Francisco A. Villegas (Bar No. 206997)
Mark W. Halderman (*pro hac vice, pending*)
Margaret R. Szewczyk (*pro hac vice, pending*)
Charlie M. Jonas (*pro hac vice, pending*)
fvillegas@atllp.com
mhalderman@atllp.com
mszewczyk@atllp.com
cjonas@atllp.com
ARMSTRONG TEASDALE LLP
7 Times Square, 44 Fl.
New York, Ny 10036
Telephone: (212) 209-4400
Facsimile: (314) 621-5065

John V. Picone III, Bar No. 187226
jpicone@hopkinscarley.com
Robert K. Jain, Bar No. 309728
rjain@hopkinscarley.com
HOPKINS & CARLEY
A Law Corporation
The Letitia Building
70 S First Street
San Jose, CA 95113-2406

mailing address:
P.O. Box 1469
San Jose, CA 95109-1469
Telephone: (408) 286-9800
Facsimile: (408) 998-4790

Attorneys For Plaintiff
B.S.D. CROWN, LTD.

UNITED STATES DISTRICT COURT

NORTHERN DISTRICT OF CALIFORNIA

SAN FRANCISCO DIVISION

BSD CROWN, LTD., Plaintiff, vs. AMAZON.COM, INC., AMAZON WEB SERVICES, INC., and TWITCH INTERACTIVE, INC., Defendants.	Case No. COMPLAINT DEMAND FOR JURY TRIAL

Plaintiff B.S.D. Crown, Ltd. ("BSD") alleges as follows for its patent infringement Complaint against Defendants Amazon.com, Inc. ("Amazon.com"), Amazon Web Services, Inc. ("AWS") (Amazon.com and AWS, collectively "Amazon") and Twitch Interactive, Inc. ("Twitch") (Amazon and Twitch collectively, "Defendants").

INTRODUCTION

1. BSD, formerly known as Emblaze, Ltd. ("Emblaze"), was founded in 1994.[1] At that time, its business lines pertained to communications technology, including multimedia, messaging, mobile telephone handset hardware, and video streaming.

2. BSD had many early successes. In March of 1998, for example, BSD sought patent protection for its new broadcasting technology that allowed transmission of real-time audio and video to one or more devices and, where necessary, adjusting video quality based on changing bandwidth. That patent, U.S. No. 6,389,473 (the "'473 Patent"), is attached hereto as **Ex. 1**.[2] Where previous live broadcasting technologies had required expensive dedicated streaming media servers to maintain a specific connection with each and every viewer and to actively monitor each stream, BSD's invention eliminated the need for such cost prohibitive equipment through the use of common and inexpensive Hypertext Transfer Protocol ("HTTP") servers – the kind of server that powers the web. Today, this technology is called HTTP based adaptive bitrate live streaming, and its hallmark characteristic is that it provides smooth real-time video broadcasts.

[1] Emblaze, in turn, was formerly known as Geo Interactive Media Group, Ltd. ("Geo"). Geo, Emblaze, and BSD remain the same company; only the name has changed.

[2] '473 Patent infringement charts (**Ex. 2–4**) are introduced in the counts of infringement, *infra* ¶¶ 77–86.

3. BSD's novel streaming technology, which is at the heart of this lawsuit, received immediate recognition. It powered the first real time video broadcast over the internet using HTTP—the White House 1998 Easter Egg Roll, shown below:

Ex. 5, at 1.

4. BSD had other successes, such as its development of adjacent streaming technologies for mobile devices. Well known technology giants praised BSD's innovation: "[BSD] has demonstrated a superb mastery of technology in delivering its Emblaze A2 video ASIC chip on time. In doing so, they have enabled [Samsung] to build the world's first streaming video cell phone in the year 2000, the start of the 21st Century." **Ex. 6**.

5. BSD was also financially successful, achieving a market capitalization of $2.7 billion in the early 2000s.

6. Today, the technology described in the '473 Patent powers the majority of live broadcasts. On information and belief, Amazon provides live streaming services for numerous content providers, including at least the NFL, Viacom, PAC-12 Conference, Notre Dame, 2018 Olympics, and 2018 World Cup. That is in addition to Defendants' provision of their own live broadcasts over Prime Video and Twitch.

7. Analysts have stated that "Amazon's media assets, which include Prime Video, Prime Music and Twitch, are worth about $500 billion, making them almost as valuable as [the] company's giant cloud-computing business . . . . Twitch is worth $15 billion." **Ex. 7**, at 2–3. Twitch's valuation is not surprising given that it claims its infringing technology has made it the "3rd most popular video website behind YouTube and Netflix."

NATURE OF THE ACTION

8. This is a civil action for patent infringement arising under 35. U.S.C. § 100, et seq., and in particular, § 271 pertaining to: (a) Amazon's implementations of the streaming standards Dynamic Adaptive Streaming over HTTP ("MPEG-DASH") and HTTP Live Streaming ("HLS"); and (b) Twitch's implementation of the HLS standard.

PARTIES

9. Plaintiff BSD is an Israeli company with a principal place of business at 7 Menachem Begin Road, Gibor Sport Tower, Ramat Gan 5268120, Israel.[3]

10. Defendant Amazon.com is a Delaware corporation with a principal place of business in Seattle, Washington. Amazon.com maintains a regular and established place of business in this district.

11. Defendant AWS is a Delaware corporation with a principal place of business in Seattle, Washington. AWS maintains a regular and established place of business in this district.

12. Defendant Twitch is a Delaware corporation with a principal place of business in San Francisco, California. Twitch maintains a regular and established place of business in this district.

13. AWS and Twitch are wholly owned by Amazon.com, and, at all times relevant to the allegations herein, have acted in concert with and/or at the direction of Amazon.com.

JURISDICTION AND VENUE

14. The Court has subject matter jurisdiction over this action under 28 U.S.C. §§ 1331 and 1338(a) because it arises under the patent laws of the United States.

15. The Court has personal jurisdiction over Amazon.com. On information and belief, Amazon.com maintains a regular and established place of business at 475 Sansome St., San Francisco, CA 94111. Amazon.com has purposefully availed itself of the rights and benefits of the

[3] Today, after a series of changes in management, BSD is involved in the import, export, and sale of foods.

laws of this State and this district. On information and belief, with respect to the allegations outlined in this Complaint, Amazon.com also has committed acts of infringement in this district.

16. The Court has personal jurisdiction over AWS. On information and belief, AWS maintains a regular and established place of business at 475 Sansome St., San Francisco, CA 94111. AWS has purposefully availed itself of the rights and benefits of the laws of this State and this district. On information and belief, with respect to the allegations outlined in this Complaint, AWS also has committed acts of infringement in this district.

17. The Court has personal jurisdiction over Twitch. On information and belief, Twitch maintains a regular and established place of business at 350 Bush St., San Francisco, CA 94104. AWS has purposefully availed itself of the rights and benefits of the laws of this State and this district. On information and belief, with respect to the allegations outlined in this Complaint, AWS also has committed acts of infringement in this district.

18. On information and belief, Amazon operates infringing video streaming infrastructure through at least AWS in this district.

19. On information and belief, Twitch operates infringing video streaming infrastructure through at least *sfo.contribute.live-video.net* in this district.

20. Venue is proper in this District under 28 U.S.C. §§ 1391 and 1400(b) because, among other things, Amazon and Twitch have a regular and established place of business in this district, engaged in a substantial number of events giving rise to BSD's claims in this district, and have committed acts of infringement in this district.

FACTUAL BACKGROUND

The '473 Patent and Its Litigation History

21. On May 14, 2002, the United States Patent and Trademark Office ("PTO") issued the '473 Patent, entitled, "Network Media Streaming."

22. BSD is the assignee and owner of all right, title, and interest in and to the '473 Patent, including the right to assert all causes of action arising under the '473 Patent and the right to all remedies for infringement of it.

23. Prior to the inventions of the '473 Patent, the delivery of audio and video to client computers faced technical problems that negatively affected video quality unless expensive, dedicated equipment was deployed. The '473 Patent resolved these technical problems through a novel solution that improved the function of audio and video delivery systems, while using common servers and network infrastructure to mitigate cost and maximize scalability.

24. The '473 Patent's use of, for example, HTTP instead of other protocols, was contrarian. That protocol, in comparison to other others used at the time, was not believed to be optimal to maintain high quality video broadcasts. HTTP, however, had many benefits, including its implementation through the use of inexpensive servers (in comparison to costly dedicated streaming computers known in the art), and possessed the ability to scale in terms of simultaneous viewers – a feature that today is critical to Amazon and Twitch. To achieve dedicated streaming-computer-like broadcasts, the '473 Patent disclosed the use of multiple streams at different quality levels, thus at once not only solved the problem of varying bandwidth (which at the time was impacted by, for example, dial-up connections), but also provided video quality at a fraction of the cost using technologies known at the time. For at least these reasons, the '473 Patent's advancements to broadcast technology, including the disclosed techniques that used arrangements of hardware and software, were non-conventional at the time of the patent.

25. BSD has filed two prior patent infringement lawsuits. The first suit was against Apple Inc. ("Apple") (N.D. Cal., 5:11-cv-01079) pertaining to, at the time, Apple's implementation of the HLS streaming standard. The other lawsuit was against Microsoft Corporation ("Microsoft") (N.D. Cal., 3:12-cv-05422), and was directed to Microsoft's own homebrewed live standard, called "Smooth Streaming."

26. The Apple lawsuit went to trial. In July 2014, the jury found the patent not invalid, but not infringed due to reasons specific to Apple's streaming standard at the time which are not relevant to Defendants' systems and services in this case.

27. In June 2015, the parties agreed to terminate the Microsoft action.

28. Lastly, on August 1, 2016, the Apple appellate process ended.

The HLS Standard

29. Users of the HLS standard, when achieving real-time video streaming latency, violate BSD's rights under the '473 Patent.

30. The HLS standard has changed since the Apple lawsuit. In October 2015, a little more than a year after BSD's trial loss, Apple revised HLS to, among other things, shorten video segment size, thereby reducing video streaming latency. More changes were around the corner. In September 2016 (one month after the end of BSD's appeal), Apple made even greater revisions to HLS through the introduction of the Common Media Application Format. That latter revision further reduced video streaming latency.

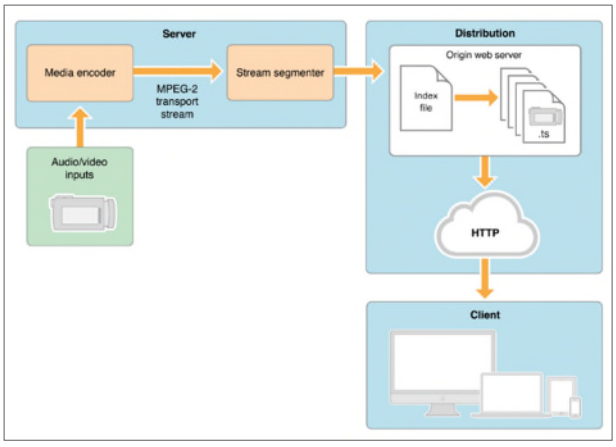
31. Apple describes the HLS standard as follows:

> HTTP Live Streaming provides a reliable, cost-effective means of delivering continuous and long-form video over the Internet. It allows a receiver to adapt the bit rate of the media to the current network conditions in order to maintain uninterrupted playback at the best possible quality.

Ex. 8, at 4.

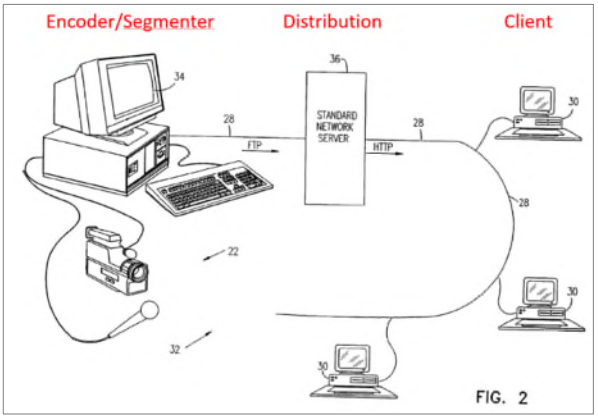
32. The '473 Patent and HLS standard share many structural similarities.

Apple HLS Standard:



Ex. 9, at 1.

’473 Patent:



Ex. 1, at Fig. 2 (annotated in red).

33. Specifically, infringing streaming systems have three structural parts: encoders, origin servers, and clients. These three ’473 Patent streaming structures are present in all HLS implementations. While these structures may appear trivial today, it is noteworthy that Apple introduced HLS in 2009, nearly ten (10) years after BSD filed for patent protection of HTTP adaptive multi-bit rate streaming.

34. Inspection of the HLS streaming protocol demonstrates that its use—in the form of providing, dividing, encoding, and uploading/downloading—infringes the ’473 Patent.

35. For example, Apple describes an exemplary process: following the *provision* of a given data rate, the HLS standard also requires *dividing* the “audio-video input and encod[ing] it as H.264 video and AAC audio, and output[ting] it [as slices],” which “[are] then [*encoded*] into a series of short media files by a software stream segmenter. These files are [*uploaded*] on a web server . . . [with] an index file containing a list of the media files,” such that “Client software reads the index,” and *can download* “the listed media files in order and displays them without any pauses or gaps between segments.” **Ex. 9**, at 1 (emphasis added).

The MPEG-DASH Standard

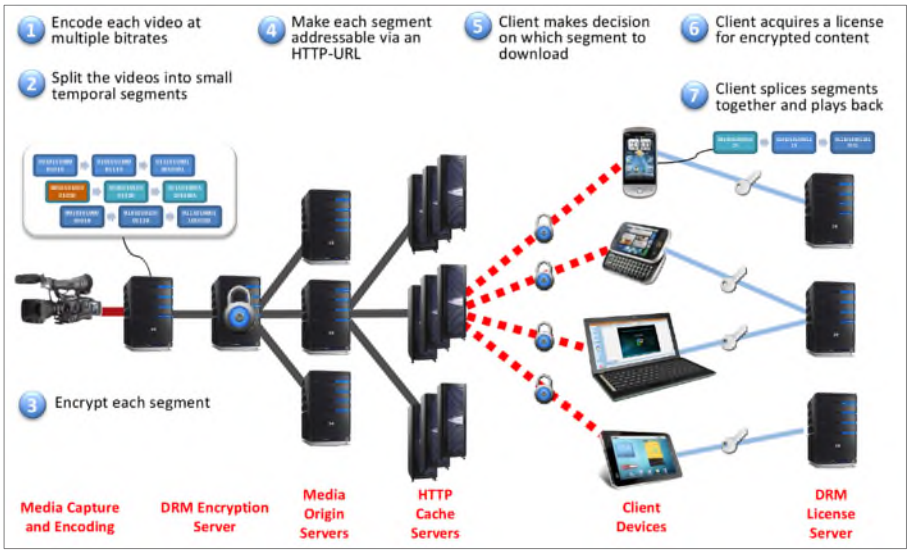
36. Users of the MPEG-DASH standard, when achieving real-time video streaming latency, violate BSD's rights under the '473 Patent.

37. The MPEG-DASH standard describes its streaming technology as:

> [MPEG-DASH] specifies . . . formats that enable delivery of media content from standard HTTP servers to HTTP clients [.] . . .
>
> [This format] provides sufficient information for a client to provide a streaming service to the user by accessing the Segments through the protocol specified in the scheme of the defined resources. . . .
>
> [This format] provides sufficient information for the DASH Client to provide a streaming service to the user by requesting Segments from an HTTP server and demultiplexing, decoding and rendering the included media streams.

Ex. 10, at 2.[4]

38. The '473 Patent and MPEG-DASH standard share many structural similarities:



Ex. 11, at 6.

[4] On information and belief, Thomas Stockhammer was the main contributor and editor of the MPEG-DASH standard.

39. As previously discussed, infringing streaming systems have an encoder, origin server, and client. As with HLS, an MPEG-DASH system, as shown above, has an encoder that provides streams with "given data rates" and "split[s] the videos into small temporal segments" such that each segment is a file "addressable via an HTTP-URL." Also present is the origin server and multiple clients. These three '473 Patent streaming structures are present in all MPEG-DASH implementations. While these structures may appear trivial today, it is noteworthy that MPEG-DASH was published in April 2012, nearly fourteen (14) years after BSD filed for patent protection of HTTP adaptive multi-bit rate streaming.

Defendants' Knowledge of the '473 Patent

40. Amazon.com had knowledge of the '473 Patent by 2015 or earlier.

41. On March 2, 2015, Amazon Technologies, Inc.[5] ("Amazon Tech.") filed U.S. Patent App. No. 14,635,254 (the "'254 Application") titled "PROCESSING OF LONG RUNNING PROCESSES."

42. Baker & Hostetler LLP of Philadelphia, PA filed that application.

43. On December 18, 2015, the PTO issued to Amazon Tech. an Office Action rejecting all twenty claims as anticipated, obvious, or both. **Ex. 12**, at 45-61.

44. Those rejections were based on the PTO's prior art search pertinent to the '254 Application. The PTO results are shown below:

[5] Amazon Tech. is wholly owned by Amazon.com. Amazon Tech. at all times relevant to the allegations herein, has acted in concert with and/or at the direction of Amazon.com. On information and belief, Amazon Tech. prosecutes and holds patents on behalf of Amazon.com across numerous technology areas.

Notice of References Cited	Application/Control No. 14/635,254	Applicant(s)/Patent Under Reexamination KAMBOJ ET AL.	
	Examiner CAMQUY TRUONG	Art Unit 2193	Page 1 of 1

U.S. PATENT DOCUMENTS

*		Document Number Country Code-Number-Kind Code	Date MM-YYYY	Name	CPC Classification	US Classification
*	A	US-6,389,473 B1	05-2002	Carmel; Sharon	H04L29/06	709/231
*	B	US-2002/0194325 A1	12-2002	Chmaytelli, Mazen	H04L67/325	709/224
*	C	US-2014/0350708 A1	11-2014	Kobayashi; Yasunori	G06Q10/06	700/108
*	D	US-7,088,673 B2	08-2006	Horne; David M.	H04J13/004	370/209
	E	US-				
	F	US-				
	G	US-				
	H	US-				
	I	US-				
	J	US-				
	K	US-				
	L	US-				
	M	US-				

Ex. 12, at 62 (12/18/2015 List of Referenced Cited by Examiner) (emphasis added).

45. The PTO rejected claims 15, 18, 19, and 20 of the '254 Application as anticipated under 35 U.S.C. §102(a)(1). It also rejected claims 1-14, and 17 as obvious under 35 U.S.C. §103.

46. BSD's '473 Patent was the primary prior art reference against Amazon's pending patent application, and thus every rejection was based on the '473 Patent—singularly, or in combination with other references.

47. Following the rejection, Amazon Tech. solicited an interview with the patent examiner. On February 11, 2016, Amazon Tech. met with the examiner to discuss the pending application's rejections. The interview summary references only one piece of prior art: the '473 Patent. **Ex. 12**, at 42-44.

48. On March 17, 2016, Amazon Tech. submitted proposed amendments and arguments to traverse the patent examiner's rejections. **Ex. 12**, at 32-41.

49. On May 31, 2016, the PTO issued a final Office Action rejecting, on the basis of the '473 Patent, claims 1 and 2 as anticipated under 35 U.S.C. §102(a)(1), and 5-6, 9-16, and 18-20 as obvious under 35 U.S.C. §103. **Ex. 12**, at 13-31.

50. Only after Amazon Tech. filed a Request for Continued Examination again seeking to distinguish the '473 Patent, did the PTO issue this application as U.S. Patent No. 9,703,594. **Ex. 12**, at 1-12.

51. This extensive prosecution history, all primarily based on the '473 Patent, demonstrates that at least Amazon.com had knowledge of the '473 Patent.

52. Twitch, like Amazon Tech., also uses Baker & Hostetler LLP of Philadelphia, PA as patent prosecution counsel. That firm appears, for example, on at least Twitch U.S. Patent Nos. 10,116,989 (filed Sep. 12, 2016, titled "BUFFER REDUCTION USING FRAME DROPPINGS"); 10,484,730 (filed Jan. 24, 2018, titled "CHUNKED TRANSFER MODE BANDWIDTH ESTIMATION"); and 10,313,412 (filed Mar. 29, 2017, titled "LATENCY REDUCTION FOR STREAMING CONTENT REPLACEMENT").

53. Despite Twitch being an allegedly separate company, Twitch patents, including the above three, were on information and belief prosecuted under Amazon's Baker Hostetler account, not Twitch's. PTO records show that at least these Twitch patents were prosecuted by "136593 Baker Hostetler – *Amazon*" of Philadelphia, PA. **Ex. 13** (emphasis added).

54. Amazon.com and Twitch knew, or should have known, that the adaptive multi-bit rate technology of the '473 Patent was foundational to the Amazon and Twitch streaming systems. Even a cursory review of the '473 Patent by Amazon and Twitch's patent counsel would have shown that the Amazon *(e.g.*, AWS Elemental Media Services) and Twitch live streaming systems infringe the '473 Patent.

55. Moreover, to the extent Amazon and Twitch relied on the non-infringement finding from the previous Apple lawsuit, these sophisticated companies with extensive streaming experience would have, on information and belief, known that: (a) the 2015/2016 changes to Apple's HLS standard rendered HLS streams infringing; and (b) their own documents and testing showed infringing real-time video stream latency.

56. On information and belief, Amazon and Twitch acted egregiously because they knew of or were willfully blind as to whether they infringed the '473 Patent and deliberately infringed BSD's patent rights.

Amazon's Infringement of the '473 Patent

57. On information and belief, the following Amazon streaming solutions (and reasonably similar solutions) infringe the '473 Patent through their implementation of MPEG-DASH, HLS, or both (the "Amazon Infringing Services"):

Amazon Infringing Services	**Streaming Format(s)**
AWS Elemental Media Services	HLS and MPEG-DASH
AWS Elemental Live	HLS and MPEG-DASH

58. While particular deployments of each of the Amazon Infringing Services may vary, Amazon infringes every one that implements HLS or MPEG-DASH standards for live streaming.

Twitch's Infringement of the '473 Patent

59. On information and belief, the following Twitch streaming services (and reasonably similar Twitch services) infringe the '473 Patent through their implementation of HLS (the "Twitch Infringing Services"):

Twitch Infringing Services	**Streaming Format(s)**
Twitch Live Streaming (https://www.twitch.tv)	HLS

60. While particular deployments of each of the Twitch Infringing Services may vary, Twitch infringes every one that implements the HLS standard for live streaming.

Defendants' Intertwined Infringing Services and Relationship

61. HLS is a real-time video streaming standard.

62. The '473 Patent, which issued years before HLS, covers certain functionalities of the HLS standard. On information and belief, these claimed functionalities are required to stream live video using the HLS standard.

63. The Amazon Infringing Services (HLS only)[6] and Twitch Infringing Services implement HLS to stream live video. Thus, these infringing services not only incorporate core infringing HLS functions, but more importantly, must infringe in the same manner. That is, the Amazon and Twitch infringing services that use HLS are the same product or service for purposes of infringement.

64. For example, every step of the '473 Patent claim 1 (providing, dividing, encoding, and uploading/downloading) is infringed due to the Defendants' implementation of HLS. Thus, Amazon and Twitch satisfy these elements in the same required matter.

65. The HLS standard, on information and belief, requires that live streams have a "given data rate" in the form of the bandwidth parameter. *See*, **Ex. 2** (Amazon HLS Infringement Chart), at 12 (*citing* **Ex. 8**, RFC 8216 § 4.3.4.2 (EXT-X-STREAM-INF <BANDWITH>)); **Ex. 4** (Twitch Infringement Chart), at 6 (*citing* **Ex. 8**, RFC 8216 § 4.3.4.2 (EXT-X-STREAM-INF <BANDWITH>)); s*ee also*, **Ex. 8** (below).

> 4.3.2.1. EXTINF
>
> The EXTINF tag specifies the duration of a Media Segment. It applies only to the next Media Segment. This tag is REQUIRED for each Media Segment. Its format is:
>
> #EXTINF:<duration>,[<title>]
>
> where duration is a decimal-floating-point or decimal-integer number (as described in Section 4.2) that specifies the duration of the Media Segment in seconds.
>
> ...

66. The HLS standard, on information and belief, requires that live streams be divided into slices of a predetermined data size. *See*, **Ex. 2** (Amazon HLS Infringement Chart), at 14 (*citing* **Ex. 8**, RFC 8216 § 8.2); **Ex. 4** (Twitch Infringement Chart), at 11 (*citing* **Ex. 8**, RFC 8216 § 8.2); *see also* **Ex. 8**, RFC 8216 § 4.3.2.1.

67. HLS requires that slices be encoded in files with an index. Apple describes that requirement, for example as shown in the Twitch Infringement Chart. **Ex. 4**, at 17 (*citing* **Ex. 9**,

---

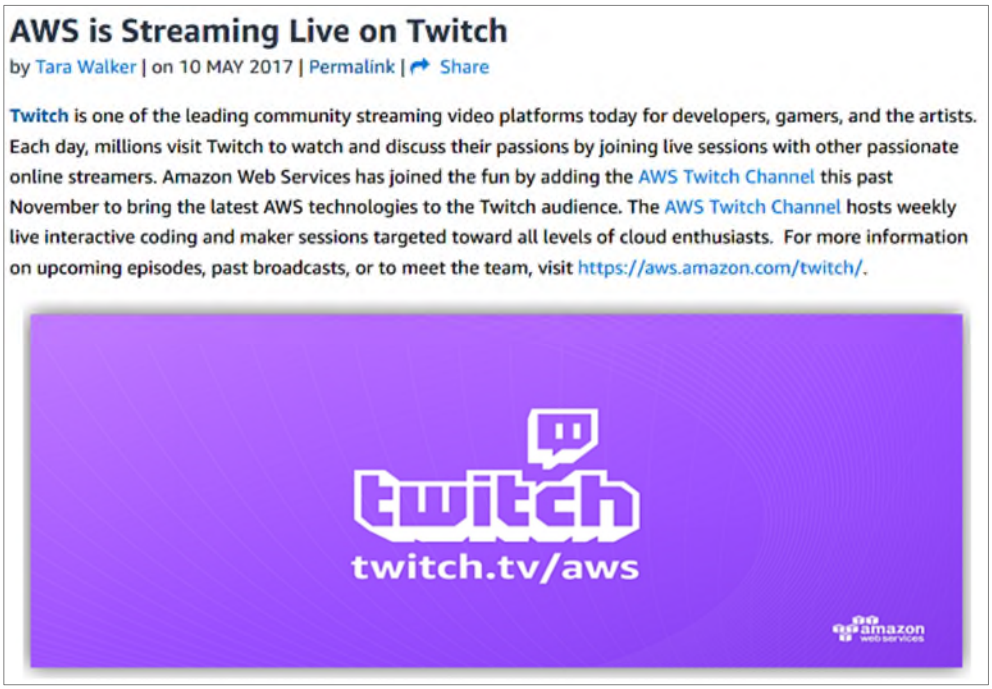
[6] Amazon also streams in MPEG-DASH.

at 1 (HTTP Streaming Architecture, at 1 (Mar. 1, 2016)). It is also identified in the Amazon HLS Infringement Chart. **Ex. 2**, at 20-21.

68. Lastly, HLS requires a client that can download from a server the video files. As described by Apple, "[the] Client software reads the index, then requests the listed media files in order and displays them without any pauses or gaps between segments." **Ex. 9**, at 1. The downloading element is also similarly described in both Twitch (**Ex. 4**, at 20) and Amazon (**Ex. 2**, at 8 (figure showing endpoints), 25).

69. In additional to having the same infringing products and services, Amazon and Twitch are deeply connected—in ways beyond Twitch being a wholly owned subsidiary of Amazon.com.

70. While Amazon streams its own live video, such as through Prime Video, it also uses Twitch for real-time broadcasting:



Ex. 14, at 1.

71. Further, Amazon's gaming developers have selected Twitch, not AWS Elemental Media Services, for in-game live streaming integration:

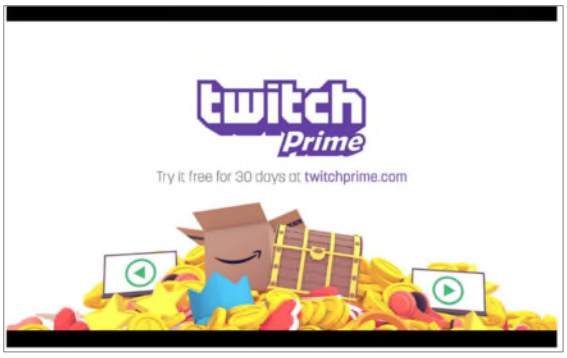
"The Twitch community has already changed how games are experienced," Michael Frazzini, vice president of games at Amazon, said in a phone interview. "What we think is next is to change how games are made."

In Amazon's new games, for example, there will be a capability called Matchbuilder that allows someone broadcasting a game-playing session on Twitch to pluck people directly from a chat room and allow them to play the next round of the game. Mr. Frazzini compared it to allowing spectators to play basketball with Michael Jordan after watching him take warm-up shots.

Bill Moorier, head of Twitch Creative.
Damien Maloney for The New York Times

Ex. 15, at 1-2.

72. Amazon's relationship with Twitch includes deep integration that extends beyond video. For example, Amazon has combined Amazon's famous Prime Video service with Twitch's live streaming to form Twitch Prime. On information and belief, Amazon seeks to generate revenue through the Twitch Live service by converting Twitch streamers into Prime users, and vice versa, while also providing Twitch specific benefits to grow the Twitch userbase.



Ex. 16.

73. Whereas Amazon relies on Twitch, Twitch also relies on Amazon. For example, while Twitch has extensive homegrown streaming infrastructure, it also relies on AWS:

> We also have been moving an increasing amount of our services to Amazon Web Services — this helps to reduce the amount of operational overhead, as well as to take advantage of the convenience and scalability of many of their services.

Ex. 17, at 9-10.

74. Beyond the business connection, the Amazon and Twitch relationship extends to the legal realm. For example, Twitch even uses Amazon's prosecution counsel. *Supra* ¶ 52.

75. Most telling about the Amazon and Twitch relationship is that they have acted in concert with and/or at the direction of Amazon. For example, although Twitch is putatively a separate company, with allegedly separate hardware, Twitch's CEO Emmett Shear confirmed that Twitch is part of AWS. **Ex. 18**, at 2-3.

> **So Twitch is part of AWS?**
>
> That's right. We're technically inside of AWS, but we are very independent and still with our own separate company. But that's the part of Amazon we are closest to.

76. Thus, Twitch concedes Amazon.com (parent) exercises control over Twitch through AWS.

COUNT ONE

Patent Infringement By Amazon

77. BSD incorporates by reference each of the preceding paragraphs of this Complaint.

78. Amazon has directly infringed at least claim 1 of the '473 Patent, pursuant to 35 U.S.C. § 271(a), literally or under the doctrine of equivalents, through its using, selling and/or offering for sale of the Amazon Infringing Services. For example, Amazon's infringement of the '473 Patent through its AWS Elemental Media Services and AWS Elemental Live is shown in the attached chart hereto. **Ex. 2**, Amazon HLS Infringement Chart; **Ex. 3**, Amazon MPEG-DASH Infringement Chart.

79. Upon information and belief, the Amazon Infringing Services are provided with streaming content by Amazon (*e.g.*, Prime Video live, Amazon Live) and/or third parties, but regardless of the content provider, Amazon practices each and every step of at least claim 1 of the '473 Patent. Moreover, while particular deployments of each of the Amazon Infringing Services may vary, Amazon infringes every one that implements HLS or DASH standards for real-time streaming.

80. Amazon has had notice of the '473 Patent prior to the filing of this lawsuit and has known that its actions constitute infringement of the '473 Patent. As described above in Paragraphs 40–56, Amazon received actual or constructive notice of the '473 Patent at least through its own patent filings. Therefore, Amazon's infringement has occurred with full knowledge of the '473 Patent since at least December 18, 2015, and has been willful and deliberate ever since.

81. Accordingly, Amazon's infringement of the '473 Patent has injured BSD's intellectual property rights.

COUNT TWO

Patent Infringement By Twitch

82. BSD incorporates by reference each of the preceding paragraphs of this Complaint.

83. Twitch has directly infringed at least claim 1 of the '473 Patent pursuant to 35 U.S.C. § 271(a), literally or under the doctrine of equivalents, through its using, selling and/or offering for sale of the Twitch Infringing Services. For example, Twitch's infringement of the '473 Patent through its Twitch Live Streaming is shown in the attached chart hereto. **Ex. 4**, Twitch Infringement Chart.

84. Upon information and belief, the Twitch Infringing Services are provided with streaming content by Amazon and/or third parties, but regardless of the content provider, Twitch practices each and every step of at least claim 1 of the '473 Patent. Moreover, while particular deployments of each of the Twitch Infringing Services may vary, Twitch infringes every one that implements the HLS standard for real-time streaming.

85. Twitch has had notice of the '473 Patent prior to the filing of this lawsuit and has known that its actions constitute infringement of the '473 Patent. As described above in Paragraphs 40–56, Twitch received actual or constructive notice of the '473 Patent at least through Amazon's patent filings. Therefore, Twitch's infringement has occurred with full knowledge of the '473 Patent since at least December 18, 2015 and has been willful and deliberate ever since.

86. Accordingly, Twitch's infringement of the '473 Patent has injured BSD's intellectual property rights.

PRAYER FOR RELIEF

WHEREFORE, BSD respectfully prays for relief as follows:

A. Judgment that Amazon and Twitch have infringed one or more claims of the '473 Patent;

B. An award of damages pursuant to 35 U.S.C. § 284 in an amount sufficient to compensate BSD for the harm caused by Defendants' infringement, not less than a reasonable royalty for the use made of the invention, along with pre- and post-judgment interest;

C. Judgment that Amazon's and Twitch's infringement of the '473 Patent has been willful and deliberate;

D. An award of enhanced damages for Defendants' infringement, in accordance with 35 U.S.C. § 284;

E. An order for an accounting of damages from Amazon's and Twitch's infringement;

F. Declare this case exceptional and award BSD its costs, expenses, and attorneys' fees pursuant to 35 U.S.C. § 285; and

G. An order awarding to BSD such other and further relief, whether at law or in equity, that this Court seems just, equitable, and proper.

JURY DEMAND

Pursuant to Federal Rule of Civil Procedure 38(b) and Civil Local Rule 3-6(a), BSD hereby demand a trial by jury on all issues so triable.

Dated: January 5, 2023

By: /s/ Francisco Villegas

Francisco A. Villegas (Bar No. 206997)
Mark W. Halderman (*pro hac vice, pending*)
Margaret R. Szewczyk (*pro hac vice, pending*)
Charlie M. Jonas (*pro hac vice, pending*)
ARMSTRONG TEASDALE LLP

John V. Picone III
Robert K. Jain
HOPKINS & CARLEY
A Law Corporation

Attorneys for Plaintiff
B.S.D. CROWN, LTD.