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Srinivasan et al.

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(54) **METHOD AND APPARATUS FOR
MULTIPLEXING SEPARATELY-AUTHORED
METADATA FOR INSERTION INTO A VIDEO
DATA STREAM**

(76) Inventors: **Anand Srinivasan**, 12718 Torrey Bluff
Dr. #155; **Mehul Y Shah**; **Indranil
Chakraborty**, both of 12633 El
Camino Real #3408; **Mohan Mardikar**,
12640 Torrey Bluff Dr. #7; **P Venkat
Rangan**, 13011 Callcott Way; **Kamal
Bhadada**, 12782 Torrey Bluff Dr. #103,
all of San Diego, CA (US) 92130

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patent is extended or adjusted under 35
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Jan. 4, 1999, which is a continuation-in-part of application
No. 09/218,738, filed on Dec. 22, 1998, which is a continu-
ation-in-part of application No. 09/168,315, filed on Oct. 7,
1998, which is a continuation-in-part of application No.
09/160,365, filed on Sep. 24, 1998, which is a continuation-
in-part of application No. 09/154,532, filed on Sep. 16,
1998.

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H04N 7/173; G06F 3/00; G06F 13/00

(52) U.S. Cl. **725/32**; 725/119; 345/328

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345/328; 348/12, 13, 10, 6, 7; 455/6.1,
6.2, 6.3, 3.1, 3.2; 370/503-519; 725/119,
143, 32, 36; G06F 15/167; H04N 1/00,
1/17, 7/025, 7/11

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Primary Examiner—Andrew Faile

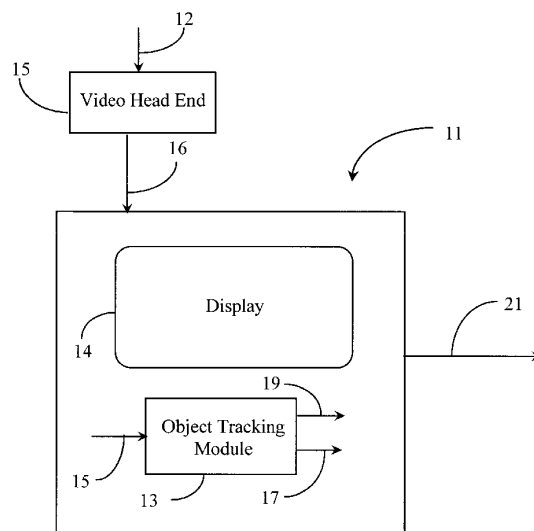
Assistant Examiner—Vivek Srivastava

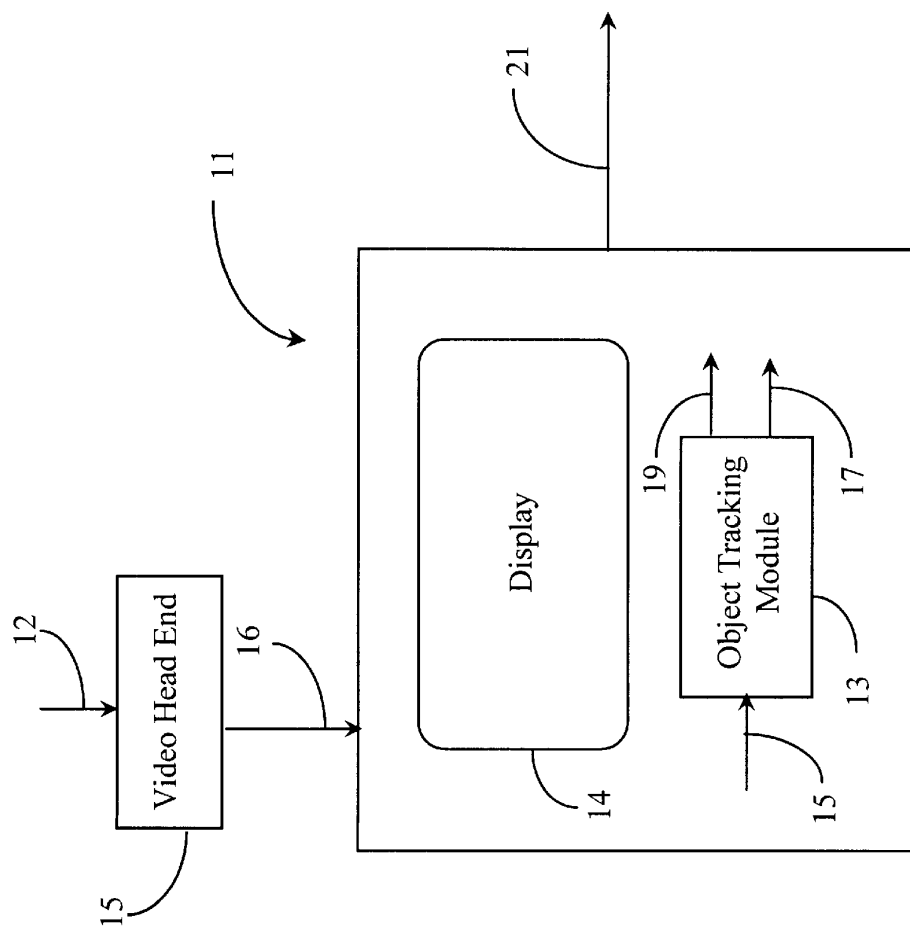
(74) *Attorney, Agent, or Firm*—Donald R. Boys; Central
Coast Patent Agency, Inc.

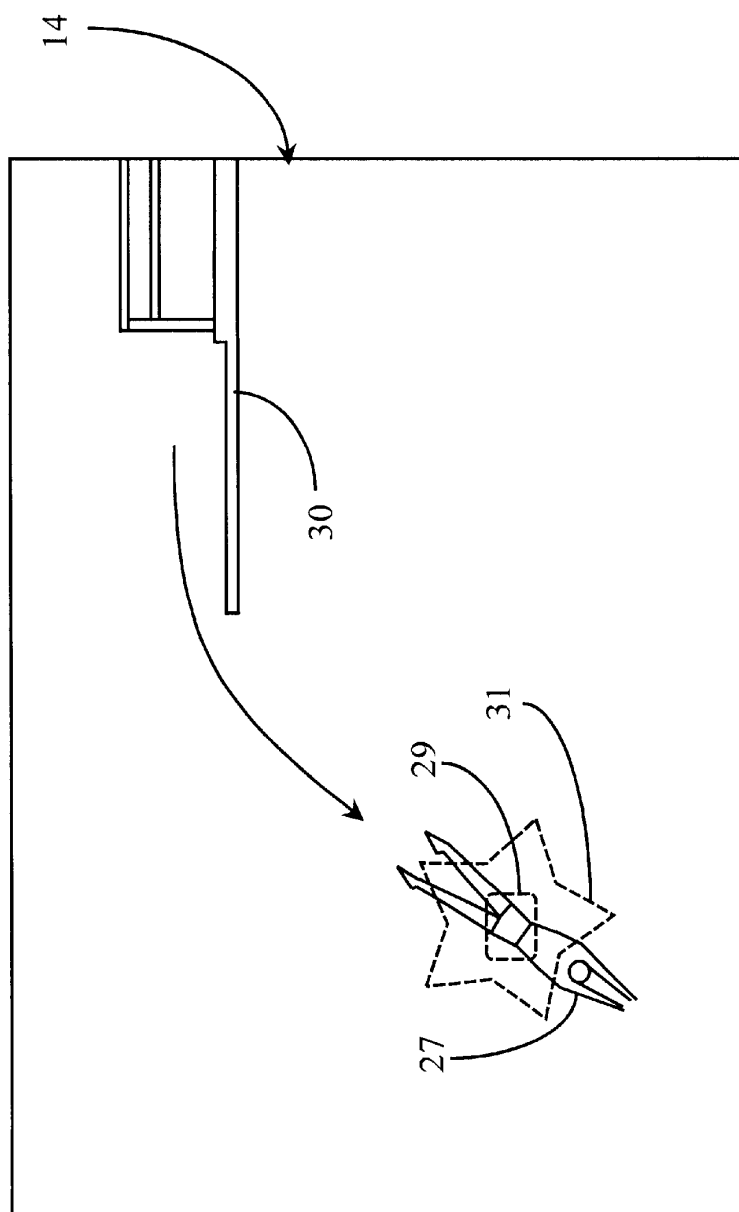
(57) ABSTRACT

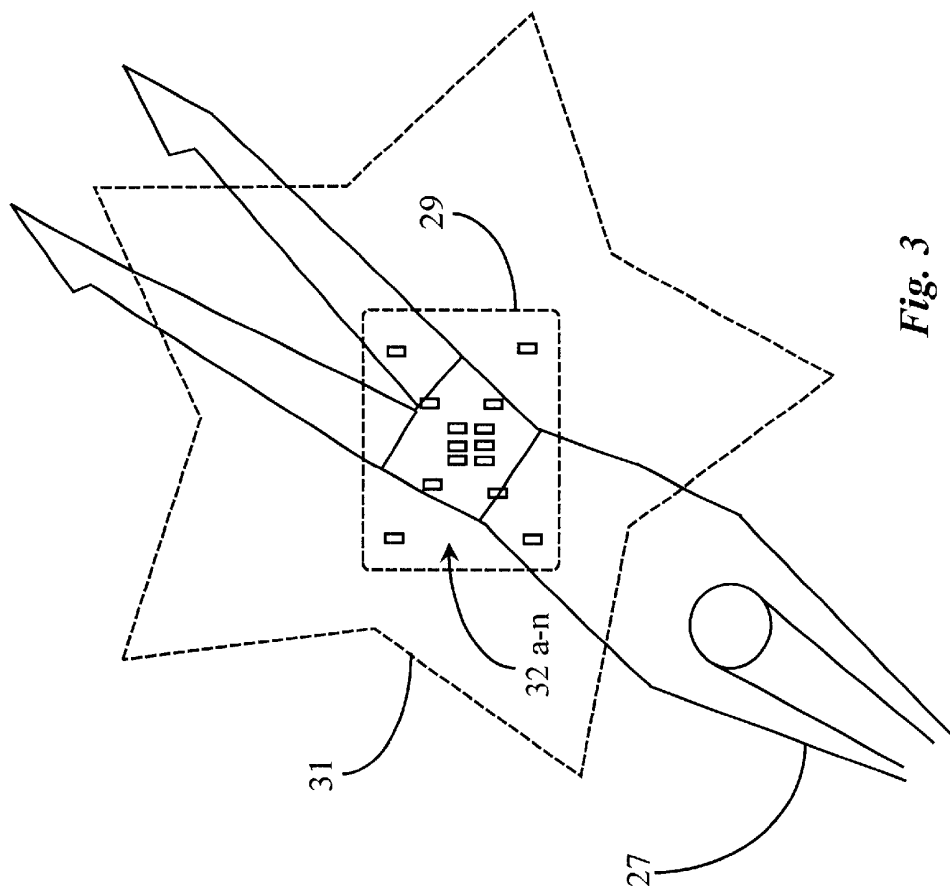
An authoring system for interactive video has two or more
authoring stations for providing authored metadata to be
related to a main video data stream and a multiplexer for
relating authored metadata from the authoring sources to the
main video data stream. The authoring stations annotate
created metadata with presentation time stamps (PTS) from
the main video stream, and the multiplexer relates the
metadata to the main video stream by the PTS signatures. In
analog streams PTS may be created and integrated. In some
embodiments there may be multiple and cascaded systems,
and some sources may be stored sources. Various methods
are disclosed for monitoring and compensating time differ-
ences among sources to ensure time coordination in end
product. In different embodiments transport of metadata to
an end user station is provided by Internet streaming, VBI
insertion or by Internet downloading. User equipment is
enhanced with hardware and software to coordinate and
present authored material with the main data stream.

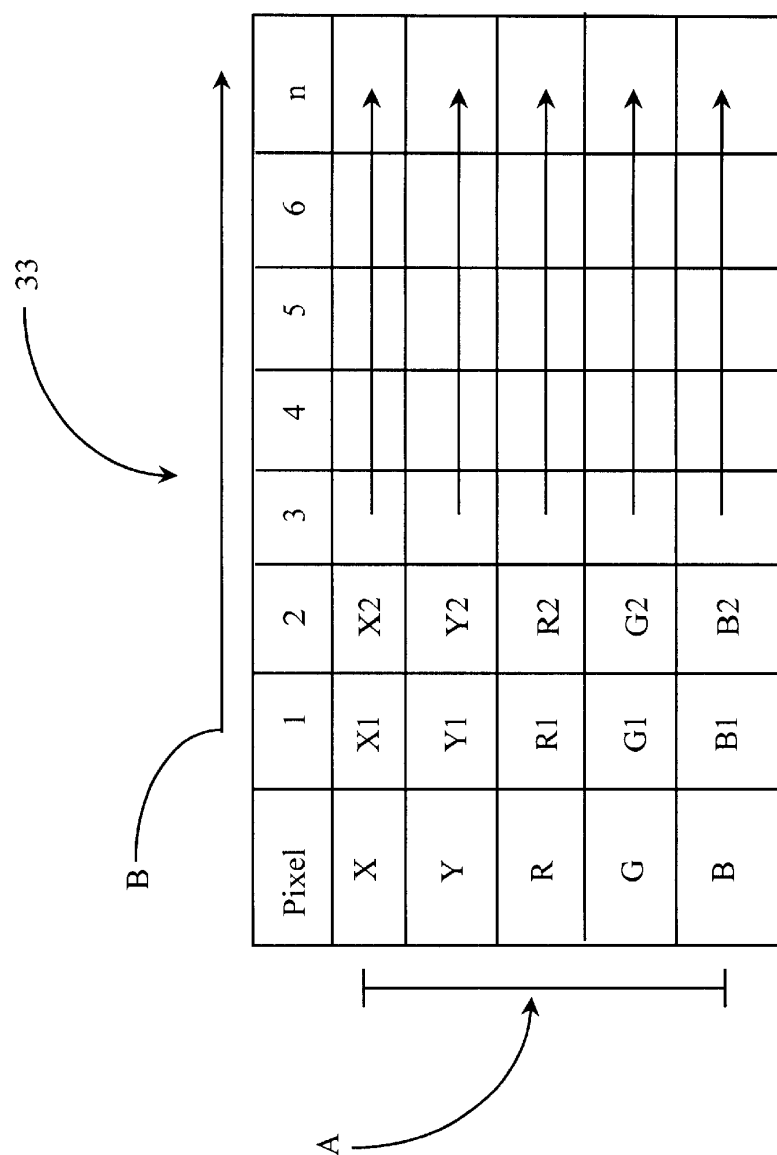
21 Claims, 18 Drawing Sheets



*Fig. 1*

*Fig. 2*



*Fig. 4*

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