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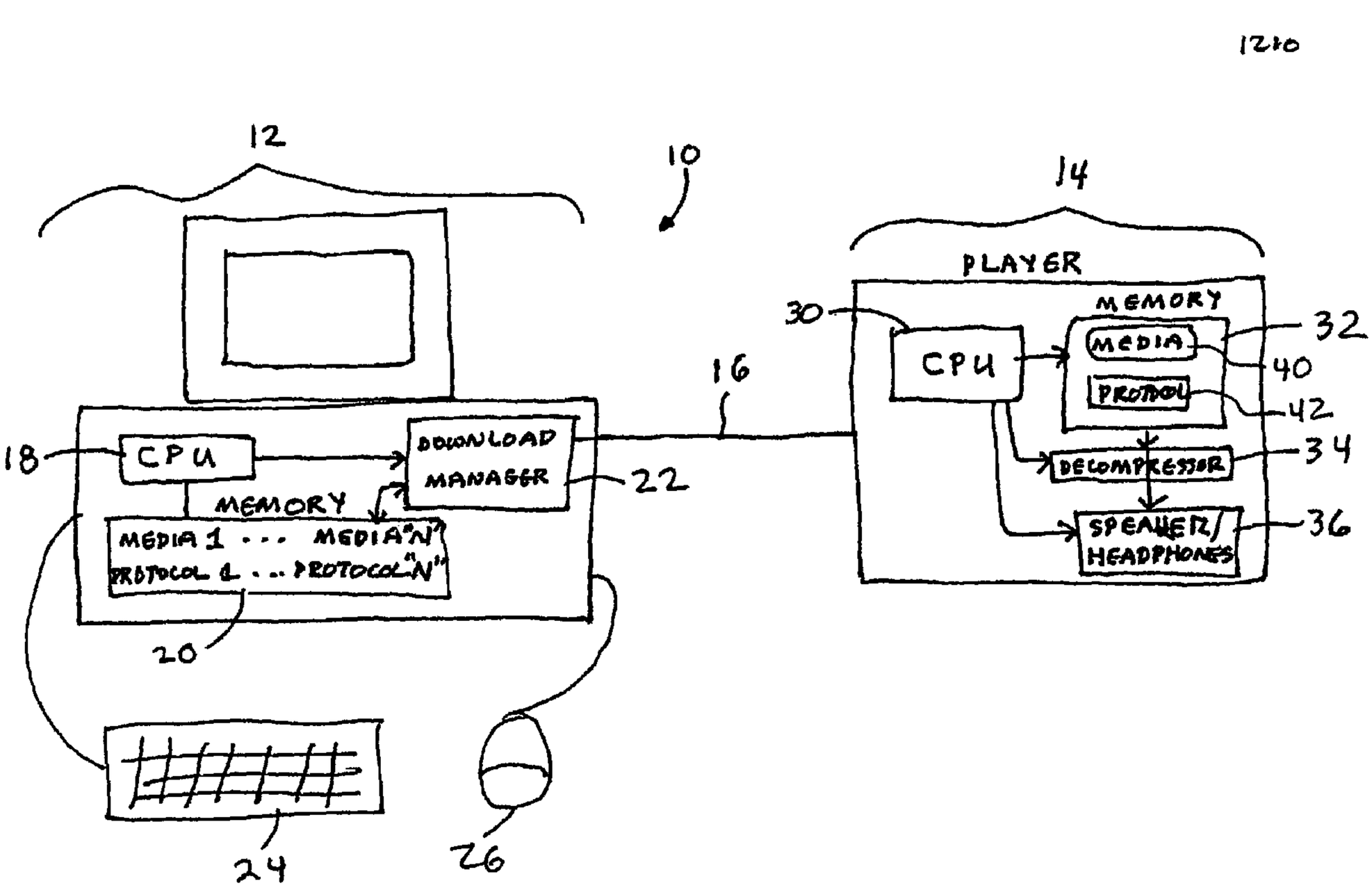
(54) Title: DOWNLOADED MEDIA PROTOCOL INTEGRATION SYSTEM AND METHOD



(57) Abrégé/Abstract:
A protocol integration system and method are described wherein a downloadable media system (10) may include a computer (12) and a media player (14) that may be used to play one or more different pieces of media using different protocols downloaded from a computer as needed. In which the media player is connected to the computer over a communications link or computer network (16) that may be a wire-based link or a wireless link. The protocols may include different CODECS and different rights managers.

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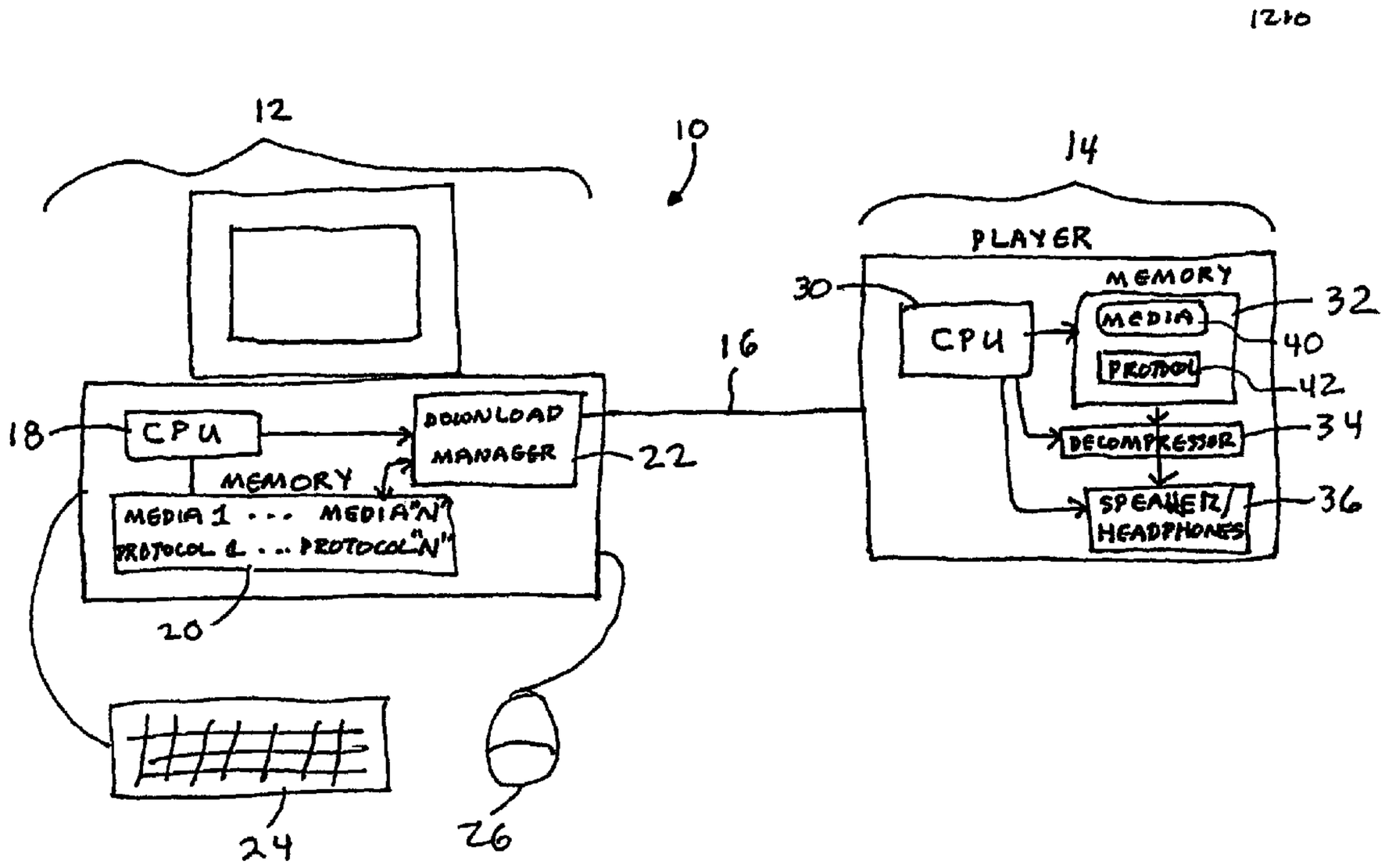
(54) Title: DOWNLOADED MEDIA PROTOCOL INTEGRATION SYSTEM AND METHOD



(57) Abstract: A protocol integration system and method are described wherein a media player may be used to play one or more different pieces of media using different protocols downloaded from a computer as needed. The protocols may include different CODECs and different digital rights managers.

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DOWNLOADED MEDIA PROTOCOL INTEGRATION SYSTEM AND METHOD

Background of the Invention

This invention relates generally to a downloaded media protocol integration system and method and in particular to a system and method for permitting any media player to play media having different protocols.

Currently, there are typically various different digital rights managers (DRMs) that control the access to a piece of media and different encoders/decoders (CODECs) (collectively known as different protocols) associated with different downloadable media. For example, for different types of media there may be the MPEG 2 and MPEG 4 protocols (video typically) and the MP3 protocol (for audio music). Therefore, with the current variety of different CODECs and DRMs, a single media player may not be able to play all of the different types of media since any single player does not have the necessary DRMs and/or CODECs to play all of the different types of media. In addition, it may be difficult for a user of a player to easily locate the necessary DRM or CODEC for a particular piece of media. Thus, for example, an MP3 audio player is only able to play media encoded using the MP3 protocol, but may not be able to play media encoded using the MPEG-4 protocol or any other protocol. Therefore, each current media player has a limited usefulness and a limited amount of media that can be played on the media player.

It is desirable to provide a protocol integration system that permits any typical media player to play media having a variety of different DRMs and CODECs. The protocol integration system in accordance with the invention would make each media player more useful since each media player would not longer be limited to only playing media that is designed specifically for the particular media player. Thus, it is desirable

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to provide a downloaded media protocol integration system and method and it is to this end that the present invention is directed.

Summary of the Invention

In general, the downloaded media protocol integration system in accordance with the invention overcomes the problem that there are typically various different digital rights managers (DRMs) and encoders/decoders (CODECs) associated with different downloadable media. Therefore, with the variety of different CODECs and DRMs, a single media player may not be able to play all of the different media. For example, an MP3 player may be able to play media encoded using the MP3 protocol, but may not be able to play media encoded using MPEG-4. The protocol integration system in accordance with the invention may, when downloading media to a player, determine the CODECs/DRMs (collectively "protocols") currently supported by the particular player. Then, if the player does not support the particular CODEC/DRM for the particular media being downloaded, the CODEC/DRM for that media is also downloaded to the player at the same time as the media. Thus, using the protocol integration system in accordance with the invention, any media player may play any type of media regardless of the CODEC or DRM being used. In one embodiment, a typical computer may interrogate a player connected to it to ensure the appropriate CODEC and DRM are available on the player. In another embodiment, a mini-component system may go to a particular web site to download the appropriate CODEC and DRM.

Thus, in accordance with the invention, a system for playing different media on a player is provided wherein each piece of media has an associated protocol. The system downloads a piece of media having a particular protocol to the player and determines if the particular protocol is supported by the player when a piece of media

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is downloaded to the player. If the protocol for the media is not supported, the system then downloads the particular protocol to the player while downloading the piece of media so that the player plays the downloaded piece of media using the downloaded protocol.

In accordance with another aspect of the invention, a method for playing different media on a player is provided wherein each piece of media having an associated protocol. First, a request is received to download a piece of media having a particular protocol to the player and it is determined if the particular protocol is supported by the player before the piece of media is downloaded to the player. If the protocol is not supported, the particular protocol is downloaded to the player while downloading the piece of media so that the player plays the downloaded piece of media using the downloaded protocol.

In accordance with yet another aspect of the invention, a server for managing one or more different pieces of media having different protocols is provided. The server receives a request to download a piece of media having a particular protocol to a player. Prior to downloading the media, the server determines if the particular protocol is supported by the player and, if the protocol for the media is not supported, downloads the particular protocol to the player while downloading the piece of media so that the player plays the downloaded piece of media using the downloaded protocol.

Brief Description of the Drawings

Figure 1 is a block diagram illustrating an example of a downloadable media system that may include a first embodiment of the downloaded media protocol integration system in accordance with the invention;

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Figure 2 is a block diagram illustrating more details of the downloaded media protocol integration system in accordance with the invention;

Figure 3 is a flowchart illustrating a method for downloaded media protocol integration in accordance with the invention; and

Figure 4 is a block diagram illustrating an example of a mini-component media system that may include a second embodiment of the downloaded media protocol integration system in accordance with the invention.

Detailed Description of a Preferred Embodiment

The invention is particularly applicable to downloading audio media and the protocols associated with the audio media and it is in this context that the invention will be described. It will be appreciated, however, that the system and method in accordance with the invention has greater utility, such as to various different types of media and to various different protocols applicable to the various different types of media, such as video media.

In general, the downloaded media protocol integration system in accordance with the invention overcomes the problem that there are typically various different digital rights managers (DRMs) and encoders/decoders (CODECs) associated with different downloadable media. Therefore, with the current variety of different CODECs and DRMs, a single media player may not be able to play all of the different media. For example, an MP3 player may be able to play media encoded using the MP3 protocol, but may not be able to play media encoded using MPEG-4. The protocol integration system in accordance with the invention may, when downloading media to a player, determine the CODECs/DRMs currently supported by the particular player. Then, if the player does not support the particular CODEC/DRM for the

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particular media being downloaded, the CODEC/DRM for that media is also downloaded to the player at the same time as the media. Thus, using the protocol integration system in accordance with the invention, any media player may play any type of media regardless of the CODEC or DRM being used. In one embodiment, a typical computer may interrogate a player connected to it to ensure the appropriate CODEC and DRM are available on the player. In another embodiment, a mini-component system may go to a particular web site to download the appropriate CODEC and DRM. Now, the first embodiment of the protocol integration system in accordance with the invention will be described in more detail.

Figure 1 is a block diagram illustrating an example of a downloadable media system 10 that may include a first embodiment of the downloaded media protocol integration system in accordance with the invention. In particular, the system 10 may include a computer 12, such as a stand-alone personal computer or any other type of computer including a server, and a media player 14 connected to the computer 12 over a communications link or computer network 16 that may be a wire-based link or a wireless link. The media player 14, which may be portable or a stand-alone unit, permits a user to play media that is downloaded from the computer.

The computer 12 may include a central processing unit (CPU) 18, a memory 20, a download manager 22 and one or more input/output devices that permit a user to interact with the computer such as a keyboard 24 and a mouse 26 as shown. The download manager 22 may be a software application stored in the memory 20 and executed by the CPU 18. The CPU 18 controls the operation of the computer including the memory and the download manager. In this example, the memory 20 may store, among other things, one or more pieces of media (Media #1 – Media #N) and one or more different protocols (Protocol #1 – Protocol #N) wherein the protocols may include different DRMs and/or different CODECs. The computer may also

include a persistent storage device, such as a hard disk drive, an optical disk drive, a CD-ROM or a tape drive, for permanently storing the one or more pieces of media, the one or more different protocols and the software used to implement the protocol integration system.

The media player 14 may include a CPU 30, a memory 32, a decompressor 34 and an output device 36, such as a speaker or headphone jack that permits the user of the media player to listen to the downloaded media. The CPU 30 controls the operation of the media player and the decompressor decompresses the downloaded media using the appropriate protocol (e.g., CODEC or DRM) and outputs the decompressed media to the output device 36. The media player permits media to be downloaded from the computer and then played on the media player. With a typical media player, the memory may store one or more pieces of media and the protocol that permits the media to be decompressed and played. In accordance with the invention, the memory 32 of the media player 14 may include one or more pieces of media 40 along with the protocol software 42 for each piece of media. The protocol may include the CODEC and/or DRM necessary to decrypt/decode the media and play it over the output device 36. In the alternative, the media player 14 may download the required protocol from the computer 12 as needed as will be described in more detail with reference to Figure 3. Now, more details of the downloaded media protocol integration system will be described.

Figure 2 is a block diagram illustrating more details of the downloaded media protocol integration system 22 in accordance with the invention. In particular, the integration system 22 further comprises a downloader module 50 and a protocol determiner module 52 that operate to achieve the functions of the protocol integration system in accordance with the invention. In particular, the downloader 50 may, based on a request from the player 14 for a piece of media, download the media or the media

and associated protocol to the player from the memory 20 where one or more pieces of media and one or more CODECs and/or one or more DRMs are stored. The protocol determiner 52 may, either during the initial download of the media or later, determine whether the player 14 has the proper protocol in order to decrypt and decode the media. If the player has the appropriate protocol, the protocol determiner does not take any further action. If the player 14 does not have the appropriate protocol for the media, the protocol determiner may retrieve the appropriate protocol from the memory 20 and download it to the player 14 along with the media so that the player 14 may decode and decrypt the media and play it. Now, an example of a method for protocol integration in accordance with the invention will be described.

Figure 3 is a flowchart illustrating a method 60 for downloaded media protocol integration in accordance with the invention. In particular, in step 62, the player may request a piece of media from the computer. In step 64, the computer may issue a protocol determination request to the player so that the computer can determine if the player supports the appropriate protocol to play the downloaded media as shown in step 66. If the player has the appropriate protocol for the piece of media to be downloaded, then the media is downloaded in step 68. If the player does not have the appropriate protocol to play the media, then in step 70, the computer downloads the media with the protocol to the player so that the player is able to play the media with the newly downloaded protocol. After the media or the media and protocol are downloaded to the player, the computer determines if there are any more media requests in step 72 and loops back to step 64 to handle any more media requests. If there are no more media requests, then the method ends. In accordance with the invention, the protocol integration system permits a single player to play many different types of media with many different types of protocols instead of having to use

a different player for each different type of protocol. Now, another embodiment of the protocol integration system in accordance with the invention will be described.

Figure 4 is a block diagram illustrating an example of a mini-component media system 80 that may include a second embodiment of the downloaded media protocol integration system in accordance with the invention. In this figure, elements having the same name as shown in Figure 1 have the same functionality and will not be described here unless the functionality is different. The system 80 may include a mini-component player 82 connected by a computer network or communications link 86, such as the Internet, to a server 84. The player 82 may further include a CPU 88, a memory 90, a decompressor 92, an output device 94, such as an audio speaker, and a download manager 96. The download manager 96 may control the download of media to the player 82. The memory 90 may store one or more pieces of media. When the player is downloading a piece of media or at some later time, the server 84 may determine the protocols resident in the memory of the player as described above and then, if the appropriate protocol is not present, download the protocol along with the media to the player over the computer network.

The server 84 may include a CPU 100, a protocol manager 102 and a storage device 104 that may contain one more pieces of media and one or more associated protocols. The protocol manager 102 may perform the function to determining if the player has the appropriate protocol to play the requested media and then download the protocol with the media if necessary. In accordance with the invention, however, the player 82 may determine that it cannot play the piece of media and then request the necessary protocol from the server 84.

While the foregoing has been with reference to a particular embodiment of the invention, it will be appreciated by those skilled in the art that changes in this

embodiment may be made without departing from the principles and spirit of the invention, the scope of which is defined by the appended claims.

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Claims:

1. A system for playing different media on a player, each piece of media having an associated protocol, the system comprising:

means for downloading a piece of media having a particular protocol to the player;

means for determining if the particular protocol is supported by the player when a piece of media is downloaded to the player; and

means, if the protocol for the media is not supported, for downloading the particular protocol to the player while downloading the piece of media so that the player plays the downloaded piece of media using the downloaded protocol.

2. The system of Claim 1, wherein the protocol further comprises a particular CODECs selected from a group of CODECs.

3. The system of Claim 2, wherein the protocol further comprises a particular digital rights manage selected from a group of digital rights managers.

4. A method for playing different media on a player, each piece of media having an associated protocol, the method comprising:

receiving a request to download a piece of media having a particular protocol to the player;

determining if the particular protocol is supported by the player before the piece of media is downloaded to the player; and

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downloading the particular protocol to the player while downloading the piece of media so that the player plays the downloaded piece of media using the downloaded protocol.

5. The system of Claim 4, wherein the protocol further comprises a particular CODECs selected from a group of CODECs.

6. The system of Claim 5, wherein the protocol further comprises a particular digital rights manage selected from a group of digital rights managers.

7. A server for managing one or more different pieces of media having different protocols, the server comprising:

means for receiving a request to download a piece of media having a particular protocol to a player;

means for determining if the particular protocol is supported by the player when a piece of media is downloaded to the player; and

means, if the protocol for the media is not supported, for downloading the particular protocol to the player while downloading the piece of media so that the player plays the downloaded piece of media using the downloaded protocol.

8. The system of Claim 7, wherein the protocol further comprises a particular CODECs selected from a group of CODECs.

9. The system of Claim 8, wherein the protocol further comprises a particular digital rights manage selected from a group of digital rights managers.

10. A media player for playing different media, each piece of media having an associated protocol, the player comprising:

means for requesting a piece of media from a computer;

means for communicating the supported protocols to the computer; and

means, if the protocol for the media is not supported, for receiving the particular protocol and the requested media from the computer so that the player plays the downloaded piece of media using the downloaded protocol.

11. The system of Claim 10, wherein the protocol further comprises a particular CODECs selected from a group of CODECs.

12. The system of Claim 11, wherein the protocol further comprises a particular digital rights manage selected from a group of digital rights managers.

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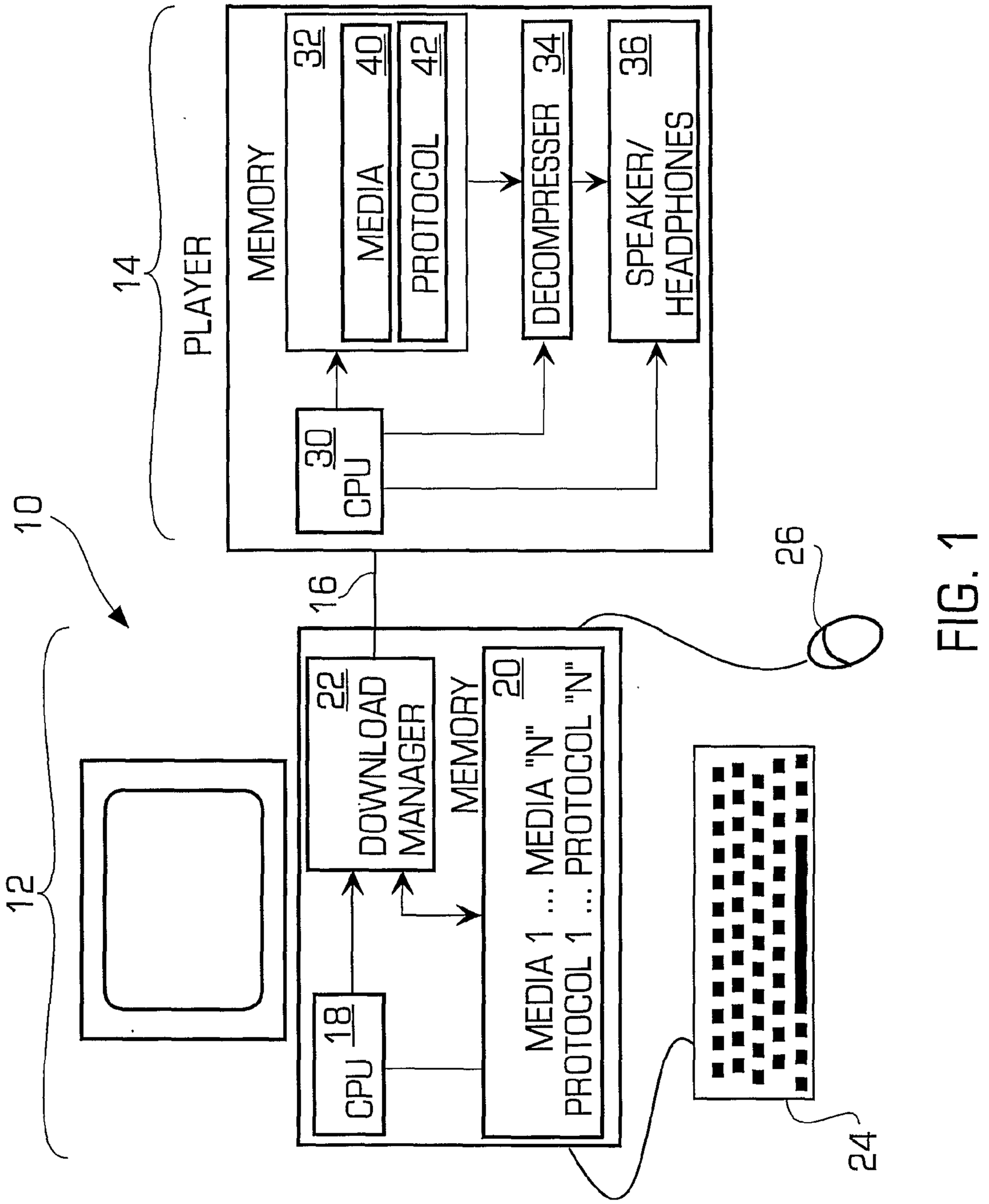
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12
14
PLAYER
MEMORY
32
MEDIA
40
PROTOCOL
42
DECOMPRESSER
34
SPEAKER/
HEADPHONES
36
30
CPU
16
22
DOWNLOAD
MANAGER
MEMORY
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MEDIA 1 ... MEDIA "N"
PROTOCOL 1 ... PROTOCOL "N"
18
CPU
26
24

FIG. 1

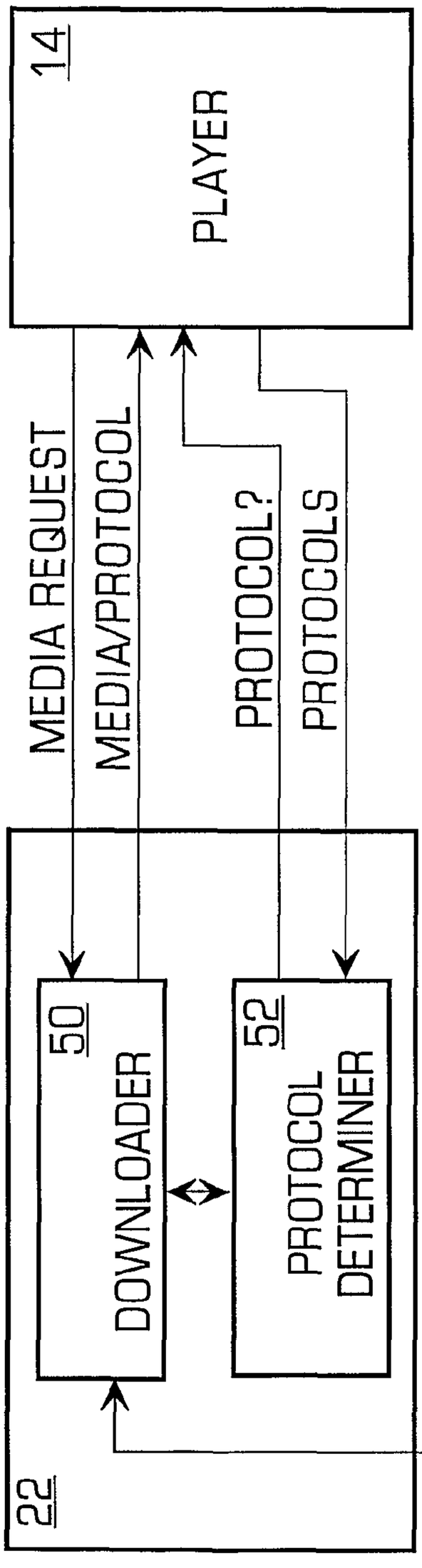
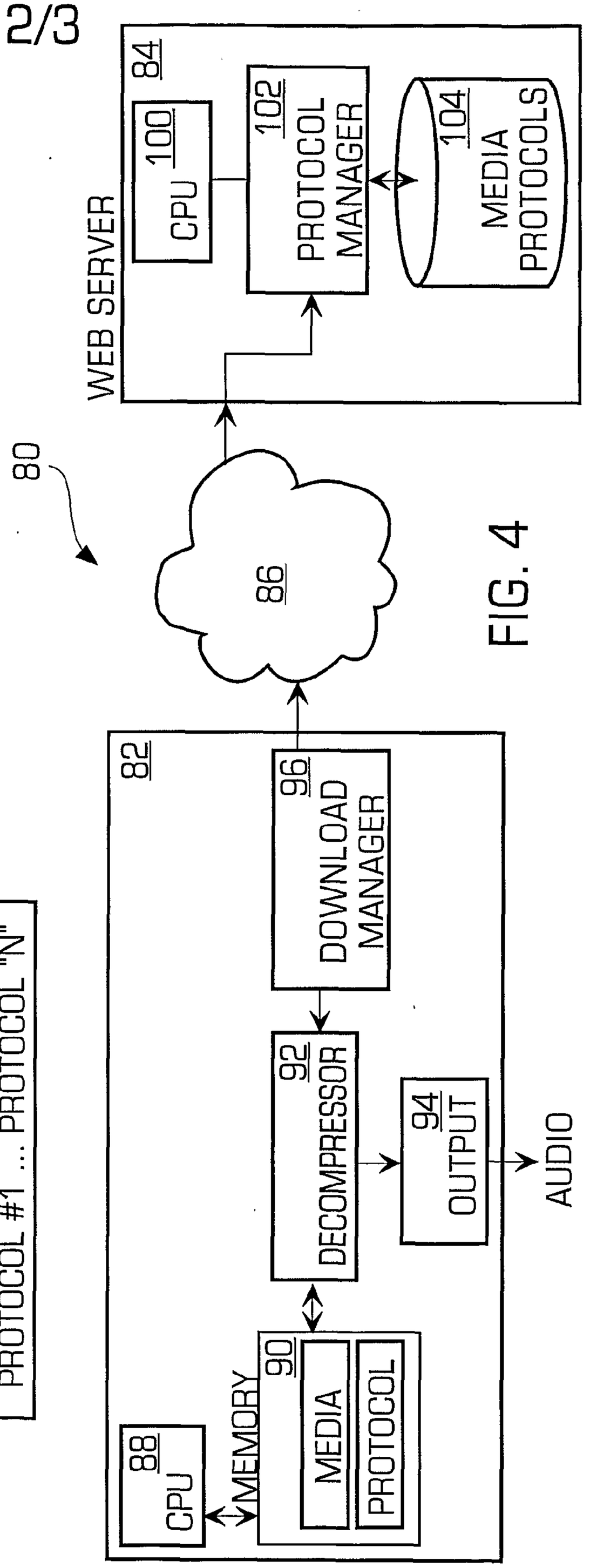

14
PLAYER
MEDIA REQUEST
MEDIA/PROTOCOL
PROTOCOL?
PROTOCOLS
50
DOWNLOADER
52
PROTOCOL DETERMINER
22
MEMORY
20
MEDIA #1 ... MEDIA "N"
PROTOCOL #1 ... PROTOCOL "N"

FIG. 2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CPU
100
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PROTOCOL MANAGER
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MEDIA PROTOCOLS
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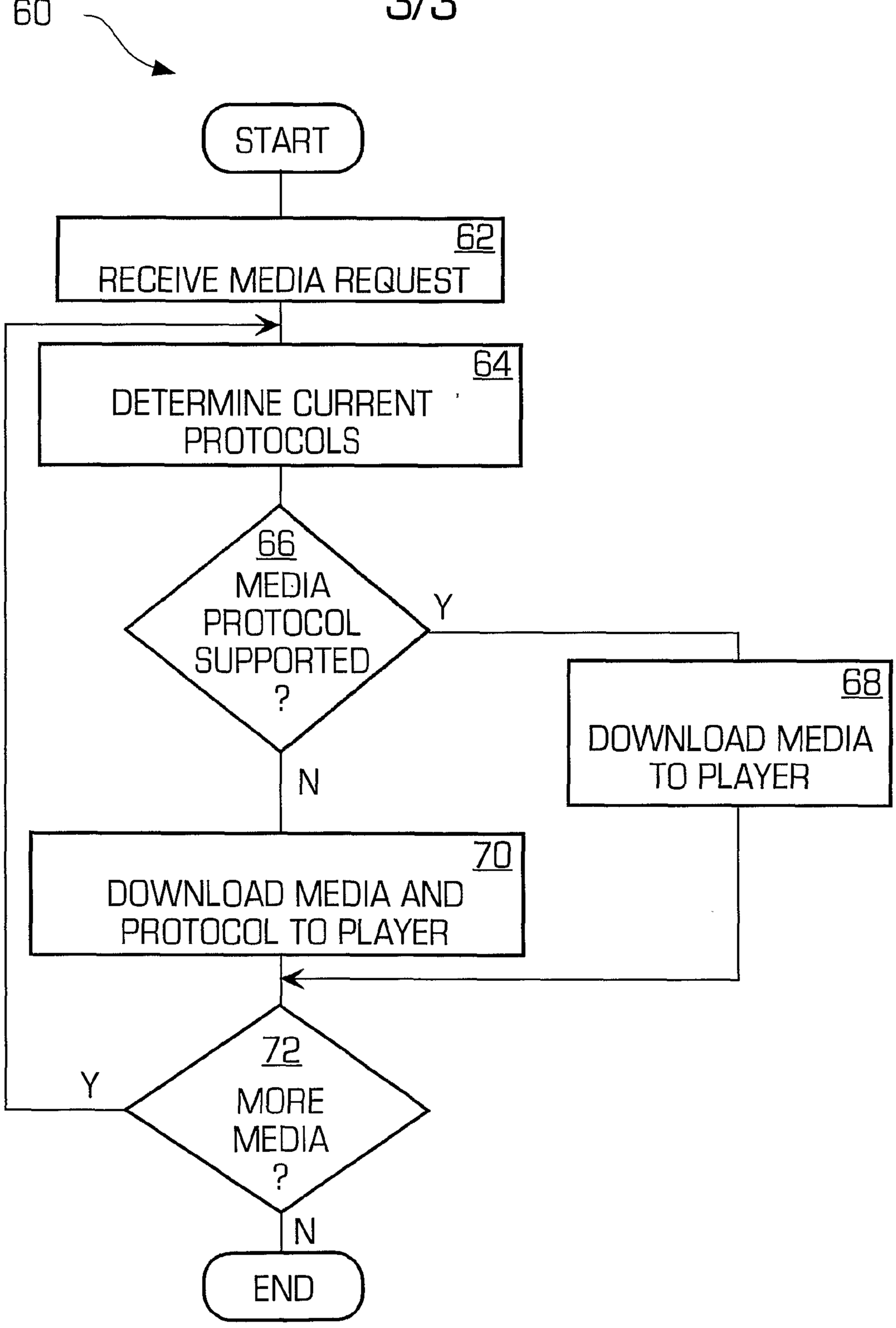
80
86
82
96
DOWNLOAD MANAGER
92
DECOMPRESSOR
94
OUTPUT
AUDIO
90
MEMORY
MEDIA
PROTOCOL
88
CPU

FIG. 4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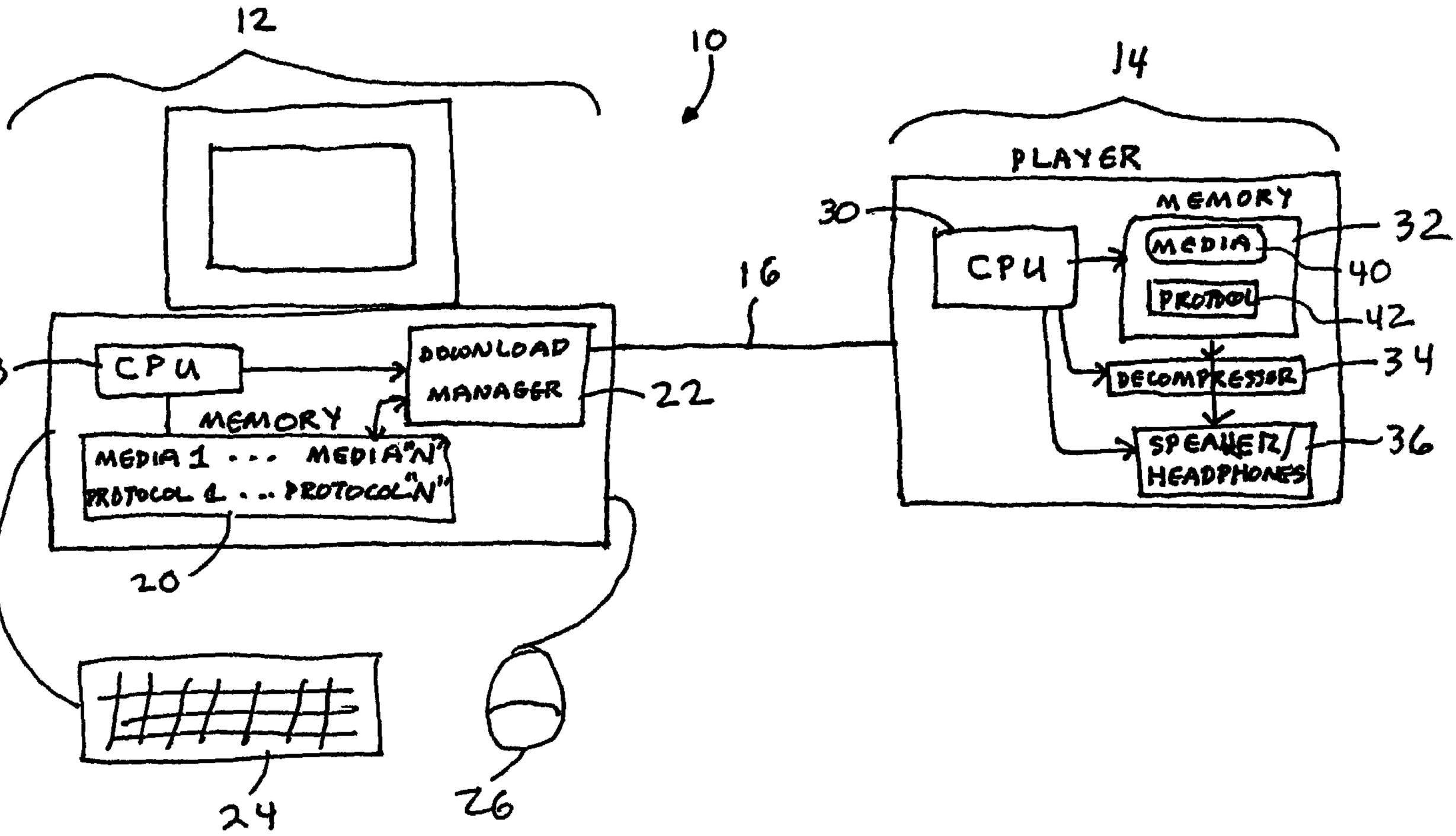
START
62
RECEIVE MEDIA REQUEST
64
DETERMINE CURRENT PROTOCOLS
66
MEDIA PROTOCOL SUPPORTED ?
Y
N
68
DOWNLOAD MEDIA TO PLAYER
70
DOWNLOAD MEDIA AND PROTOCOL TO PLAYER
72
MORE MEDIA ?
Y
N
END

FIG. 3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