patent document discloses and teaches projectile launching devices ... that *use projectiles formed from* a super absorbent polymer (*SAP*). *As a result, the projectiles* launched by the devices of the present patent document *are soft-projectiles*.

Ex.1001, Col.3:54-58. As discussed above, Dr. Fuller agreed that prior to 2010, “a POSITA would have known how to produce *soft* projectile SAP ammunition *configured for use* with a projectile launcher.” Ex.1035, pp.150:18-151:11.

The musings offered by Dr. Kudrowitz (who is not a chemist)—that SAP projectiles (like Spitballs) did not possess sufficient strength to withstand the pneumatic and mechanical forces of Peev’s airsoft gun—are belied by Dr. Fuller and Dr. Reitman (who are chemists).

Further, PO’s and Dr. Kudrowitz’s argument that Spitballs and Peev’s loading mechanism cannot be physically combined is contrary to obviousness law. “[I]t is not necessary that [prior art] be physically combinable to render [claims] obvious.” *Allied Erecting and Dismantling Co., Inc. v. Genesis Attachments, LLC*, 825 F.3d 1373, 1381 (Fed. Cir. 2016). Spitballs and Peev are combinable under *KSR* because, as discussed above, the experts agree that as of 2010, a POSITA possessed the technical skills to (i) modify Peev to launch SAP ammunition and (ii) make the SAP ammunition to have any size and any softness she wanted. *KSR Int’l Co. v. Teleflex Inc.*, 550 U.S. 398, 421 (2007) (a POSITA “has **good reason to pursue** the known options within his or her **technical grasp**”).

IV. PO’S OBJECTIVE INDICIA ARGUMENTS FAIL

A. PO Cannot Show A Nexus

PO argues that secondary considerations support nonobviousness for three claims, Claims 5, 8 and 9. Paper19, p.39. (PO offers no objective evidence argument for the remaining challenged Claims 4, 6, 7, 12 and 14.) PO argues that

Xploderz products were commercially successful and enjoyed industry praise because they allowed (1) storage of *more ammunition* and (2) launching ammunition over a *greater distance*. PO argues that the “*advantages*—more distance and more ammo—are *merits* of practicing the ’683 Patent’s *claim 5 (for more ammunition)* and *claims 8 and 9 (for more distance)*.” Paper19, p.46.

But this is not the test for nexus. “Evidence of commercial success, or other secondary considerations, is only significant if there is a nexus between the *claimed* invention and the commercial success.” *Ormco*, 463 F.3d at 1311-12. “[I]f the commercial success is due to an *unclaimed feature* of the device, the commercial success is *irrelevant*.” *Id.* at 1312.

“*More ammo*” is an *unclaimed feature*. Claim 5 says nothing about holding “more ammo.” Claim 5 merely recites the “system of claim 1, wherein the projectile launcher includes a *feed chamber for loading* the soft-projectiles within projectile launcher.” And, according to the ’683 Patent, the ammo is stored in magazine 50, not in the feed chamber:

A magazine 50 preferably holds between 150 and 250 rounds and more preferably holds about 200 soft-projectiles 16. ... [L]arger clips of approximately 500 to 1000 rounds may be used for machine guns ...

Ex.1001, Col.8:65-67, Col.9:3-4. Although the amount of ammo that can be held by the magazine is disclosed in the specification, no amount of ammo is set forth in any claim. Since Claim 5 does not refer to any amount of ammo or “rounds” and does not even refer to the magazine, any commercial success due to “more ammo” is legally irrelevant. *Ormco*, 463 F.3d at 1311-12. While Claim 6 refers to the magazine, ***PO does not make a nexus argument for Claim 6.***

PO’s attempt to tie “***more distance***” to Claims 8 and 9 also fails. Claims 8 and 9 say nothing about the distance that the ammunition flies. Claims 8 and 9 describe the firing mechanism as including an “air compression chamber”, a “piston”, a “spring”, and “a smaller diameter tube.” The specification is also silent on the distance that the ammunition flies. Dr. Kudrowitz agreed there is no such teaching in the ‘683 Patent. Ex.1036, pp.64:15-65:1.

Here again, any commercial success due to the ***unclaimed*** “more distance” feature is legally irrelevant under *Ormco*. See also *Lectrosonics, Inc. v. Zaxcom, Inc.*, IPR2018-01129, Paper33 (PTAB Jan. 24, 2020) (precedential). In *Lectrosonics*, the PTAB found that “Patent Owner has ***not demonstrated a nexus*** exists between the evidence presented and the ***merits*** of the claimed invention because the evidence is directed to ***features that are not required*** by the claims.”

Id., p.34. There, the secondary considerations evidence was directed toward the “feature of fixing dropouts by replacing data”, but this feature was “not required” by the issued claims. *Id.* The Patent Owner therefore amended the issued claims to add this feature so that the secondary considerations would be, and were eventually considered, for the amended claims. *Id.*, pp.64-65.

Here, PO’s “*merits*” evidence (more distance, more ammo) is irrelevant since it is not directed to *features that are required* by the claims, and PO has made no claim amendment to add these unclaimed features.

Further, PO’s argument that the firing mechanism of Claims 8 and 9 somehow contributed to the commercial success and praise is contrary to the record evidence. Mr. Ben-Ezer, whose company sold Xploderz, testified that [REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

Ex.2032, pp.230:12-231:14. Dr. Kudrowitz never bothered to speak to Mr. Ben-Ezer. Ex.1036, p.23:12-18. Similarly, Hasbro’s own executive, John Tomulonis, testified that [REDACTED]

Ex.2070, p.79:4-10 (“[REDACTED]
[REDACTED]”). [REDACTED]

[REDACTED]

PO and Dr. Kudrowitz also rely on “line extensions” of Xploderz products to support commercial success. Paper19, pp.40-44; Ex.2015, p.86, fn.6. But introduction of these line extensions in 2013 coincided with a steep drop-off in sales. PO’s ITC expert, Ms. Lynn Rosenblum, testified that (1) “Xploderz revenue *declined* from \$17 million in 2012 to \$12 million in 2013”, (2) “declined again to \$7 million in 2014”, (3) declined “again in 2015 to just \$500,000”, and (4) dropped to “zero in 2016.” Ex.1004, p.478:3-16.

In other words, the line extensions did not stop the steep sales decline or prevent discontinuance of Xploderz. Mr. Ben-Ezer [REDACTED]

[REDACTED]

[REDACTED] Ex.2032, p.231:7-20. The line extensions do not evidence commercial success.

B. PO Ignores *Ormco*

PO never discusses the Federal Circuit’s holding in *Ormco* that “if the commercial success is due to an *unclaimed feature* of the device, the commercial success is irrelevant.” 463 F.3d at 1312. Instead, PO seeks to create a new rule that any commercial success and praise is relevant if it can somehow be tied to the “merits” and “advantages” of the invention. Paper19, p.56. This is contrary to the Federal Circuit’s *Ormco* decision and the PTAB’s precedential *Lectrosonics* decision. Even the cases cited by PO do not support its position.

Specifically, in *WBIP, LLC v. Kohler Co.*, 829 F.3d 1317 (Fed. Cir. 2016), the Federal Circuit reaffirmed that any allegation of nexus can be rebutted if it does not comply with *Ormco*:

The presumption of *nexus is rebuttable* ... *Ormco Corp. v. Align Tech., Inc.*, 463 F.3d 1299, 1312 (Fed. Cir. 2006) (holding that evidence that commercial success was due

to ***unclaimed*** or non-novel features of device “***clearly rebuts*** the presumption that ... success was due to the claimed and novel features”).

WBIP, 829 F.3d at 1329. Likewise, neither *In re Natural Alternatives, LLC*, 659 F. App’x 608 (Fed. Cir. 2016) nor *Ashland Oil, Inc. v. Delta Resins & Refractories, Inc.*, 776 F.2d 281 (Fed. Cir. 1985) (***pre-Ormco***) set forth a different test for nexus.

PO disputes Petitioners’ argument that the alleged commercial success and praise were due solely to the use of the non-novel SAP ammunition. Paper19, pp.57-61. PO argues that the commercial success and praise were instead due to “more ammo” and “more distance” that resulted from the use of the “as-claimed Xploderz blaster” with the “as-claimed Xploderz ammunition.” *Id.*, p.57. PO’s position on commercial success and praise is now clear. Both were allegedly due to “more ammo” and “more distance”—which are unclaimed features. As discussed above, commercial success and praise due to unclaimed features is legally irrelevant.

C. There Was No Failure of Others or Copying, And The Licenses Are Irrelevant

PO claims that a prior product (the “Goo Spewer”) sold by Petitioners was a failure and suggests that Petitioners’ current product copied Xploderz. Paper19,

pp.46-47. Both of these assertions are not supported by any evidence, were rejected by the ALJ in the ITC proceeding and should be rejected here. Ex.2007, pp.85-87.⁴

As the ALJ found, Petitioners’ earlier Goo Spewer product was “commercially *successful* in markets in which [Petitioners] advertised.” *Id.*, p.88. The ALJ also found that there was no evidence that Petitioners’ product copied the Xploderz. *Id.*, pp.85-87. PO offers no such evidence here.

As to licenses, PO argues that products sold by Hasbro, Splat-R-Ball, and Gel Balster were commercially successful. Paper19, p.45. However, PO does not produce any of these licenses and does not present any evidence as to the reasons for the alleged success of such products. Nor does PO make a nexus argument to tie the unstated “reasons” to any claim of the ‘683 Patent.

V. SIMULTANEOUS INVENTION SUPPORTS OBVIOUSNESS

PO discounts Kim since it refers to soft “gels” as ammunition and does not use the words SAP. Paper19, pp.61-62. PO misses the point. As explained by the Director, the “evidence of simultaneous invention further supports the conclusion that persons of ordinary skill in the art at the time of the invention *understood the safety problem* posed by hard ammunition in airsoft guns and that *softer*

⁴ Ex.2007 citations are to native page numbers.

ammunition was a possible solution.” Paper12, p.17. PO does not address the Director’s finding that:

Kim ... explains that its “invention is to improve the bullet of a toy gun to ***prevent injury*** to the human body” [and] its improved “toy bullet [is] formed of ***gel***” and, when fired by a gun using air pressure from a cylinder, is “***safer*** to use than a bullet of a conventional rigid material structure and does not cause injury to the human body.” *Id.* Thus, Kim ***speaks directly to the modification and rationale proposed by Petitioner***, i.e., modifying an airsoft gun to employ softer ammunition to improve safety.

Id., p.16.

Similarly, with respect to VAT19, PO ignores the Director’s finding that VAT19 “demonstrates using Spitballs as projectiles and shows them exploding on contact with a person and without causing harm ... Vat19 demonstrates that persons of ordinary skill in the art at the relevant time recognized the need for softer projectile ammunition.” *Id.*, pp.16-17. Rather, PO makes the irrelevant and speculative attorney argument that VAT19 came too late because “the Xploderz products ***would have*** been disclosed to manufacturing partners and retailers looking to stock product, such that the invention ***would have*** become known to

others.” Paper19, p.63.

VI. CONCLUSION

For the reasons discussed above and in the Petition, the remaining challenged claims of the ‘683 Patent, Claims 4-9, 12 and 14, should be found unpatentable and cancelled. (PO disclaimed Claims 1-3, 10 and 11, *see* Ex.2014.)

Respectfully submitted,

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CERTIFICATE OF COMPLIANCE

Pursuant to 37 C.F.R. § 42.24(d), the undersigned hereby certifies that the foregoing PETITIONERS' REPLY BRIEF UNDER 35 U.S.C. § 316(a)(13) AND 37 C.F.R. § 42.23 complies with the type-volume limitation of 37 C.F.R. § 42.24(c)(1) because, according to the "word count" function of Microsoft Word 2010 used to prepare this paper, the Reply Brief contains 5,589 words, excluding the parts of the Reply Brief exempted from the word count under 37 C.F.R. § 42.24(c).

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CERTIFICATE OF SERVICE

Pursuant to 37 C.F.R. § 42.6(e), I hereby certify that on this 28th day of February, 2025, a true copy of the foregoing PETITIONERS' REPLY BRIEF, together with Petitioners' Exhibit Nos. 1031-1048, was served via email on the Patent Owner at the following correspondence address of record.

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