

UNITED STATES PATENT AND TRADEMARK OFFICE

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BEFORE THE PATENT TRIAL AND APPEAL BOARD

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**MOTOROLA SOLUTIONS, INC.**  
Petitioner

v.

**STELLAR, LLC**  
Patent Owner

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Case No. – Not Yet Assigned  
U.S. Patent No. 8,310,540

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**PETITION FOR *INTER PARTES* REVIEW  
OF U.S. PATENT NO. 8,310,540**

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# PETITION FOR *INTER PARTES* REVIEW OF U.S. PATENT NO. 8,310,540

## I. INTRODUCTION

Motorola Solutions, Inc. (“Petitioner” or “Motorola”) requests *inter partes* review of U.S. Patent No. 8,310,540. The ’540 patent is directed to surveillance devices that use loop recording to constantly record video data to a buffer in memory. In such devices, when the end of the buffer is reached, data is then recorded to the beginning of the buffer—hence the term “loop” recording—erasing the earliest-recorded data. Loop recording techniques were well-known years before the ’540 patent, including in patents and literature, consumer devices (*e.g.*, TiVo DVRs of the late 1990s), and law enforcement applications (*e.g.*, mounted in police cruisers).

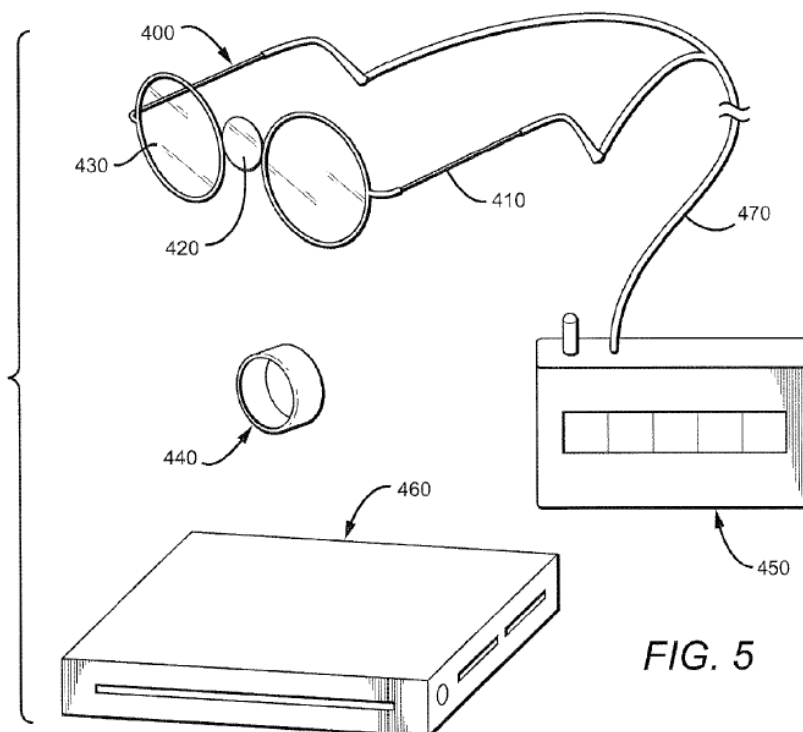
The ’540 patent also describes write protecting a portion of the buffer in response to an event occurrence, with the write-protected portion including data from before and after the event. Protecting both pre- and post-event data helps to ensure that unexpected moments—*e.g.*, a speeder going through a redlight and a police officer’s subsequent pursuit—are preserved and not overwritten in the next recording loop. But this technique was likewise well-known, and the Applicant of the ’540 patent conceded this in prosecuting a related patent. EX1013, 95, 101, 107-08. In fact, the Applicant admitted that many of the features claimed in the ’540 patent were known in the art. *Id.*, 84-112; EX1051, ¶¶33-48. And the few ’540 patent features that Applicant did not concede as conventional were also known in the art, as detailed herein.

Motorola requests institution of IPR and cancellation of claims 1-19.

## II. BACKGROUND

### A. Summary Of The '540 Patent

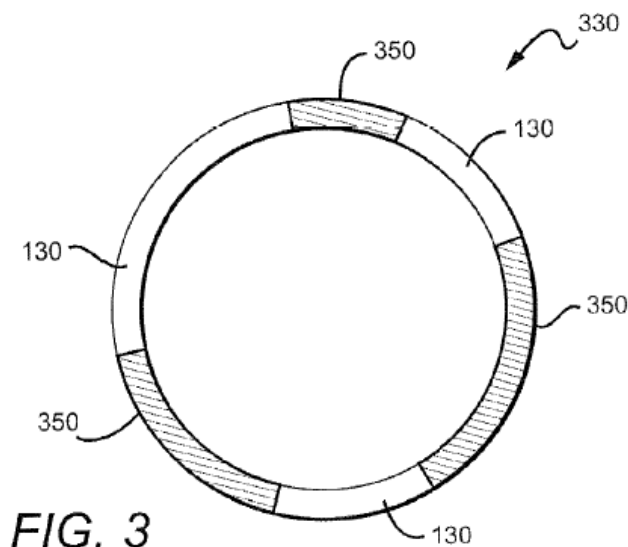
The '540 patent discloses “methods and systems of storing discrete segments of imaged data in a camera by using a sensor in the camera to capture image data; using multiple portions of a memory as a loop in which to record the segments in approximately real time; and protecting the multiple portions from being overwritten by subsequent recording [in] the loop.” EX1018, 2:66-3:3. Figure 5, below, illustrates one such system in which camera 410 is coupled to recorder 450 via wires 470. *Id.*, 6:15-34, 6:45-50. Also depicted is “remote activating device 440 attached to the hand as a finger ring” and “a separate external copying device 460.” *Id.*, 6:19-21.



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The recorder is described as “any recording device that records video and/or audio data” and includes a microprocessor 240 (*id.*, 3:11-16) that is “any component” of the recorder “which manipulates data” (*id.*, 5:20-21, 5:39-42).

“In preferred embodiments, users can decide when to record or protect a portion of data being recorded by sending a signal.” *Id.*, 4:8-9. Figure 3 shows “image data 130 marked for protection becomes protected data 350 in [memory] loop 330.” *Id.*, 4:10-11. “Protected data 350 is characterized as a predefined portion of the recording data,” and “it is contemplated that the portion of the loop that is marked as protected data cannot be overwritten once the recorder loops back to the beginning of the media.” *Id.*, 4:11-15. Optionally, this predefined portion of the recording data “can be configured for any suitable length,” including extending from some time “before the signal” to some time “after the signal.” *Id.*, 4:37-41.



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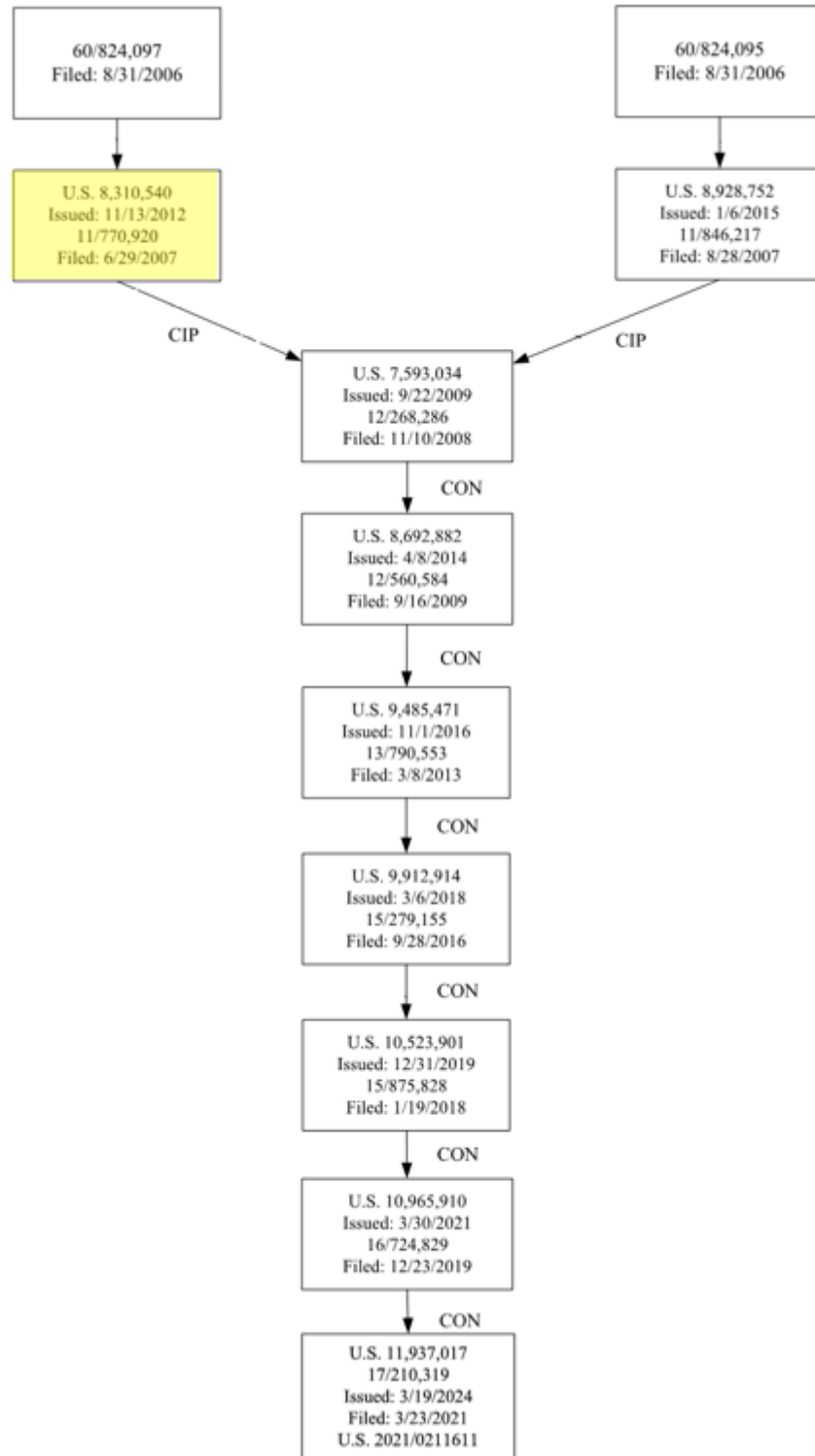
Preferably, “the microprocessor is programmed to allow editing” a given portion of image data “upon receiving image data or protected data” (*id.*, 5:28-30) and “without stopping and replaying the image” (*id.*, 1:45-47). Editing actions can include “book-marking an additional portion of the loop memory” or “releasing a protected portion of the memory from protection.” *Id.*, claim 19.

As detailed in the declaration of Dr. Nabil Sarhan, all of these features were widely known and used before the claimed priority date of the ’540 patent, including in real-world situations (*e.g.*, video recording systems in police cars). EX1051, ¶¶33-102; EX1007, 2; EX1024.

### **B. Patent Family And Relevant File Histories**

The ’540 patent is one of several patents in a family of related patents:

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In the district court litigation, Patent Owner Stellar, LLC (“Stellar”) asserts that the claims of the ’540 patent are entitled to claim priority to June 29, 2007, the filing

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date of the application for the '540 patent. EX1006, 4. Without conceding its propriety, Petitioner applies June 29, 2007 as the priority date of the challenged claims in this petition. Petitioner reserves its right to challenge priority in this or other proceedings.

### **1. '034 Patent File History**

The file history of the '034 patent—a continuation in part of the '540 patent, EX1010, Cover—contains admissions relevant to the unpatentability of the '540 patent claims. Specifically, Applicant filed a document (i) identifying the prior art allegedly most relevant to the claimed subject matter, and (ii) conceding that many claim limitations were disclosed in these references. EX1013, 84-112. As relevant to this proceeding, several of the features conceded by Applicant as being known in the prior art are recited in the claims of the '540 patent. *Id.*; EX1051, ¶¶40-46.

### **2. '540 Patent File History**

Application No. 11/770,920, which eventually issued as the '540 patent, was filed on June 29, 2007 with 19 claims. EX1011, 1-34. The Office provisionally rejected claims 1, 4, 8, and 10-16 on the basis of non-statutory double patenting over co-pending Application No. 12/268,286, which issued as the '034 patent. *Id.*, 59-62. Applicant overcame these rejections by submitting a terminal disclaimer. *Id.*, 84. The Office also rejected the claims as being unpatentable over U.S. 5,523,799 to Hattori (EX1016) alone or in combination with other prior art. *Id.*, 62-65, 87-95. After Applicant made

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several narrowing amendments (*id.*, 73-79, 158-165, 169-182), the Office allowed the claims. *Id.*, 183-192.

### **C. Level Of Skill In The Art**

For purposes of this proceeding, Petitioner maintains a person having ordinary skill in the art (POSITA) at the time of the '540 patent would have been a person having at least a Bachelor's Degree in electrical engineering, computer science, or computer engineering, or undergraduate training in an equivalent field and at least two years of relevant experience in electronics technology. EX1051, ¶30. Additional graduate education could substitute for professional experience, and significant work experience could substitute for formal education. *Id.*

## **III. REQUIREMENTS FOR *INTER PARTES* REVIEW UNDER 37 C.F.R. § 42.104**

### **A. Grounds For Standing Under 37 C.F.R. § 42.104(a)**

Petitioner certifies that the '540 patent is available for IPR and that the Petitioner is not barred or estopped from requesting IPR challenging the claims of the '540 patent on the grounds identified herein.

### **B. Identification Of Challenge Under 37 C.F.R. § 42.104(b) And Relief Requested**

**Ground 1a:** Claims 1-7, 9-15, and 19 would have been obvious under 35 U.S.C. § 103 over U.S. 7,158,167 to Yerazunis ("Yerazunis") (EX1017) alone or as combined with U.S. 2002/191952 to Fiore ("Fiore") (EX1009).

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**Ground 1b:** Claims 16-18 would have been obvious under 35 U.S.C. § 103 over Yerazunis alone or as combined with Fiore, in further view of EP 1,064,783 to Mann (“Mann”) (EX1015).

**Ground 1c:** Claim 8 would have been obvious under 35 U.S.C. § 103 over Yerazunis alone or as combined with Fiore, in further view of U.S. 6,563,532 to Strub (“Strub”) (EX1046).

**Ground 2a:** Claims 1-7, 9-14, and 19 would have been obvious under 35 U.S.C. § 103 over U.S. 5,982,418 to Ely (“Ely”) (EX1020) alone or as combined with Fiore.

**Ground 2b:** Claim 15 would have been obvious under 35 U.S.C. § 103 over Ely alone or as combined with Fiore, in further view of Lewellen.

**Ground 2c:** Claim 16-18 would have been obvious under 35 U.S.C. § 103 over Ely alone or as combined with Fiore, in further view of Mann.

**Ground 2d:** Claim 8 would have been obvious under 35 U.S.C. § 103 over Ely alone or as combined with Fiore, in further view of Strub.

### **C. Claim Construction Under 37 C.F.R. § 42.104(b)(3)**

In this Petition, all of the claim terms are given their plain meaning, as understood by a POSITA, unless otherwise noted below. EX1051, ¶¶109-119.

#### **1. Patent Owner’s Construction Of Claim 1**

For purposes of this petition, Petitioner has applied Patent Owner’s construction of claim 1 of the ’540 patent, including: (1) the preamble; and (2) the “recorder coupled to the camera” limitation. EX1018, 8:19-36.

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(1) Regarding the preamble of claim 1, Patent Owner’s position in the related litigation is that the preamble is not limiting and “is duplicative of the limitations in the body of the claim”:

[P]roviding a recorder coupled to the camera and having a memory and using that memory to record segments of image data, makes clear that the image data is stored in the camera, specifically within memory of a recorder coupled to (i.e., within the single unit of) the camera. Storing of discrete segments of imaged data in a camera is therefore duplicative of providing a recorder coupled to the camera and having a memory and using that memory to record segments of image data as recited in the body of the claim[.]

EX1047, 004-005.<sup>1</sup>

(2) As for the “recorder coupled to the camera” limitation of claim 1, Patent Owner’s position in the related litigation is that the “commonly understood meaning” of “coupled” is “to come together to form a single unit.” *Id.*, 007 (citing <https://www.merriamwebster.com/thesaurus/coupled>). In claim 1 of the ’540 patent, according to Patent Owner, “the word ‘coupled’ is used to designate a camera substructure as a component within an entire recording device,” and “[a]s recited in claim 1, and consistent with the patentee’s use of ‘coupled’ in the specification, the

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<sup>1</sup> The citations to EX1047 refer to page numbers added by Petitioner (running from 001-016).

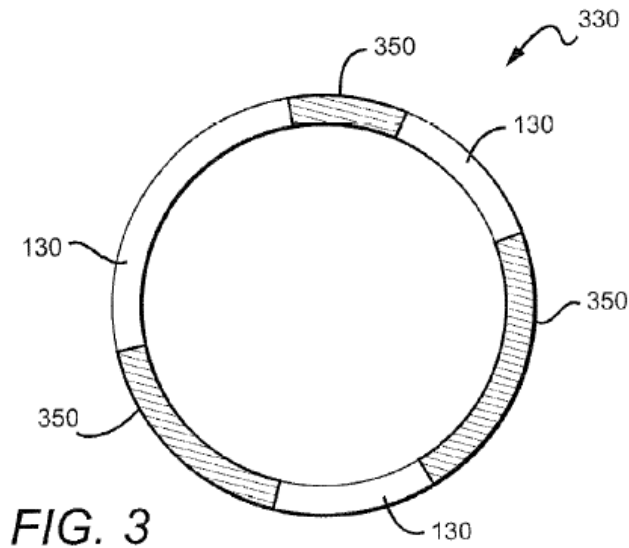
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camera and recorder come together to form a single unit.” *Id.* Patent Owner’s position, which Petitioner adopts solely for purposes of this petition, is that claim 1 is not indefinite because “[a] lay person would easily understand that ‘a recorder coupled to the camera and having a memory’ refers to a camera having sub-components, including a recorder having a memory.” *Id.*, 005.

### 2. “file”

Independent claim 1 recites “treating the memory loop as a single *file*.” EX1018, 8:18-36. The term “file” should be given its plain and ordinary meaning as of June 2007, which was “an identifiable collection of data.” EX1051, ¶¶113-119.

***Intrinsic Evidence:*** The ’540 patent describes its purported invention as utilizing a file-based approach for the memory loop. The patent states that the entire memory loop can be treated as a file. EX1018, 2:4-8, 4:3-4. The patent further states that write-protected portions of the memory loop can be “stored as separate files or a common file separate from the loop single file.” *Id.*, 2:6-8. In Figure 3, the entire memory loop 330 is treated as a file, and the write-protected portions 350 are also treated as files stored in the memory loop:



*Id.*, Fig. 3. In this example, the memory loop 330 and write-protected portions 350 are “files” inasmuch as they comprise identifiable collections of data, although the patent does not describe any particular file type or structure for these files.

In sum, the ’540 patent uses the term “file” in a manner consistent with its plain and ordinary meaning as of June 2007, *i.e.*, “an identifiable collection of data.” The patent does not suggest that any particular type of file is required and thus provides no basis for departing from this plain and ordinary meaning.

The prosecution histories of the related patents in the family likewise do not compel a narrower construction. EX1051, ¶117. During prosecution, Applicant reiterated what was recited in the various pending claims but did not otherwise limit the claimed “file” to any particular type of file. EX1011, 77; EX1013, 285-86.

***Extrinsic Evidence:*** General-purpose and technical dictionaries confirm the plain and ordinary meaning of “file” as “an identifiable collection of data.” EX1051,

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¶118. The American Heritage Dictionary defined “file” as “a collection of related data or program records stored as a unit with a single name” (EX1025, 3), and Merriam-Webster’s Collegiate Dictionary defined it as “a collection of related data records (as for a computer)” (EX1026, 3). A technical dictionary, the Wiley Electrical and Electronics Engineering Dictionary, defined “file” as “a collection of information which is stored as a unit.” EX1027, 3.

### **IV. THE CHALLENGED CLAIMS ARE UNPATENTABLE**

#### **A. Ground 1a: Claims 1-7, 9-15, And 19 Would Have Been Obvious Over Yerazunis Alone Or As Combined With Fiore**

##### **1. Summary Of Yerazunis**

Yerazunis, EX1017, entitled “Video Recording Device for a Targetable Weapon,” was filed September 9, 1998 and issued January 2, 2007. Yerazunis is prior art under at least pre-AIA 35 U.S.C. §§ 102(a) and (e).

Yerazunis discloses a “compact video image recording device” for different applications. EX1017, Abstract, 1:21-31, 3:5-10, 9:8-16. In one application, it is “mounted to a targetable weapon, such as a gun,” for “recording video images before and after the firing of the gun.” *Id.*, Abstract, 3:9-10, 4:28-30, 8:8-25, 9:60-10:11, 16:4-8, 16:43-17:38.

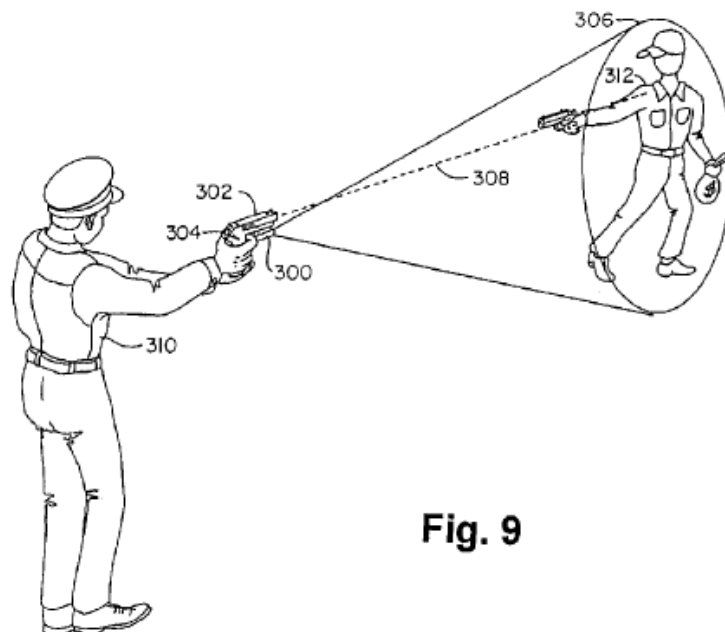


**Fig. 9**

*Id.*, Fig. 9.

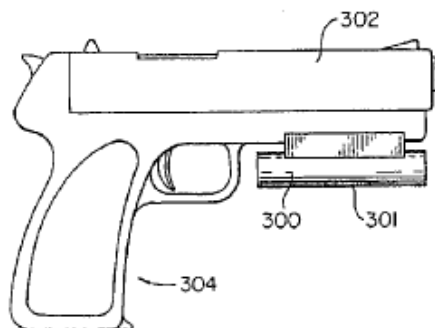


**Fig. 10a**

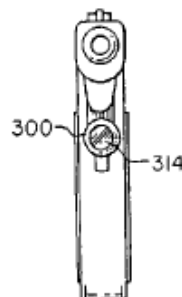


**Fig. 10b**

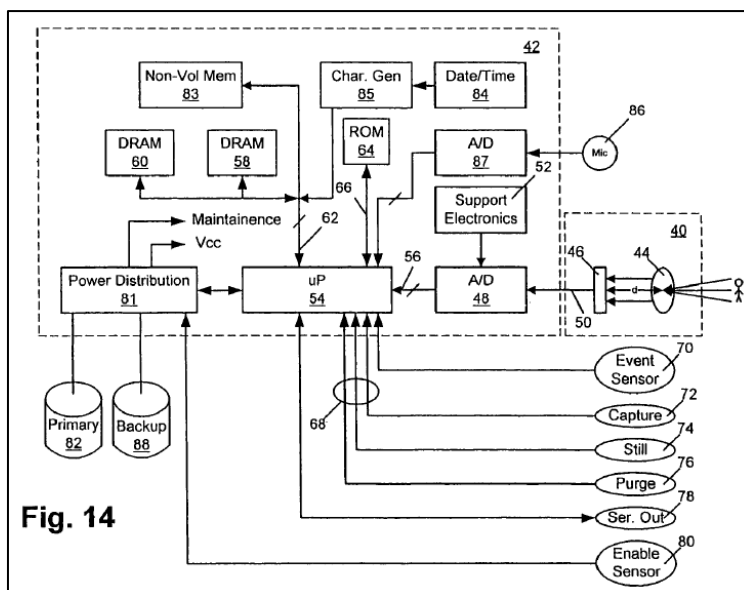
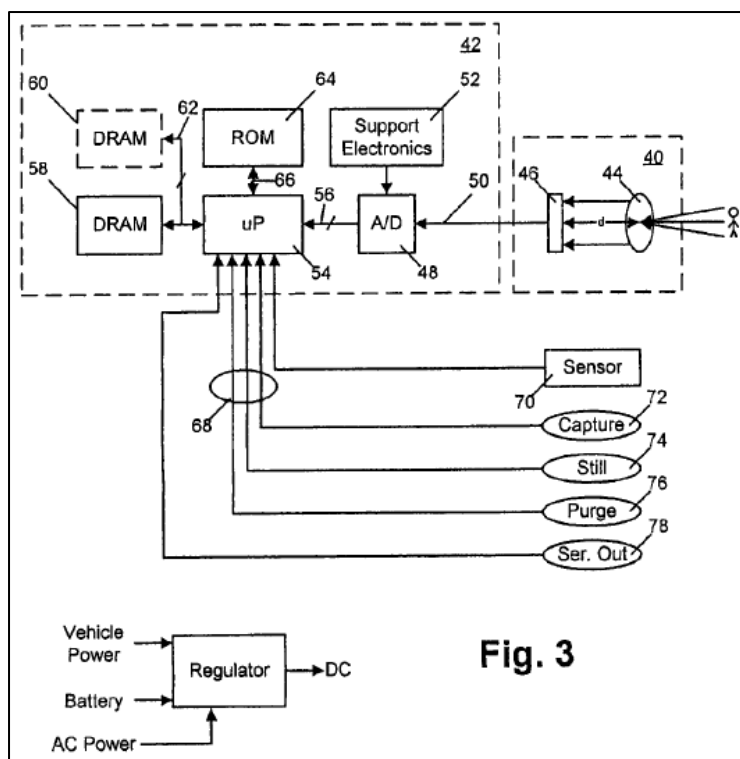
*Id.*, Figs. 10a, 10b.

Yerazunis's video recording device "records video frames successively in at least one circular buffer memory organized as a continuous loop overwriting the oldest frame within the respective buffer memory with a more recently received frame." *Id.*, 2:19-23. For a gun-mounted application, Yerazunis discloses that a "gun firing signal is generated upon discharge of the gun," and "specified frame data associated with

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that firing event both before and after the event is preserved and cannot be overwritten as a result of further use of the gun or subsequent firing events.” *Id.*, 3:19-31. “Frame data associated with each subsequent firing event[] is stored within an unused portion of the circular buffer memory.” *Id.*, 3:31-33.

Figure 3 depicts an “electrical block diagram of a video recording device” (*id.*, 3:55-56), and Figure 14 illustrates “a video recording device in accordance with the present invention for use with a gun” (*id.*, 4:28-30).



*Id.*, Figs. 3, 14; *id.*, 16:4-8, 17:34-38. EX1051, ¶¶123-129.

Yerazunis was neither cited nor applied during prosecution. While certain patents related to the '540 patent list on their face U.S. 2002/0005895 to Freeman (EX1028), an application to which Yerazunis is a continuation-in-part, Yerazunis

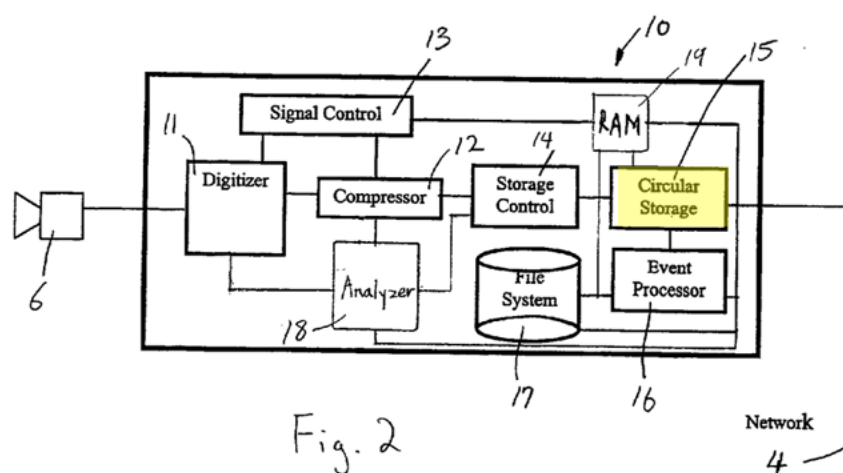
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includes significant additional disclosures not included in Freeman. For example, Yerazunis discloses the above-described gun-camera embodiment that is not described in Freeman. This petition relies on these additional disclosures of Yerazunis that are not present in Freeman.

### 2. Summary Of Fiore

Fiore, EX1009, entitled “Data Recording and Playback System and Method,” was filed on April 9, 2002, and published on December 19, 2002. Fiore incorporates by reference and claims priority to U.S. Provisional Application No. 60/282,162, filed April 9, 2001 (EX1030). Fiore is prior art to the ’540 patent under at least pre-AIA 35 U.S.C. § 102(a), (b), and (e).

Fiore discloses “data recording and playback systems for monitoring processes or occurrences of events which allows the replay and/or analysis of a time sampled signal.” EX1009, [0003]. Fiore’s circular storage buffer 15 stores data frames of an input signal from a monitoring device 6 (which may be a video camera, *id.*, [0040]):



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*Id.*, Fig. 2 (color added); *see also id.*, [0048]. Circular storage buffer 15 “may be implemented as a reserved area in memory, a disk file, or as a storage in a looped media.” *Id.*, [0065].

Circular storage buffer 15 is implemented as a memory-mapped file. *Id.*, [0047], [0068]. Fiore teaches indexing data frames associated with events as files within circular storage buffer 15. Fiore’s Background section describes conventional approaches that do not differentiate event data as files in the circular buffer. *Id.*, [0005]-[0006]. In contrast, Fiore describes indexing identifiable collections of data (*i.e.*, files) for respective events in circular storage buffer 15. *Id.*, [0022]-[0023], [0051], [0059], [0060]. Fiore’s indexing of data as files in the buffer 15 is described in further detail below and in the Dr. Sarhan’s declaration. EX1051, ¶¶135-143.

Fiore was neither cited nor applied during prosecution.

### 3. Motivation To Combine

A POSITA would have been motivated to combine Yerazunis and Fiore for several reasons. EX1051, ¶¶165-169.

*First*, because Yerazunis and Fiore both disclose data recording systems that store data in a circular buffer and preserve data associated with an event—both before and after an event trigger—a POSITA would have been aware of and motivated to combine the two references.

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*Second*, a POSITA would have been motivated to implement Yerazunis's video recording device with Fiore's file-based approach for the circular storage buffer and event data stored therein. Fiore provides a fulsome description of its file-based approach, which includes (i) implementing the circular storage buffer 15 as a memory-mapped file, and (ii) indexing event data for events as respective files within the memory-mapped file. EX1009, [0022]-[0023], [0051], [0059], [0060]. Fiore also describes numerous benefits of its file-based approach, including that it "combines the access speed of the RAM memory with large storage capacity of a disk file" (*id.*, [0065]), "mak[es] the indexing of data in the memory mapped file 110 transparent to the circular storage buffer's 15 access objects" (*id.*, [0067]), and "avoid[s] issues of switching between Random Access Memory (RAM) and disk files" (*id.*, [0068]; *id.*, [0072] (describing approach as providing "significant performance gains" and allowing "playback from the circular storage buffer without interrupting recording into the circular storage buffer").

In view of these benefits, a POSITA implementing Yerazunis would have been motivated to utilize Fiore's teachings on (i) the circular storage buffer implemented as a memory mapped file, and (ii) indexing of event data as files within the circular storage buffer. A POSITA would have had a reasonable expectation of success because Fiore provides a detailed disclosure of its file-based approach, and applying

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those techniques to Yerazunis would have been routine and well within a POSITA's skill.

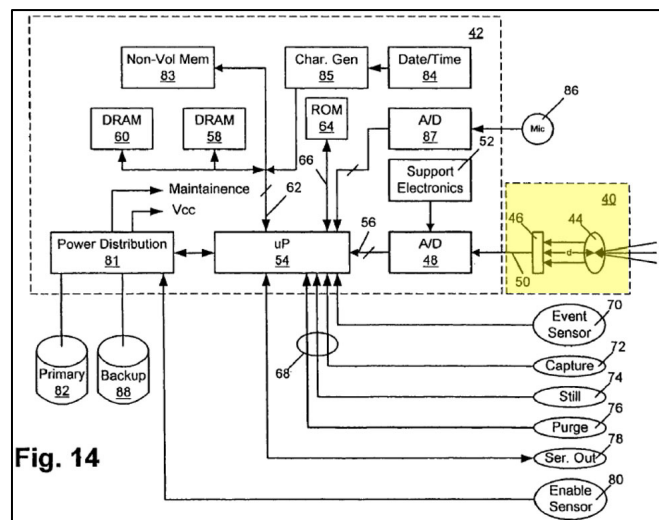
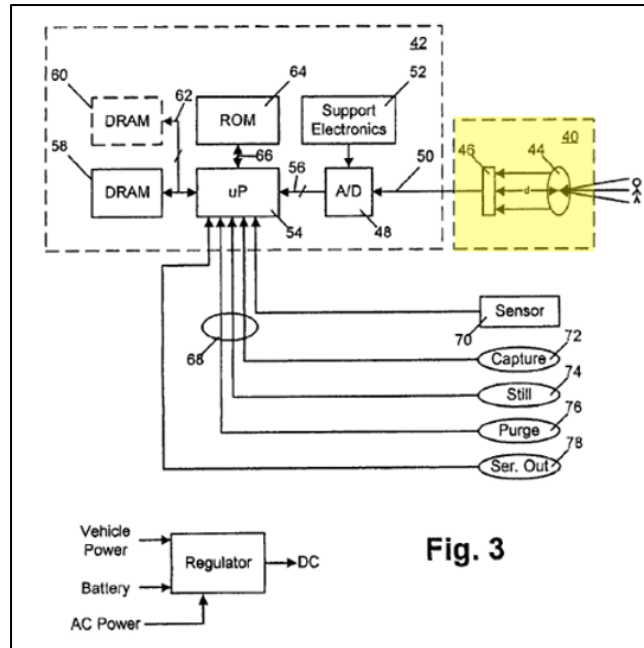
### **4. Claim 1**

#### **a) Preamble: A method of storing discrete segments of imaged data in a camera, comprising:**

For purposes of this petition, Petitioner has applied Patent Owner's construction of claim 1, including that the preamble is not limiting and is "duplicative of the limitations in the body of the claim." EX1047, 004-005. Petitioner addresses the prior art's disclosure of the limitations alleged to be "duplicative" of the preamble below. Yerazunis does disclose, in any event, a method in which a video recording device 300 that includes a camera and camera lens 314 stores discrete segments of imaged data, such as images relating to multiple different firings of a gun. EX1017, 14:45-64; 15:9-13. EX1051, ¶170.

#### **b) Element 1: using a sensor in the camera to capture image data;**

Yerazunis discloses this claim element. EX1051, ¶¶171-172. Yerazunis's video recording device includes a camera 40 with image sensor 46 that captures image data:



EX1017, Figs. 3, 14 (color added); *see also id.*, 2:33-41.

The camera 40 is “comprised of a lens 44 which is disposed a predetermined distance  $d$  from the surface of an image sensor 46.” *Id.*, 5:43-45. “The image sensor 46, ... may comprise a [CCD] array, an artificial retina, or any other suitable image sensor operative to provide an output signal representative of a video image which impinges upon the sensor.” *Id.*, 5:45-49. The output signal is “an analog signal which is coupled

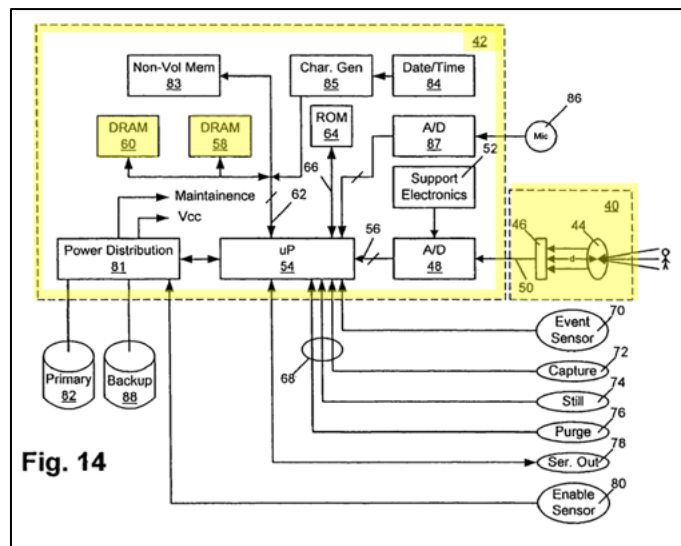
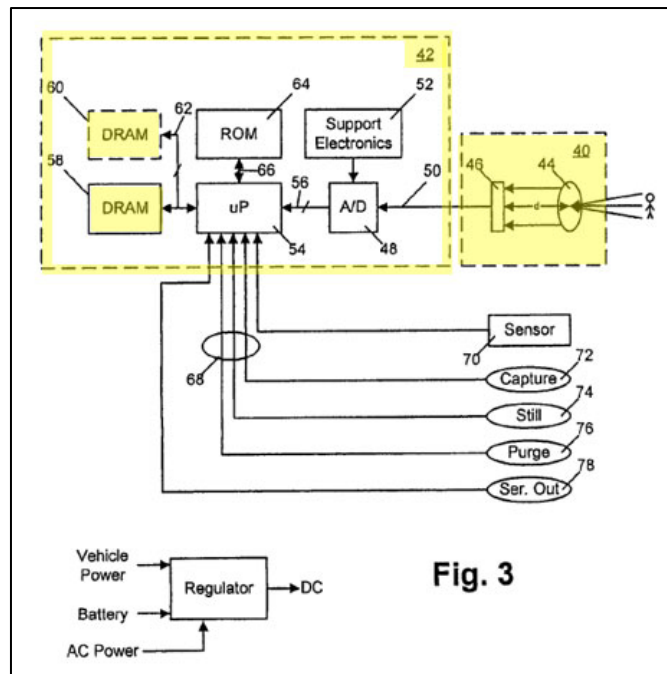
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to one or more A/D converters” (ADC 48) that “generate a digital representation of the video image.” *Id.*, 2:37-41. Camera 40 thus discloses the claimed “sensor” because it uses its image sensor 46 (*i.e.*, “using a sensor in the camera”) to capture video images impinging on the sensor 46 (*i.e.*, “to capture image data”).

**c) Element 2: providing a recorder coupled to the camera and having a memory;**

For purposes of this petition, Petitioner has applied Patent Owner’s construction of claim 1, including that “a recorder coupled to the camera” means “the camera and recorder come together to form a single unit,” with “a camera substructure as a component within an entire recording device.” EX1047, 004-005, 007.

Yerazunis discloses this claim element. EX1051, ¶¶173-175. Yerazunis’s video recording device includes camera 40 (*i.e.*, “the camera”) and video electronics 42 (*i.e.*, “a recorder coupled to the camera and having a memory”). EX1017, 5:40-43, 16:4-8; *id.*, Figs. 3, 14. Camera 40 captures video, and the aforementioned ADC 48, coupled to camera 40 via signal path 50, converts the captured video into a digital signal. *Id.*, 5:40-67. The digital signal is provided to inputs of microprocessor 54, and microprocessor 54 “compresses the digitized frame data and stores the compressed frame data in the next sequential location of [a] circular buffer.” *Id.*, 2:45-47, 6:24-26, 6:52-7:6, 10:55-67, 17:50-59; *see also id.*, 11:50-14:44, Figs. 6-8.



*Id.*, Figs. 3, 14 (color added). Yerazunis’s circular buffer is formed in the DRAM 58 (*id.*, 7:7-61, 18:7-12), which is coupled to microprocessor 54 (*id.*, 6:24-26, 6:28-33). Video electronics 42, which includes microprocessor 54 and DRAM 58, thus discloses the claimed “recorder coupled to the camera and having a memory.” Coupled together as shown in Figures 3 and 14 and described in Yerazunis’s text (*see, e.g., id.*, 5:40-67,

6:14-36), the camera 40 and video electronics 42 form a single unit, and both of them are parts of a video recording device. EX1051, ¶174. Figure 2A of Yerazunis shows the video recording device as within a single housing 10, with a recorder coupled to a camera with a lens 12. EX1017, 4:57-5:15. And Figures 9-12 of Yerazunis show a gun camera embodiment with a video recording device 300 including a recorder coupled to a camera with a lens (314 or 324). *Id.*, 14:45-15:56.

**d) Element 3: using multiple portions of the memory as a memory loop in which to record segments of the image data in approximately real time;**

Yerazunis discloses this claim element. EX1051, ¶¶176-179. Yerazunis's video recording device "records video frames successively in at least one circular buffer memory organized as a continuous loop overwriting the oldest frame within the respective buffer memory with a more recently received frame," as illustrated in Figures 4a, 4b (EX1017, 2:19-23, 17:9-20, 17:50-59):

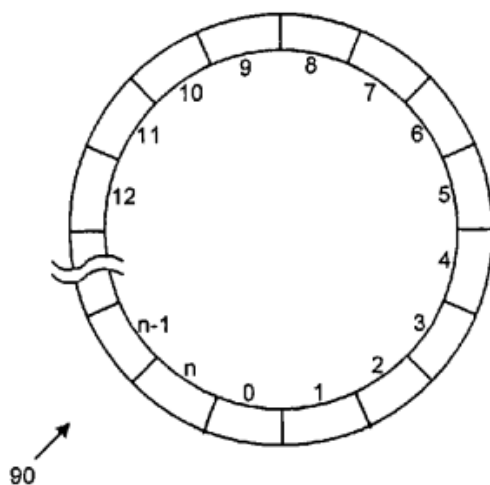


**Fig. 4a**

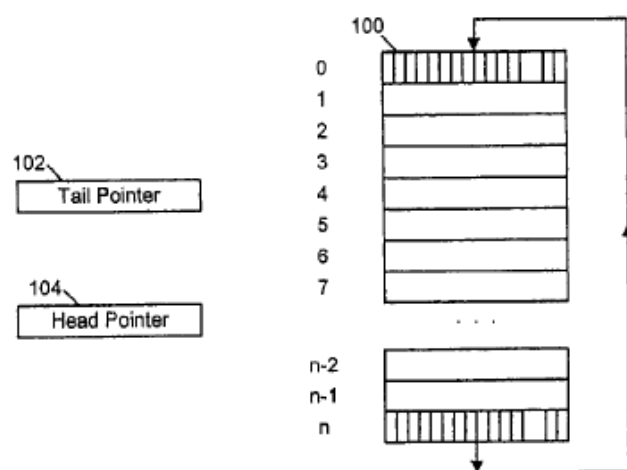


**Fig. 4b**

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*Id.*, Figs. 4a, 4b.

In one embodiment, the circular buffer “may be subdivided” to accommodate multiple gun-firing events, with each subdivision (*i.e.*, “portion”) of the memory allocated to a particular event. *Id.*, 16:66-17:38. Each subdivision includes one or more frames, which are discrete segments of image data. EX1051, ¶177. A POSITA would have understood Yerazunis’s “circular buffer” (which is “organized as a continuous loop”) to be a “memory loop” of the type described in the ’540 patent. *Id.*

In another embodiment, Yerazunis discloses that upon activation of a still button 74, “the video electronics captures a video frame and stores the frame within the buffer memory 58 [or 60].” EX1017, 9:27-31. A captured frame stored as a result of the activation of the still button 74 can be “stored within a frame location within the circular buffer, however, the frame is protected from overwriting while video capture within the circular buffer continues. Such may be accomplished via tagging protected frame locations containing captured still frames and checking to determine whether a frame location is protected prior to writing to the frame location.” *Id.*, 9:34-42.

Yerazunis’s video recording device records segments of the image data in approximately real time: As explained above, image sensor 46 captures image data, and ADC 48 generates a digital representation of the video image. EX1017, 2:37-41, 5:45-49. Then, microprocessor 54 “compresses the digitized frame data and stores the compressed frame data in the next sequential location of [a] circular buffer,” which is

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formed in DRAM 58. *Id.*, 2:45-47, 6:24-26, 6:52-7:61, 10:55-11:16, 11:50-14:44, 17:50-59, 18:7-12, and Figs. 5, 6-8. Because conventional and well-known techniques for compression and digitization in June 2007 were capable of handling data at real time or near real time speeds, a POSITA would have understood Yerazunis to record “in approximately real time.” EX1051, ¶179.

**e) Element 4: treating the memory loop as a single file;**

Yerazunis alone or as combined with Fiore discloses this claim element. EX1051, ¶¶180-184.

Yerazunis discloses tail and head pointers (102 and 104, respectively) that “defin[e] the area(s) of the circular buffer memory.” EX1017, 7:33-61, 17:50-56.

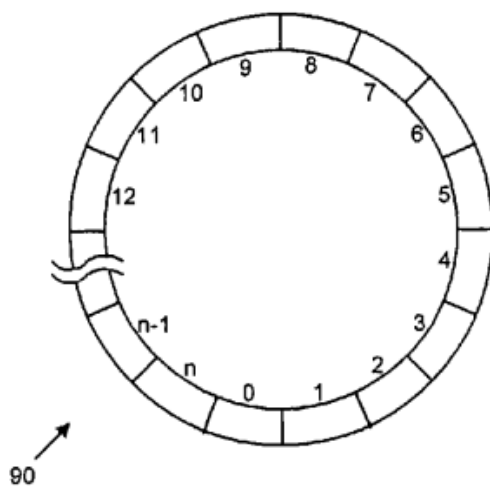


**Fig. 4a**

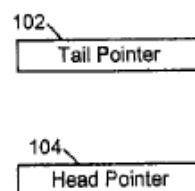


**Fig. 4b**

*Id.*, Figs. 4a, 4b.

While Yerazunis does not expressly refer to “treating the memory loop as a single file,” Yerazunis does disclose that in a gun camera embodiment, “the head

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pointer 104 and the tail pointer 102 ... defining the area(s) of the circular buffer memory, are stored in a table to allow later retrieval of the video data pertaining to each firing of the gun.” EX1017, 17:50-56. A POSITA would have found it obvious to treat the circular buffer as a single file (*i.e.*, a single identifiable collection of data, *see* Section III.C.2) based on Yerazunis’s disclosure of storing pointers that “defin[e] the areas(s) of the circular buffer” in memory. EX1051, ¶182. Further, a POSITA would have understood that utilizing multiple files can be more time consuming than using a single file, and that using a single file format had been found to be well-suited for implementing a circular storage buffer and for storing video data. *Id.* And a POSITA would have understood treating the circular buffer as a single file to be one of a finite number of identified solutions for implementing Yerazunis’s circular buffer (*id.*), evidencing its obviousness. *KSR Int’l Co. v. Teleflex Inc.*, 550 U.S. 398, 421 (2007).

To the extent a POSITA wanted further guidance as to particular methods for implementing Yerazunis’s circular buffer and recording image data into the buffer, a POSITA would have been motivated to turn to Fiore. EX1051, ¶¶183-184. Fiore discloses a circular storage buffer 15 that is treated as a single file: Fiore discloses that the circular storage buffer 15 is implemented as a memory-mapped file (*i.e.*, “a single file”). EX1009, [0022]-[0023], [0051], [0059]-[0060], [0071] (memory-mapped file is preferably “a *single* contiguous disk *file*”). Fiore also describes

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advantages of the single file format, including that its single “memory mapped file ... has a memory mapped architecture that combines the access speed of the RAM memory with large storage capacity of a disk file.” *Id.*, [0065]. “The memory mapped architecture allows the playback from the circular storage buffer to be independent from recording into the buffer so that such recording is uninterrupted by the playback.” *Id.* “Because the circular storage buffer is implemented via a memory mapped file 110 which is preferably a single contiguous disk file, reads and writes to adjacent virtual memory locations are insured to be physically adjacent on the disk drive. In this manner, the circular storage buffer cannot become fragmented on the disk drive” *Id.*, [0071].

Fiore also describes indexing collections of frame data for respective events as files within the memory-mapped file. *Id.*, [0022]-[0023], [0051], [0059]-[0060], [0071]-[0072]. Fiore describes the benefits of its file-based approach, including enabling playback of video data for a specific event from the circular buffer without interrupting simultaneous recording of new video data into the buffer. *Id.*, [0065], [0067]-[0068], [0071]-[0072]. In view of these exemplary benefits and the additional reasons explained in Section IV.A.3, a POSITA would have been motivated to treat Yerazunis’s circular buffer as a single file in the manner Fiore discloses. EX1051, ¶184.

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- f) Element 5: protecting the multiple portions, within the single file, from being overwritten by subsequent recording in the memory loop; and**

Yerazunis alone or as combined with Fiore discloses this claim element. EX1051, ¶¶185-191.

In embodiments, Yerazunis's video recording device includes the microprocessor 54 with "a number of inputs 68 which permit activation of the video recording device and control of the device by a user." EX1017, 6:40-42, Figs. 3, 14. Inputs include still button 74, the activation of which causes a video frame to be "stored within a frame location within the circular buffer," with the "frame [being] protected from overwriting while video capture within the circular buffer continues." *Id.*, 9:27-31, 9:34-42. EX1051, ¶186.

In Yerazunis's gun-camera embodiment, event sensor 70 is "responsive to the discharge of [a] gun" and thus generates a "gun firing signal" "upon discharge of the gun." EX1017, 3:20-33, 8:8-25, 14:55-61. Upon detection of the gun firing signal from event sensor 70, the microprocessor 54 causes "specified frame data associated with [the] firing event both before and after the event" to be "preserved," such that it "cannot be overwritten as a result of further use of the gun or subsequent firing events." *Id.*, 3:25-38, 8:26-30, 15:9-13. With the specified frame data being write protected, "[f]rame data associated with each subsequent firing event[] is stored within an unused portion of the circular buffer memory." *Id.*, 3:31-33.

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Yerazunis teaches that when its video recording device is employed with a gun, “it may be desirable to generate a video record which is associated with each firing of the gun.” *Id.*, 16:66-17:4. “The circular buffer memory may be subdivided evenly to accommodate a predetermined number of firings of the gun and an equal number of frames may be stored within the circular buffer memory for each firing.” *Id.*, 17:9-12. “Alternatively, a fraction of the circular buffer memory may be devoted to the storage of data associated with the first firing,” and thereafter “another fraction of the remaining portion of the circular buffer memory may be employed for the storage of frame data pertaining to the second firing of the gun,” and so on. *Id.*, 17:12-38, Figs. 6-8.

“To accommodate this objective,” Yerazunis discloses that the write protecting performed by microprocessor 54 may include storing pointers that define areas of the circular buffer that are not to be overwritten “in a table to allow later retrieval of the video data pertaining to each firing of the gun.” *Id.*, 17:45-61. Thus, Yerazunis discloses protecting video data pertaining to multiple events within the single file from being overwritten by subsequent recording in the circular buffer by indexing the video data in a table/index corresponding to the buffer.

Further, a POSITA would have recognized the claimed “protecting the multiple portions, within the single file, from being overwritten by subsequent recording in the memory loop” as being one of a finite number of identified solutions for preserving data in Yerazunis, further evidencing its obviousness. *KSR*, 550 U.S. at 421. A POSITA

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would have recognized that Yerazunis's event data must be preserved in some way, and write protecting the event data as multiple portions within a single file (the circular buffer) using indexing was a well-known approach for doing so. EX1051, ¶¶186-190. Preserving event data using this conventional approach was not innovative but rather a straightforward application of ordinary skill or common sense. *See KSR*, 550 U.S. at 421.

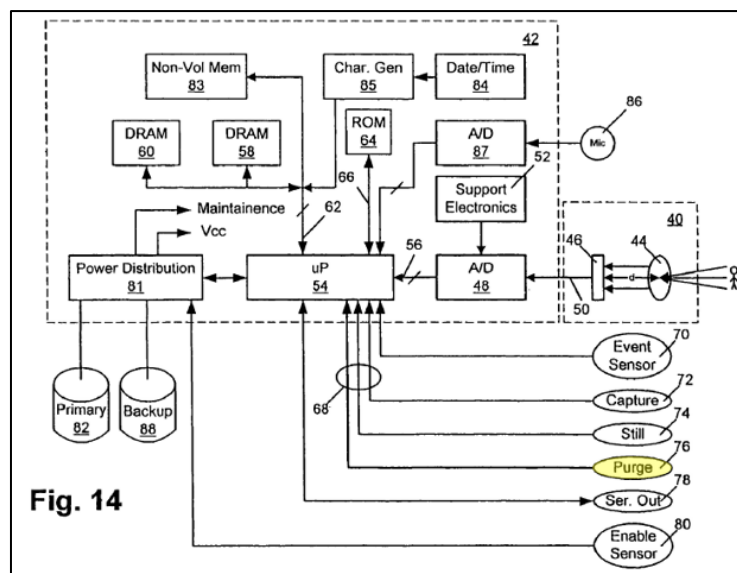
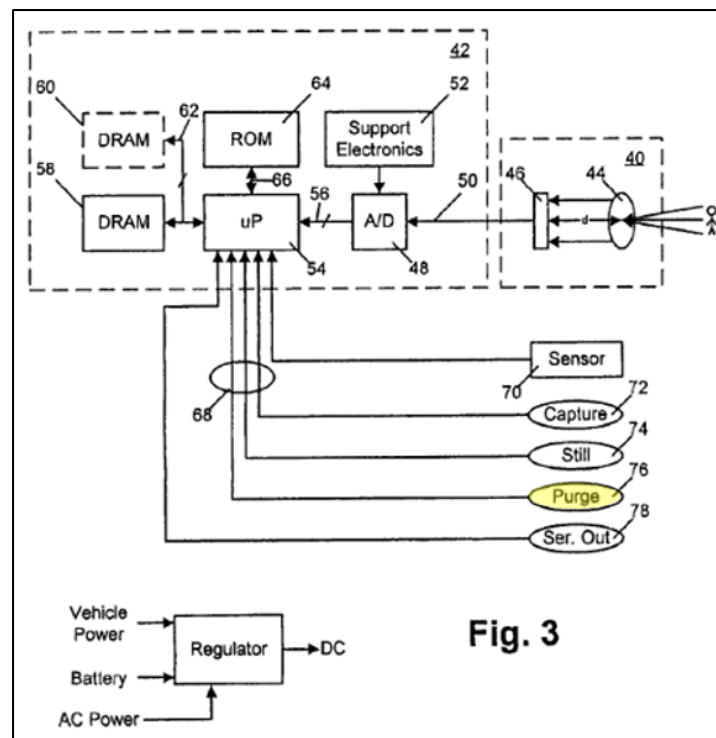
To the extent that a POSITA wanted further guidance as to particular methods for indexing or preserving of event data as files in Yerazunis's buffer, a POSITA would have been motivated to turn to Fiore. *Id.*, 190. As explained in Section IV.A.2, Fiore implements its circular storage buffer 15 as a memory-mapped file and describes indexing collections of frame data for respective events as multiple portions within the memory-mapped file. *See, e.g.*, EX1009, [0022]-[0023], [0051], [0059], [0060]. Fiore also describes the benefits of its file-based approach, including that it enables playback of video data for a specific event from the circular buffer without interrupting simultaneous recording of new video data into the buffer. *See, e.g., id.*, [0065], [0067], [0068], [0072]. In view of these exemplary benefits and the additional reasons explained in Section IV.A.3, a POSITA would have been motivated to implement Yerazunis's microcontroller 54 to "protect[] the multiple portions, within the single file, from being overwritten by subsequent recording in the memory loop" by indexing the write-protected portions in the buffer in the manner disclosed in Fiore.

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- g) Element 6: allowing the editing of the imaged data in protected multiple portions stored in the memory loop within the single file via a recorder control while recording additional segments of the image data in the memory loop within the single file.**

Yerazunis alone or as combined with Fiore discloses this claim element. EX1051, ¶¶192-196.

Yerazunis discloses various “editing of the imaged data.” For example, Yerazunis discloses a purge button 76 that is electronically coupled to microprocessor 54. EX1017, 9:47-48. “Upon activation of the purge button, the contents of the circular buffer and any still images that have been captured are erased. Thus, in the event that a user captures images which, for any reason, such user does not desire to retain, they may be erased.” *Id.*, 9:48-53. Accordingly, write-protected portions are released from protection, which the ’540 patent method claims expressly recite as among potential “editing” steps. EX1018, claim 19 (“wherein the step of allowing the editing of the image data ... includes an action selected from the group consisting of ... releasing a protected portion of the memory from protection”).



EX1017, Figs. 3, 14 (color added); *id.*, 19:30-34.

Purge button 76 is a “recorder control” because it “permit[s] activation of the video recording device and control of the device by a user.” EX1017, 6:40-44. The releasing from protection occurs while recording additional segments of the image data:

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Yerazunis stresses recording occurs “continuously” (*id.*, 2:1-8, 2:19-23, 4:45-49, 7:11-14, 9:34-38, 17:56-61), such that the editing (purging) necessarily occurs “while recording additional segments.” EX1051, ¶¶194-195.

A POSITA would have understood the claimed “editing” to be well-known and as covering myriad potential actions. *Id.* Yerazunis, for example, further discloses that date/time of an event may be “stamped” onto each associated frame. EX1017, 19:1-9.

And, to the extent a POSITA wanted further guidance as to particular methods for allowing editing while recording additional image data, a POSITA would have been motivated to turn to Fiore. EX1051, ¶196. Fiore’s memory mapped file and use of indexing enable “multiple processes mapped in virtual memory space to read from, and write to the same memory, thereby concurrently sharing the circular storage buffer.” EX1009, [0068]; *see also id.*, [0023], [0071]-[0072]. A POSITA would have understood that Fiore’s teachings would enable Yerzunis’s editing (purging) to occur while recording (“without interrupting” recording, *id.*), *e.g.*, by enabling processes for editing and recording to “concurrently shar[e] the circular storage buffer.” *Id.*, [0068]; EX1051, ¶196.

### 5. Claim 2

Claim 2 depends from claim 1 and recites “wherein the loop is sufficiently large to store at least five minutes of the image data.” This limitation would have been obvious in view of Yerazunis. EX1051, ¶¶197-198. In one embodiment, Yerazunis’s

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memory holds approximately 15 seconds of video data; in another, 30 seconds. EX1017, 8:43-51, 11:31-43. Yerazunis provides motivation for increasing the total recording time, explaining that “[i]t may be desired to increase the memory capacity of the recording device to permit a greater number of frames to be captured or to accommodate the storage of video images received from plural cameras.” *Id.*, 6:33-36. Yerazunis also teaches “[a]dditional semiconductor memory 60 may be coupled to the microprocessor 54 via a bus 62 in the event that it is desired to increase the semiconductor memory capacity of the video recording device.” *Id.*, 6:30-33.

In addition to increasing memory capacity, Yerazunis also discloses multiple techniques for increasing the total record time that would have been conventional and well-known by June 2007, including using a lower sampling rate (*id.*, 6:12-13), using compression (*id.*, 10:63-67, 11:31-35), and using “any number of storage methods ... to extend the period of time captured within the semiconductor memory buffer, or to achieve almost any frame capture profile that may be desired,” including those techniques illustrated in Yerazunis’s Figures 6-8. *Id.*, 10:37-49, 11:44-49, 17:34-38. In sum, a POSITA would have been motivated to implement a “sufficiently large” memory loop in the Yerazunis/Fiore system, such as to store at least five minutes of the image data to permit a greater number of frames to be captured, and a POSITA would have been aware of conventional and well-known techniques for doing so. EX1051, ¶198.

**6. Claims 3 and 4**

Claim 3 depends from claim 1 and recites “storing first and second ones of the multiple portions as separate files.” Claim 4 depends from claim 1 and recites “storing first and second ones of the multiple portions in a common file.” Yerazunis alone or as combined with Fiore discloses these limitations. EX1051, ¶¶199-202.

Yerazunis discloses write-protecting multiple events in the circular buffer: Upon detection of the gun firing signal from event sensor 70, the microprocessor 54 causes “specified frame data associated with [the] firing event both before and after the event” to be “preserved,” such that it “cannot be overwritten as a result of further use of the gun or subsequent firing events” (EX1017, 3:25-38, 8:26-30, 15:9-13); and “[f]rame data associated with each subsequent firing event[] is stored within an unused portion of the circular buffer memory.” *Id.*, 3:31-33; *see also id.*, 16:66-17:4, 17:9-44, Figs. 6-8. “To accommodate this objective,” the write protecting performed by microprocessor 54 may include storing pointers that define areas of the circular buffer that are not to be overwritten “in a table to allow later retrieval of the video data pertaining to each firing of the gun.” *Id.*, 17:45-61. Yerazunis discloses that the circular buffer may be subdivided, with each subdivision (*i.e.*, each identifiable collection of data) accommodating a single event. *Id.*, 17:9-12 Yerazunis also discloses that “the gun may be refired within the post trigger event time period.” *Id.*, 17:39-44. In such instances, “the recording time may be extended so as to terminate another post event time period

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after the last such firing.” *Id.* Thus, Yerazunis discloses protecting video data pertaining to multiple events from being overwritten (by subsequent recording) by indexing the video data as one or more files in a table/index corresponding to the buffer. EX1051, ¶200.

Fiore likewise implements its circular storage buffer 15 as a memory-mapped file and like Yerazunis describes indexing collections of frame data for respective events as multiple portions within the memory-mapped file. *See, e.g.*, EX1009, [0022]-[0023], [0051], [0059], [0060].

In view of Yerazunis and Fiore, it would have been obvious to a POSITA to index the event data either “as separate files” or “in a common file,” as claimed. EX1051, ¶¶201-202. Indeed, both “separate files” and “common files” were conventional and well-known file structures by June 2007, and a POSITA would have been motivated to select either technique to accomplish Yerazunis’s goal of enabling “later retrieval of the video data pertaining to each firing of the gun.” *Id.*, ¶202; EX1017, 17:45-61. A POSITA would have had a reasonable expectation of success because implementing such file-management techniques in the Yerazunis/Fiore recording system would have been routine and well within a POSITA’s skill. EX1051, ¶202.

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### 7. Claims 5 and 6

Claim 5 depends from claim 1 and recites “continuing to record the image data immediately after ending at least one of the segments.” Claim 6 depends from claim 1 and recites “continuing to record the image data immediately after protecting at least one of the segments.” Yerazunis discloses these limitations. EX1051, ¶¶203-205. Yerazunis discloses that recording of image data into the circular buffer occurs continuously. EX1017, 2:1-8, 2:19-23, 4:45-49, 7:11-14, 9:34-38, 17:56-61. Yerazunis thus discloses “continuing to record the image data immediately” (i) “after ending at least one of the segments” (claim 5), and (ii) “after protecting at least one of the segments” (claim 6).

Yerazunis also discloses that a captured frame stored as a result of the activation of the still button 74 can be “stored within a frame location within the circular buffer, however, the frame is protected from overwriting *while video capture within the circular buffer continues*,” and this “may be accomplished via tagging protected frame locations containing captured still frames and checking to determine whether a frame location is protected prior to writing to the frame location.” EX1017, 9:34-42.

Yerazunis further discloses that when its video recording device is employed with a gun, “it may be desirable to generate a video record which is associated with each firing of the gun.” *Id.*, 16:66-17:4. “To accommodate this objective, after the conclusion of data storage associated with one firing event, the head pointer 104 and

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the tail pointer 102 ... defining the area(s) of the circular buffer memory, are stored in a table to allow later retrieval of the video data pertaining to each firing of the gun,” and the pointers “are then reset to allow *continued* recording into another portion of the circular buffer memory without over writing the previously stored and preserved data.” *Id.*, 17:50-59. Thus, after recording a segment of image data or preserving video data pertaining to an event, “recording of data *continues* since a subsequent firing event may occur.” *Id.*, 17:45-50.

### 8. Claims 7 and 9

Claim 7 depends from claim 1 and recites “designating a beginning of a first one of the multiple portions in response to a start signal from a user of the camera.” Yerazunis discloses this limitation. EX1051, ¶¶206-208. Yerazunis discloses an input mechanism through which a user triggers a write-protecting signal, including “a button actuated by a user.” EX1017, 2:58-64; *see also id.*, 9:17-18 and Fig. 3 (describing “capture button 72 which serves as a user activatable trigger event”), Fig. 14 (depicting capture button 72); *see also* Figs. 3, 14 (depicting still button 74). Pushing this button (capture or still) provides a trigger signal to central control processor 54, which causes a portion of the circular buffer to be write protected, which would include designating the beginning of the write-protected portion. *Id.*, 9:19-22; EX1051, ¶206.

Yerazunis’s video recording device may also be “interfaced directly to the trigger of the gun” such that “the trigger is employed to generate a switching action or signal

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which is used to indicate a trigger event.” EX1017, 16:59-62. The gun trigger results in “designating a beginning of a first one of the multiple portions” just as with the capture or still button. EX1051, ¶207.

Applicant admitted a limitation nearly identical to that of claim 7 is known in the art. EX1013, 96, 102.

Claim 9 depends from claim 7 and recites “designating an end of the first one of the multiple portions in response to a stop signal from the user.” Yerazunis discloses this limitation. EX1051, ¶208. Yerazunis’s video recording device responds to a signal from a user to save a recording by write protecting specified frame data in the circular buffer. EX1017, 2:53-64, 3:20-38, 8:8-30, 14:55-61, 15:9-13. The signal from the user includes “a stop signal,” as recited in claim 9. EX1051, ¶208. Specifically, Yerazunis’s signal from the user tells the video recording device when to (i) start recording, *i.e.*, upon detection of the signal, EX1017, 3:25-38, 8:26-30, 15:9-13, and when to (ii) stop recording by designating an end of a write-protected portion, *i.e.*, when a predetermined number of frames subsequent to the trigger event have been write protected, *id.*, 2:53-64, 4:35-56, 8:26-61, 11:27-30, 12:14-17, 13:3-17, 16:66-17:38. Yerazunis thus discloses the limitations added in claim 9.

### **9. Claim 10**

Claim 10 depends from claim 7 and recites “wherein the start signal comprises a manually operated switch.” Yerazunis discloses this limitation. EX1051, ¶209. As

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explained for claim 7, Yerazunis teaches a “capture button 72 which serves as a user activatable trigger event” (EX1017, 9:17-18; *see also id.*, 2:58-64), a “still” button (*id.*, 9:27-46), and a gun trigger “interfaced directly to” Yerazunis’s video recording device (*id.*, 16:59-62). The capture button, still button, and gun trigger are “manually operated switch[es]” that trigger the signal to write protect video data. EX1051, ¶209.

Applicant admitted this limitation is known in the art. EX1013, 91, 99, 105.

### **10. Claim 11**

Claim 11 depends from claim 7 and recites “wherein the start signal comprises an audio signal.” Yerazunis discloses this. EX1051, ¶210. Yerazunis’s “event sensor 70 is operative to generate a trigger signal in response to the discharge of the gun,” and may comprise a microphone “operative to detect the sound associated with the firing of the gun” (*i.e.*, “audio signal”). EX1017, 16:43-55; *see also id.*, 8:17-19.

Applicant admitted this limitation is known in the art. EX1013, 91.

### **11. Claim 12**

Claim 12 depends from claim 7 and recites “including in the first one of the multiple portions, a time span of the image data that occurred prior to the start signal.” Yerazunis discloses this limitation. EX1051, ¶211; EX1017, 2:53-58, 4:35-56, 8:8-61, 10:37-49, 11:31-43. In one embodiment, upon detecting a gun-firing signal, microprocessor 54 causes “specified frame data associated with [the] firing event both before and after the event” to be “preserved,” such that it “cannot be overwritten as a

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result of further use of the gun or subsequent firing events.” EX1017, 3:25-38, 8:26-30, 15:9-13. The frame data from *before* the event, which is preserved in response to the gun-firing signal, discloses the claimed “time span of the image data that occurred prior to the start signal.”

Applicant admitted a nearly identical limitation is known in the art. EX1013, 95, 101, 108.

**12. Claims 13 and 14**

Claim 13 depends from claim 12 and recites “wherein the time span comprising at least 5 seconds” Claim 14 depends from claim 12 and recites “wherein the time span comprising at least 15 seconds” Yerazunis discloses these limitations. EX1051, ¶¶212-213. In one embodiment, the write-protected segment is approximately 15 seconds long, half being the pre-recorded subset (*i.e.*, the “time span”). EX1017, 11:31-43. In another embodiment, the write-protected segment is approximately 30 seconds long, half being the pre-recorded subset. *Id.*, 8:43-51. This discloses the limitations of claims 13 and 14: the approximately 7.5-second pre-recorded segment is “at least 5 seconds” and the approximately 15-second pre-recorded segment is “at least 15 seconds.” Yerazunis teaches that “the number of frames that are recorded before and after [a trigger signal] are a matter of design choice.” *Id.*, 8:51-55.

Further, as explained for claim 2, a POSITA would have been motivated to increase the total record time, and would have had a reasonable expectation of success

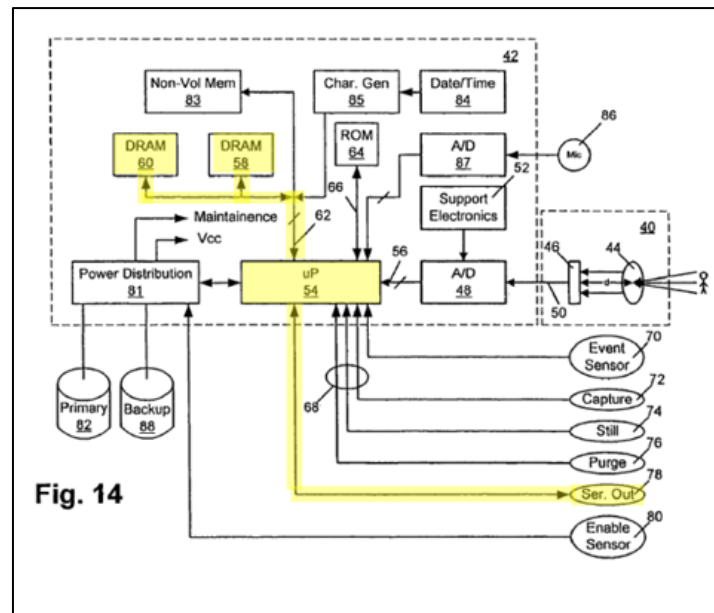
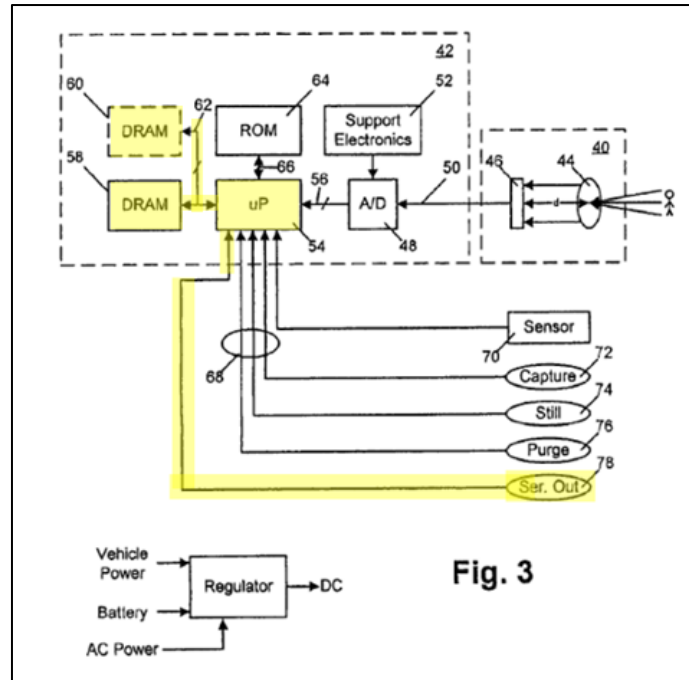
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in doing so. *See* Section IV.A.5. For at least these same reasons, a POSITA would have been motivated to increase the “time span” of the image data that occurred prior to the start signal, including at least to capture events preceding the trigger signal, *e.g.*, additional actions of a suspect preceding a police officer’s firing of his gun. EX1051, ¶213. This would have been routine and well within a POSITA’s skill, as evidenced by, as one example, Ely, which discloses write protecting a “ten minute period” with “five minutes prior to the alarm and five minutes after.” EX1020, 10:60-65; *see also* EX1015 (Mann), [0065]. EX1051, ¶213.

Applicant admitted that a limitation nearly identical to that of claim 13 was known in the art. EX1013, 89, 95, 102.

### **13. Claim 15**

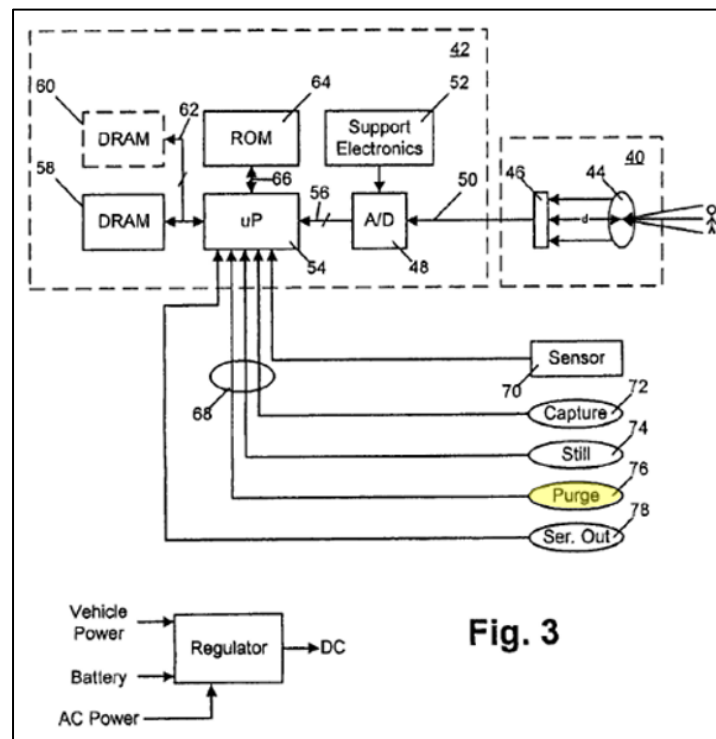
Claim 15 depends from claim 1 and recites “wirelessly transmitting a first one of the segments to a remote memory, and releasing a corresponding one of the multiple portions of memory from protection.” Yerazunis discloses this limitation. EX1051, ¶¶214-215. Yerazunis’s microprocessor 54 includes a serial output channel 78 that is “provided to permit recorded frame data to be downloaded to a computer for viewing.” EX1017, 3:1-2, 6:45-51, 18:60-66.

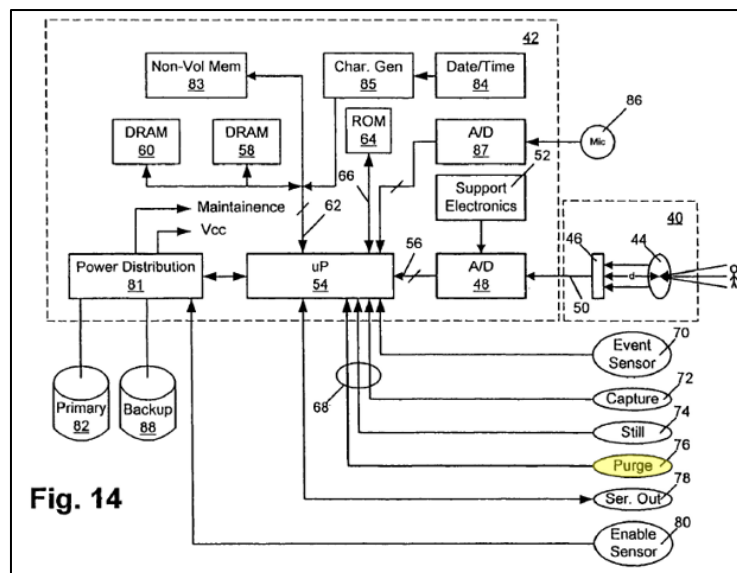


*Id.*, Figs. 3, 14 (color added). Serial output channel 78 “is employed to download captured and stored video images” from the circular buffer of DRAM 58 “to an external Personal Computer (PC)” or to “a radio transmitter to transmit RF signals to a base station.” *Id.*, 9:60-10:3. Serial output channel 78 coupled to Yerazunis’s radio

transmitter discloses “wirelessly transmitting a first one of the segments to a remote memory.”

As explained for element 6 of claim 1, Yerazunis also discloses “releasing a corresponding one of the multiple portions of memory from protection”: Yerazunis discloses a purge button 76, and that “[u]pon activation of the purge button, the contents of the circular buffer and any still images that have been captured are erased. Thus, in the event that a user captures images which, for any reason, such user does not desire to retain, they may be erased.” *Id.*, 9:48-53. It would have been obvious to a POSITA that one reason the “user does not desire to retain” captured images is that the images have been offloaded. EX1051, ¶215.





EX1017, Figs. 3, 14 (color added); *id.*, 19:30-34.

#### 14. Claim 19

As explained for element 6 of claim 1, Yerazunis alone or as combined with Fiore discloses the limitations added in dependent claim 19 via the “purge” button that “releas[es] a portion of the memory from protection.” EX1051, ¶216.

### B. Ground 1b: Claims 16-18 Would Have Been Obvious Over Yerazunis Alone Or As Combined With Fiore, In Further View Of Mann

#### 1. Summary Of Mann

Mann, EX1015, entitled “Wearable Camera System with Viewfinder Means,” was filed March 25, 1999 and issued June 4, 2003. Mann is prior art under at least pre-AIA 35 U.S.C. § 102(a), (b).

Mann describes a body-worn portable camera system with wearable viewfinder, built into eyeglass frames, as illustrated in Figure 1. EX1015, [0001], [0056].

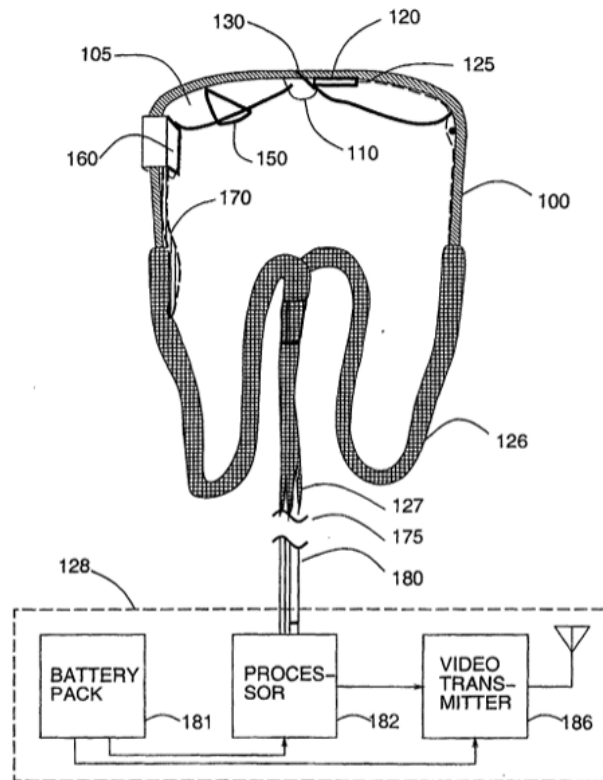


FIG. 1 - FOVEATED EMBODIMENT OF WEARABLE CAMERA SYSTEM

*Id.*, Fig. 1. This figure depicts eyeglasses with frames 100, lenses 105, cameras 110 and 120, electronic display 160 that acts as a viewfinder screen. *Id.*, [0056]-[0058]. Figure 1 further depicts a belt pack or body-worn pack 128 connected to the eyeglasses via wiring harness 180 and cable harness 127. *Id.*

Mann's system includes a "chording keyboard" with letter keys, one of which can be pressed by a user to begin recording via the cameras. *Id.*, [0064]-[0065]. "Recording is typically retroactive, in the sense that the wearable camera system, by default, always records into a 5-minute circular buffer, so that pressing [the letter key] begins recording starting from 5 minutes ago, e.g. starting from 5 minutes before [the letter key] is pressed." *Id.*, [0065].

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During prosecution of U.S. Patent App. No. 12/268,286 (the '034 patent), the Applicant admitted that Mann discloses many of the claim limitations, including “a mount for the camera,” and wherein the “mount is a pair of wearable glasses.” EX1013, 100-106. Mann was applied in a rejection of claims during prosecution of the '540 patent (EX1011, 65-66) but not in combination with Yerazunis or Fiore.

In addition to Mann, wearable cameras including cameras mounted to eyeglasses and using circular buffers to record pre-event data were well-known by June 2007. *See, e.g.*, EX1029.

### **2. Motivation To Combine**

A POSITA would have been motivated to combine Mann with Yerazunis and Fiore. EX1051, ¶217. Because all three of Yerazunis, Fiore, and Mann disclose video recording systems—and Yerazunis and Mann in particular disclose compact, mountable systems—a POSITA would have been aware of and motivated to combine these references. Mann also describes why a POSITA would have been motivated to implement the Yerazunis/Fiore system in an eyeglasses-mounted apparatus: Among other reasons, Mann’s wearable viewfinder system advantageously “allows the user to record a portion of his or her eye’s visual field of view.” EX1015, [0044].

### **3. Claims 16 and 17**

Claim 16 depends from claim 1 and recites “[a] system comprising electronics that implements the method of claim 1, and a clothing accessory that supports the

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sensor.” Claim 17 depends from claim 16, and recites “wherein the clothing accessory comprises a pair of glasses.” Yerazunis alone or as combined with Fiore, in further view of Mann, discloses these limitations. EX1051, ¶218. For claim 16, as explained in Section IV.A.4, Yerazunis alone or as combined with Fiore discloses a “system comprising electronics that implements the method of claim 1.” For claim 17, Mann discloses “a clothing accessory that supports the sensor,” which is “a pair of glasses”: Mann describes a body-worn portable camera system with wearable viewfinder means, particularly as built into eyeglass frames 100 with lenses 105 and cameras 110 and 120, as illustrated in Figure 1. EX1015, [0001], [0056]-[0058], Fig. 1. A POSITA would have been motivated to implement the Yerazunis/Fiore system in an eyeglasses-mounted apparatus for the reasons in Section IV.B.2.

Applicant admitted that Mann discloses a limitation nearly identical to that of claim 17. EX1013, 103.

### **4. Claim 18**

Claim 18 depends from claim 17 and recites “providing a viewfinder in a lens of the glasses.” Mann discloses this limitation. EX1051, ¶219. As illustrated in Figure 1, the optics of the viewfinder (optical system 150) are concealed in or behind one or both of the glass lenses. EX1015, [0047], [0058]. “This optical system provides a magnified view of an electronic display,” which “acts as a viewfinder screen.” *Id.*, [0058].

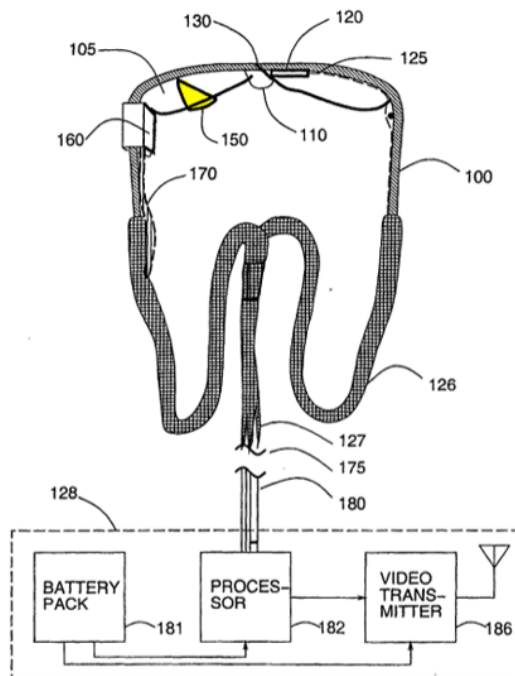


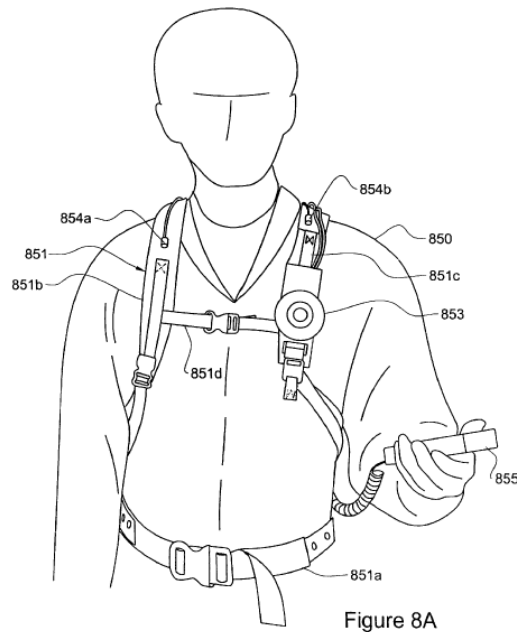
FIG. 1 - FOVEATED EMBODIMENT OF WEARABLE CAMERA SYSTEM

EX1015, Fig. 1 (color added).

**C. Ground 1c: Claim 8 Would Have Been Obvious Over Yerazunis Alone Or As Combined With Fiore, In Further View Of Strub**

Claim 8 depends from claim 7 and recites “using a switch in a clothing accessory to operate an aspect of the method.” To the extent Yerazunis and Fiore do not disclose this limitation, it would have been obvious in view of Strub (EX1046), entitled “Low Attention Recording Unit For Use By Vigorously Active Recorder.” Strub was filed on April 21, 2000, and issued on May 13, 2003. Strub is therefore prior art to the ’540 patent under at least pre-AIA 35 U.S.C. § 102(a), (b), and (e). Strub was neither cited nor applied during prosecution.

Strub discloses a “recording unit” with a video camera that “acquires a continuous stream of visual data” of an event. EX1046, 13:41-48.



*Id.*, Fig. 8A. Strub teaches that “it can be desirable to integrate components of a recording unit according to the invention into clothing to be worn by a recorder” and that components of a recording unit according to the invention “can be sewn into clothing” such as “a special police officer’s uniform.” *Id.*, 66:31-39; *see also id.*, 66:24-31 (“desirable that the recording unit components be packaged so that the recording unit has a discreet appearance”).

“During recording of an event, it can be desirable to mark the recording,” which Strub discloses is “intended to indicate that the content represented by the recording data is of interest and may be particularly desirable to view during later display of the recording.” *Id.*, 3:44-54. Further, to “facilitate” marking, Strub discloses that “it may be desirable to provide additional apparatus (a ‘marking token’)” that is “physically separated from the rest of a recording unit,” such as “a ring, brooch, bracelet (e.g., a

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watch-like band) or similar wearable item can be constructed with one or more pushbuttons and adapted to enable communication (perhaps wirelessly) with the remainder of the recording unit.” *Id.*, 54:20-29.

The combination of the Yerazunis/Fiore video recording device with Strub discloses “using a switch in a clothing accessory to operate an aspect of the method,” as recited in claim 8 of the ’540 patent. EX1051, ¶¶220-221. Strub discloses using a wearable item (a clothing accessory) with pushbuttons (a switch) to control operation of a physically separate recording unit. EX1046, 54:20-29. A POSITA would have been motivated to implement the Yerazunis/Fiore video recording device with Strub’s wearable item with user-pressable pushbuttons to facilitate operation of the video recording device by a user. EX1051, ¶221. For example, a police officer surveilling a situation with Yerazunis’s video recording device (*e.g.*, mounted on a gun or in a car) could use Strub’s wearable item to discreetly take video or photographs (*i.e.*, “using a sensor in the camera to capture image data,” as recited in method claim 1 of the ’540 patent) without handling the video recording device directly. *Id.*; *see also* EX1049 (Blum), EX1050 (Blum provisional).

**D. Ground 2a: Claims 1-7, 9-14, And 19 Would Have Been Obvious Over Ely Alone Or As Combined With Fiore**

**1. Summary Of Ely**

Ely, EX1020, entitled “Distributed Video Data Storage in Video Surveillance System,” was filed April 22, 1996 and issued November 9, 1999. Ely is prior art under at least pre-AIA 35 U.S.C. § 102(a), (b), (e).

Figure 2 is “a block diagram of a video surveillance system provided in accordance with the present invention.” *Id.*, 5:21-22.

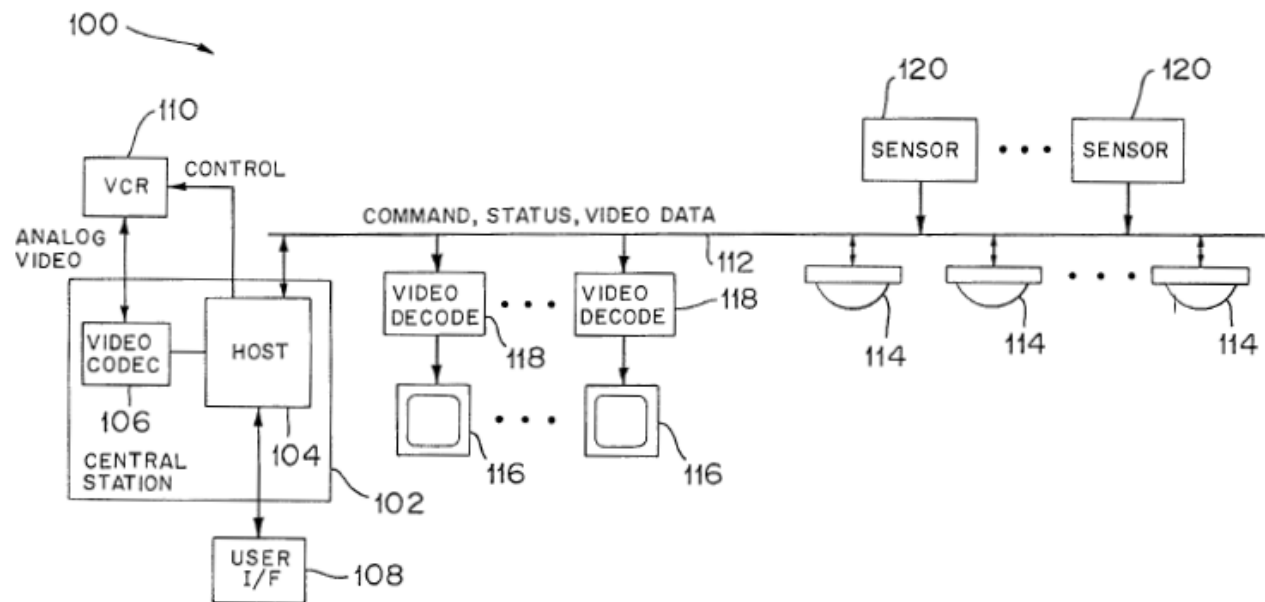


FIG. 2

*Id.*, Fig. 2. Depicted are camera units 114 and sensor devices 120, connected to host computer 104 at central station 102 via a network, which in Figure 3 is a local area network (LAN) 112 (*id.*, 5:37-53):

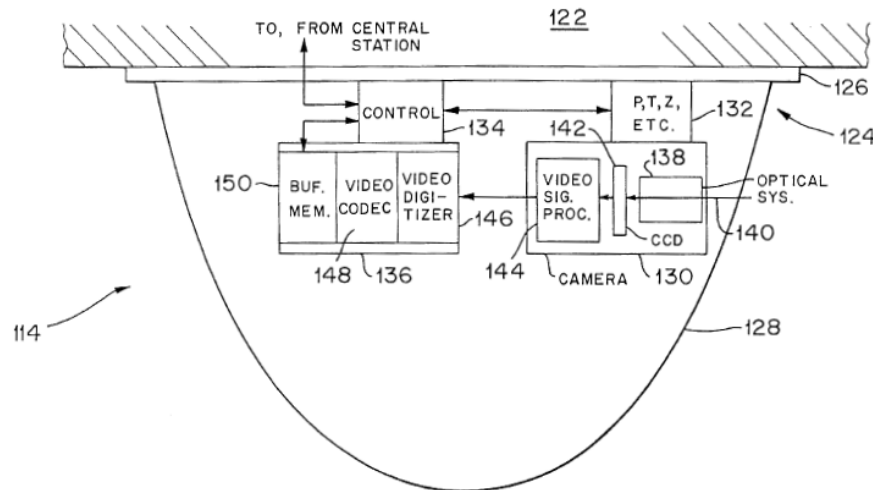


FIG. 3

*Id.*, Fig. 3.

Ely's network enables video data to be transmitted from memory device 150 to a remote memory that uses "conventional analog video tape recording" or "a digital video tape recorder (DVTR)." *Id.*, 9:51-58. EX1051, ¶¶130-134.

## 2. Motivation To Combine

A POSITA would have been motivated to combine Ely and Fiore for multiple reasons. EX1051, ¶¶222-225.

As one example, both references describe similar technologies and solve similar problems. Ely describes a surveillance system that uses a ring buffer to continuously record a video signal generated by a camera 130, and portions of the ring buffer are write protected in response to an alarm command. Ex 1020, 6:51-53, 6:61-65, 7:28-39. The write-protected portions include video data recorded both before and after the alarm command. *Id.*, 7:48-55. Fiore similarly discloses a "data recording and

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playback system” that uses “a circular storage buffer having a memory mapped file with same address space as the memory device for storing the input signal data.” EX1009, Abstract. In Fiore, “data frames before, during, and after [an] event” are preserved, similar to what is disclosed in Ely. *Id.*, [0048].

As another example, a POSITA would have been motivated to implement Ely’s video surveillance system with Fiore’s file-based approach for the circular storage buffer and event data stored therein. Fiore’s file-based approach includes (i) implementing a circular storage buffer as a memory-mapped file, and (ii) indexing event data for events as respective files within the memory-mapped file. EX1009, [0022]-[0023], [0051], [0059], [0060]. As detailed in Section IV.A.2, Fiore also describes numerous benefits of its file-based approach. *Id.*, [0065], [0067], [0068], [0072]. In view of these exemplary benefits, and other reasons discussed herein, a POSITA implementing Ely would have been motivated to utilize Fiore’s teachings on the circular storage buffer implemented as a memory mapped file and the indexing of event data as files within the circular storage buffer. EX1051, ¶¶223-225. A POSITA would have had a reasonable expectation of success because Fiore provides a detailed disclosure of its file-based approach, and applying those techniques to Ely’s surveillance system would have been routine and well within a POSITA’s skill. *Id.*, ¶225.

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## 3. Claim 1

### a) Preamble<sup>2</sup>

For purposes of this petition, Petitioner has applied Patent Owner’s construction of claim 1, including that the preamble is not limiting and “is duplicative of the limitations in the body of the claim.” EX1047, 004-005. Petitioner addresses the prior art’s disclosure of the limitations alleged to be duplicative of the preamble below. Ely does disclose, in any event, a method in which a “camera unit or units respond to the alarm command by protecting buffered video data which corresponds to a predetermined pre- and post-alarm time period,” with multiple “blocks of alarm data” being saved. EX1020, 10:9-15, 10:59-11:8; EX1051, ¶226.

### b) Element 1

Ely discloses this claim element. EX1051, ¶¶227-228. Ely’s camera unit 114 includes a camera 130 with the claimed “sensor ... to capture image data”:

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<sup>2</sup> For brevity, the language of claims 1-19 (included above in Grounds 1a through 1c) is not reproduced for Grounds 2a through 2d.

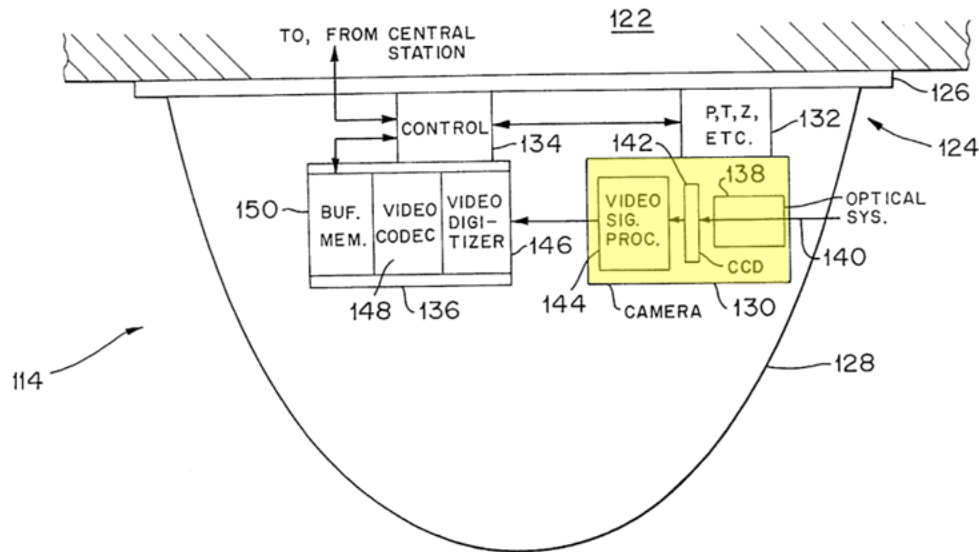


FIG. 3

EX1020, Fig. 3 (color added).

In the camera 130, an “image formed by the optical system 138 is converted into an electrical signal at CCD 142 and the resulting signal is subjected to conventional analog signal processing at video signal processing circuit 144.” *Id.*, 6:21-28. The camera 130 thus discloses the claimed “sensor” because it has a CCD 142 that captures video images that impinge on it.

**c) Element 2**

For purposes of this petition, Petitioner has applied Patent Owner’s construction of claim 1, including that the claimed camera and recorder are “coupled” if they “come together to form a single unit,” with “a camera substructure as a component within an entire recording device.” EX1047, 004-005, 007. Ely discloses this claim element. EX1051, ¶¶229-230. Ely’s camera unit 114 includes a recorder (memory board 136



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shown in Figure 3 and described in Ely's text (*see, e.g., id.*, 6:17-21, 6:48-65), the camera 130 and memory board 136 form a single unit, and both of them are parts of a camera unit 114. EX1051, ¶230.

### d) Element 3

Ely discloses this claim element. EX1051, ¶¶231-232. Ely's memory device 150 "functions as a buffer for the video signal generated by the camera 130, and is controlled by the control circuit 134." EX1020, 6:61-65. "[M]emory 150 serves as a ring buffer, in which currently generated compressed video data is written over the oldest compressed video data that had previously been stored in the memory 150." *Id.*, 7:28-34. A POSITA would have understood the "ring buffer" to mean a "memory loop" of the type disclosed in the '540 patent. EX1051, ¶231.

The compressed video data is stored as one or more frames, which are discrete segments of image data (*id.*), and Ely's circular buffer may be organized into multiple "blocks" (*i.e.*, "multiple portions") containing one or more segments of image data corresponding to an event (EX1017, 10:56-11:2). Block 154 of Figure 4 further illustrates this step of "stor[ing] live compressed video data" in the ring buffer:

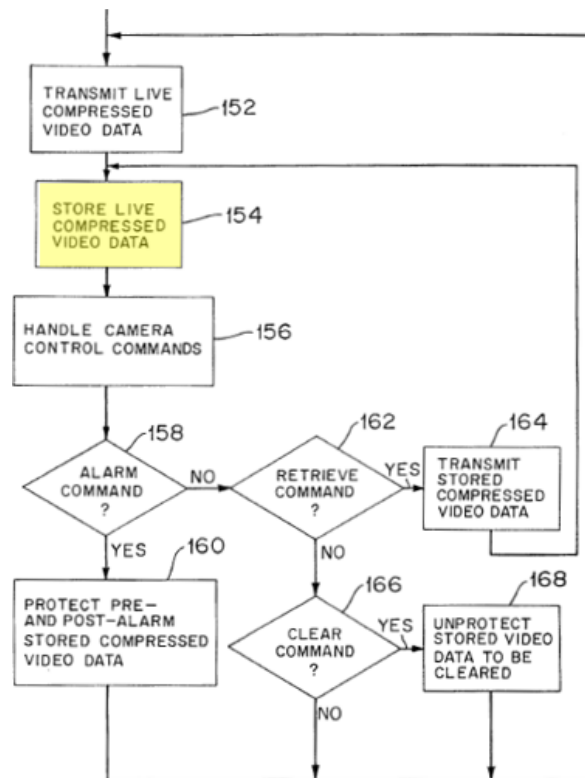


FIG. 4  
CAMERA UNIT OPERATION

EX1020, Fig. 4 (color added). A POSITA would have understood “stor[ing] live compressed video data” to mean recording segments of the image data in approximately real time—*i.e.*, recording video data that is “live” after conversion into an electrical signal at CCD 142, digitization, and/or compression. *Id.*, 6:21-28, 6:48-65; EX1051, ¶232.

e) **Element 4**

Ely alone or as combined with Fiore discloses this claim element. EX1051, ¶¶233-237.

Ely discloses that the camera system responds to an “alarm command by protecting buffered video data which corresponds to a predetermined pre- and post-

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alarm time period,” and the “protected data is then available for subsequent retrieval, display, and permanent recording.” EX1020, 10:11-17. In Ely, “[a]fter the compressed video data stored at one of the camera units has been protected pursuant to an alarm command, the data (which will sometimes be referred to as ‘alarm data’) can be selectively retrieved in response to user instruction either for display (block 180) or directly for taperecording (block 182).” *Id.*, 10:17-23.

While Ely never *expressly* refers to treating the ring buffer as a single file, a POSITA would have understood that utilizing multiple files can be more time consuming than using a single file, and that using a single file format had been found to be well-suited for implementing a ring buffer and for storing video data. EX1051, ¶235. And a POSITA would have understood treating the ring buffer as a single file to be one of a finite number of identified solutions for implementing Ely’s ring buffer (*id.*), evidencing its obviousness. *KSR*, 550 U.S. at 421 .

To the extent a POSITA wanted further guidance as to particular methods for implementing Ely’s ring buffer and recording image data into the buffer, a POSITA would have been motivated to turn to Fiore. EX1051, ¶236. Fiore discloses a circular storage buffer 15 that is treated as a single file: Fiore discloses that the circular storage buffer 15 is implemented as a memory-mapped file (*i.e.*, “a single file”). EX1009, [0022]-[0023], [0051], [0059]-[0060], [0071] (memory-mapped file is preferably “a *single* contiguous disk *file*”). Fiore describes advantages of the single file format. *See*,

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*e.g., id.*, [0065] (“memory mapped file ... combines the access speed of the RAM memory with large storage capacity of a disk file”), [0071] (“reads and writes to adjacent virtual memory locations are insured to be physically adjacent on the disk drive,” ensuring that “the circular storage buffer cannot become fragmented”).

Fiore also describes indexing collections of frame data for respective events as files within the memory-mapped file. Fiore describes the benefits of its file-based approach, including enabling playback of video data for a specific event from the circular buffer without interrupting simultaneous recording of new video data into the buffer. *Id.*, [0065], [0067]-[0068], [0072]. In view of these exemplary benefits and the additional reasons explained in Section IV.D.2, a POSITA would have been motivated to treat Ely’s ring buffer as a single file in the manner Fiore discloses. EX1051, ¶237.

**f) Element 5**

Ely alone or as combined with Fiore discloses this claim element. EX1051, ¶¶238-242.

First, Ely discloses that overwriting of data in the ring buffer “is subject to inhibition in response to alarm commands.” EX1020, 7:34-35. “On such occasions, the live compressed video data is written into a portion of the memory device 150 which does not hold video data that is to be preserved.” *Id.*, 7:35-38. “When an alarm command is received,” a process is “carried out in which the control circuit 134

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protects from over-writing compressed digital video data previously stored in the memory 150.” *Id.*, 7:48-55. The write-protected video data “correspond[s] to a time interval beginning at a predetermined time prior to receipt of the alarm command, and continu[es] for a predetermined time after receipt of the alarm command.” *Id.*; *see also id.*, 10:11-15. Multiple “blocks” of alarm data for respective alarm commands can be protected within the ring buffer. *See id.*, 10:59-11:2.

Second, Ely discloses that “[a]fter the compressed video data stored at one of the camera units has been protected pursuant to an alarm command, the data (which will sometimes be referred to as ‘alarm data’) can be selectively retrieved in response to user instruction either for display (block 180) or directly for taperecording (block 182).” *Id.*, 10:17-23. A POSITA would have understood that selectively retrieving alarm data associated with an alarm command necessitates an ability to locate the alarm data within the buffer by indexing the alarm data in a table/index corresponding to the buffer. EX1051, ¶¶239-240. Thus, Ely discloses protecting alarm data pertaining to multiple alarm commands within the single file from being overwritten by subsequent recording in the buffer by indexing the alarm data in a table/index corresponding to the buffer.

A POSITA would have found it obvious to protect video data for multiple events within the single file from being overwritten by subsequent recording in the memory loop based on Ely’s disclosure of storing the alarm data for subsequent, selective

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“retrieval, display, and permanent recording.” *Id.*, ¶241. Further, a POSITA would have recognized the claimed “protecting the multiple portions, within the single file” as being one of a finite number of identified solutions for preserving alarm data in Ely, further evidencing its obviousness. *KSR*, 550 U.S. at 421. A POSITA would have recognized that Ely’s alarm data must be preserved in some way, and write protecting the alarm data as multiple portions within a single file was a well-known approach for doing so. EX1051, ¶241.

To the extent that a POSITA wanted further guidance as to particular methods for indexing or preserving of alarm data as files in Ely’s buffer, a POSITA would have been motivated to turn to Fiore. *Id.*, ¶242. As explained in Section IV.A.2, Fiore implements its circular storage buffer 15 as a single memory-mapped file and describes indexing collections of frame data for respective events as multiple portions within the memory-mapped file. *See, e.g.*, EX1009, [0022]-[0023], [0051], [0059], [0060]-[0061]. Fiore also describes the benefits of its file-based approach, including that it enables playback of video data for a specific event from the circular buffer without interrupting simultaneous recording of new video data into the buffer. *See, e.g., id.*, [0065], [0067], [0068], [0072]. In view of these exemplary benefits and the additional reasons explained in Section IV.D.2, a POSITA would have been motivated to implement Ely’s control circuit 134 to “protect[] the multiple portions, within the single

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file, from being overwritten by subsequent recording in the memory loop” by indexing the write-protected portions in the buffer in the manner disclosed in Fiore.

### **g) Element 6**

Ely discloses this claim element. EX1051, ¶¶243-245. Ely’s control circuit 134 responds to “clear” commands by removing a block of stored video data from protection, thereby permitting “live” video data to be written over the now-unprotected video data. EX1020, 8:7-12. The clear command may be sent after write-protected alarm data is retrieved and transmitted. *Id.*, 10:24-43, 10:51-55, Fig. 4, Fig. 5B (block 190). Accordingly, write-protected portions are released from protection, which claims of the ’540 patent explicitly recite as an “editing” step. *See* EX1018, claim 19.

Additionally, Ely’s clear command is a “recorder control” because it directs control circuit 134—which controls the ring buffer—to remove write protection from alarm data. EX1051, ¶244. The releasing from protection occurs while recording additional segments of the image data: As illustrated in Figure 4, after unprotection of alarm data (block 168), the process loops back to block 154, “stor[ing] live compressed video data”:

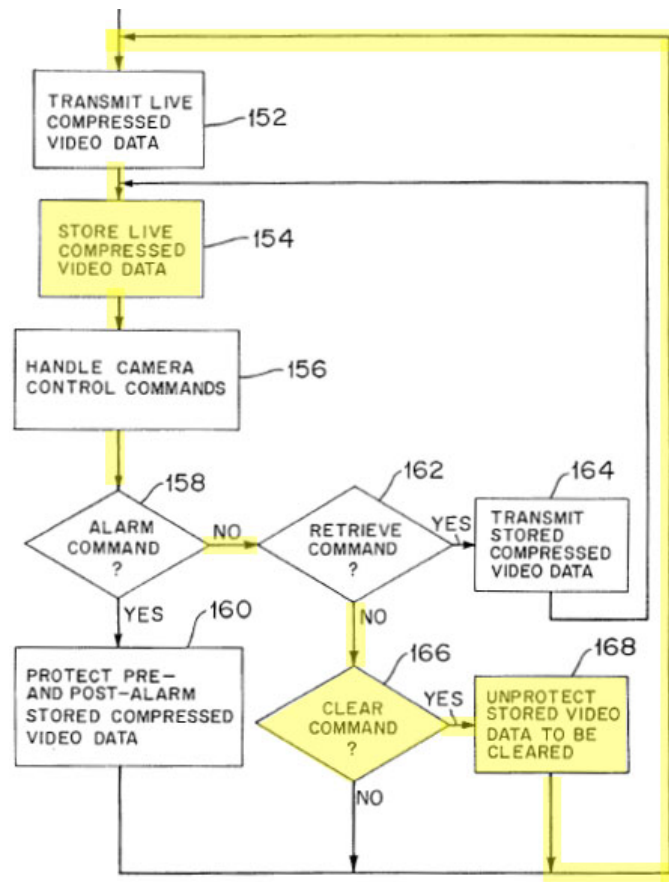


**FIG. 4**  
**CAMERA UNIT OPERATION**

EX1020, Fig. 4 (color added); *see also id.*, 7:45-48, 8:3-6. Further, because the recording of live video data is “ongoing” (*i.e.*, continuous), the unprotection of alarm data necessarily occurs while recording additional segments of image data. *See id.*, Fig. 4, 7:45-48, 7:56-8:6

To the extent a POSITA wanted further guidance as to particular methods for allowing editing while recording additional image data, a POSITA would have been motivated to turn to Fiore. EX1051, ¶245. Fiore’s memory mapped file and use of indexing enable “multiple processes mapped in virtual memory space to read from, and

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write to the same memory, thereby concurrently sharing the circular storage buffer.” EX1009, [0068]; *see also id.*, [0023], [0048], [0071]-[0072]. A POSITA would have understood that Fiore’s teachings would enable Ely’s editing (releasing from protection) to occur while recording additional segments. *Id.*, [0068]; EX1051, ¶245.

### **4. Claim 2**

Ely discloses the limitations added in dependent claim 2. EX1051, ¶246. In one embodiment, the buffer has a storage capacity of “thirty minutes of video signals,” and “each alarm command initiates protection of buffered video signals corresponding to a ten minute period (say five minutes prior to the alarm and five minutes after).” EX1020, 10:60-65.

### **5. Claims 3 and 4**

Ely discloses the limitations added in dependent claims 3 and 4. EX1051, ¶¶247-250.

Ely discloses that “[a]fter the compressed video data stored at one of the camera units has been protected pursuant to an alarm command, the data (which will sometimes be referred to as ‘alarm data’) can be selectively retrieved in response to user instruction either for display (block 180) or directly for taperecording (block 182).” EX1020, 10:17-23. Ely further discloses write-protecting multiple events (as multiple “blocks”) in the ring buffer. *Id.*, 10:59-11:2. Thus, Ely discloses protecting alarm data pertaining to multiple events from being overwritten (by subsequent recording) by indexing the

## PETITION FOR *INTER PARTES* REVIEW OF U.S. PATENT NO. 8,310,540

alarm data as one or more files in a table/index corresponding to the buffer. EX1051, ¶248.

Fiore implements its circular storage buffer 15 as a memory-mapped file and describes indexing collections of frame data for respective events as multiple portions within the memory-mapped file. *Id.*, ¶249; *see, e.g.*, EX1009, [0022]-[0023], [0051], [0059], [0060].

In view of Ely and Fiore, it would have been obvious to a POSITA to index the event data either “as separate files” or “in a common file,” as claimed. EX1051, ¶250. Indeed, both “separate files” and “common files” were conventional and well-known file structures by June 2007, and a POSITA would have been motivated to select either technique to accomplish Ely’s goal to enable selective retrieval of alarm data in response to user instruction. *Id.*; EX1020, 10:17-23. A POSITA would have had a reasonable expectation of success because implementing such file-management techniques in the Ely/Fiore recording system would have been routine and well within a POSITA’s skill. EX1051, ¶250.

### 6. Claims 5 and 6

Ely discloses the limitations added in dependent claims 5 and 6. *Id.*, ¶¶251-253. Ely discloses that recording of image data into the ring buffer is “ongoing” and thus occurs continuously. EX1020, Fig. 4, 7:45-48, 7:56-8:6. With reference to Figure 4, for example, Ely describes the process of block 154 (“store live compressed video

data”) as being “ongoing” (*id.*, 8:3-6) and occurring “concurrently” with other processes (*id.*, 7:45-48):

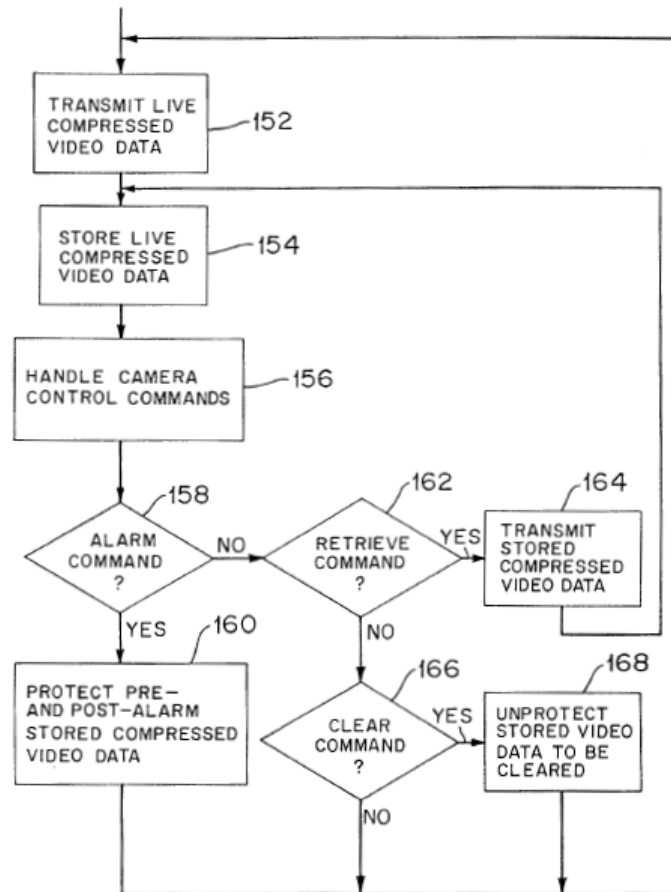


**FIG. 4**  
CAMERA UNIT OPERATION

*Id.*, Fig. 4 (color added).

Because recording of image data into the ring buffer occurs continuously, Ely discloses “continuing to record the image data immediately” (i) “after ending at least one of the segments” (claim 5), and (ii) “after protecting at least one of the segments” (claim 6). EX1051, ¶252. Further, Ely discloses write-protecting multiple events (as respective “blocks”) in the ring buffer. EX1020, 10:59-11:2. A POSITA would have

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understood that to preserve multiple events in the ring buffer, Ely must “continu[e] to record the image data immediately after protecting at least one of the segments,” *e.g.*, after protecting a first block of alarm data. EX1051, ¶253.

### **7. Claims 7 and 9**

Ely discloses the limitations added in dependent claim 7. EX1051, ¶254. Ely discloses that “an alarm condition can be generated by a system operator via the user interface.” EX1020, 11:42-47. Ely further describes the user interface as responding to inputs from common computer peripherals (*e.g.*, a mouse, keyboard) and a “TOUCHTRACKER” control module. *Id.*, 5:60-6:3.

Ely discloses the limitations added in claim 9. EX1051, ¶255. Ely’s system responds to a signal from a user to save a recording by write protecting specified digital video data in the ring buffer. EX1020, 7:48-55, 10:11-15. The signal from the user includes “a stop signal,” as recited in claim 9. EX1051, ¶255. Ely’s alarm command tells the video recording device when to (i) “start recording,” *i.e.*, upon receipt of the alarm command, and when to (ii) “stop recording,” *i.e.*, when a predetermined amount of time has passed after receipt of the alarm command. EX1020, 7:48-55, 10:11-23.

### **8. Claim 10**

Ely discloses the limitations added in dependent claim 10 for the reasons discussed for claim 7. EX1051, ¶256. Ely alone or as combined with Fiore therefore renders obvious claim 10.

**9. Claim 11**

Ely in view of Fiore renders obvious the limitations added in dependent claim 11. *Id.*, ¶¶257-258. Ely discloses various sensors 120 (*e.g.*, motion sensors, heat sensing devices) that generate alarm signals to trigger write protection. EX1020, 5:46-55, 7:48-55, 10:1-23, 11:40-47. To the extent Ely does not disclose “the start signal comprises an audio signal,” Fiore does. Fiore’s signal processor is connected to a monitoring device, which “may be any type of a device for monitoring such as a video camera, microphone, a sensor, etc., that functions as a signal source for providing an input signal data to the signal processor.” EX1009, [0040]. In “the case of an audio signal the analyzer may trigger an event on the sudden change of amplitude.” *Id.*, [0046].

A POSITA would have been motivated to implement the Ely/Fiore system with Fiore’s teachings regarding a microphone or audio sensor for triggering an alarm signal. Ely discloses various sensors 120 for generating alarm signals (EX1020, 5:46-53, 7:48-55), and a POSITA would have been motivated to implement a microphone as an alarm sensor, *e.g.*, to detect breakage of glass or other noisy occurrences. EX1051, ¶258. A POSITA would have recognized this audio sensing as complementing Ely’s other sensor types and advantageously enabling a wider variety of events to be detected.

**10. Claim 12**

Ely discloses the limitations added in dependent claim 12. EX1051, ¶259. As discussed above, Ely discloses that “[w]hen an alarm command is received, a process (indicated by block 160) is carried out in which the control circuit 134 protects from over-writing compressed digital video data previously stored in the memory 150.” EX1020, 7:48-55. The alarm data “correspond[s] to a time interval beginning at a predetermined time prior to receipt of the alarm command, and continuing for a predetermined time after receipt of the alarm command.” *Id.*

**11. Claims 13 and 14**

Ely discloses the limitations added in dependent claims 13 and 14. EX1051, ¶260. In one embodiment, the buffer has a storage capacity of “thirty minutes of video signals,” and “each alarm command initiates protection of buffered video signals corresponding to a ten minute period (say five minutes prior to the alarm and five minutes after).” EX1020, 10:60-65.

**12. Claim 19**

As explained above for element 6 of claim 1, Ely alone or as combined with Fiore discloses the “allowing the editing” limitations added in dependent claim 19 via the “clearing” of write protected alarm data. EX1051, ¶261.

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**E. Ground 2b: Claim 15 Would Have Been Obvious Over Ely Alone Or As Combined With Fiore, In Further View Of Lewellen**

Claim 15 depends from claim 1 and recites “wirelessly transmitting a first one of the segments to a remote memory, and releasing a corresponding one of the multiple portions of memory from protection.” As explained in Section IV.D.3, Ely’s control circuit 134 responds to “clear” commands by removing a block of stored video data from protection, thereby permitting “live” video data to be written over the now-unprotected video data. EX1020, 8:7-12. The clear command may be sent after write-protected alarm data is retrieved from a local memory (*e.g.*, step 162 in Figure 4) and transmitted to a remote memory (*e.g.*, step 164). *Id.*, Abstract, 9:51-10:3, 10:24-55.

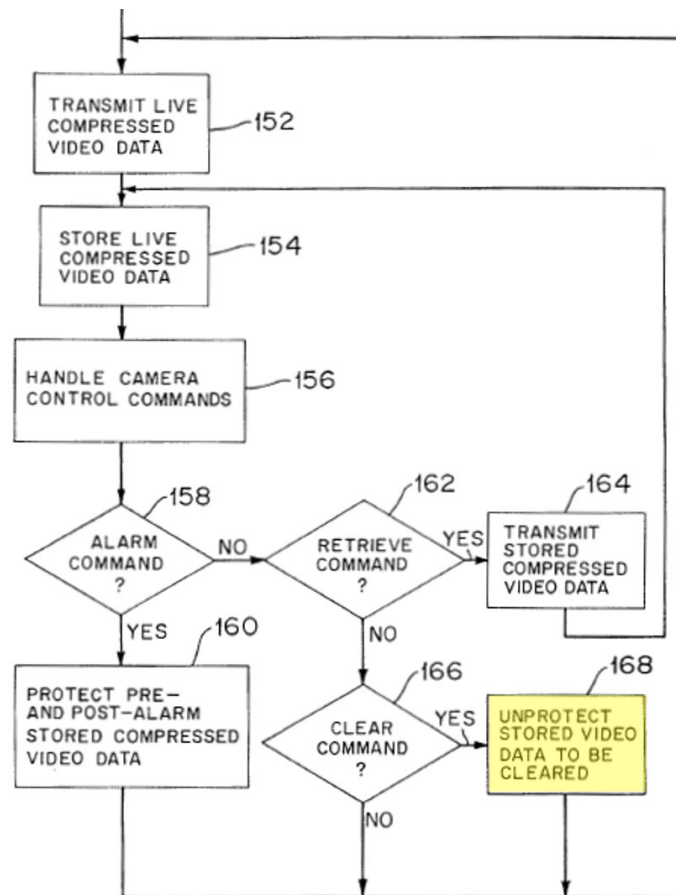


**FIG. 4**  
CAMERA UNIT OPERATION

*Id.*, Fig. 4 (color added); *see also id.*, Fig. 5B (block 190), 7:17-39, 7:56-8:6, 9:31-50, 10:56-11:14. Thus, Ely discloses “transmitting a first one of the segments to a remote memory, and releasing a corresponding one of the multiple portions of memory from protection.” EX1051, ¶262.

To the extent Ely does not disclose “wirelessly” transmitting the first one of the segments to remote memory, this feature would have been obvious in view of Lewellen (EX1019). Lewellen was filed July 11, 2002 and published January 15, 2004. Lewellen

is prior art under at least pre-AIA 35 U.S.C. §§ 102(a), (b), (e). Lewellen was neither cited nor applied during prosecution.

Figure 3 of Lewellen depicts a video system 300 having long-distance and local wireless interfaces (380, 390, respectively):

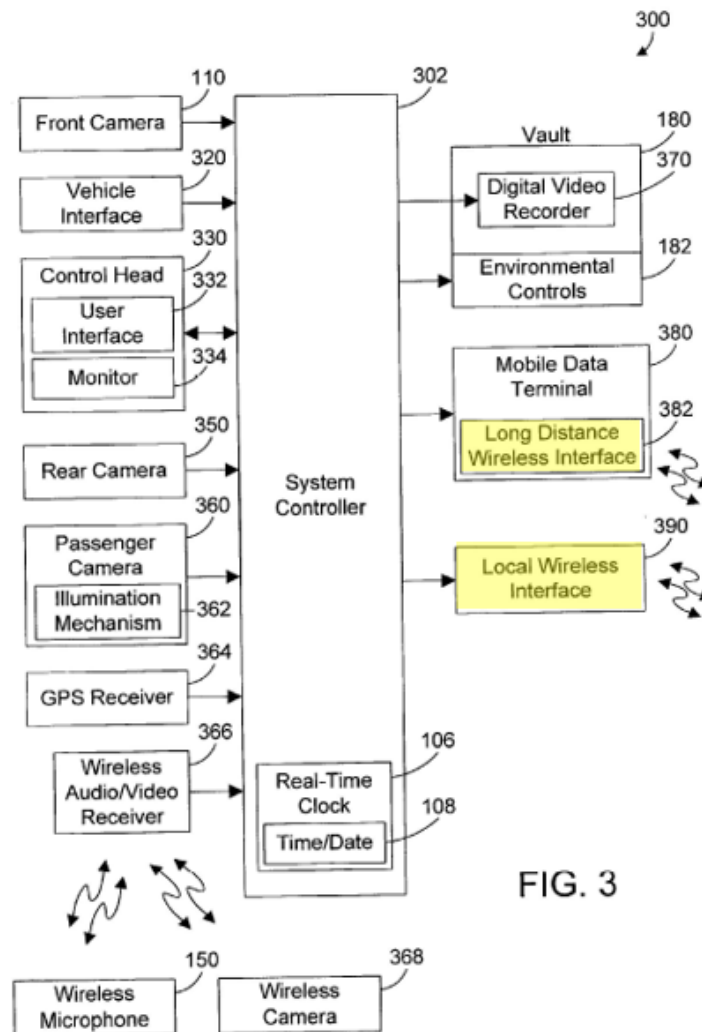


**FIG. 3**

EX1019, Fig. 3 (color added).

The long-distance wireless interface 382 enables communication with police headquarters, whereas the local wireless interface 390 enables communication with

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devices located in the nearer vicinity via short-range wireless communications. *Id.* at [0030]-[0031]. “The local wireless interface of the vehicle video system ... allows other devices, such as a handheld device or a vehicle video system in a different vehicle, to access the stored digital video information.” *Id.*, Abstract. Local wireless interface 390 may be “low power” and “inexpensive” “Bluetooth-compatible interface, which can communicate with other Bluetooth-compatible devices,” including mobile phones. *Id.*, [0031], [0037], [0041]-[0043].

A POSITA would have been motivated to combine Lewellen with Ely alone or Ely as combined with Fiore. EX1051, ¶264. A POSITA would have recognized the advantages of modifying the Ely/Fiore system to implement Lewellen’s long-distance wireless interface 382 or local wireless interface 390 for transmitting alarm data preserved with the file-based circular buffer approach of the Ely/Fiore system. Ely describes a “data communication network” to transmit “command and status data between the system central station and the video cameras,” which “may be provided with sufficient capacity to handle transmission of compressed video data buffered or currently generated at the video camera units, in which case separate video signal transmission cabling can be dispensed with.” EX1020, 4:63-5:9. Ely discloses it is an “object of the invention to provide a video surveillance system which requires less cabling than conventional systems.” *Id.*, 2:52-54. A POSITA would have recognized the advantages of implementing Ely’s video recording system with Lewellen’s long-

## **PETITION FOR *INTER PARTES* REVIEW OF U.S. PATENT NO. 8,310,540**

distance wireless interface 382 or local wireless interface 390, *e.g.*, to further reduce the amount of cabling required through wireless rather than wired transmission of signals and data, and to provide a more robust system with redundant transmission options. EX1051, ¶265.

A POSITA would have had a reasonable expectation of success in implementing the Ely/Fiore system with Lewellen's long-distance wireless interface 382 or local wireless interface 390 and related techniques Lewellen describes. *Id.*, ¶266. Wireless interfaces (both long-distance and local) were well-known and commercially available as of June 2007, and adding such an interface in the Ely/Fiore system would have been routine and well within a POSITA's skill. *Id.*

### **F. Ground 2c: Claims 16-18 Would Have Been Obvious Over Ely Alone Or As Combined With Fiore, In Further View Of Mann**

#### **1. Motivation To Combine**

A POSITA would have been motivated to combine Mann with Ely and Fiore. EX1051, ¶¶267-268. Ely discloses a "video surveillance system" with "an improved capability for storage of video signals." EX1020, 2:34-36. Like Ely, Mann discloses a camera system used for, *e.g.*, surveillance or public safety. EX1015, [0041]-[0042]. Because Ely, Fiore, and Mann all disclose video recording systems, a POSITA would have been aware of and motivated to combine these references.

Mann also provides reasons why a POSITA would have been motivated to implement the Ely/Fiore surveillance system (or one or more components thereof) in

## **PETITION FOR *INTER PARTES* REVIEW OF U.S. PATENT NO. 8,310,540**

an eyeglasses-mounted apparatus: For instance, Mann teaches that, “[a]lthough there are a growing number of video surveillance cameras installed in the environment allegedly for ‘public safety’, there have been recent questions as to the true benefit of such centralized surveillance infrastructures,” noting that such systems can be abused by their owners, whereas an eyeglasses-based application places the system in the hands of the individual user. EX1015, [0041]. Mann’s wearable viewfinder system “allows images to be captured in a natural manner, without giving an unusual appearance to others (such as a potential assailant).” *Id.*, [0042]; *see also id.*, [0044]. A POSITA would have been motivated to implement the Ely/Fiore surveillance system and/or its camera unit 114 in an eyeglasses-mounted apparatus for several reasons, including to give more control to the wearer over what is recorded and how that recorded data may later be used.

### **2. Claims 16 and 17**

Ely alone or as combined with Fiore, in further view of Mann, discloses the limitations added in dependent claims 16 and 17. EX1051, ¶269. As explained above for claim 1, Ely alone or as combined with Fiore discloses a “system comprising electronics that implements the method of claim 1.” And as explained above for Ground 1b, Mann discloses the claimed “clothing accessory that supports the sensor,” which is “a pair of glasses.” A POSITA would have been motivated to implement the

## **PETITION FOR *INTER PARTES* REVIEW OF U.S. PATENT NO. 8,310,540**

Ely/Fiore system in an eyeglasses-mounted apparatus for the reasons explained in Section IV.F.1.

### **3. Claim 18**

As explained for Ground 1b, Mann discloses the limitations added in dependent claim 18. EX1051, ¶270. Further, a POSITA would have been motivated to implement the Ely/Fiore system in an eyeglasses-mounted apparatus, for the reasons explained in Section IV.F.1.

#### **G. Ground 2d: Claim 8 Would Have Been Obvious Over Ely Alone Or As Combined With Fiore, In Further View Of Strub**

To the extent Ely and Fiore do not disclose the limitation added in claim 8 (“using a switch in a clothing accessory to operate an aspect of the method”), this limitation would have been obvious in view of Strub. EX1051, ¶271. As explained in Section IV.C above, Strub discloses using a “ring, brooch, bracelet (e.g., a watch-like band) or similar wearable item” (a clothing accessory) with pushbuttons (a switch) to control operation of a physically separate recording unit. EX1046, 54:20-33. A POSITA would have been motivated to implement the Ely/Fiore system with Strub’s wearable item with user-pressable pushbuttons to facilitate operation of the system by a user. EX1051, ¶271. For example, a security guard patrolling the floor of a casino or warehouse could advantageously use Strub’s wearable item to take video or photographs by communicating wirelessly with Ely’s control circuit 134 to control the camera 130. EX1051, ¶271.

**PETITION FOR *INTER PARTES* REVIEW OF U.S. PATENT NO. 8,310,540**

**V. CONCLUSION**

Petitioner respectfully requests IPR of claims 1-19 of the '540 patent.

**VI. MANDATORY NOTICES PURSUANT TO 37 C.F.R. § 42.8(a)(1)**

Pursuant to 37 C.F.R. § 42.8(a)(1), the mandatory notices identified in 37 C.F.R. § 42.8(b) are provided below as part of this petition.

**A. 37 C.F.R. § 42.8(b)(1): Real Parties-In-Interest**

The real parties-in-interest are Motorola Solutions, Inc. and WatchGuard Video, Inc.

**B. 37 C.F.R. § 42.8(b)(2): Related Matters**

Pursuant to 37 C.F.R. § 42.8(b)(2), Petitioner is aware of the following patent infringement lawsuit involving the '540 patent: *Stellar, LLC v. Motorola Solutions, Inc. et al.*, Case No. 4:23-cv-750 (U.S. District Court, Eastern District of Texas).

**C. 37 C.F.R. § 42.8(b)(3), (4): Lead And Back-Up Counsel And Service Information**

Petitioner provides the following designation of counsel:

**PETITION FOR *INTER PARTES* REVIEW OF U.S. PATENT NO. 8,310,540**

| Lead Counsel                                                                                                                                                 | Back-up Counsel                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |
|--------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Joshua R. Nightingale (Reg. No. 67,865)<br>JONES DAY<br>500 Grant Street, Suite 4500<br>Pittsburgh, PA 15219<br>(412) 394-7950<br>jrnightingale@jonesday.com | Hilda C. Galvan (Reg. No. 39,680)<br>JONES DAY<br>2727 North Harwood Street, Suite 500<br>Dallas, TX 75201<br>(214) 969-4556<br>hcgaltan@jonesday.com<br><br>John A. Marlott (Reg. No. 37,031)<br>JONES DAY<br>110 North Wacker Drive, Suite 4800<br>Chicago, IL 60606<br>(312) 269-4236<br>jamarlott@jonesday.com<br><br>Christopher A. Buxton<br>(Reg. No. 75,436)<br>JONES DAY<br>2727 North Harwood Street, Suite 500<br>Dallas, TX 75201<br>(214) 969-4841<br>cbuxton@jonesday.com |

Pursuant to 37 C.F.R. § 42.10(b), a Power of Attorney for Petitioner accompanies this petition. Please address all correspondence to lead and back-up counsel at the addresses above. Petitioner also consents to electronic service by email at the email addresses listed above.

**PETITION FOR *INTER PARTES* REVIEW OF U.S. PATENT NO. 8,310,540**

Dated: August 9, 2024

Respectfully submitted,

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## **CERTIFICATE OF SERVICE**

The undersigned hereby certifies that a copy of the foregoing petition for *Inter Partes* Review of U.S. Patent No. 8,310,540, including all Exhibits, was served on August 9, 2024 via Express Mail delivery directed to the attorney of record for the patent at the following address:

Fish IP Law, LLP  
Attn: Tomas Prieto  
19900 MacArthur Blvd, Suite 810  
Irvine, CA 92612  
United States

In addition, a courtesy copy of the foregoing petition for *Inter Partes* Review of U.S. Patent No. 8,310,540, including all Exhibits, was served on litigation counsel for patent owner Stellar LLC at the following address:

Devlin Law Firm  
Attn: Jim Lennon  
1526 Gilpin Ave.  
Wilmington, DE 1980  
United States

Date: August 9, 2024

/ Joshua R. Nightingale /

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Pittsburgh, PA 15219  
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**CERTIFICATE OF WORD COUNT UNDER 37 C.F.R. § 42.24(a)**

I, the undersigned, do hereby certify that the attached petition contains 13,928 words, as measured by the Word Count function of Microsoft Word. This is less than the limit of 14,000 words as specified by 37 C.F.R. § 42.24(a)(1)(i).

Date: August 9, 2024

By: / Joshua R. Nightingale /

Joshua R. Nightingale

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## LIST OF PETITIONER EXHIBITS

| EXHIBIT NO. | TITLE                                                                           |
|-------------|---------------------------------------------------------------------------------|
| 1001        | RESERVED                                                                        |
| 1002        | RESERVED                                                                        |
| 1003        | Declaration of Nabil J. Sarhan Regarding the '034, '882, '471, and '914 Patents |
| 1004        | U.S. 8,928,752 ('752 patent)                                                    |
| 1005        | U.S. 5,996,023 (Winter)                                                         |
| 1006        | Stellar's First Amended Infringement Contentions                                |
| 1007        | Special Report – The Patrol Video Project                                       |
| 1008        | U.S. 6,167,186 (Kawasaki)                                                       |
| 1009        | US 2002/191952 (Fiore)                                                          |
| 1010        | U.S. 7,593,034 ('034 patent)                                                    |
| 1011        | File History of '540 Patent                                                     |
| 1012        | File History of '752 Patent                                                     |

|      |                                                        |
|------|--------------------------------------------------------|
| 1013 | File History of '034 Patent                            |
| 1014 | WO 2006/044476 (Vanman)                                |
| 1015 | EP 1,064,783 (Mann)                                    |
| 1016 | U.S. 5,523,799 (Hattori)                               |
| 1017 | U.S. 7,158,167 (Yerazunis)                             |
| 1018 | U.S. 8,310,540 ('540 patent)                           |
| 1019 | US 2004/008255 (Lewellen)                              |
| 1020 | U.S. 5,982,418 (Ely)                                   |
| 1021 | RESERVED                                               |
| 1022 | RESERVED                                               |
| 1023 | U.S. 6,163,338 (Johnson)                               |
| 1024 | Digital Mobile Witness Recording System                |
| 1025 | American Heritage Dictionary, 4th Ed. 2007             |
| 1026 | Merriam-Webster's Collegiate Dictionary, 11th Ed. 2006 |

|      |                                                                |
|------|----------------------------------------------------------------|
| 1027 | Wiley Electrical and Electronics Engineering Dictionary (2004) |
| 1028 | US 2002/005895 (Freeman)                                       |
| 1029 | US 2004/0033058 (Reich)                                        |
| 1030 | U.S. App. No. 60/282,162 (Fiore provisional)                   |
| 1031 | RESERVED                                                       |
| 1032 | RESERVED                                                       |
| 1033 | RESERVED                                                       |
| 1034 | U.S. 6,831,556 (Boykin)                                        |
| 1035 | U.S. 7,348,895 (Lagassey patent)                               |
| 1036 | US 2006/092043 (Lagassey publication)                          |
| 1037 | US 6,804,638 (Fiedler)                                         |
| 1038 | RESERVED                                                       |
| 1039 | RESERVED                                                       |
| 1040 | RESERVED                                                       |

|      |                                                                                             |
|------|---------------------------------------------------------------------------------------------|
| 1041 | Appendix to Declaration of Nabil J. Sarhan Regarding the '034, '882, '471, and '914 Patents |
| 1042 | Declaration of Joshua R. Nightingale                                                        |
| 1043 | U.S. Patent No. 6,370, 198 (Washino)                                                        |
| 1044 | U.S. Patent No. 5,204, 909 (Cowan)                                                          |
| 1045 | WO 1992/022983 (Browne)                                                                     |
| 1046 | U.S. Patent No. 6,563,532 (Strub)                                                           |
| 1047 | Plaintiff Stellar, LLC's Reply Claim Construction Brief                                     |
| 1048 | U.S. Patent No. 10,523,901 ('901 Patent)                                                    |
| 1049 | U.S. Patent No. 9,124,796 (Blum)                                                            |
| 1050 | U.S. App. No. 60/669,043 (Blum provisional)                                                 |
| 1051 | Declaration of Nabil J. Sarhan Regarding the '540 and '752 Patents                          |
| 1052 | Appendix to Declaration of Nabil J. Sarhan Regarding the '540 and '752 Patents              |
| 1053 | U.S. Patent Pub. 2007/132,773 (Plante)                                                      |

|      |                                                                                                    |
|------|----------------------------------------------------------------------------------------------------|
| 1054 | U.S. Patent No. 7,263,073 (Petite)                                                                 |
| 1055 | U.S. Patent No. 7,956,735 (Jackson)                                                                |
| 1056 | <i>Stellar, LLC v. Motorola Solutions, Inc. et al.</i> , Case No. 4:23-cv-750 (E.D. Tex.), Dkt. 36 |
| 1057 | <i>Stellar, LLC v. Motorola Solutions, Inc. et al.</i> , Case No. 4:23-cv-750 (E.D. Tex.), Dkt. 39 |