



US006233389B1

(12) **United States Patent**
Barton et al.

(10) **Patent No.:** **US 6,233,389 B1**
(45) **Date of Patent:** **May 15, 2001**

(54) **MULTIMEDIA TIME WARPING SYSTEM**

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ASTARTE DVDirector™ Beta Testing Program.

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(57) **ABSTRACT**

(*) Notice: Subject to any disclaimer, the term of this
patent is extended or adjusted under 35
U.S.C. 154(b) by 0 days.

A multimedia time warping system. The invention allows
the user to store selected television broadcast programs
while the user is simultaneously watching or reviewing
another program. A preferred embodiment of the invention
accepts television (TV) input streams in a multitude of
forms, for example, National Television Standards Commit-
tee (NTSC) or PAL broadcast, and digital forms such as
Digital Satellite System (DSS), Digital Broadcast Services
(DBS), or Advanced Television Standards Committee
(ATSC). The TV streams are converted to an Moving
Pictures Experts Group (MPEG) formatted stream for inter-
nal transfer and manipulation and are parsed and separated
it into video and audio components. The components are
stored in temporary buffers. Events are recorded that indi-
cate the type of component that has been found, where it
is located, and when it occurred. The program logic is notified
that an event has occurred and the data is extracted from the
buffers. The parser and event buffer decouple the CPU from
having to parse the MPEG stream and from the real time
nature of the data streams which allows for slower CPU and
bus speeds and translate to lower system costs. The video
and audio components are stored on a storage device and
when the program is requested for display, the video and
audio components are extracted from the storage device and
reassembled into an MPEG stream which is sent to a
decoder. The decoder converts the MPEG stream into TV
output signals and delivers the TV output signals to a TV
receiver. User control commands are accepted and sent
through the system. These commands affect the flow of said
MPEG stream and allow the user to view stored programs
with at least the following functions: reverse, fast forward,
play, pause, index, fast/slow reverse play, and fast/slow play.

(21) Appl. No.: **09/126,071**

(22) Filed: **Jul. 30, 1998**

(51) **Int. Cl.**⁷ **H04N 5/92**

(52) **U.S. Cl.** **386/46; 386/68**

(58) **Field of Search** 386/1, 33, 45,
386/46, 111–112, 125–126, 68; 369/60;
366/7, 33; 348/7, 10, 571, 714, 722, 725;
H04N 5/76, 5/92, 9/79, 5/14

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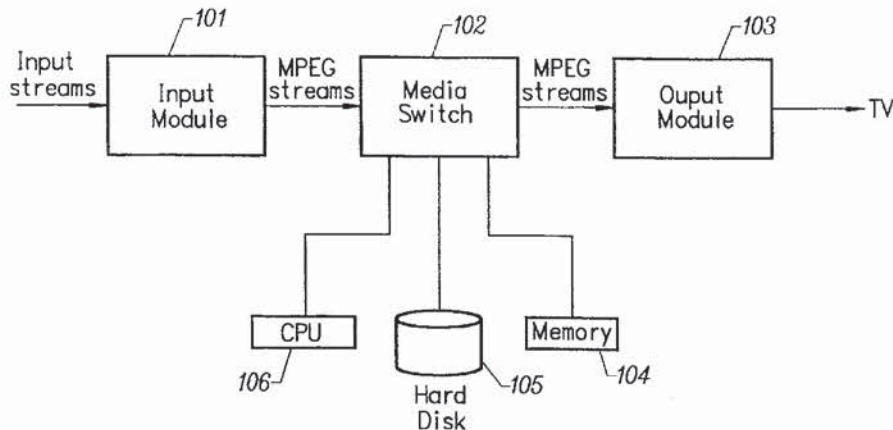
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61 Claims, 12 Drawing Sheets



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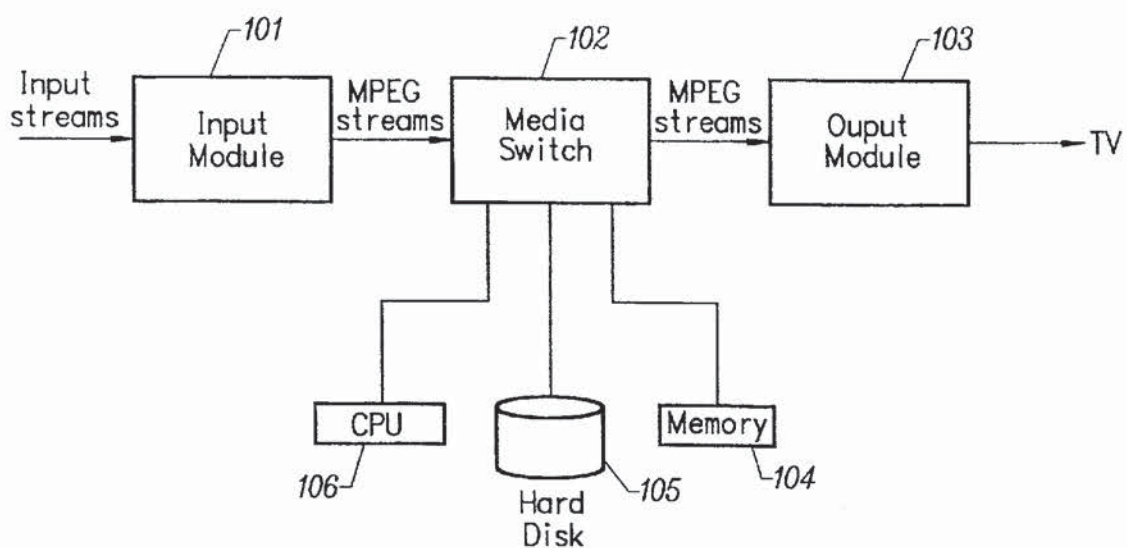


FIG. 1

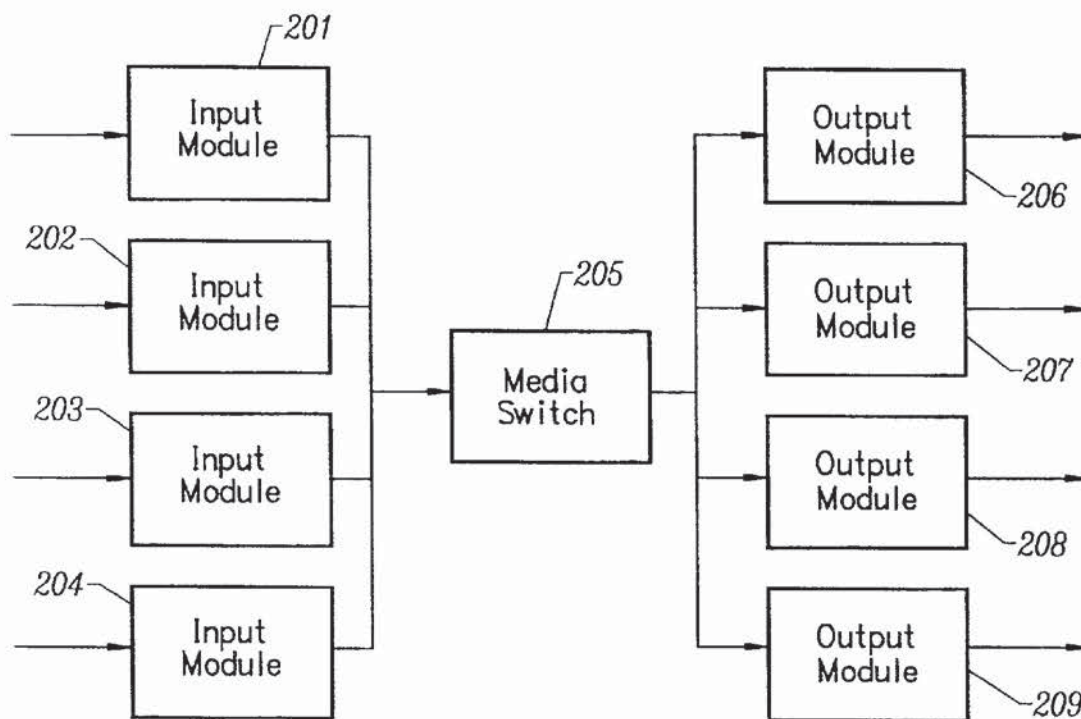


FIG. 2

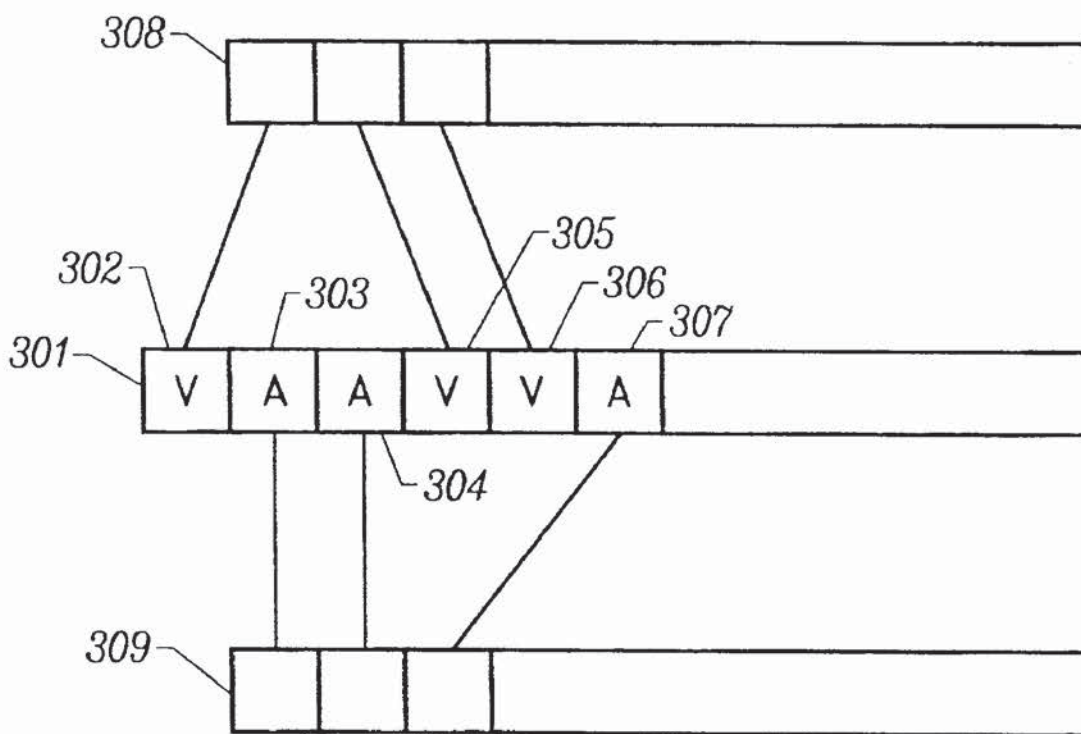


FIG. 3

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