

UNITED STATES PATENT AND TRADEMARK OFFICE

BEFORE THE PATENT TRIAL AND APPEAL BOARD

MOTOROLA SOLUTIONS, INC.

Petitioner

v.

STELLAR, LLC

Patent Owner

Case No. – Not Yet Assigned
U.S. Patent No. 10,523,901

**PETITION FOR *INTER PARTES* REVIEW
OF U. S. PATENT NO. 10,523,901**

TABLE OF CONTENTS

I.	INTRODUCTION	1
II.	BACKGROUND	2
	A. Summary Of The '901 Patent.....	2
	B. Patent Family And Relevant File Histories.....	5
	1. '034 Patent File History	7
	2. '901 Patent File History	8
	C. Level Of Skill In The Art	8
III.	REQUIREMENTS FOR <i>INTER PARTES</i> REVIEW UNDER 37 C.F.R. § 42.104	9
	A. Grounds For Standing Under 37 C.F.R. § 42.104(a)	9
	B. Identification Of Challenge Under 37 C.F.R. § 42.104(b) And Relief Requested.....	9
	C. Claim Construction Under 37 C.F.R. § 42.104(b)(3)	10
IV.	THE CHALLENGED CLAIMS ARE UNPATENTABLE.....	11
	A. Ground 1a: Claims 1-14 And 19-25 Would Have Been Obvious Over Yerazunis In View Of Campbell.....	11
	1. Summary Of Yerazunis.....	11
	2. Summary Of Campbell	14
	3. Motivation To Combine.....	16
	4. Claim 1	17
	5. Claims 2-6	41
	6. Claim 7	42
	7. Claim 8	43
	8. Claim 9.....	44
	9. Claim 10	45
	10. Claims 11 and 12.....	45
	11. Claims 13 and 14.....	45
	12. Claim 19	47

TABLE OF CONTENTS

(continued)

13.	Claims 20 and 21.....	48
14.	Claims 22 and 23.....	49
15.	Claim 24.....	50
16.	Claim 25.....	50
B.	Ground 1b: Claims 15 And 16 Would Have Been Obvious Over Yerazunis In View Of Campbell, In Further View Of Lewellen.....	51
C.	Ground 1c: Claims 17 And 18 Would Have Been Obvious Over Yerazunis In View Of Campbell, In Further View Of Fiore	55
D.	Ground 2a: Claims 1, 7-14, And 19-25 Would Have Been Obvious Over Ely In View Of Campbell.....	58
1.	Summary Of Ely	58
2.	Motivation To Combine.....	60
3.	Claim 1	62
4.	Claim 7.....	77
5.	Claim 8.....	78
6.	Claim 9.....	79
7.	Claim 10.....	79
8.	Claims 11 and 12.....	79
9.	Claims 13 and 14.....	79
10.	Claim 19.....	80
11.	Claims 20 and 21.....	81
12.	Claims 22 and 23.....	82
13.	Claim 24.....	83
14.	Claim 25.....	83
E.	Ground 2b: Claims 2-6 Would Have Been Obvious Over Ely In View Of Campbell, In Further View Of Yerazunis	83
F.	Ground 2c: Claims 15 And 16 Would Have Been Obvious Over Ely In View Of Campbell, In Further View Of Lewellen	84

TABLE OF CONTENTS

(continued)

G.	Ground 2d: Claims 17 And 18 Would Have Been Obvious Over Ely In View Of Campbell, In Further View Of Fiore	86
V.	CONCLUSION.....	87
VI.	MANDATORY NOTICES PURSUANT TO 37 C.F.R. § 42.8(a)(1).....	87
A.	37 C.F.R. § 42.8(b)(1): Real Parties-In-Interest.....	87
B.	37 C.F.R. § 42.8(b)(2): Related Matters	87
C.	37 C.F.R. § 42.8(b)(3), (4): Lead And Back-Up Counsel And Service Information.....	87

PETITION FOR *INTER PARTES* REVIEW OF U.S. PATENT NO. 10,523,901

I. INTRODUCTION

Motorola Solutions, Inc. (“Petitioner” or “Motorola”) requests *inter partes* review of U.S. Patent No. 10,523,901. The ’901 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 ’901 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 ’901 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 ’901 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 ’901 patent were known in the art. *Id.*, 89-112; EX1062, ¶¶34-49. And the few ’901 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 1-25.

II. BACKGROUND

A. Summary Of The '901 Patent

The '901 patent is directed to an “apparatus, systems, and methods in which a surveillance apparatus processes images by (1) continuously recording a stream of imaged data, (2) write protecting segments of the recorded stream, and (3) sending write protected segments from a local memory to a remote memory using a wireless transmitter.” EX1048, 2:18-23; *see also* EX1062, ¶¶109-114. Figure 1 illustrates one exemplary “surveillance apparatus 100 generally comprising eyeglasses 110 having a camera 120.” EX1048, 3:64-67.

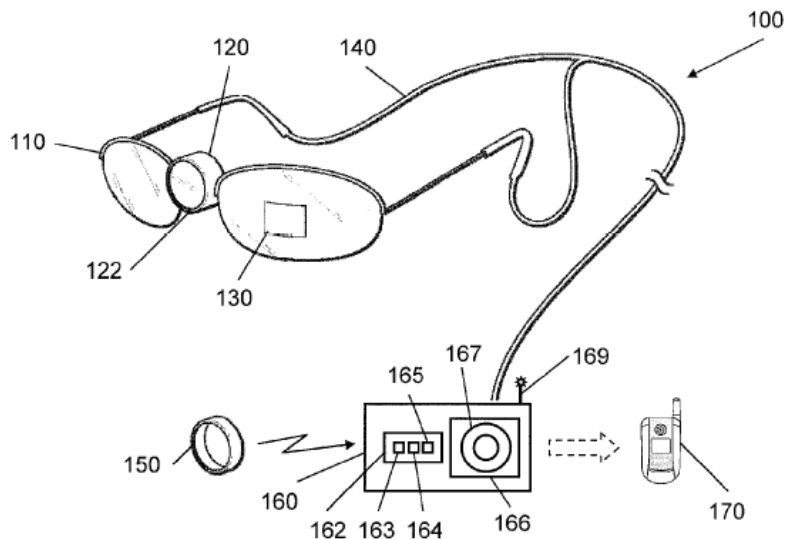


FIG. 1

The '901 patent claims all recite “a pair of eyeglasses having a sensor that captures sensor data.” In this regard, the '901 patent discloses that “[t]he eyeglasses 110 are used here euphemistically to represent any type of camera mount.” *Id.*, 4:9-10. While “[i]n a preferred embodiment, the camera mount is disguised to be a common object

PETITION FOR *INTER PARTES* REVIEW OF U.S. PATENT NO. 10,523,901

worn by a person or lying around a house,” it “could also be shaped and sized to look like a camera” and “[c]ontemplated mounts include lapel pins, hair clips, shirt buttons, purses, staplers, desk clocks, tripods, head gear, hand grips, or security camera mounts.” *Id.*, 4:10-16.

Figure 1 shows camera 120 coupled to belt-worn recorder 160 via data and power cord 140. *Id.*, 3:64-4:3. Also depicted in Figure 1 is remote memory 170 and ring-shaped signaling device 150, both of which “cooperate[]” with recorder 160. *Id.* Recorder 160 is “any recording device that records video and/or audio/video data, including conventional recorders,” and “preferably includes a processor 162 with software or hardware that accomplishes the functions described herein, or one or more physical memories that are collectively referred to herein as memory 166.” *Id.*, 4:65-5:3.

“In preferred embodiments, image data received by recorder 160 is stored in a circular buffer 167 on memory 166.” *Id.*, 6:4-6. Figure 3 shows a “diagram representation of circular buffer 167 [misabeled in Figure 3 with reference numeral 169] in memory 166, with unprotected segment 320 and write-protected segment 330.” *Id.*, 7:48-50. “The recording facility 163 continuously records [a] data stream 310 [from the recorder 160] into circular buffer 167.” *Id.*, 7:52-53. “The recording facility 163 records over unprotected segment 320 of circular buffer 167, while skipping over protected segments 330 of circular buffer 167.” *Id.*, 7:53-56. “It is contemplated that

the portion of the circular buffer that is marked as write-protected data cannot be overwritten once the recorder loops back to the beginning of the media.” *Id.*, 7:56-59.

“The circular buffer is preferably organized into a series of memory segments that loops back on itself,” and receipt of a “record signal” causes “a segment of the circular buffer to be write-protected to prevent that segment from being overwritten during the next recording loop.” *Id.*, Abstract, 2:34-36, 2:46-50. Figure 3 shows an example of a circular buffer with write-protected segment 330:

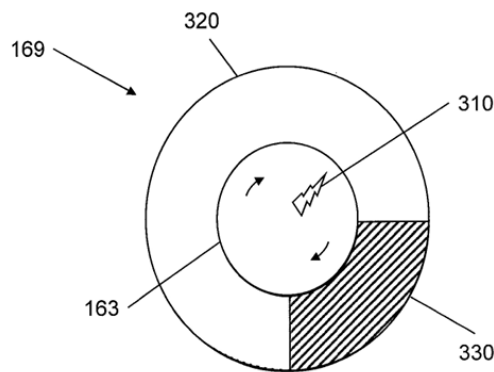


FIG. 3

Id., Fig. 3. The write-protected segment includes video data from both before and after the record signal. *Id.*, 2:46-54.

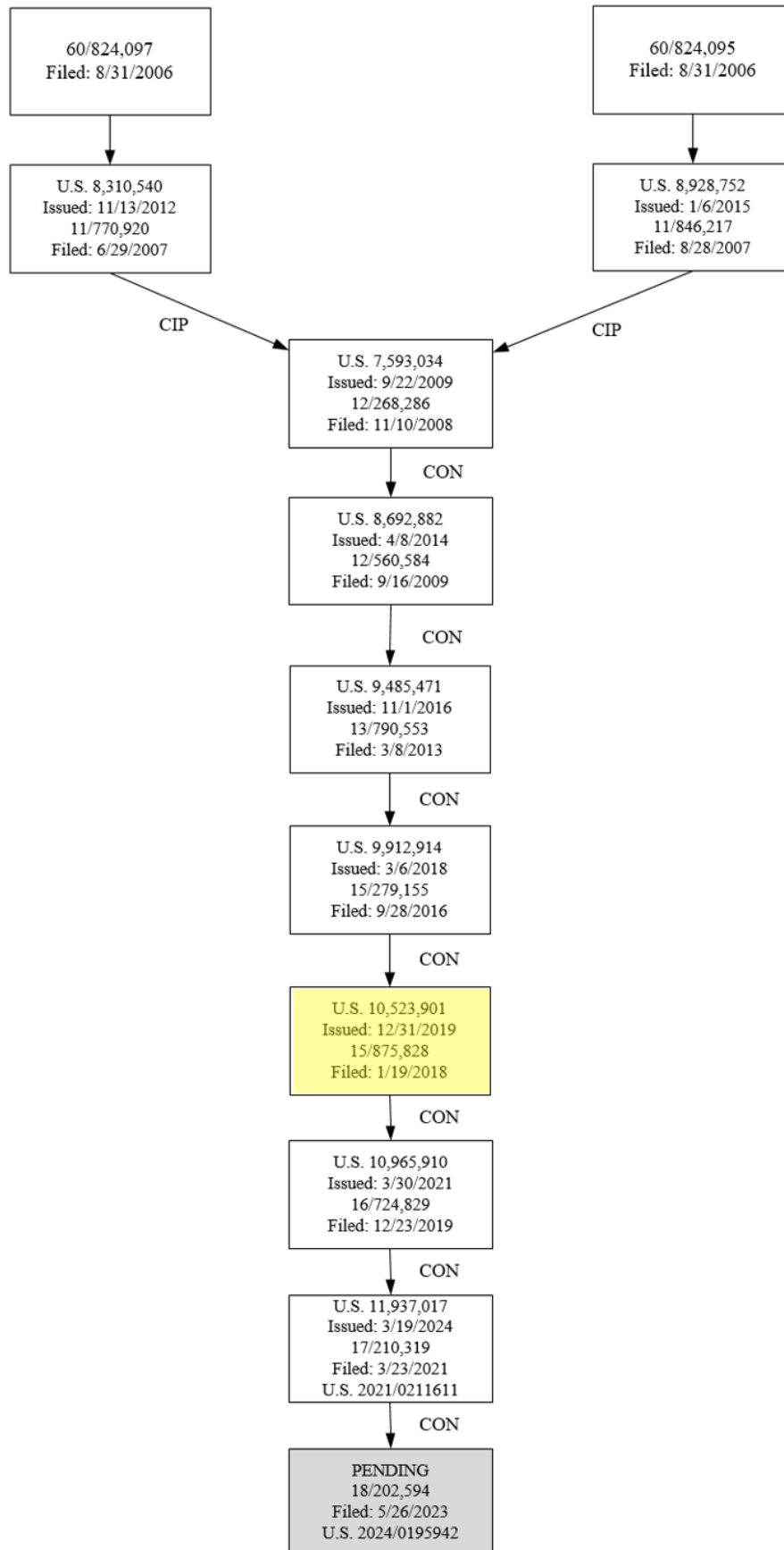
As detailed in Dr. Nabil Sarhan’s declaration, all of these features were widely known and used before the claimed priority date of the ’901 patent, including in real-world situations (*e.g.*, video recording systems in police cars). EX1062, ¶¶34-112; EX1007, 2; EX1024.

PETITION FOR *INTER PARTES* REVIEW OF U.S. PATENT NO. 10,523,901

B. Patent Family And Relevant File Histories

The '901 patent is one of several patents in a family of related patents:

PETITION FOR *INTER PARTES* REVIEW OF U.S. PATENT NO. 10,523,901



PETITION FOR *INTER PARTES* REVIEW OF U.S. PATENT NO. 10,523,901

The '901 patent claims priority back to USP 7,593,034 (the '034 patent, EX1010), filed November 10, 2008, as a continuation application. EX1048, 1:1-20. The '034 patent claims priority as a continuation-in-part to U.S. App. No. 11/770,920 (the '920 application, EX1011), filed on June 29, 2007, and U.S. App. No. 11/846,217 (the '217 application, EX1012), filed August 28, 2007. *Id.*

In the district court litigation, Patent Owner Stellar, LLC ("Stellar") asserts that the claims of the '901 patent are entitled to claim priority to the June 29, 2007 filing date of the '920 application. 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 contains admissions relevant to the unpatentability of the '901 patent claims. Specifically, Applicant filed a document (i) identifying the prior art allegedly most relevant to the claimed subject matter, and (ii) conceding many claim limitations were disclosed in these references. EX1013, 89-112. As relevant to this proceeding, many of the features conceded by Applicant as being known in the prior art are recited in the claims of the '901 patent. *Id.*; EX1062, ¶¶34-49. Applicant's document also included a "Statement of the Utility" of the purported invention. EX1013, 112.

PETITION FOR *INTER PARTES* REVIEW OF U.S. PATENT NO. 10,523,901

2. '901 Patent File History

Application No. 15/875,828, which eventually issued as the '901 patent, was filed on January 19, 2018 with 24 claims. EX1058, 1-36. Applicant requested Track One examination (*id.*, 1-2), which was granted (*id.*, 318). The Office initially rejected claims 1-24 as being unpatentable over U.S. 5,523,799 to Hattori (EX1016) in combination with other prior art. *Id.*, 319-331. After Applicant made several narrowing amendments and added new claim 25 (*id.*, 352-360, 393-402), the Office allowed the claims (*id.*, 403-409).

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 '901 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. EX1062, ¶¶26-30. Additional graduate education could substitute for professional experience, and significant work experience could substitute for formal education. *Id.*

PETITION FOR *INTER PARTES* REVIEW OF U.S. PATENT NO. 10,523,901

**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 the '901 patent is available for IPR and the Petitioner is not barred or estopped from requesting IPR challenging the claims of the '901 patent on the grounds identified herein.

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

Ground 1a: Claims 1-14 and 19-25 would have been obvious under 35 U.S.C. § 103 over U.S. 7,158,167 to Yerazunis ("Yerazunis") (EX1017) in view of U.S. 4,516,157 to Campbell ("Campbell") (EX1059).

Ground 1b: Claims 15 and 16 would have been obvious under 35 U.S.C. § 103 over Yerazunis in view of Campbell, in further view of U.S. 2004/008255 to Lewellen ("Lewellen") (EX1019).

Ground 1c: Claims 17 and 18 would have been obvious under 35 U.S.C. § 103 over Yerazunis in view of Campbell, in further view of U.S. 2002/191952 to Fiore ("Fiore") (EX1009).

Ground 2a: Claims 1, 7-14, and 19-25 would have been obvious under 35 U.S.C. § 103 over U.S. 5,982,418 to Ely ("Ely") (EX1020) in view of Campbell.

Ground 2b: Claims 2-6 would have been obvious under 35 U.S.C. § 103 over Ely in view of Campbell, in further view of Yerazunis.

PETITION FOR *INTER PARTES* REVIEW OF U.S. PATENT NO. 10,523,901

Ground 2c: Claims 15 and 16 would have been obvious under 35 U.S.C. § 103 over Ely in view of Campbell, in further view of Lewellen.

Ground 2d: Claims 17 and 18 would have been obvious under 35 U.S.C. § 103 over Ely in view of Campbell, in further view of Fiore.

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.

“a computer processor configured to”

Claim 1 recites “a computer processor configured to” perform certain recited functions. EX1048, 12:15-41. In the related litigation, Patent Owner’s position is that 35 U.S.C. § 112, ¶6 is inapplicable to claim 1, and there are no means-plus-function limitations in this claim. EX1056, 008-019.¹

If, however, the “computer processor configured to” limitations invoke Section 112, ¶6, Patent Owner and Petitioner (the “Parties”) in the related litigation have identified the claimed functions and corresponding structures. EX1057, 008-014.

For purposes of this petition, Petitioner has applied the constructions (MPF and non-MPF) urged by Patent Owner in the related litigation, as well as Petitioner’s constructions.

¹ Citations to EX1056 and EX1057 herein refer to page numbers added by Petitioner.

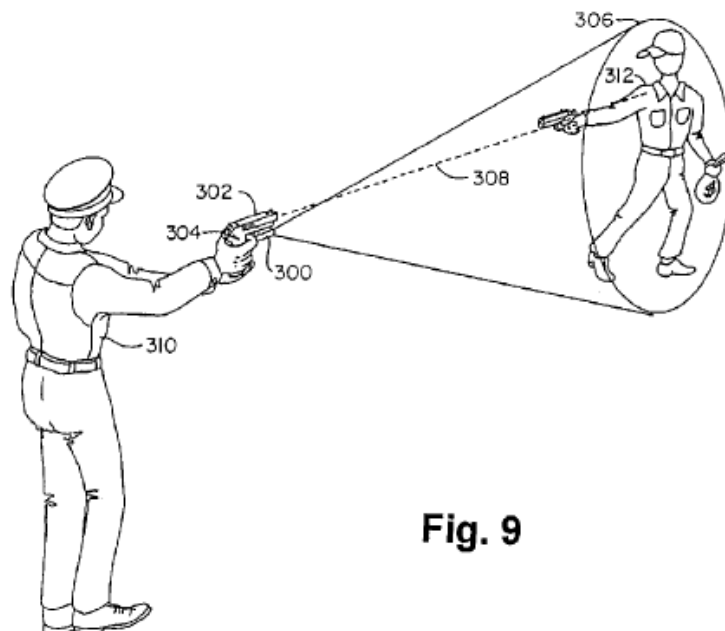
IV. THE CHALLENGED CLAIMS ARE UNPATENTABLE

A. Ground 1a: Claims 1-14 And 19-25 Would Have Been Obvious Over Yerazunis In View Of Campbell

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.



Id., Fig. 9.

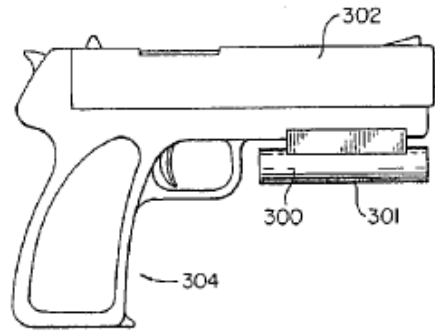


Fig. 10a

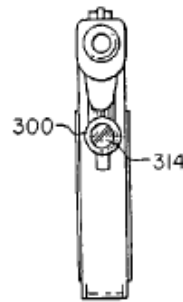
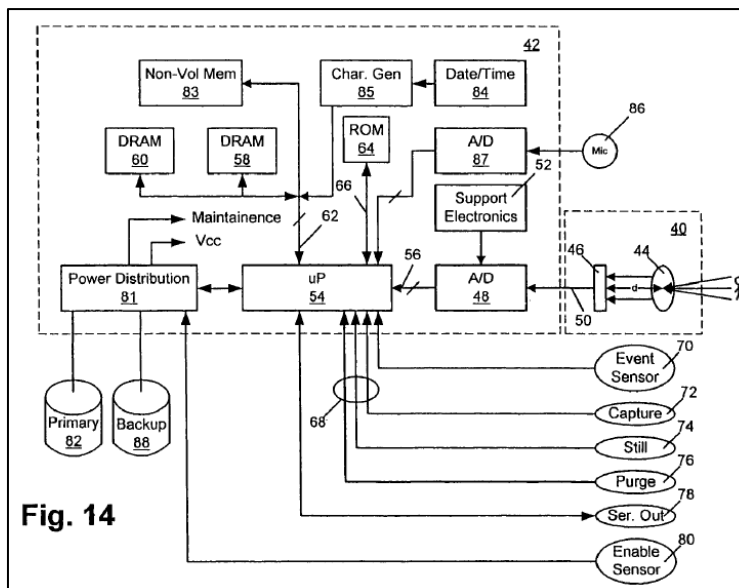
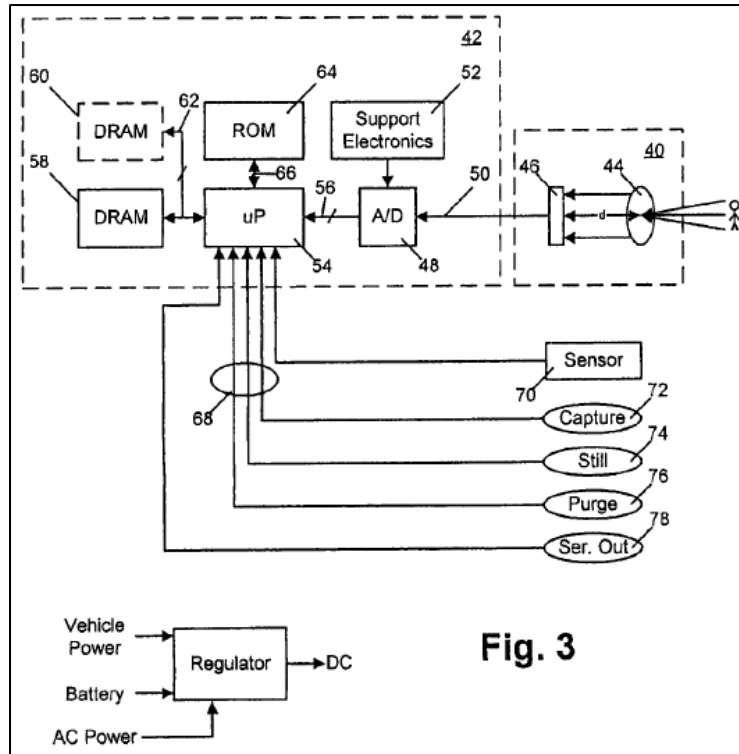


Fig. 10b

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 a "gun firing signal is generated upon discharge of the gun," and "specified frame data associated with 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 the video recording device" (*id.*, 3:54-55), 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. These figures and other relevant disclosure of Yerazunis are described further below and in Dr. Sarhan's declaration. EX1062, ¶¶129-135.

PETITION FOR *INTER PARTES* REVIEW OF U.S. PATENT NO. 10,523,901

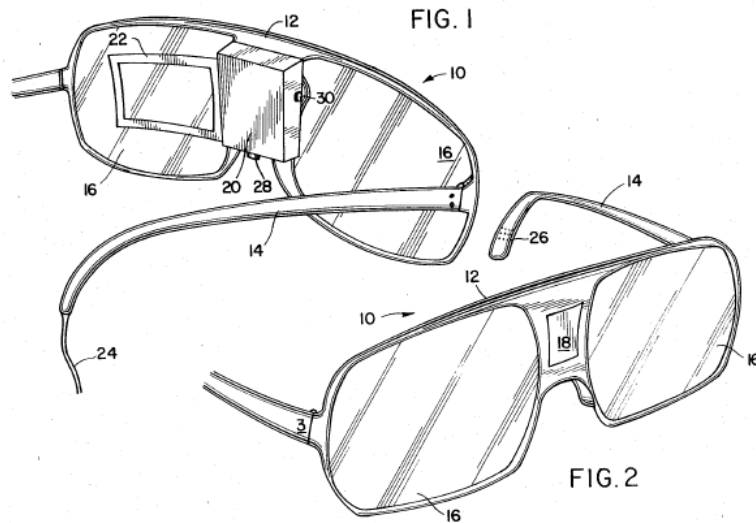
Yerazunis was neither cited nor applied during prosecution. While the '901 patent lists on its face U.S. Patent Pub. 2002/005895 to Freeman (EX1028), an application to which Yerazunis is a continuation-in-part, Yerazunis includes significant additional disclosures not included in Freeman. For example, Yerazunis's gun-camera embodiment is not described in Freeman. This petition relies on these additional disclosures of Yerazunis that are not present in Freeman.

2. Summary Of Campbell

Campbell, EX1059, entitled "Portable Electronic Camera," was filed October 27, 1983 and issued May 7, 1985. Campbell is prior art under at least pre-AIA 35 U.S.C. §§ 102(a), (b), (e).

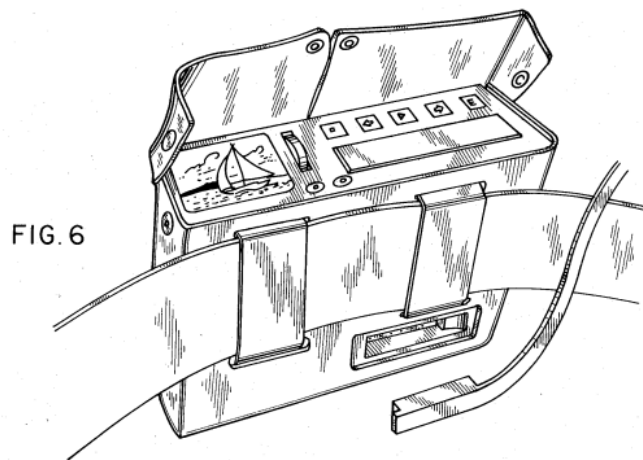
Campbell describes a "video recording device" "arranged to be worn by the user like a pair of spectacles." EX1059, Abstract; EX1062, ¶¶155-158. A camera may be concealed within the spectacle frame (EX1059, Abstract, 2:46-51, Figs. 1, 2 (miniature camera 20)) or between the lenses (*id.*, 4:5-9, Fig. 5 (camera 72)), or a pair of cameras may be mounted adjacent to each hinge on the frame (*id.*, 3:49-59, Figs. 3, 4). Mounting a camera to spectacles in this fashion "has a wide range of uses," including "in the security and military fields where concealment is sometimes desirable." *Id.*, 6:3-20.

PETITION FOR *INTER PARTES* REVIEW OF U.S. PATENT NO. 10,523,901



Id., Figs. 1, 2.

Campbell states it is “preferred that the video camera be connected to a recorder mounted on the user’s person, and it is particularly preferred that the recorder be mounted on a belt, in such a manner as to be concealed, as shown in FIG. 6”:



Id., 4:42-46, Fig. 6. The recorder comprises a “recording medium” that may be any “means of storing a signal from the CCD.” *Id.*, 4:49-55.

PETITION FOR *INTER PARTES* REVIEW OF U.S. PATENT NO. 10,523,901

Campbell describes a “transmitting means” that “may involve a cable connecting the portable camera” to the belt-worn recorder, or “may include a radio or other transmitter for transmitting the signal to a remote recording station” for preservation, display, or playback. *Id.*, 1:57-59, 1:65-2:2, 5:1-55.

Campbell was neither cited nor applied during prosecution.

3. Motivation To Combine

A POSITA would have been motivated to combine Yerazunis and Campbell for several reasons. EX1062, ¶¶163-165. Because each of Yerazunis and Campbell disclose compact, mountable video recording systems, a POSITA would have been aware of and motivated to combine these references.

Campbell also describes why a POSITA would have been motivated to implement Yerazunis’s video recording device in an eyeglasses-mounted apparatus: Among other reasons, Campbell’s apparatus is “hands free” and “provides almost instantaneous recording of a scene as the act of looking at the scene points the camera and the view finder towards that portion of the scene to be captured.” EX1059, Abstract. Campbell’s eyeglasses-mounted apparatus would therefore facilitate, *e.g.*, a police officer’s on-foot pursuit of a suspect, as it would free the officer’s hands and would not require the officer to “point” a recorder in the direction of the suspect. Additionally, Campbell teaches mounting to eyeglasses is useful “in the security and military fields where concealment is sometimes desirable.” *Id.*, 6:3-20.

PETITION FOR *INTER PARTES* REVIEW OF U.S. PATENT NO. 10,523,901

Yerazunis describes why a POSITA would have been motivated to implement Yerazunis's teachings of a circular buffer in Campbell's eyeglasses-mounted device: For example, Yerazunis describes capturing multiple events in a circular buffer without overwriting event data; by preserving only event data and overwriting unimportant data, Yerazunis requires less memory storage. EX1017, 10:37-49; EX1062, ¶165. Recording could also be triggered automatically and capture pre-event and post-event data. EX1017, Abstract. A POSITA would have had a reasonable expectation of success, as Dr. Sarhan explains, because Yerazunis provides a detailed disclosure of its buffer-based approach, and applying those techniques to Campbell's eyeglasses-mounted apparatus would have been routine and well within a POSITA's skill. EX1062, ¶165.

4. Claim 1

a) Preamble: A recording system for saving a sequence of clips comprising:

To the extent limiting, Yerazunis discloses the preamble of claim 1. EX1062, ¶166. Yerazunis discloses "a video recording device" that "is contained within a compactly sized housing" and captures video images for, *e.g.*, security purposes. EX1017, 2:12-14; *see also id.*, 1:17-43. Yerazunis's video recording device saves sequences of clips. *Id.*, 14:45-64, 15:9-13.

PETITION FOR *INTER PARTES* REVIEW OF U.S. PATENT NO. 10,523,901

Campbell likewise discloses the preamble of claim 1. EX1062, ¶167. Campbell's eyeglasses-mounted apparatus "can be used to record moving pictures or still pictures." EX1059, Abstract.

b) Element 1: a pair of eyeglasses having a sensor that captures sensor data;

Yerazunis discloses "a sensor that captures sensor data." EX1062, ¶¶168-172. Yerazunis's video recording device includes camera 40 that discloses the "sensor that captures sensor data":

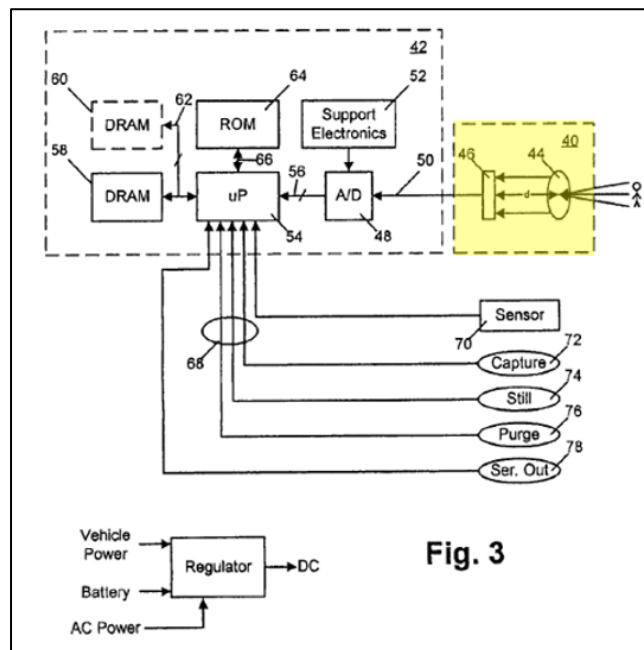
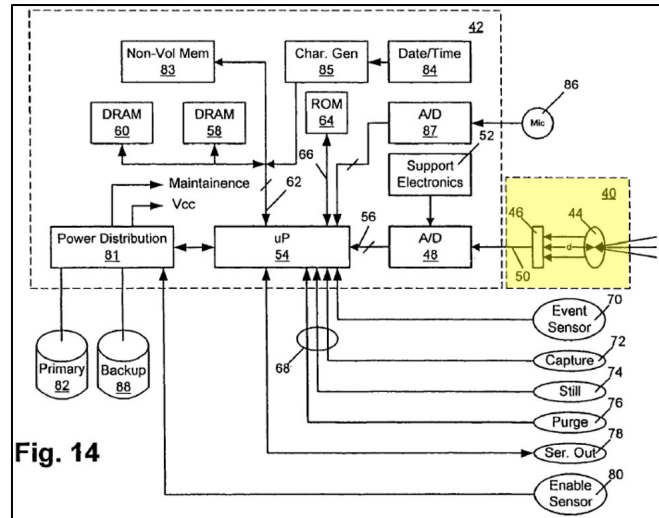


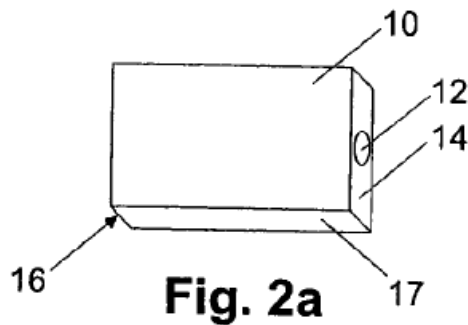
Fig. 3



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, as described above, 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 to one or more A/D converters” that “generate a digital representation of the video image.” *Id.*, 2:37-41. The camera 40 thus discloses the “sensor” because it has an image sensor 46 that captures video images impinging on it (“sensor data”).

Yerazunis discloses a “compact video image recording device” that can be utilized in a number of different applications, including mounted to a vehicle, bicycle, or gun. EX1017, Abstract, 4:35-56, 9:8-14, 14:45-15:20.



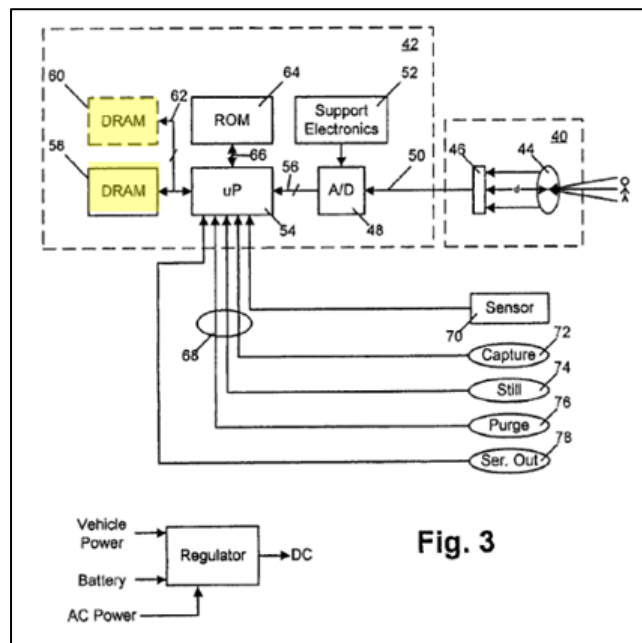
Id., Fig. 2A. To the extent Yerazunis does not disclose the sensor being part of “a pair of eyeglasses,” the ’901 patent discloses “[t]he eyeglasses 110 are used here euphemistically to represent any type of camera mount” (EX1048, 3:62-63), such as the examples Yerazunis discloses. Moreover, including Yerazunis’s sensor as part of a pair of eyeglasses would have been obvious in view of Campbell. EX1062, ¶¶172-173. Campbell discloses a pair of eyeglasses having a sensor that captures sensor data: It describes one or more cameras, typically CCD devices, including a video receptor and mounted to eyeglasses for capturing video. EX1059, 2:47-52, 3:27-33, 3:49-59.

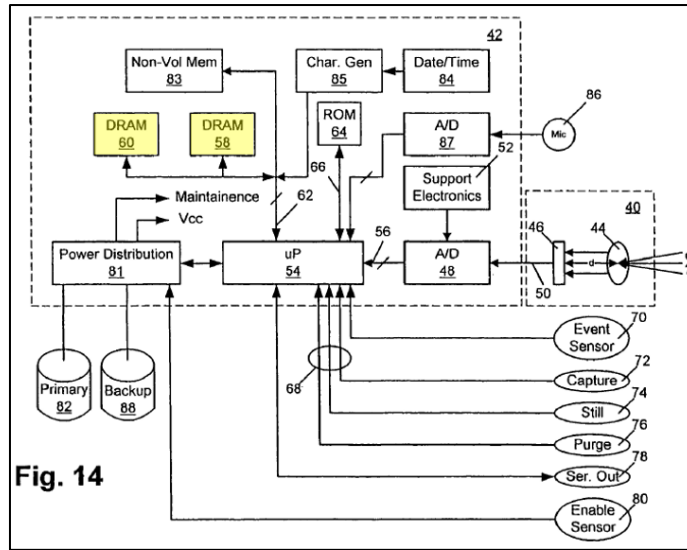
A POSITA would have been motivated to implement Yerazunis’s sensor that captures sensor data in a pair of eyeglasses, as taught by Campbell, for at least the reasons explained in Section IV.A.3. EX1062, ¶¶163-165, 172-173. The ’901 patent also concedes that eyeglasses cameras were known in the art, citing EP 1,064,783 to Mann (EX1015) and stating Mann “describes a camera mountable to a pair of

eyeglasses that continuously saves recorded images to a circular buffer in a computer on the user's waist." EX1048, 2:1-3.

c) Element 2: a first memory communicatively coupled with the sensor; and

Yerazunis discloses this element. EX1062, ¶¶174-175. Yerazunis's video recording device includes video electronics 42 with semiconductor memory comprising DRAMs 58, 60 that disclose the memory communicatively coupled with the sensor (EX1017, 5:40-43, 6:24-36):





Id., Figs. 3, 14 (color added).

As seen above, DRAMs 58, 60 are coupled to camera 40. Microprocessor 54 and DRAM 58 “may be obtained as a single integrated circuit [IC]” (*id.*, 6:24-29), meaning their connection would be via physical connectors on the IC (*e.g.*, conductive lines and/or vias, etc.). DRAM 60 is “coupled to the microprocessor 54 via a bus 62.” *Id.*, 6:30-36. Microprocessor 54, in turn, is coupled to analog-to-digital converter (ADC) 48 “via signal path 56 which comprises a parallel signal bus.” *Id.*, 6:14-23. Finally, ADC 48 is coupled to camera 40 “via signal path 50” to enable ADC 48 to sample the output of image sensor 46 at predetermined intervals. *Id.*, 5:40-67. Accordingly, DRAMs 58, 60 are “communicatively coupled with the sensor.”

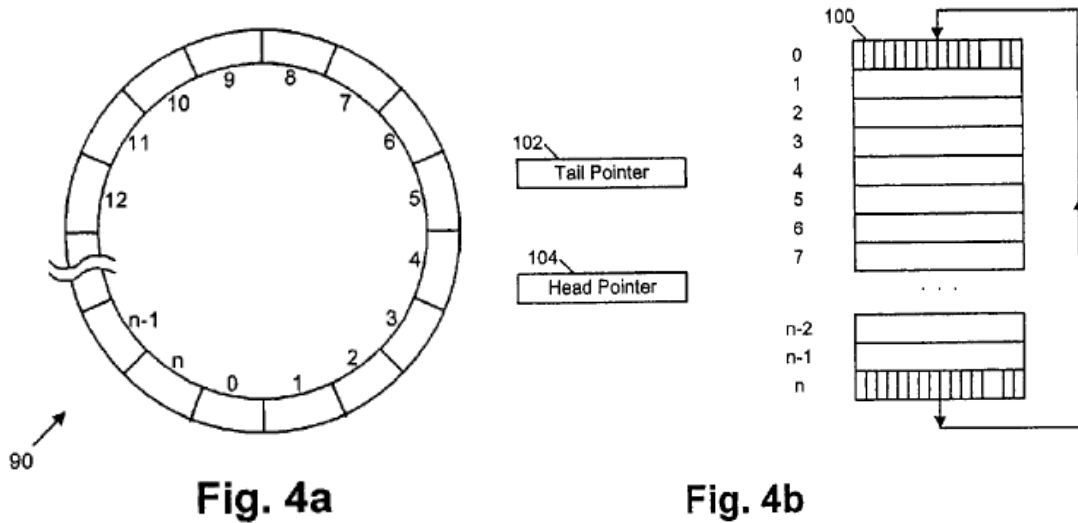
Campbell likewise discloses this element. EX1062, ¶176. Campbell's recorder is "connected to" the "video camera" and comprises a "recording medium" ("memory") for "storing a signal from the CCD." EX1059, 4:42-55.

PETITION FOR *INTER PARTES* REVIEW OF U.S. PATENT NO. 10,523,901

Applicant also admitted a nearly identical limitation is known in the art. EX1013, 101, 107.

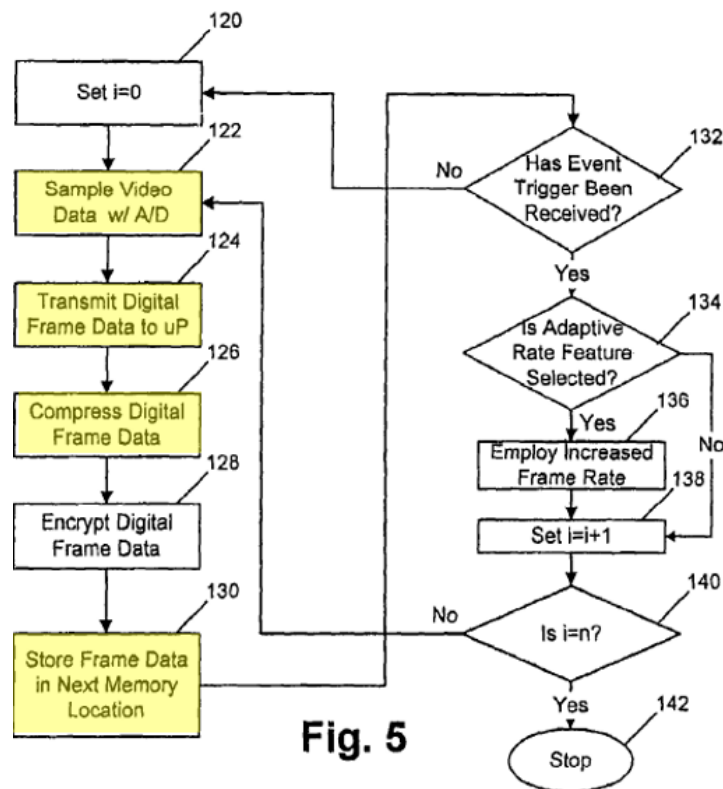
d) Element 3: a computer processor configured to: record the sensor data in the first memory;

Patent Owner's Constructions: Patent Owner's position is that the "computer processor configured to" claim limitations do not invoke Section 112, ¶ 6 (EX1056, 008-019), and the claims broadly cover any "computer processor" configured to perform the claimed functions. Yerazunis's microprocessor 54 (a computer processor) records sensor data from camera 40 in DRAM 58 (the first memory). Specifically, Yerazunis's video recording device under control of microprocessor 54 "records video frames successively in at least one circular buffer memory organized as a continuous loop." EX1017, 2:19-23, 17:9-20, 17:50-59. Camera 40 captures video, and ADCs 48 convert the captured video into a digital signal. *Id.*, 5:40-67. The digital signal is provided to microprocessor 54, which "compresses the digitized frame data and stores the compressed frame data in the next sequential location of [a] circular buffer" formed in DRAM 58. *Id.*, 2:45-47, 6:24-26, 6:52-7:6, 10:55-67, 11:50-14:44, 17:50-59, and Figs. 3, 4a, 4b, 6-8, 14.



Id., Figs. 4a, 4b.

Figure 5 illustrates aspects of Yerazunis's process for "record[ing] the sensor data in the first memory" at least at steps 122, 124, 126, and 130.



Id., Fig. 5 (color added); *see also id.*, 10:55-11:7.

PETITION FOR *INTER PARTES* REVIEW OF U.S. PATENT NO. 10,523,901

Yerazunis thus describes a “computer processor” (microprocessor 54) that is “configured to: record the sensor data in the first memory,” disclosing element 3 under Patent Owner’s position that Section 112, ¶6 is inapplicable (referred to herein as Patent Owner’s “non-MPF position”). EX1062, ¶¶177-180.

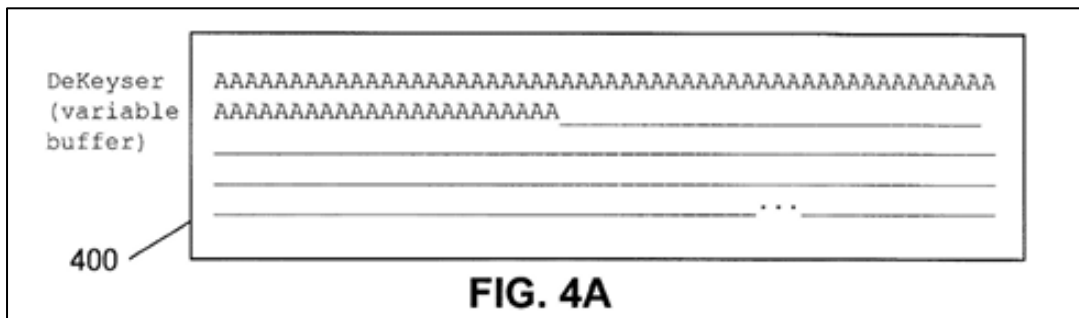
Yerazunis also discloses element 3 under Patent Owner’s alternative position should Section 112, ¶6 apply. While Patent Owner cites wide swaths of the ’901 patent as allegedly disclosing corresponding structure for this element (*see* Section III.C.2), Patent Owner also contends the corresponding structure broadly encompasses any “component of a recording device including software or hardware that accomplishes the functions described” (referred to herein as Patent Owner’s “MPF position”). EX1057, 008-014. As explained for Patent Owner’s non-MPF position, Yerazunis’s microprocessor 54 runs software to accomplish the function of “record the sensor data in the first memory.” *See also* EX1017, 6:17-23, 6:37-51. Yerazunis thus discloses element 3 under Patent Owner’s MPF position. EX1062, ¶181.

Petitioner’s Corresponding Structure: Yerazunis discloses the corresponding structure identified by Petitioner: “hardware and/or software programmed to perform the circular buffer algorithm disclosed at 2:33-39, 4:67-5:2, 5:38-50, Fig. 3, 7:48-59, Fig. 4A, 7:60-65.” EX1062, ¶¶182-186.

Yerazunis discloses a recorder with memory that runs software to accomplish functions, consistent with the ’901 patent’s disclosure at 4:67-5:2. Specifically,

PETITION FOR *INTER PARTES* REVIEW OF U.S. PATENT NO. 10,523,901

Yerazunis discloses video electronics 42 (a recorder) having microcontroller 54 that runs software for performing instructions. EX1017, 6:17-23, 6:37-51. The video electronics 42 include DRAM 58, 60 (memory), and microprocessor 54 records sensor data from camera 40 in the circular buffer formed in the memory, consistent with the '901 patent's disclosure at 2:33-39, Fig. 3, 7:48-59, 7:60-65, and Figure 4A:



'901 Patent	Yerazunis
In Figure 4A, a recording facility records data stream “A” into circular buffer 400. EX1048, 7:60-65.	In Yerazunis's gun-camera embodiment, microprocessor 54 stores a first digital data stream generated by one or more ADCs 48 in a circular buffer formed in DRAM 58, 60 (memory). EX1017, 2:19-23, 2:45-47, 6:24-26, 6:52-7:6, 10:55-67, 11:50-14:44, 17:9-20, 17:50-59, and Figs. 3, 5 (e.g., steps 122, 124, 126, 130), 6-8, 14. EX1062, ¶185.

PETITION FOR *INTER PARTES* REVIEW OF U.S. PATENT NO. 10,523,901

Additionally, in recording the sensor data in the circular buffer formed in the memory, Yerazunis's microcontroller 54 skips over write-protected matter, consistent with the '901 patent's disclosure at 2:33-39. EX1017, 3:28-33, 17:45-61. Yerazunis's recorder (video electronics 42) records the sensor data "in digital [or analog] format," consistent with the '901 patent's disclosure at 5:38-50. *Id.*, 2:37-47, 5:49-67, 6:14-16, 6:52-57. EX1062, ¶186.

- e) **Element 4: in response to a first trigger signal, designate for saving a first portion of the sensor data that was captured prior to occurrence of the first trigger signal, wherein the portion of the sensor data occupies a portion of the first memory that is less than the entirety of the first memory and corresponds to a length of time prior to the first trigger signal;**

Patent Owner's Constructions: Yerazunis's microprocessor 54 is a "computer processor" that performs the function of element 4, under Patent Owner's non-MPF position. EX1056, 008-019. In embodiments, microprocessor 54 comprises "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. EX1062, ¶188.

In Yerazunis's gun-camera embodiment, event sensor 70 generates a "gun firing signal" "upon discharge of the gun." EX1017, 3:20-33, 8:8-25, 14:55-61. Upon

PETITION FOR *INTER PARTES* REVIEW OF U.S. PATENT NO. 10,523,901

detecting the 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 result of further use of the gun or subsequent firing events.” *Id.*, 3:25-38, 8:26-30, 15:9-13 (emphasis added). With the specified frame data 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. Thus, microprocessor 54 performs the claimed function: “in response to a first trigger signal, designate for saving a first portion of the sensor data that was captured prior to occurrence of the first trigger signal.” EX1062, ¶189.

Yerazunis also discloses “wherein the portion of the sensor data occupies a portion of the first memory that is less than the entirety of the first memory.” *Id.* Yerazunis discloses its “circular buffer memory may be subdivided evenly to accommodate a predetermined number of firings of the gun,” such that the first firing event occupies less than the full buffer. EX1017, 17:9-20; EX1062, ¶190. Yerazunis thus discloses element 4 under Patent Owner’s non-MPF position.

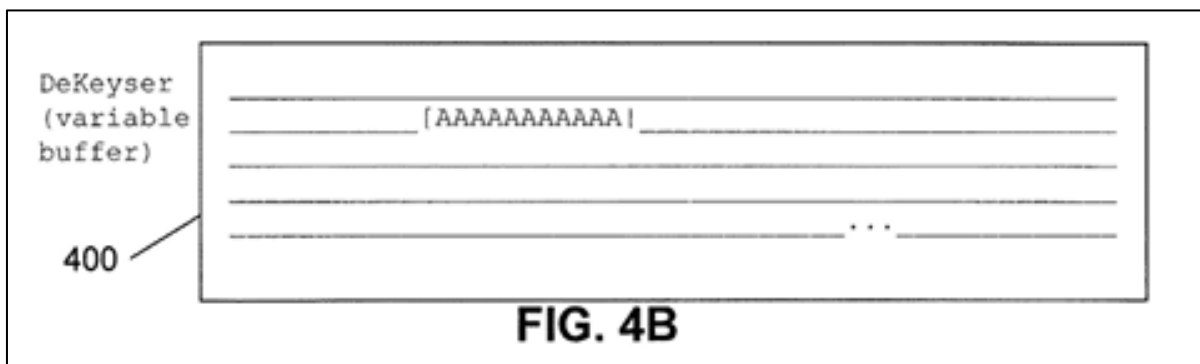
Yerazunis also discloses element 4 under Patent Owner’s MPF position. EX1057, 008-014. As explained for Patent Owner’s non-MPF position, Yerazunis’s microprocessor 54 runs software to accomplish the function of element 4. *See also* EX1017, 6:17-23, 6:37-51. Yerazunis thus discloses element 4 under Patent Owner’s MPF position. EX1062, ¶191.

PETITION FOR *INTER PARTES* REVIEW OF U.S. PATENT NO. 10,523,901

Petitioner’s Corresponding Structure: Yerazunis discloses the corresponding structure identified by Petitioner: “hardware and/or software programmed to perform the circular buffer algorithm disclosed at 2:33-39, 2:46-64, 4:67-5:2, 5:38-50, Fig. 4B, 8:9-37, Fig. 4C, 8:52-67, 9:62-10:5.” EX1062, ¶¶192-199.

As explained for Petitioner’s corresponding structure for element 3 of claim 1, Yerazunis discloses a recorder (video electronics 42) with memory and microcontroller 54 that runs software to accomplish functions, consistent with the ’901 patent’s disclosure at 2:33-39, 4:67-5:2, 5:38-50, 7:48-59, and Fig. 3. EX1062, ¶193.

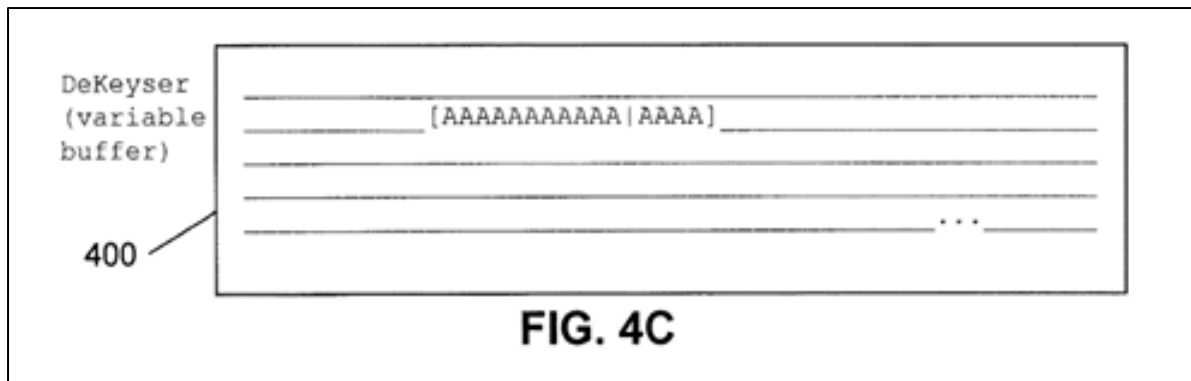
The operation of Yerazunis’s microprocessor 54 is also consistent with the ’901 patent’s disclosure at 2:46-64, Fig. 4B (described at 8:9-37), and Fig. 4C (described at 8:52-67):



'901 Patent	Yerazunis
In Figure 4B, the protecting facility has protected a recent period of data stream “A” as a function of a “start” signal. In	In Yerazunis’s gun-camera embodiment, microprocessor 54 protects a recent period of the first data

PETITION FOR *INTER PARTES* REVIEW OF U.S. PATENT NO. 10,523,901

protecting recent data, the system can protect a historical time period preceding the “start” signal. EX1048, 8:9-37.	stream recorded in the circular buffer based on a first trigger signal (a start signal) generated by event sensor 70 or capture button 72. EX1017, 2:1-4, 2:19-33, 3:20-38, 4:45-49, 8:8-30, 9:17-26, 9:34-38, 14:55-61, 15:9-13, 17:45-61. The protected portion of the first data stream in the circular buffer is associated with a first event, <i>e.g.</i>, a first firing of a gun (<i>id.</i>, 3:20-38, 8:26-30, 15:9-13, 16:66-17:4, 17:45-61), and includes a period of the first data stream preceding the first trigger signal. <i>Id.</i>, 3:20-38, 14:55-64. EX1062, ¶195.
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'901 Patent	Yerazunis
In Figure 4C, the protecting facility has received a “stop” signal sometime after receiving the start signal, thereby lengthening the protected portion of the “A” data stream. EX1048, 8:52-67.	In Yerazunis’s gun-camera embodiment, the video recording device responds to a signal from a user, and the user’s signal includes a stop signal. EX1017, 3:20-38, 8:8-30, 14:55-61, 15:9-13; EX1062, ¶197. Specifically, Yerazunis’s signal from the user tells the video recording device when to (i) start recording, <i>i.e.</i>, 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>i.e.</i>, when a predetermined number of frames

PETITION FOR *INTER PARTES* REVIEW OF U.S. PATENT NO. 10,523,901

	subsequent to the trigger event have been write protected (<i>id.</i> , 2:53-64, 4:35-56, 8:26-61, 11:27-30, 12:14-17, 13:3-17, 16:66-17:38).
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Additionally, Yerazunis write protects sensor data in the circular buffer by indexing it in an electronic index, consistent with Petitioner’s corresponding structure for element 4 at 9:62-10:5 of the ’901 patent (“segments of recorded data are ‘write-protected’ by being indexed in an electronic index”). Specifically, the write protecting performed by microprocessor 54 may include storing pointers that define areas of the circular buffer not to be overwritten. EX1017, 17:45-61. A POSITA would have understood Yerazunis’s use of pointers to identify a sensor data for write protection and storage of such pointers in a table “to allow later retrieval” of video data for gun-firing events (*id.*) to be indexing in an electronic index. EX1062, ¶198. A POSITA would have understood retrieving video data for gun-firing events necessitates an ability to locate the video data within the buffer, such that Yerazunis necessarily uses indexing. *Id.* Thus, while Yerazunis does not expressly refer to “indexing” write-protected portions, a POSITA would have understood Yerazunis as describing—or at minimum, rendering obvious—such indexing. EX1017, 6:1-13, 6:33-36, 7:23-32, 10:37-39, 10:63-67, 11:31-43.

PETITION FOR *INTER PARTES* REVIEW OF U.S. PATENT NO. 10,523,901

A POSITA would have recognized indexing as being one of a finite number of identified solutions for storing and retrieving data in Yerazunis, further evidencing its obviousness. *KSR Int’l Co. v. Teleflex Inc.*, 550 U.S. 398, 421 (2007). A POSITA would have recognized Yerazunis’s event data must be stored and retrieved in some way, and indexing such data was a well-known approach for doing so. EX1062, ¶199. Storing and retrieving 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.

- f) **Element 5: contiguously continuing to record the sensor data in the first memory while the first portion of the sensor data is designated for saving;**

Patent Owner’s Constructions: Yerazunis’s microprocessor 54 (“computer processor”) performs the function of element 5, under Patent Owner’s non-MPF position. EX1056, 008-019. Yerazunis stresses recording occurs “continuously” in embodiments, such that designating the first portion to be saved necessarily occurs while “continuing to record the sensor data in the first memory.” Indeed, Yerazunis expressly discloses frame data is “protected from overwriting while video capture within the circular buffer continues.” EX1017, 9:34-38; *see also id.*, 2:1-4, 2:19-23, 4:45-49, 17:45-61.

When Yerazunis’s 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.”

PETITION FOR *INTER PARTES* REVIEW OF U.S. PATENT NO. 10,523,901

EX1017, 16:66-17:4. “To accommodate this objective, after the conclusion of data storage associated with one firing event, the head 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,” and the pointers “are then reset to allow continued recording into another portion of the circular buffer memory without overwriting the previously stored and preserved data.” *Id.*, 17:50-59. Thus, while designating the first portion for saving, “recording of data continues since a subsequent firing event may occur.” *Id.*, 17:45-50. EX1062, ¶¶201-202.

Yerazunis also discloses “contiguously” continuing to record the sensor data. EX1062, ¶203. For example, in Yerazunis’s gun-camera embodiment, the video recording device under control of microprocessor 54 records into the circular buffer continuously. EX1017, 2:1-8, 2:19-23, 4:45-49, 7:11-14, 9:34-38, 17:45-61. A POSITA would have thus understood Yerazunis as disclosing “contiguously” continuing to record the sensor data in the first memory while designating the first portion for saving because “[a]dditional frames are successively stored in the unused portion of the buffer memory” after protecting event data (*id.*, Abstract, 3:9-35, 17:45-61), and in one embodiment Yerazunis discloses protecting a frame “from overwriting while video capture within the circular buffer continues” (*id.*, 9:27-46). Yerazunis thus discloses element 5 under Patent Owner’s non-MPF position.

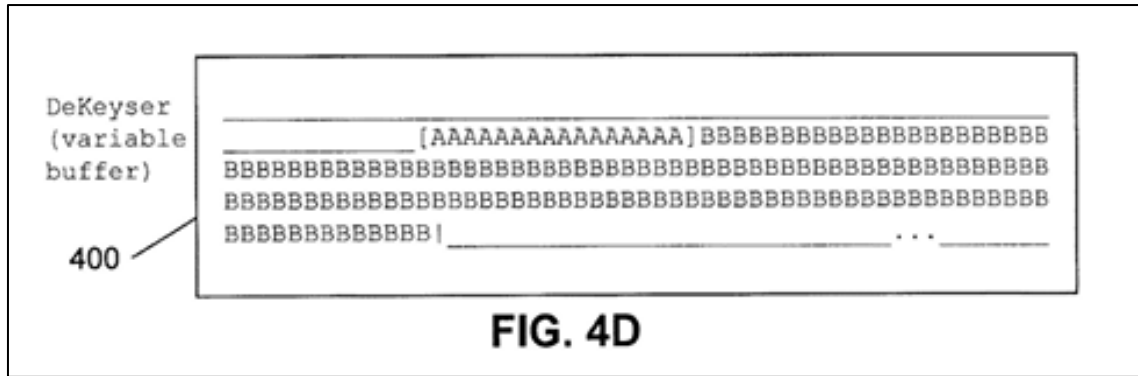
PETITION FOR *INTER PARTES* REVIEW OF U.S. PATENT NO. 10,523,901

Yerazunis also discloses element 5 under Patent Owner's MPF position. EX1057, 008-014. As explained for Patent Owner's non-MPF position, Yerazunis's microprocessor 54 runs software to accomplish the function of element 5. *See also* EX1017, 6:14-23, 6:37-51. Yerazunis thus discloses element 5 under Patent Owner's MPF position. EX1062, ¶204.

Petitioner's Corresponding Structure: Yerazunis discloses the corresponding structure identified by Petitioner: "hardware and/or software programmed to perform the circular buffer algorithm disclosed at 2:33-39, 2:46-64, 4:67-5:2, 5:38-50, Fig. 3, 7:48-59, Fig. 4D, 9:21-26, Fig. 4B, 8:9-37, Fig. 4C, 8:52-67, 9:62-10:5." EX1062, ¶¶205-208.

As explained for Petitioner's corresponding structure for elements 3 and 4 of claim 1, Yerazunis discloses a recorder (video electronics 42) with memory and microcontroller 54 that runs software to accomplish functions, consistent with the '901 patent's disclosure at 2:33-39, 2:46-64, 4:67-5:2, 5:38-50, 7:48-59, Fig. 3, Fig. 4B (described at 8:9-37), Fig. 4C (described at 8:52-67), and 9:62-10:5. EX1017, 6:17-23, 6:37-51; EX1062, ¶206.

The operation of Yerazunis's microprocessor 54 is also consistent with the '901 patent's disclosure at Fig. 4D (described at 9:21-26):



'901 Patent	Yerazunis
In Figure 4D, the system has finished protecting the desired portion of the “A” data stream, and the recording facility continues to store a “B” data stream. The “B” data stream may be contiguous with the “A” data stream, “so that differentiation of ‘A’ and ‘B’ streams is merely an artifact of how the data is being stored.” EX1048, 9:21-26.	In Yerazunis’s gun-camera embodiment, the video recording device under control of microprocessor 54 records into the circular buffer continuously, such that storing of a second data stream in the circular buffer continues after protecting a portion of the first data stream. EX1017, 2:1-8, 2:19-23, 4:45-49, 7:11-14, 9:34-38, 17:45-61. The second data stream is continuous with the write-protected portion of the first data stream, with the second data stream being recorded in a non-

PETITION FOR *INTER PARTES* REVIEW OF U.S. PATENT NO. 10,523,901

	protected portion of Yerazunis's circular buffer immediately following the write-protected portion of the first data stream. <i>Id.</i> , 2:1-8, 2:19-23, 4:45-49, 7:11-14, 9:34-38, 17:45-61. EX1062, ¶¶207-208.
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- g) Element 6: in response to a subsequent second trigger signal, designate for saving a second portion where in the second portion occupies less than the remaining entirety of the first memory not designated for saving and corresponds to a length of time prior to the second trigger signal; and**

Patent Owner's Constructions: In embodiments, Yerazunis's microprocessor 54 comprises "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), including a still button 74 causing a video frame in the circular buffer to be "protected from overwriting." *Id.*, 9:27-31, 9:34-42. EX1062, ¶210. And in Yerazunis's gun-camera embodiment, microprocessor 54 is configured to protect a second portion of sensor data in the circular buffer associated with a second event, *e.g.*, a second firing of the gun, based on a second trigger signal generated by event sensor 70 or capture button 72 subsequent to the first trigger signal described for element 4 of claim 1. EX1017, 4:35-56, 8:26-61, 11:27-30, 12:14-17, 13:3-17, 16:66-17:61. Like the first portion

PETITION FOR *INTER PARTES* REVIEW OF U.S. PATENT NO. 10,523,901

designated for saving, the second portion designated for saving includes a period of the sensor data preceding the second trigger signal. *Id.*, 3:20-38, 14:55-64. Thus, microprocessor 54 performs the claimed function: “in response to a subsequent second trigger signal, designate for saving a second portion.” EX1062, ¶211. Saving of video data for multiple events in a circular buffer was also well-known in the art. *Id.*; EX1008, Abstract, 4:30-5:11, Figs. 4, 5; EX1009, [0022]-[0023], [0051], [0059], [0060].

Yerazunis also discloses “where in [sic] the second portion occupies less than the remaining entirety of the first memory not designated for saving and corresponds to a length of time prior to the second trigger signal.” Yerazunis discloses its “circular buffer memory may be subdivided evenly to accommodate a predetermined number of firings of the gun,” such that first and second firing events each occupy less than the full buffer. EX1017, 17:9-20. Yerazunis thus discloses element 6 under Patent Owner’s non-MPF position. EX1062, ¶212.

Yerazunis also discloses element 6 under Patent Owner’s MPF position. EX1057, 008-014. As explained for Patent Owner’s non-MPF position, Yerazunis’s microprocessor 54 runs software to accomplish the function of element 6. *See also* EX1017, 6:17-23, 6:37-51. Yerazunis thus discloses element 6 under Patent Owner’s MPF position. EX1062, ¶213.

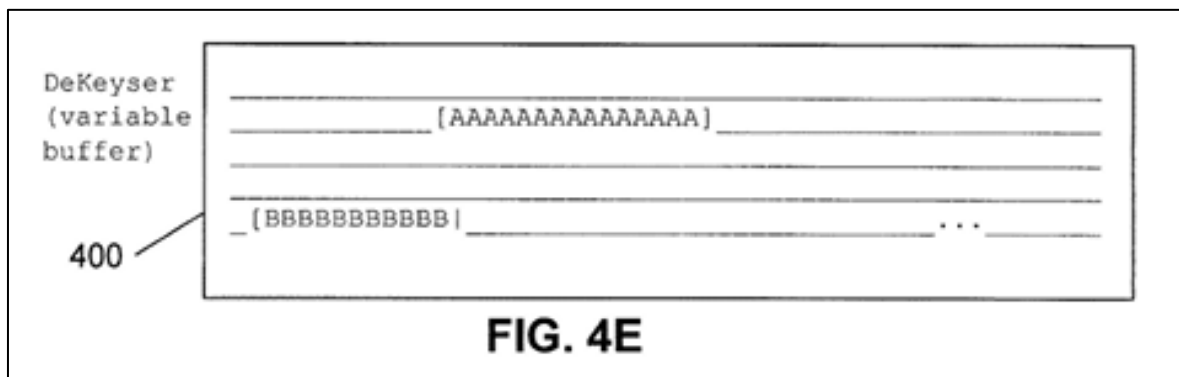
Petitioner’s Corresponding Structure: Yerazunis discloses the corresponding structure identified by Petitioner: “hardware and/or software programmed to perform

PETITION FOR *INTER PARTES* REVIEW OF U.S. PATENT NO. 10,523,901

the circular buffer algorithm disclosed at 2:33-39, 2:46-64, 4:67-5:2, 5:38-50, Fig. 4E, 9:48-50, 9:62-10:5.” EX1062, ¶¶214-217.

As explained for Petitioner’s corresponding structure for elements 3 and 4 of claim 1, Yerazunis discloses a recorder (video electronics 42) with memory and microcontroller 54 that runs software to accomplish functions, consistent with the ’901 patent’s disclosure at 2:33-39, 2:46-64, 4:67-5:2, 5:38-50, 7:48-59, 9:62-10:5, and Fig. 3. EX1017, 6:14-23, 6:37-51; EX1062, ¶215.

The operation of Yerazunis’s microprocessor 54 is also consistent with the ’901 patent’s disclosure at Fig. 4E (described at 9:48-50):



'901 Patent	Yerazunis
Figure 4E illustrates protection of a portion of the “B” data stream based on receipt of a start signal. EX1048, 9:48-50.	In Yerazunis’s gun-camera embodiment, microprocessor 54 is configured to protect a portion of the second data stream in the circular buffer associated with a second event, e.g., a

PETITION FOR *INTER PARTES* REVIEW OF U.S. PATENT NO. 10,523,901

	second firing of the gun, based on a second trigger signal generated by event sensor 70 or capture button 72. EX1017, 4:35-56, 8:26-61, 11:27-30, 12:14-17, 13:3-17, 16:66-17:61. Like the protected portion of the first data stream, the protected portion of the second data stream includes a period of the second data stream preceding the second trigger signal. <i>Id.</i>, 3:20-38, 14:55-64. EX1062, ¶216.
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- h) Element 7: automatically overwrite portions of the sensor data that were recorded in the first memory that were not designated for saving.**

Patent Owner's Constructions: Yerazunis's microprocessor 54 performs the function of element 7, under Patent Owner's non-MPF position. EX1056, 008-019. 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." EX1017, 2:19-23. This occurs automatically "absent receipt of some trigger event from the sensor 54 or activation of other input by the user." *Id.*, 7:11-22. This is also true of

PETITION FOR *INTER PARTES* REVIEW OF U.S. PATENT NO. 10,523,901

Yerazunis's gun-mounted devices, which likewise record continuously into the circular buffer memory and thus overwrite sensor data recorded in the memory and not designated for saving. *Id.*, 15:56-16:3, 18:4-12. Yerazunis thus discloses element 7 under Patent Owner's non-MPF position. EX1062, ¶219.

Yerazunis also discloses element 7 under Patent Owner's MPF position. EX1057, 008-014. As explained for Patent Owner's non-MPF position, microprocessor 54 runs software to accomplish the function of element 7. *See also* EX1017, 6:14-23, 6:37-51. Yerazunis thus discloses element 7 under Patent Owner's MPF position. EX1062, ¶220.

Petitioner's Corresponding Structure: Yerazunis discloses the corresponding structure identified by Petitioner: "hardware and/or software programmed to perform the circular buffer algorithm disclosed at 2:33-39, 4:67-5:2, 5:38-50, Fig. 3, 7:48-59, Fig. 4A, 7:60-65." EX1062, ¶221. This structure is the same as that identified by Petitioner for element 3 of claim 1, and Yerazunis thus discloses Petitioner's corresponding structure for element 7 for the reasons in Section IV.A.4.d.

5. Claims 2-6

Claim 2 depends from claim 1, and claims 3-6 depend from claim 2. Yerazunis discloses the limitations added in these claims. EX1062, ¶¶222-227.

Claim 2: "[A]fter the trigger event occurs and the video data which is to be preserved is defined, the non-volatile memory may be powered up under the control of

PETITION FOR *INTER PARTES* REVIEW OF U.S. PATENT NO. 10,523,901

the microprocessor 54 and the video data written from the DRAMs to the non-volatile memory 83.” EX1017, 18:4-28, claim 23.

Claim 3: Yerazunis’s semiconductor memory may comprise “at least one dynamic random access memory and a nonvolatile memory,” so nonvolatile memory (“second memory”) is a different part of the semiconductor memory. *Id.*, claim 23.

Claim 4: Yerazunis’s microprocessor 54 “compresses the digitized frame data” received from the image sensor “and stores the compressed frame data in the next sequential location of the circular buffer.” *Id.*, 2:45-47; *see also id.*, 6:52-55, 7:7-14, 10:63-67.

Claim 5: Yerazunis’s video recording device write-protects video data “before *and after*” an event, such that copying a write-protected portion would necessarily copy sensor data “captured after occurrence of the first trigger signal.” *Id.*, Abstract, 3:9-35, 8:51-55, 14:45-64, 19:52-56 (emphasis added).

Claim 6: Because Yerazunis discloses write-protecting video data “before and after” an event and records continuously, Yerazunis necessarily discloses capturing sensor data “during occurrence of the first trigger signal” and would necessarily copy that data as part of the write-protected portion. *Id.*, 2:19-23, 17:9-20, 17:50-59.

6. Claim 7

Claim 7 depends from claim 1 and recites “including with the first designated portion, another portion of the sensor data that was captured after occurrence of the first

trigger signal.” Yerazunis discloses this. EX1062, ¶228. Yerazunis’s video recording device write-protects video data “before *and after*” an event. EX1017, Abstract, 3:9-35, 8:51-55, 14:45-64, 19:52-56 (emphasis added). The pre- and post-event data comprise an indexed, identifiable collection of data in the circular buffer. *Id.*, 17:9-20, 17:45-61; *see also* 6:1-13, 6:33-36, 7:23-32, 10:37-39, 10:63-67, 11:31-43.

7. Claim 8

Claim 8 depends from claim 1, reciting “wherein the computer processor is further configured to transmit, via a wireless transmitter, the first designated portion to a remote memory.” Yerazunis discloses this. EX1062, ¶229. Yerazunis’s microprocessor 54 includes a serial output channel 78 “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.” EX1017, 3:1-2, 6:45-51, 9:60-10:3, 18:60-66.

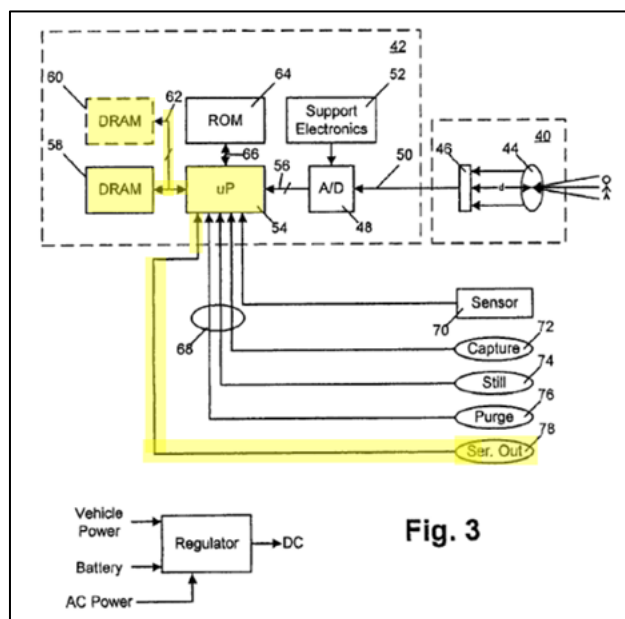
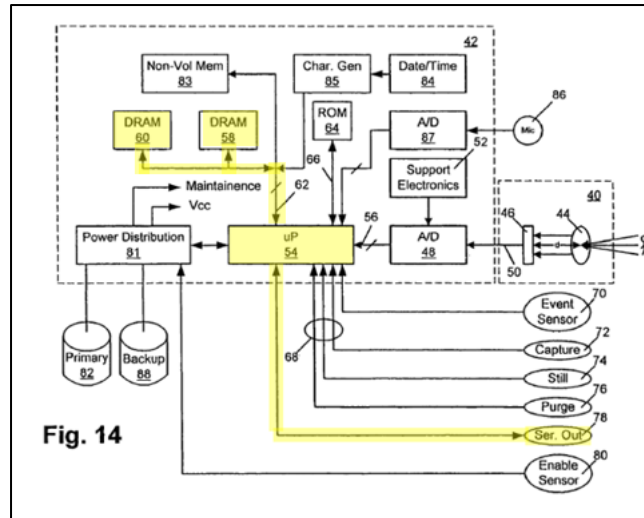


Fig. 3



Id., Figs. 3, 14 (color added).

A POSITA would have recognized Yerazunis's radio transmitter is a "wireless transmitter." EX1062, ¶229.

Campbell also discloses this limitation. EX1062, ¶230. Campbell describes a "transmitting means" that "may include a radio or other transmitter for transmitting the signal to a remote recording station" for preservation. EX1059, 1:57-59, 1:65-2:2, 5:1-55.

8. Claim 9

Claim 9 depends from claim 1 and recites "wherein the sensor data comprises at least one of the following: image data and video data." Yerazunis discloses this. EX1062, ¶231. Yerazunis's video recording device includes camera 40 with a sensor that captures video data. EX1017, 2:33-41, 5:43-49, Figs. 3, 14.

9. Claim 10

Claim 10 depends from claim 1, reciting “wherein the first memory comprises a circular buffer.” Yerazunis discloses this. EX1062, ¶232. 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.” EX1017, 2:19-23, 7:7-61, 17:9-20, 17:50-59, 18:7-12 (emphasis added).

10. Claims 11 and 12

Claims 11 and 12 depend from claim 1 and recite “wherein the first designated portion is stored using time compression” (claim 11) or “frame compression” (claim 12). These limitations would have been obvious in view of Yerazunis. EX1062, ¶¶233-234. Yerazunis discloses that various compression techniques were well-known in the art as of the purported June 2007 priority date (EX1017, 6:55-7:6); these known techniques included time compression and frame compression (EX1062, ¶¶233-234). It would have been obvious to a POSITA to select either conventional compression technique in the Yerazunis/Campbell video recording system. *Id.*

11. Claims 13 and 14

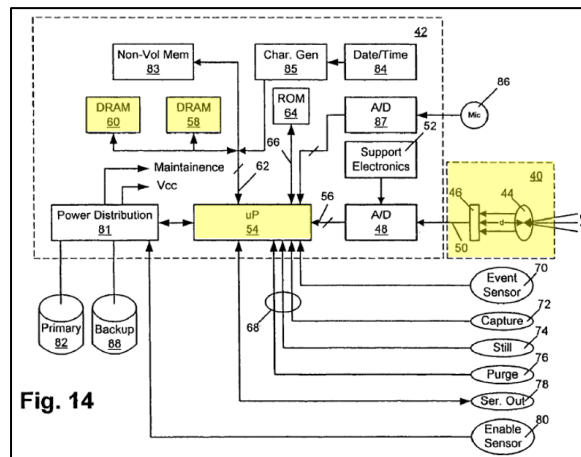
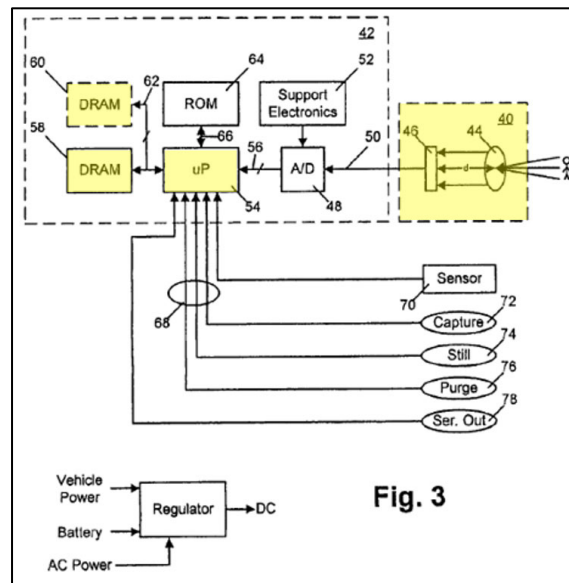
Claim 13 depends from claim 1, reciting “comprising a camera that includes the sensor interface, the first memory, and the computer processor.” Claim 14

PETITION FOR *INTER PARTES* REVIEW OF U.S. PATENT NO. 10,523,901

depends from claim 13, reciting “wherein the camera comprises a security camera.”

Yerazunis discloses these limitations. EX1062, ¶¶235-237.

Claim 13: Yerazunis’s video recording system includes signal path 50 (“sensor interface”) between camera 40 and video electronics 42, DRAMs 58, 60, and microprocessor 54 (EX1017, 5:40-53, 6:24-36):



Id., Figs. 3, 14 (color added).

PETITION FOR *INTER PARTES* REVIEW OF U.S. PATENT NO. 10,523,901

Although Yerazunis refers to lens 44 and image sensor 46 as components of “camera 40,” a POSITA would have understood Yerazunis’s video recording systems (including video electronics 42 and camera 40) as being cameras. EX1062, ¶236.

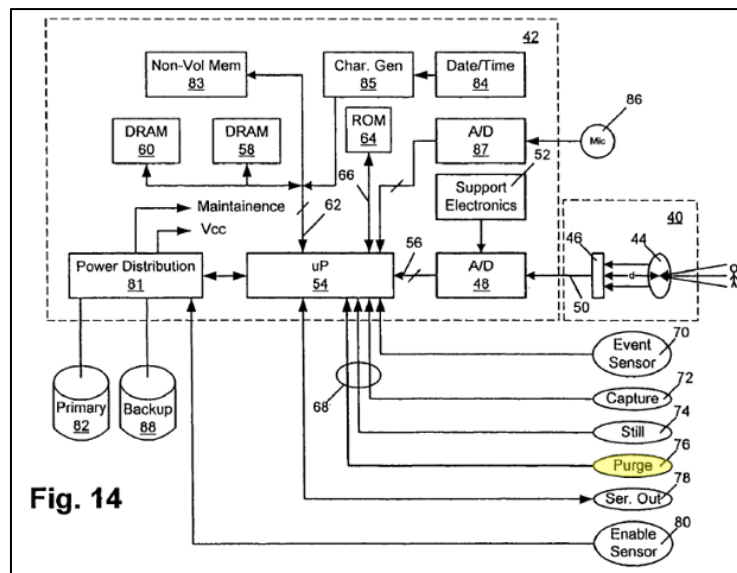
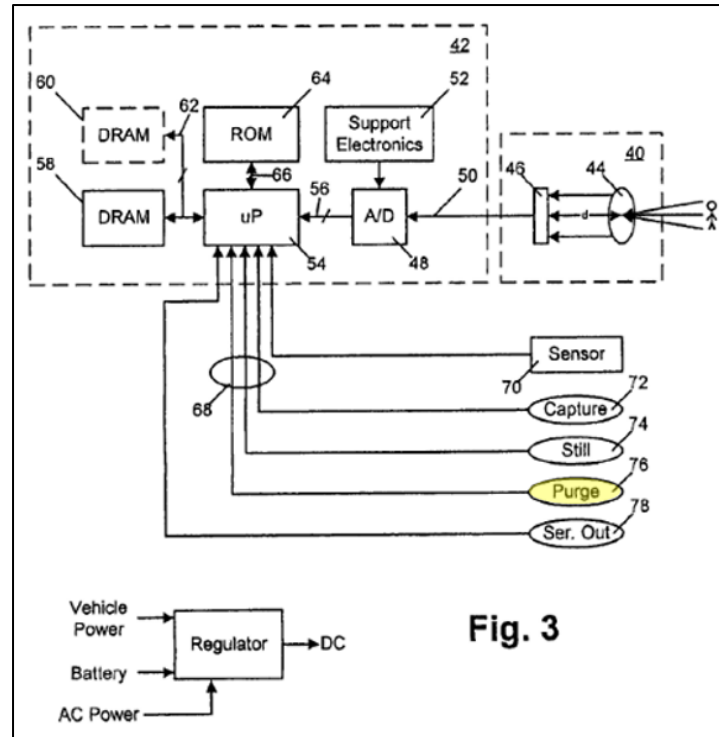
Claim 14: Yerazunis’s video recording device is suitable “in security applications” (EX1017, 1:22-31), and trigger events include “a signal indicative of a security or fire alarm condition,” such as “movement, glass breakage, or unauthorized entry” (*id.*, 2:53-64, 8:8-25). Thus, Yerazunis discloses a “security camera.” EX1062, ¶237.

12. Claim 19

Claim 19 depends from claim 1, reciting “wherein the first trigger signal represents detection of at least one of the following: a motion, a sound, an image, content in a data stream, a pattern in the sensor data, a person, a human face, a computer screen, an event, a verbal command, operation of switch, and operation of a button.” Yerazunis discloses this. EX1062, ¶238. In Yerazunis, “the event sensor 70 is operative to generate a trigger signal in response to the discharge of the gun,” and preferably comprises “a microphone, or any other suitable sensor which can detect a characteristic associated with the firing of the gun.” EX1017, 16:43-50. “In the case of a microphone, the event sensor 70 is operative to detect the sound associated with the firing of the gun.” *Id.*, 16:53-55. Thus, Yerazunis discloses “wherein the trigger signal represents detection of at least ... a sound.”

13. Claims 20 and 21

Claim 20 depends from claim 1, reciting “wherein the computer processor is further configured to write-protect the first designated portion as a write-protected portion in the first memory.” Claim 21 depends from claim 20, reciting “wherein the computer processor is further configured to free the write-protected portion following a transmission of the designated portion.” Yerazunis discloses these limitations. EX1062, ¶¶239-241. Yerazunis discloses the limitations of claim 20 for the reasons in Section IV.A.4.e. For claim 21, Yerazunis discloses purge button 76 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,” including any the “user does not desire to retain.” *Id.*, 9:48-53. Accordingly, write-protection is removed from a write-protected portion of the circular buffer. It would have been obvious one reason the “user does not desire to retain” captured images is when they have been offloaded, as disclosed by Yerazunis and discussed with respect to claim 8 in Section IV.A.7 above.



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

14. Claims 22 and 23

Claim 22 depends from claim 1, reciting “wherein the computer processor is further configured to index in the first memory the first designated portion.” Claim

PETITION FOR *INTER PARTES* REVIEW OF U.S. PATENT NO. 10,523,901

23 depends from claim 1, reciting “wherein the computer processor is further configured to index the first designated portion while the recording facility is still recording the sensor data into the first memory.” Yerazunis discloses these limitations. EX1062, ¶¶242. When Yerazunis’s video recording device is used with a gun, “recording of data continues [during and after a first firing event] since a subsequent firing event may occur.” EX1017, 17:45-50. This is achieved by indexing, as explained in Section IV.A.4.e. *Id.*, 2:19-23, 4:45-49, 7:7-61, 9:34-38, 17:45-61.

15. Claim 24

Claim 24 depends from claim 1, reciting “wherein the computer processor is configured to record the sensor data continuously, from before the first trigger signal, through a pre-designated time period, and after the pre-designated time period.” Yerazunis discloses this. EX1062, ¶243. Because Yerazunis discloses write-protecting video data “before and after” an event and records continuously, Yerazunis necessarily discloses recording sensor data “continuously, from before the first trigger signal, through a pre-designated time period, and after the pre-designated time period.” EX1017, 2:19-23, 17:9-20, 17:50-59.

16. Claim 25

Claim 25 depends from claim 1, reciting “wherein the first portion of the sensor data also corresponds to a pre-determined length of time after the trigger signal.”

PETITION FOR *INTER PARTES* REVIEW OF U.S. PATENT NO. 10,523,901

Yerazunis discloses this. Yerazunis discloses write-protecting a predetermined number of frames subsequent to the trigger event (EX1017, 2:53-64, 4:35-56, 8:26-61, 11:27-30, 12:14-17, 13:3-17, 16:66-17:38), thus disclosing this limitation as explained by Dr. Sarhan. EX1062, ¶244.

B. Ground 1b: Claims 15 And 16 Would Have Been Obvious Over Yerazunis In View Of Campbell, In Further View Of Lewellen

Claim 15 depends from claim 1, reciting “comprising a cell phone including the sensor interface, the first memory, and the computer processor.” Claim 16 depends from claim 1, reciting “a personal area network coupled with the computer processor and including at least two of the following: the sensor interface, the first memory, and the computer processor.” To the extent Yerazunis and Campbell do not explicitly disclose the limitations added in claims 15 or 16, these limitations 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):

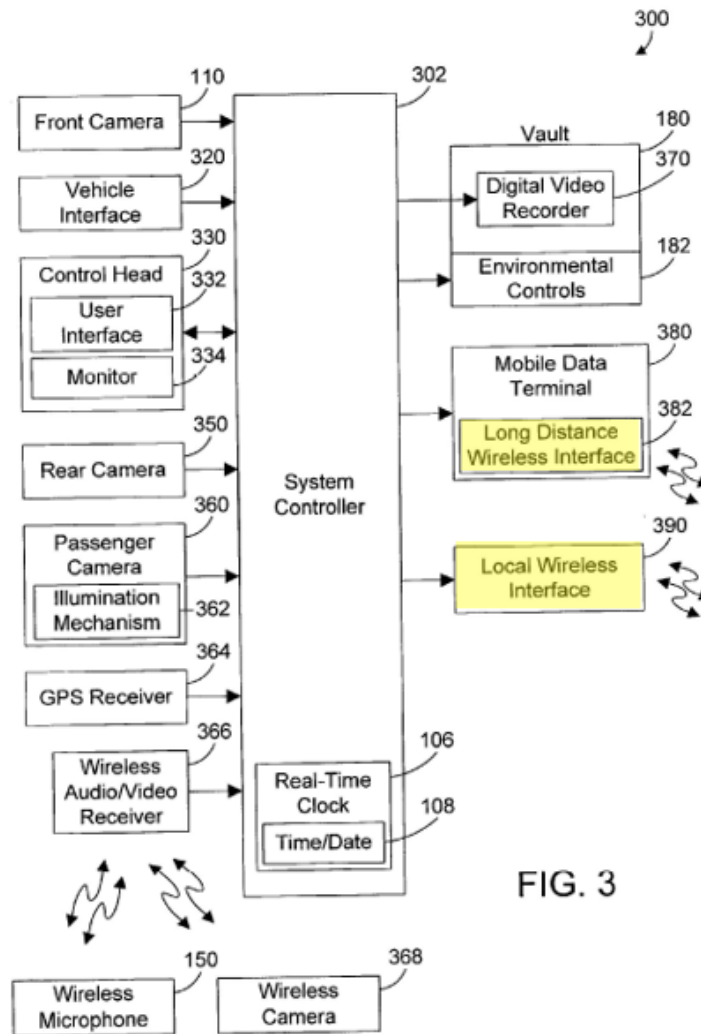


FIG. 3

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 devices nearby via short-range wireless communications. *Id.*, [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

PETITION FOR *INTER PARTES* REVIEW OF U.S. PATENT NO. 10,523,901

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]; EX1062, ¶¶151-154.

Lewellen discloses the limitations added in claims 15 and 16. EX1062, ¶¶245-248. For claim 15, Lewellen discloses a cell phone including a sensor interface that communicatively couples various sensors (*e.g.*, cameras) to other portions of the cell phone, including a memory and a computer processor. EX1019, [0041]-[0043]. Cell phones as of June 2007 included cameras, memory, and microprocessor components. EX1062, ¶247.

Lewellen discloses the “personal area network” of claim 16. *Id.*, ¶248. The ’901 patent provides minimal disclosure on the “personal area network,” stating it can be (i) implemented with a Bluetooth wireless interface or other suitable interface, and (ii) used to couple the disclosed recording system to other Bluetooth-compatible components. EX1048, 6:31-36, 7:22-28, 10:17-49. Lewellen likewise discloses the use of a Bluetooth wireless interface for coupling to Bluetooth-compatible devices. EX1019, [0022], [0031], [0042]-[0048].

A POSITA would have been motivated to apply Lewellen’s teachings of a personal area network to the Yerazunis/Campbell device. EX1062, ¶249. All three references disclose recording systems for law enforcement or security applications. EX1017, 1:32-43, 9:60-10:11; EX1019, [0002]-[0009], [0024]-[0026], [0042];

PETITION FOR *INTER PARTES* REVIEW OF U.S. PATENT NO. 10,523,901

EX1059, 6:16-20. In an embodiment, Yerazunis describes using a radio transmitter, “such as found in a police cruiser,” to “transmit RF signals to a base station for viewing.” EX1017, 3:1-4, 6:45-51, 9:60-10:3, 18:60-66. And Campbell describes a “transmitting means” that “may include a radio or other transmitter for transmitting the signal to a remote recording station.” EX1059, 1:57-59, 1:65-2:2, 5:1-55. A POSITA would recognize, however, that radio transmitters (like those disclosed in Yerazunis and Campbell) may not be available at all times. EX1062, ¶249. For example, when a police officer is using Yerazunis’s gun-camera out in the field, away from his police cruiser or a computer, the radio transmitter of the police cruiser is unavailable, and the police officer would not be able to offload critical video evidence for safe storage on another device. Accordingly, a POSITA would have been motivated to apply Lewellen’s teachings of a personal area network to the Yerazunis/Campbell system.

A POSITA would have also been motivated to implement the Yerazunis/Campbell system using a cell phone comprising a sensor interface, memory, and computer processor, as disclosed in Lewellen. EX1062, ¶250; EX1019, [0010], [0031], [0037], [0041]. Bluetooth-compatible mobile phones were ubiquitous as of June 2007 and carried by many police officers on a daily basis. EX1062, ¶¶249-250. A POSITA would have recognized that using these mobile phones as the video recording device would have been a simple and low-cost method for preserving

important video. *Id.* Lewellen expressly recognizes the significant advantages of Bluetooth technology, including that it is “very inexpensive.” EX1019, [0032], [0034], [0042].

A POSITA would have had a reasonable expectation of success in implementing the Yerzunis/Campbell device with Lewellen’s local wireless interfaces and related techniques described in Lewellen, as Dr. Sarhan explains. EX1062, ¶251.

C. Ground 1c: Claims 17 And 18 Would Have Been Obvious Over Yerazunis In View Of Campbell, In Further View Of Fiore

Claim 17 depends from claim 1, reciting “wherein the first memory is configured to record the first designated portion of the sensor data in a file.” Claim 18 depends from claim 1 and recites “wherein the first memory is configured to record the first designated portion of the sensor data in a single file.” The term “file” in these claims should be interpreted as “an identifiable collection of data.” EX1062, ¶¶116-124, 253. As Dr. Sarhan explains (*id.*, ¶¶116-124), this was the plain and ordinary meaning of “file” understood by a POSITA at the claimed priority of the ’901 patent, as confirmed by intrinsic (EX1011, 77; EX1013, 285-86; EX1048, 2:41-64, 6:22-31, 9:53-10:5, Figs. 3, 4H) and extrinsic evidence (EX1025, 518; EX1026, 467; EX1027, 283).

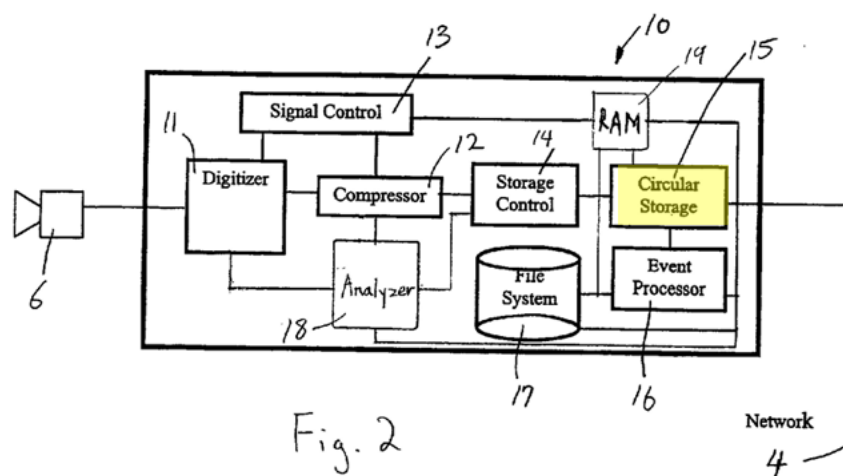
Yerazunis discloses the limitations added in claims 17 and 18. EX1062, ¶254. The write protecting performed by Yerazunis’s microprocessor 54 includes storing pointers that define areas of the circular buffer not to be overwritten, thus providing

PETITION FOR *INTER PARTES* REVIEW OF U.S. PATENT NO. 10,523,901

an electronic index to each write-protected segment—“a single file” in the buffer—
“to allow later retrieval.” EX1017, 17:45-61.

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 (EX1009). EX1062, ¶255. Fiore is 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 ’901 patent under at least pre-AIA 35 U.S.C. § 102(a), (b), (e). Fiore was neither cited nor applied during prosecution.

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]; EX1062, ¶¶141-150. Fiore’s circular storage buffer 15 stores data frames of an input signal from a monitoring device 6 (which may be a video camera, EX1009, [0040]):



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

Fiore discloses the limitations added in claims 17 and 18. EX1062, ¶256. Fiore’s circular storage buffer 15 is implemented as a single, memory-mapped file (*id.*, [0047], [0068]), and Fiore describes indexing collections of frame data for respective events as files within the memory-mapped file. EX1009, [0022]-[0023], [0051], [0059]-[0060].

A POSITA would have been motivated to apply Fiore’s teachings to the Yerazunis/Campbell device. EX1062, ¶¶257-258. Yerazunis and Fiore describe similar technologies and solve similar problems. EX1017, Abstract, 17:45-61; EX1009, Abstract, [0048]. Fiore describes numerous benefits of its approach to indexing within a memory-mapped file: it “combines the access speed of the RAM memory with large storage capacity of a disk file” (EX1009, [0065]), “mak[es] the

PETITION FOR *INTER PARTES* REVIEW OF U.S. PATENT NO. 10,523,901

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"))).

A POSITA implementing the Yerazunis/Campbell device would have been motivated to utilize Fiore's teachings regarding indexing within the memory-mapped file. EX1062, ¶¶257-258. A POSITA would have had a reasonable expectation of success, as Dr. Sarhan explains. *Id.*, ¶259.

D. Ground 2a: Claims 1, 7-14, And 19-25 Would Have Been Obvious Over Ely In View Of Campbell

1. Summary Of 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." EX1020, 5:21-22; EX1062, ¶¶136-140.

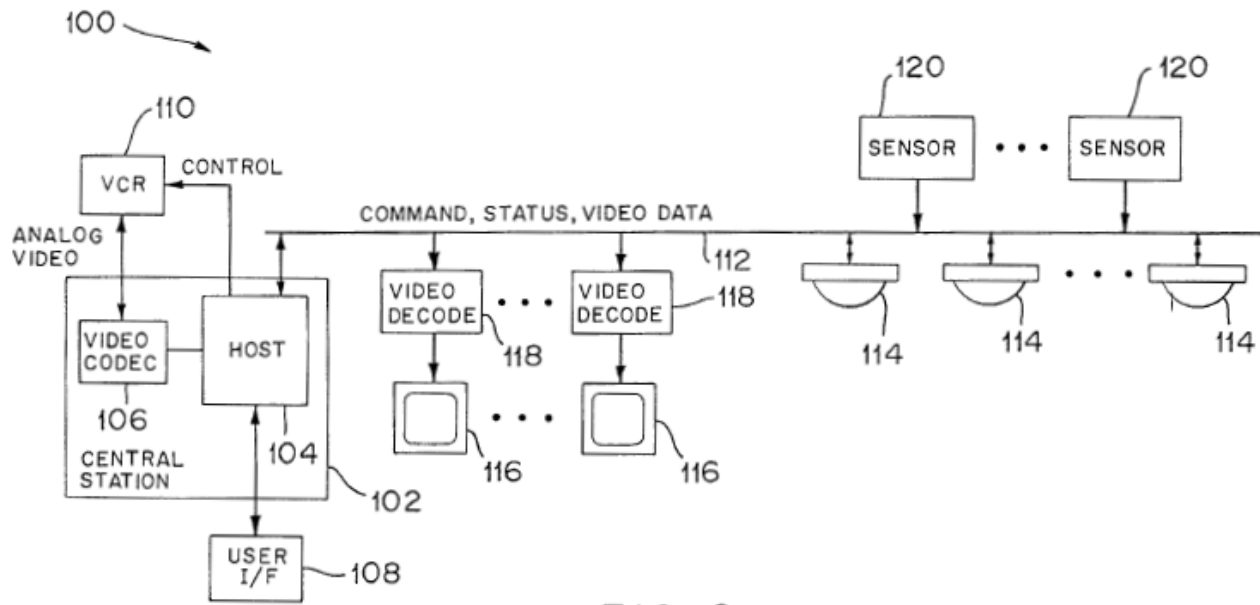


FIG. 2

EX1020, 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.*, 5:46-53):

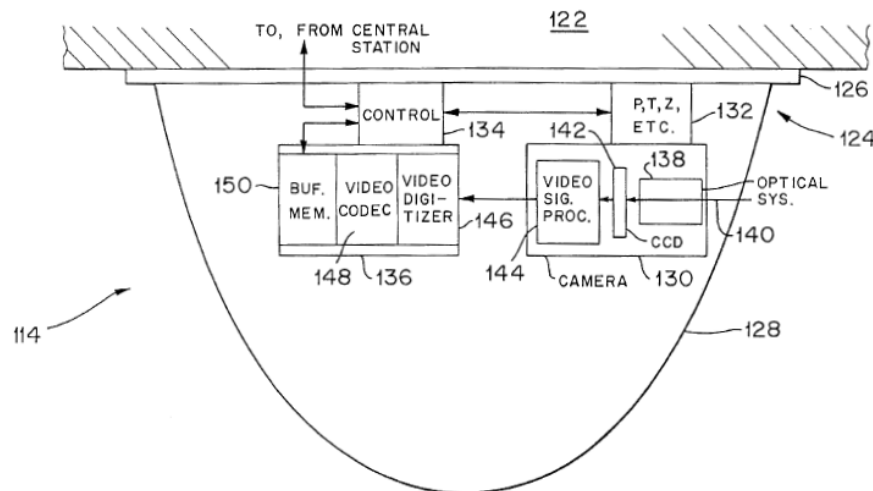


FIG. 3

Id., Fig. 3.

PETITION FOR *INTER PARTES* REVIEW OF U.S. PATENT NO. 10,523,901

Ely's network enables video data to be transmitted from memory device 150 to a remote memory comprising "conventional analog video tape recording" or "a digital video tape recorder (DVTR)." *Id.*, 9:51-58. Ely's disclosure is described further below and in Dr. Sarhan's declaration. EX1062, ¶¶136-140.

2. Motivation To Combine

A POSITA would have been motivated to combine Ely and Campbell for several reasons. EX1062, ¶¶261-263. Ely discloses a "video surveillance system" that "includes a central control station and a plurality of video cameras each mounted inside a dome housing unit." EX1020, Abstract. Like Ely, Campbell discloses a recording device useful "in the security and military fields." EX1059, 6:3-20. Because both disclose video recording systems, a POSITA would have been aware of and motivated to combine these references.

Campbell also describes why a POSITA would have been motivated to implement the Ely surveillance system in an eyeglasses-mounted apparatus: Among other reasons, Campbell's apparatus is "hands free" and "provides almost instantaneous recording of a scene as the act of looking at the scene points the camera and the view finder towards that portion of the scene to be captured." EX1059, Abstract. Additionally, Campbell teaches mounting to eyeglasses is useful "in the security and military fields where concealment is sometimes desirable." *Id.*, 6:3-20. A POSITA would have been motivated to implement the Ely surveillance system and/or

PETITION FOR *INTER PARTES* REVIEW OF U.S. PATENT NO. 10,523,901

components thereof (*e.g.*, camera unit 114) in an eyeglasses-mounted apparatus for several reasons, including to enable discreet, concealed, and hands-free recording, and to give more control to the wearer over what is recorded.

Ely describes why a POSITA would have been motivated to implement Ely's teachings of a circular buffer in Campbell's eyeglasses-mounted device: For example, Ely describes capturing multiple events in a circular buffer without overwriting event data, which enables capture of important pre- and post-event data without requiring significant storage. EX1020, 1:52-65. Ely describes how recording could be triggered automatically in response to an alarm signal, *e.g.*, "unauthorized opening of doors, windows and display cases and the like." *Id.*, 5:50-55. A POSITA would have had a reasonable expectation of success because Ely provides a detailed disclosure of its buffer-based approach, and applying those techniques to Campbell's eyeglasses-mounted apparatus would have been routine and well within a POSITA's skill. EX1062, ¶263.

3. Claim 1

a) Preamble²

To the extent limiting, Ely discloses the preamble of claim 1. EX1062, ¶264. Ely discloses a “video surveillance system” and 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, 10:10-15, 10:59-11:8. Ely therefore discloses a “recording system for saving a sequence of clips.”

Campbell likewise discloses this preamble for the reasons in Section IV.A.4.a.

b) Element 1

Ely discloses “a sensor that captures sensor data.” EX1062, ¶¶266-267. Ely’s video surveillance system includes a camera 130 with the “sensor that captures sensor data”:

² For brevity, language of claims 1-25 (included in Grounds 1a through 1c) is not reproduced for Grounds 2a through 2d.

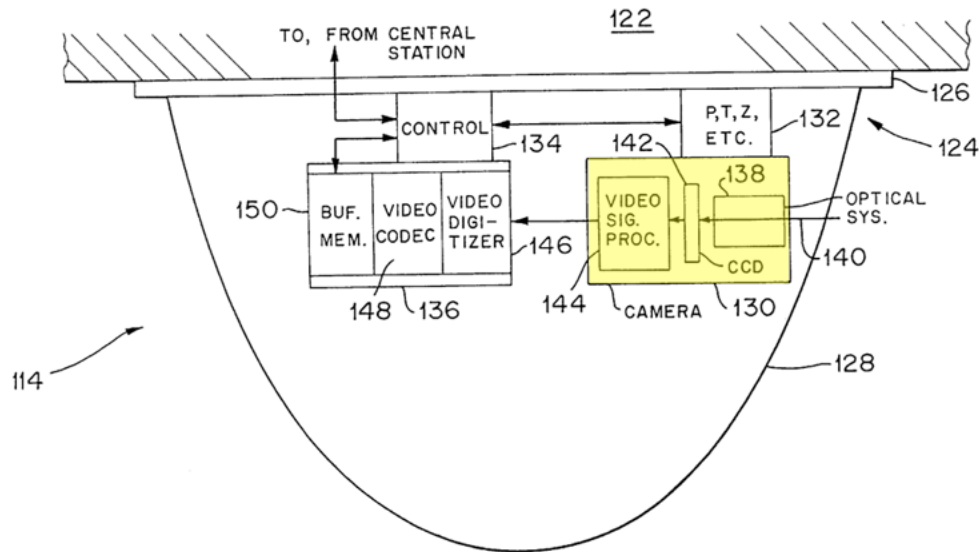


FIG. 3

EX1020, Fig. 3 (color added).

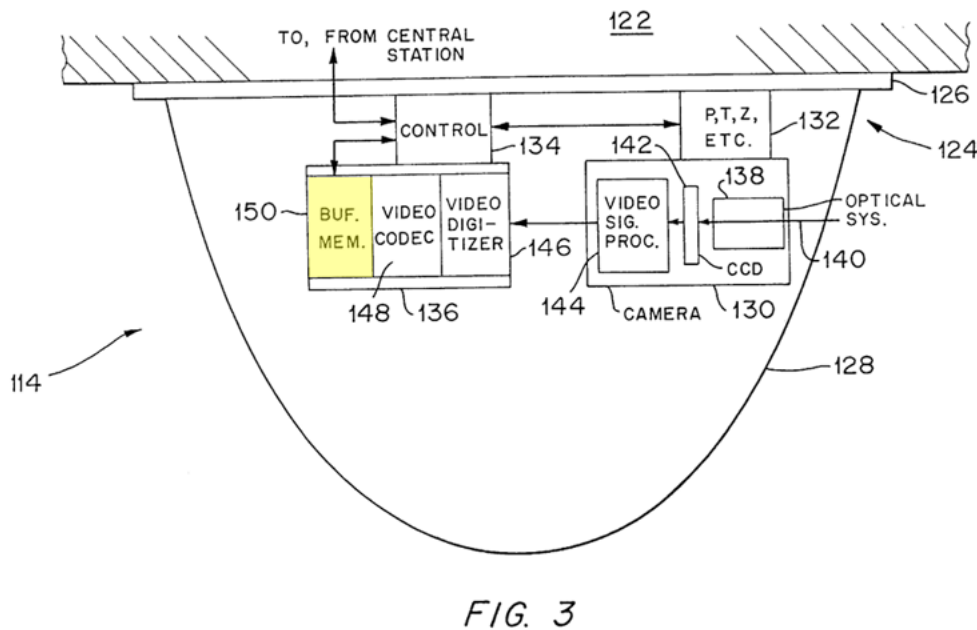
In the camera 130, an “image formed by the optical system 138 is converted into an electrical signal at CCD 142 and the resulting signal is subjected to conventional analog signal processing at video signal processing circuit 144.” *Id.*, 6:21-28. The camera 130 thus discloses the “sensor” because it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

A POSITA would have been motivated to implement Ely’s sensor that captures sensor data in a pair of eyeglasses, as taught by Campbell, for at least the reasons explained in Section IV.D.2. EX1062, ¶¶261-263. As explained in Section IV.A.4.b, Campbell discloses a pair of eyeglasses having a sensor that captures sensor data. Furthermore, the ’901 patent discloses that the “eyeglasses” as recited in claim 1 “are

used here euphemistically to represent any type of camera mount” including “security camera mounts” (EX1048 4:9-16) as in Ely.

c) Element 2

Ely discloses this element. EX1062, ¶¶269-270. Ely’s video surveillance system includes a memory board 136 having a memory device 150 that discloses the “memory” (EX1020, 6:17-21, 6:48-53, 6:61-65):



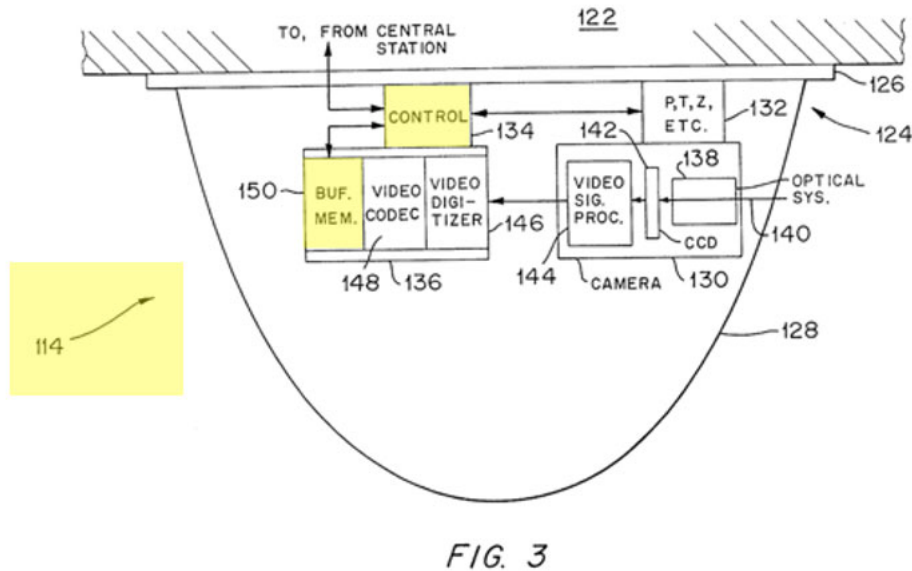
Id., Fig. 3 (color added).

As seen above, the camera 130 is coupled to the memory board 136, with the memory board 136 being configured “to receive an analog video signal output from the camera 130 and to digitize, compress and store the video signal” in the memory device 150. EX1020, 6:48-65.

Campbell likewise discloses this element for the reasons in Section IV.A.4.c.

d) Element 3

Patent Owner's Constructions: Ely discloses a computer processor that performs the function of element 3, under Patent Owner's non-MPF position. EX1056, 008-019. Specifically, Ely's camera unit 114 includes control circuit 134 ("computer processor") "for controlling the storage device to operate as a ring buffer in which digital data representative of a video signal currently formed by the video camera is written over oldest digital data stored in the storage device." EX1020, 4:1-7.



Id., Fig. 3 (color added).

Memory device 150 "functions as a buffer for the video signal generated by the camera 130, and is controlled by the control circuit 134." *Id.*, 6:48-65. More particularly, "the memory 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.

Control circuit 134 “may be a conventional microcontroller,” and is “programmed, according to practices of the present invention, to carry out memory control, as well as data storage and retrieval functions” (*id.*, 6:37-47), as Figure 4 illustrates. *Id.*, 5:25-26. One such function is to record sensor data in the memory device 150:

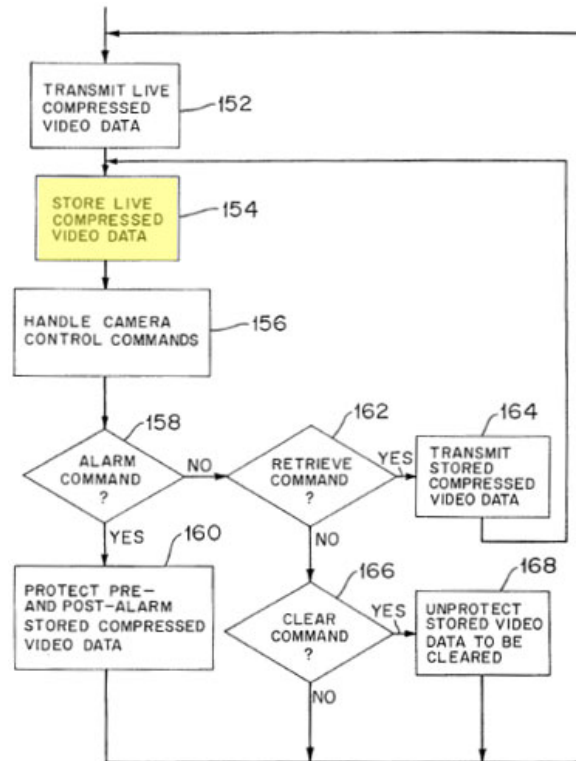


FIG. 4
CAMERA UNIT OPERATION

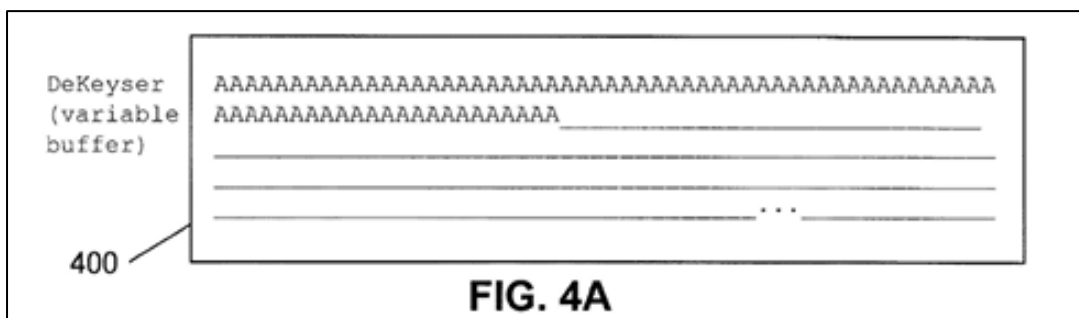
Id., Fig. 4 (color added); *see also id.*, 7:27-35. Ely thus discloses element 3 under Patent Owner’s non-MPF position. EX1062, ¶¶273-276.

PETITION FOR *INTER PARTES* REVIEW OF U.S. PATENT NO. 10,523,901

Ely also discloses element 3 under Patent Owner’s MPF position. EX1057, 008-014. As explained for Patent Owner’s non-MPF position, Ely’s control circuit 134 runs software to accomplish the function of element 3. *See also* EX1020, 4:1-8, 6:37-47, 7:12-8:12. Ely thus discloses element 3 under Patent Owner’s MPF position. EX1062, ¶277.

Petitioner’s Corresponding Structure: Ely discloses the corresponding structure identified by Petitioner. EX1062, ¶¶278-282; EX1057, 008-014.

Ely discloses a recorder with a memory that runs software to accomplish functions, consistent with the ’901 patent’s disclosure at 4:67-5:2. Specifically, Ely’s control circuit 134 runs software for performing instructions. EX1020, 4:1-8, 6:37-47, 7:12-8:12. Camera unit 114 also includes memory device 150, and control circuit 134 records sensor data from camera 130 in the ring buffer formed in the memory, consistent with the ’901 patent’s disclosure at 2:33-39, Fig. 3, 7:48-59, 7:60-65, and Figure 4A:



Ely’s control circuit 134 stores a first digital data stream generated by video digitizer 146 in a ring buffer formed in memory device 150. EX1020, 7:17-38.

PETITION FOR *INTER PARTES* REVIEW OF U.S. PATENT NO. 10,523,901

Additionally, in recording the sensor data in the ring buffer formed in the memory, Ely's control circuit 134 skips over write-protected matter, consistent with the '901 patent's disclosure at 2:33-39. EX1020, 7:34-38, 10:11-23. Ely's camera unit 114 records the sensor data "in digital [or analog] format," consistent with the '901 patent's disclosure at 5:38-50. *Id.*, 2:55-3:5, 4:1-8, 6:48-7:11. EX1062, ¶282.

e) Element 4

Patent Owner's Constructions: Ely's control circuit 134 is a "computer processor" that performs the function of element 4, under Patent Owner's non-MPF position. EX1056, 008-019. Ely's camera system responds to an "alarm command by protecting buffered video data which corresponds to a predetermined pre- and post-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.

"When 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." *Id.*, 7:48-55. The alarm data "correspond[s] to a time interval beginning at a predetermined time *prior to* receipt of

PETITION FOR *INTER PARTES* REVIEW OF U.S. PATENT NO. 10,523,901

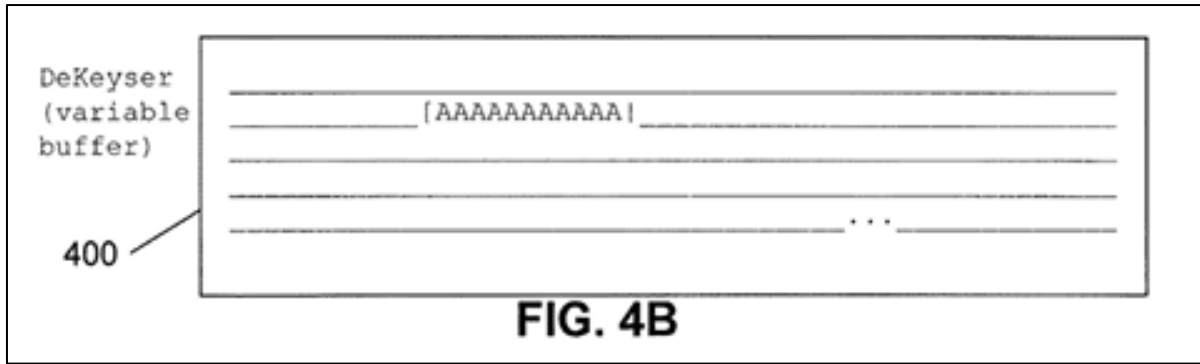
the alarm command, and continuing for a predetermined time after receipt of the alarm command.” *Id.* (emphasis added). Thus, Ely’s control circuit 134 performs the claimed function of element 4. EX1062, ¶¶283-285.

Ely discloses its camera unit’s buffer memory may contain multiple blocks of event data, such that the first event occupies less than the full buffer. EX1020, 10:56-11:8. Ely thus discloses element 4 under Patent Owner’s non-MPF position. EX1062, ¶286.

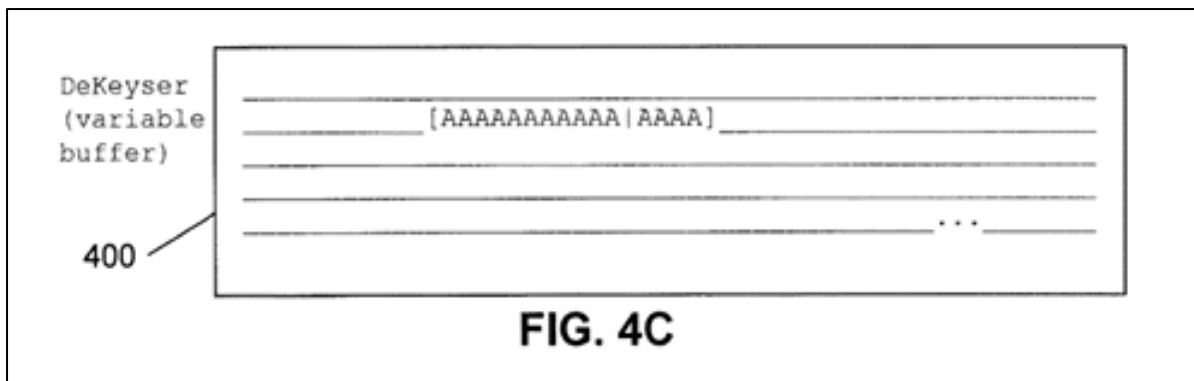
Ely also discloses element 4 under Patent Owner’s MPF position. EX1057, 008-014. As explained for Patent Owner’s non-MPF position, Ely’s control circuit 134 runs software to accomplish the function of element 4. EX1062, ¶287.

Petitioner’s Corresponding Structure: Ely discloses the corresponding structure identified by Petitioner. EX1062, ¶¶288-293; EX1057, 008-014.

As explained for Petitioner’s corresponding structure for element 3 of claim 1, Ely discloses a recorder (camera unit 114) with memory and control circuit 134 that runs software to accomplish functions, consistent with the ’901 patent’s disclosure at 2:33-39, 4:67-5:2, 5:38-50, 7:48-59, and Fig. 3. EX1020, 4:1-8, 6:37-47, 7:12-8:12. The operation of Ely’s control circuit 134 is also consistent with the ’901 patent’s disclosure at 2:46-64, Fig. 4B (described at 8:9-37), and Fig. 4C (described at 8:52-67):



Ely's control circuit 134 protects a recent period of the first data stream recorded in the ring buffer based on a first alarm command (a start signal) generated by sensor 120. EX1020, 4:7-8, 7:48-55, 10:11-23. The protected portion of the first data stream in the ring buffer is associated with a first alarm event (*id.*, 4:7-8, 7:48-55, 10:11-23), and includes a period of the first data stream preceding the first alarm command. *Id.*, 7:48-55, 10:11-23.



Ely's control circuit 134 stops protection of the first data stream in the ring buffer based on a stop signal. EX1020, 7:48-55, 10:11-23. Specifically, Ely's system responds to a signal from a user to save a recording, and this signal includes a "stop signal." *Id.*; EX1062, ¶291. 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

PETITION FOR *INTER PARTES* REVIEW OF U.S. PATENT NO. 10,523,901

(ii) stop recording, *i.e.*, when a predetermined amount of time has passed after receipt of the alarm command. EX1062, ¶291.

Additionally, Ely write protects sensor data in the circular buffer by indexing it in an electronic index, consistent with the '901 patent's disclosure at 9:62-10:5. "After 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. A POSITA would have understood 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. EX1062, ¶292. Thus, a POSITA would have understood Ely as describing—or at minimum, rendering obvious—indexing alarm data in a table/index corresponding to the buffer. *Id.*

A POSITA would have recognized indexing in an electronic index 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 Ely's alarm data must be preserved in some way, and indexing data to be preserved in an electronic index was a well-known approach for doing so. EX1062, ¶293. 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.

f) Element 5

Patent Owner's Constructions: Ely's control circuit 134 ("computer processor") performs the function of element 5, under Patent Owner's non-MPF position. EX1056, 008-019. The protection of alarm data performed by control circuit 134 occurs while "continuing to record the sensor data in the first memory." As Figure 4 illustrates, protection of alarm data (at block 160) loops back to the beginning of a process including, at block 154, "stor[ing] live compressed video data":

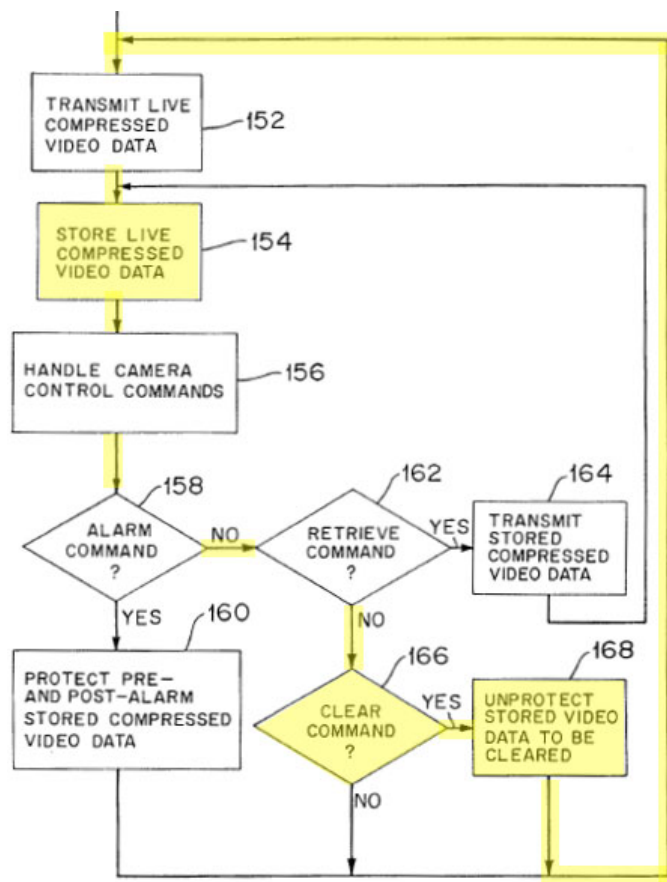


FIG. 4
CAMERA UNIT OPERATION

PETITION FOR *INTER PARTES* REVIEW OF U.S. PATENT NO. 10,523,901

EX1020, Fig. 4 (color added); *see also id.*, 7:45-48, 8:3-6.

Because the recording of live video data is “ongoing” (continuous), the protection of alarm data necessarily occurs while “continuing to record the sensor data in the first memory.” *See id.*, Fig. 4, 7:45-48, 7:56-8:6. Ely also discloses write-protecting multiple events (as multiple “blocks”) in the ring buffer. *Id.*, 10:59-11:2. A POSITA would have understood that to preserve video for multiple events in the ring buffer, Ely must “contiguously” continue to record the sensor data in memory while designating the first portion for saving. EX1062, ¶¶295-297. Ely thus discloses element 5 under Patent Owner’s non-MPF position.

Ely also discloses element 5 under Patent Owner’s MPF position. EX1057, 008-014. As explained for Patent Owner’s non-MPF position, Ely’s control circuit 134 runs software to accomplish the function of element 5. EX1062, ¶298.

Petitioner’s Corresponding Structure: Ely discloses the corresponding structure identified by Petitioner. EX1062, ¶¶299-301; EX1057, 008-014.

As explained for Petitioner’s corresponding structure for elements 3 and 4 of claim 1, Ely discloses a recorder (camera unit 114) with memory and control circuit 134 that runs software to accomplish functions, consistent with the ’901 patent’s disclosure at 2:33-39, 2:46-64, 4:67-5:2, 5:38-50, 7:48-59, Fig. 3, Fig. 4B (described at 8:9-37), Fig. 4C (described at 8:54-67), and 9:62-10:5. EX1020, 4:1-8, 6:37-47,

PETITION FOR *INTER PARTES* REVIEW OF U.S. PATENT NO. 10,523,901

for protecting a second portion of the sensor data in the ring buffer associated with a second alarm event based on a second alarm command generated by sensor 120. *Id.*, 4:7-8, 7:48-55, 10:11-23, 10:59-11:2. Like the first portion designated for saving, the second portion designated for saving includes a period of the sensor data preceding the second trigger signal. *Id.*, 7:48-55. Thus, Ely's control circuit 134 performs the claimed function of element 6.

Ely discloses its camera unit's buffer memory may contain multiple blocks of event data, such that first and second events each occupy less than the full buffer. EX1020, 10:56-11:8. Ely thus discloses element 6 under Patent Owner's non-MPF position. EX1062, ¶¶302-304.

Ely also discloses element 6 under Patent Owner's MPF position. EX1057, 008-014. As explained for Patent Owner's non-MPF position, Ely's control circuit 134 runs software to accomplish the function of element 6. *See also* EX1020, 4:1-8, 6:37-47, 7:12-8:12. Ely thus discloses element 6 under Patent Owner's MPF position. EX1062, ¶305.

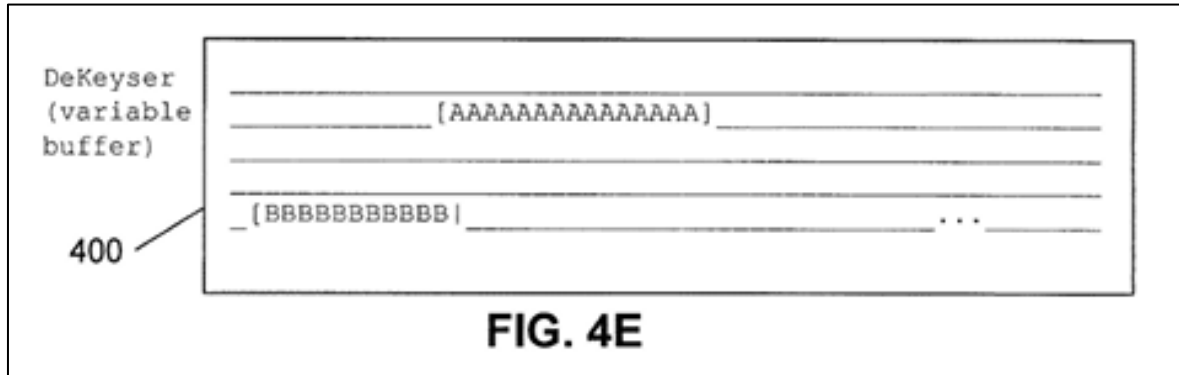
Petitioner's Corresponding Structure: Ely discloses the corresponding structure identified by Petitioner. EX1062, ¶¶306-308; EX1057, 008-014.

As explained for Petitioner's corresponding structure for elements 3 and 4 of claim 1, Ely discloses a recorder (camera unit 114) with memory and control circuit 134 that runs software to accomplish functions, consistent with the '901

PETITION FOR *INTER PARTES* REVIEW OF U.S. PATENT NO. 10,523,901

patent's disclosure at 2:33-39, 2:46-64, 4:67-5:2, 5:38-50, 7:48-59, 9:62-10:5, and Fig. 3. EX1020, 4:1-8, 6:37-47, 7:12-8:12; EX1062, ¶307.

The operation of Ely's control circuit 134 is also consistent with the '901 patent's disclosure at Fig. 4E (described at 9:48-50):



Ely's control circuit 134 is configured to protect a portion of the second data stream in the ring buffer associated with a second alarm event based on a second alarm command (start signal) generated by sensor 120. EX1020, 4:7-8, 7:48-55, 10:11-23, 10:59-11:2. Like the protected portion for the first data stream, the protected portion of the second data stream includes a period of the second data stream preceding the second alarm command. *Id.* As with the first data stream, the control circuit 134 stops protection of the second data stream in the ring buffer based on a stop signal. EX1062, ¶¶307-308.

h) Element 7

Patent Owner's Constructions: Ely's control circuit 134 performs the function of element 7 under Patent Owner's non-MPF position. EX1056, 008-019. Ely's control circuit 134 controls memory addressing and writing of data into the memory so that

PETITION FOR *INTER PARTES* REVIEW OF U.S. PATENT NO. 10,523,901

memory 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.” EX1020, 7:28-34. Ely’s control circuit 134 records into the ring buffer on an “ongoing,” continuous basis and thus automatically overwrites sensor data recorded in the memory not designated for saving. *Id.*, Fig. 4, 7:45-48, 7:56-8:6, 10:11-23. Ely thus discloses element 7 under Patent Owner’s non-MPF position. EX1062, ¶¶309-310.

Ely also discloses element 7 under Patent Owner’s MPF position. *Id.*, ¶311. EX1057, 008-014. As explained for Patent Owner’s non-MPF position, Ely’s control circuit 134 runs software to accomplish the function of element 7. Ely thus discloses element 7 under Patent Owner’s MPF position.

Petitioner’s Corresponding Structure: Ely discloses the corresponding structure identified by Petitioner. EX1062, ¶312; EX1057, 008-014. Petitioner’s identified structure for element 7 is the same as that identified by Petitioner for element 3 of claim 1, and Ely thus discloses Petitioner’s corresponding structure for element 7 for the reasons in Section IV.D.3.d above.

4. Claim 7

Ely discloses the limitations added in claim 7. EX1062, ¶313. Ely discloses protecting from overwriting video data “corresponding 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.” EX1020, 7:45-55 (emphasis added).

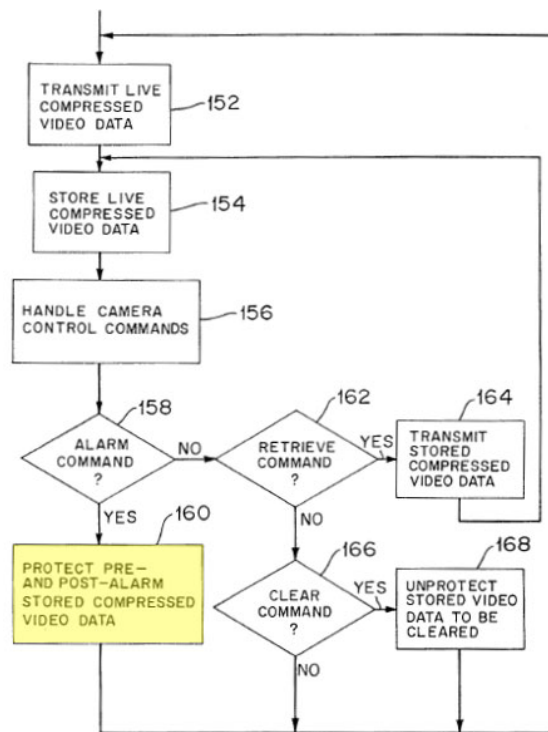


FIG. 4
CAMERA UNIT OPERATION

Id., Fig. 4 (color added), 10:1-23. The pre- and post-event data comprise an indexed, identifiable collection of data in the circular buffer. EX1062, ¶313.

5. Claim 8

Campbell discloses the limitations added in claim 8 as discussed in Section IV.A.7. Additionally, a POSITA would have been motivated to use Campbell’s wireless transmitter to transmit a first portion designated for write protection to a remote memory in the Ely/Campbell system. EX1062, ¶314. Doing so would have enabled the alarm data to be preserved in in the remote memory, thus

PETITION FOR *INTER PARTES* REVIEW OF U.S. PATENT NO. 10,523,901

freeing up space in the memory for other important alarm data without needing to establish a physical (wired) connection. *Id.*

6. Claim 9

Ely discloses the limitations added in claim 9. EX1062, ¶315. As discussed for claim 1, Ely discloses a camera 130 that records video data. EX1020, 6:21-28.

7. Claim 10

Ely discloses the limitations added in claim 10. EX1062, ¶316. Ely's memory device 150 "serves as a ring buffer" (EX1020, Abstract, 6:61-65, 7:28-34), which a POSITA would have understood to mean a "circular buffer" like disclosed in the '901 patent. EX1062, ¶316.

8. Claims 11 and 12

The limitations added in claims 11 and 12 would have been obvious in view of Ely. EX1062, ¶317. Ely's video surveillance system includes processing circuitry that compresses video data stored in the ring buffer. EX1020, 2:65-3:5, 3:56-67, 4:49-56, 6:48-65. It would have been obvious to a POSITA to select either time compression or frame compression in the Ely/Campbell video recording system. EX1062, ¶317. Both techniques were well-known circa June 2007, and selecting either for the Ely/Campbell system would have been obvious to a POSITA. *Id.*

9. Claims 13 and 14

Ely discloses the limitations added in claims 13 and 14. EX1062, ¶¶318-320.

Claim 13: Ely's camera unit 114 includes (i) the sensor interface between the camera 130 and memory board 136, (ii) memory device 150, and (iii) control circuit 134:

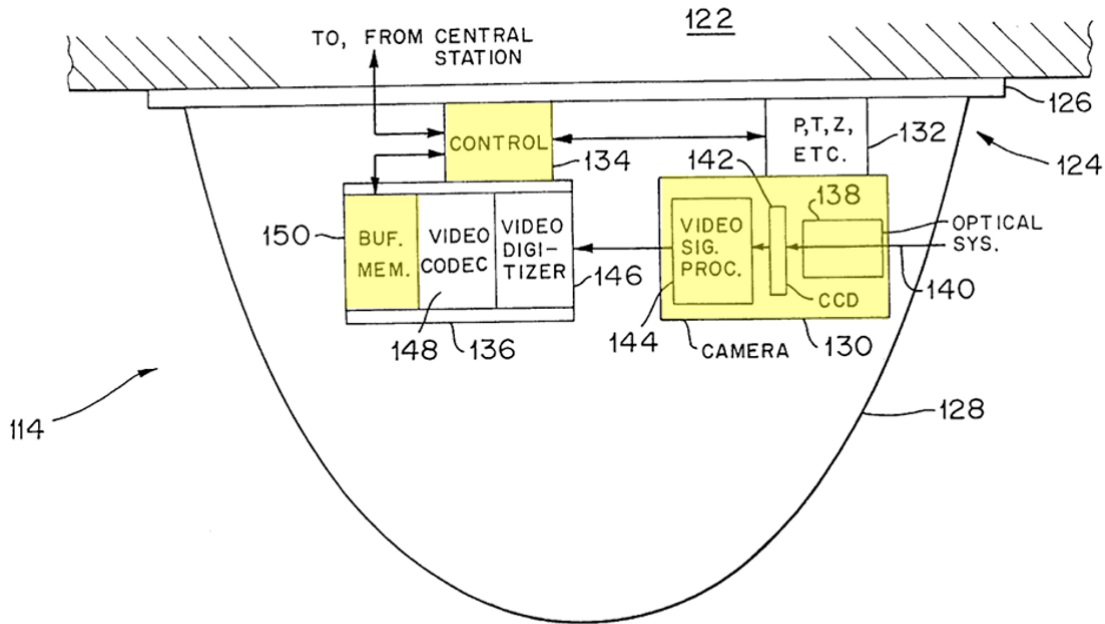


FIG. 3

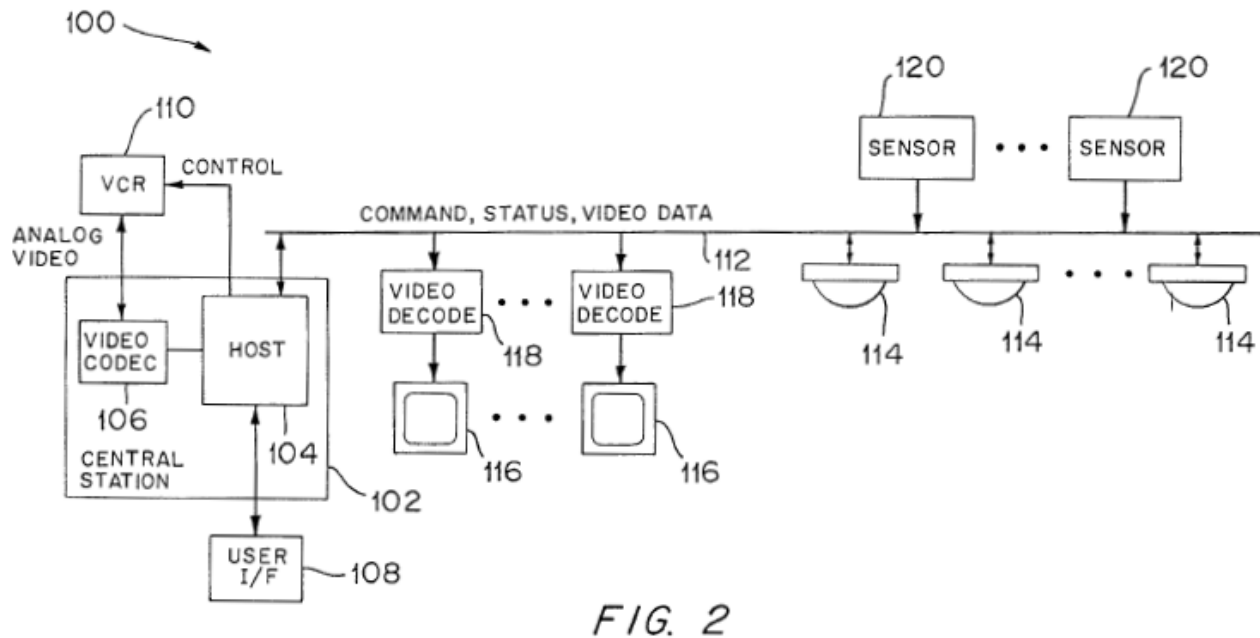
EX1020, Fig. 3 (color added); *see also id.*, 6:4-6. A POSITA would have understood camera unit 114 as being a “camera.” EX1062, ¶319.

Claim 14: Ely’s “video surveillance system[]” includes “sensors for advising the system of alarm conditions.” EX1020, 1:5-8. These alarm conditions include “unauthorized opening of doors, windows and display cases and the like.” *Id.*, 5:50-55. Thus, Ely discloses the “security camera.” EX1062, ¶320.

10. Claim 19

Ely discloses the limitations added in claim 19. EX1062, ¶321. Ely’s video surveillance system comprises one or more sensor devices 120, which “are preferably

of conventional types that detect, for example, unauthorized opening of doors, windows and display cases and the like and generate alarm signals indicative of these occurrences.” EX1020, 5:50-53. “The sensors 120 may also include conventional motion and/or heat sensing devices.” *Id.*, 5:54-55.



EX1020, Fig. 2.

11. Claims 20 and 21

Ely discloses the limitations added in claims 20 and 21. EX1062, ¶¶322-324. Ely discloses the limitations of claim 20 for the reasons in Section IV.D.3.e. For claim 21, Ely’s control circuit 134 is conditioned to receive commands relating to the previously stored compressed video data including “clear” commands, “in response to which the control circuit removes a previously protected block of stored video data from protection, thereby permitting ‘live’ video data to be written over the now-unprotected

stored video data.” EX1020, 8:7-12. The clear command may be sent after write-protected alarm data is retrieved. *Id.*, 7:56-59, 10:24-43, 10:51-55.

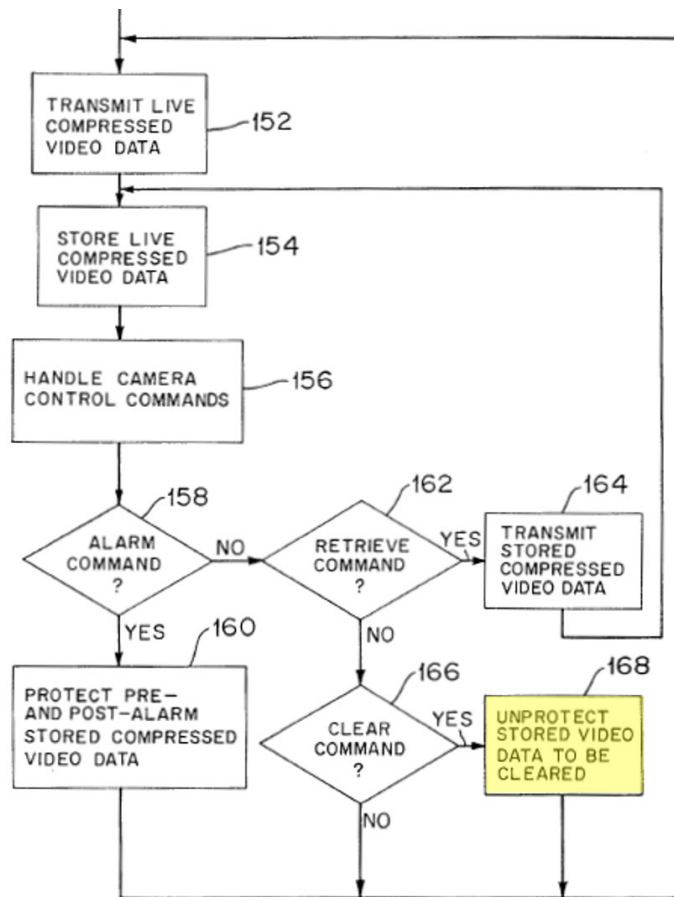


FIG. 4
CAMERA UNIT OPERATION

Id., Fig. 4 (color added); see also *id.*, Fig. 5B (block 190).

12. Claims 22 and 23

Ely discloses or renders obvious the limitations added in claims 22 and 23. EX1062, ¶¶325-326. Ely’s control circuit 134 is conditioned “to receive commands calling for reading-out and transmission to the central station of previously-stored compressed video data.” EX1020, 7:56-59. “The transmission of the compressed

PETITION FOR *INTER PARTES* REVIEW OF U.S. PATENT NO. 10,523,901

video data that was read out from the memory 150 may be in place of, or virtually in parallel with, continued transmission of ‘live’ compressed video data.” *Id.*, 7:66-8:2. Preferably, transmission “does not interrupt ongoing storage of ‘live’ video data.” *Id.*, 8:3-6. A POSITA would have understood the selective retrieval and transmission of alarm data without interrupting ongoing storage of “live” video data necessitates that the control circuit 134 be configured to index the alarm data (“first designated portion”) while continuing to record sensor data into the first memory. EX1062, ¶326.

13. Claim 24

Ely discloses the limitations added in claim 24. EX1062, ¶327. Ely discloses protecting from overwriting video data previously stored in the memory “corresponding 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.” EX1020, 7:45-55 (emphasis added); *see also id.*, 10:1-23, Fig. 4 (block 160).

14. Claim 25

Ely discloses the limitations added in claim 25 for reasons explained above with respect to claim 7. EX1062, ¶328.

E. Ground 2b: Claims 2-6 Would Have Been Obvious Over Ely In View Of Campbell, In Further View Of Yerazunis

To the extent Ely and Campbell do not disclose the limitations added in claims 2, 3, 5, and 6, these limitations would have been obvious in view of Yerazunis.

PETITION FOR *INTER PARTES* REVIEW OF U.S. PATENT NO. 10,523,901

EX1062, ¶¶329-331. As explained in Section IV.A.5, Yerazunis discloses the limitations requiring copying the first designated portion to a second memory. A POSITA would have been motivated to apply Yerazunis's teachings of copying protected data to a second memory to the Ely/Campbell system, *e.g.*, to "provide fully non-volatile data storage without battery drainage" (EX1017, 18:4-28) and to provide redundancy. EX1062, ¶310.

Ely discloses the limitations added in claim 4, which depends from claim 2. *Id.*, ¶331. Ely's video surveillance system includes "processing circuitry disposed within the housing for applying a data compression algorithm to the digital video signal to form compressed video data, the compressed video data being stored in the storage device," said storage device comprising a ring buffer. EX1020, 2:65-3:5, 3:56-67, 4:49-56, 6:48-65 (disclosing use of H.261 compression standard).

F. Ground 2c: Claims 15 And 16 Would Have Been Obvious Over Ely In View Of Campbell, In Further View Of Lewellen

To the extent Ely and Campbell do not disclose the limitations added in claims 15 and 16, these limitations would have been obvious in view of Lewellen. Lewellen discloses these limitations as discussed in Section IV.B. A POSITA would have been motivated to apply Lewellen's teachings to the Ely/Campbell system. EX1062, ¶¶332-336. All three disclose recording systems for security/surveillance applications. EX1019, [0002]-[0009], [0024]-[0026], [0042]; EX1020, Abstract, 5:34-59; EX1059, 6:16-20. A POSITA would have recognized the advantages of

PETITION FOR *INTER PARTES* REVIEW OF U.S. PATENT NO. 10,523,901

modifying the Ely/Campbell system to implement Lewellen’s teachings regarding personal area networks for transmitting alarm data preserved with the file-based circular buffer approach of the Ely/Campbell system. Ely discloses it is an “object of the invention to provide a video surveillance system which requires less cabling than conventional systems.” EX1020, 2:52-54. Lewellen teaches the “benefit of providing the local wireless interface 390 is that digital information recorded by the digital video recorder 370 may be automatically transmitted and received to and from compatible devices.” EX1019, [0043]. A POSITA would have been motivated to implement the Ely/Campbell system with Lewellen’s wireless interface to further reduce the amount of cabling required, by enabling wireless transmission of signals and data. EX1062, ¶334.

A POSITA would have also been motivated to implement the Ely/Campbell system or a component thereof (*e.g.*, camera unit 114) using a cell phone comprising a sensor interface, memory, and computer processor. EX1062, ¶335; EX1019, [0010], [0031], [0037], [0041]. Bluetooth-compatible mobile phones were ubiquitous as of June 2007 and carried by many security professionals on a daily basis. EX1062, ¶335. A POSITA would have recognized that using these mobile phones as the video recording device would have been a simple and low-cost means to enable security guards to record from their person on, *e.g.*, a casino floor, thus providing more portability and additional angles/viewpoints compared to fixed cameras. *Id.* Lewellen

PETITION FOR *INTER PARTES* REVIEW OF U.S. PATENT NO. 10,523,901

expressly recognizes the significant advantages of Bluetooth technology, including that it is “very inexpensive.” EX1019, [0032], [0034], [0042].

A POSITA would have had a reasonable expectation of success in implementing the Ely/Campbell system with Lewellen’s wireless interface and related techniques described in Lewellen, as explained by Dr. Sarhan. EX1062, ¶336.

G. Ground 2d: Claims 17 And 18 Would Have Been Obvious Over Ely In View Of Campbell, In Further View Of Fiore

Ely discloses the limitations added in claims 17 and 18. EX1062, ¶¶337-339. As explained in Section IV.D.3.e, a POSITA would have understood the selective retrieval of alarm data from Ely’s ring buffer necessitates an ability to locate the alarm data as a single file within the buffer, such that Ely necessarily discloses the limitations of claims 17 and 18.

To the extent a POSITA wanted further guidance as to particular methods for implementing Ely’s ring buffer and recording sensor data into the buffer as a file, a POSITA would have been motivated to turn to Fiore. Fiore discloses the limitations added in claims 17 and 18 (Section IV.C), and a POSITA would have been motivated to apply Fiore’s teachings to the Ely/Campbell system. EX1062, ¶340. Ely and Fiore describe similar technologies and solve similar problems. EX1020, 6:51-53, 6:61-65, 7:28-38, 7:48-55; EX1009, Abstract, [0048]. And Fiore describes numerous benefits of its file-based indexing approach. *See, e.g.*, EX1009, [0065], [0067]-[0068], [0072]; Section IV.C. A POSITA implementing the Ely/Campbell system would have been

PETITION FOR *INTER PARTES* REVIEW OF U.S. PATENT NO. 10,523,901

motivated to utilize Fiore's teachings regarding indexing within the memory-mapped file. EX1062, ¶340. 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 the Ely/Campbell system would have been routine and well within a POSITA's skill. *Id.*

V. CONCLUSION

Petitioner respectfully requests IPR of claims 1-25 of the '901 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 '901 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. 10,523,901

Lead Counsel	Back-up Counsel
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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. 10,523,901

Dated: August 15, 2024

Respectfully submitted,

/ Joshua R. Nightingale /

Joshua R. Nightingale

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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. 10,523,901, including all Exhibits, was served on August 15, 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. 10,523,901, 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 15, 2024

/ Joshua R. Nightingale /

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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 13,986 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 15, 2024

By: / 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	RESERVED
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	RESERVED
1036	RESERVED
1037	RESERVED
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	RESERVED

1044	RESERVED
1045	RESERVED
1046	U.S. Patent No. 6,563,532 (Strub)
1047	RESERVED
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	RESERVED
1054	RESERVED
1055	RESERVED
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

1058	File History of '901 Patent
1059	U.S. Patent No. 4,516,157 (Campbell)
1060	U.S. Patent No. 10,965,910
1061	File History of '910 Patent
1062	Declaration of Nabil J. Sarhan Regarding the '901 and '910 Patents
1063	Appendix to Declaration of Nabil J. Sarhan Regarding the '901 and '910 Patents
1064	U.S. Patent No. 6,351,798 (Aono)
1065	Chart Comparing Independent Claims 1 and 20 of the '910 Patent