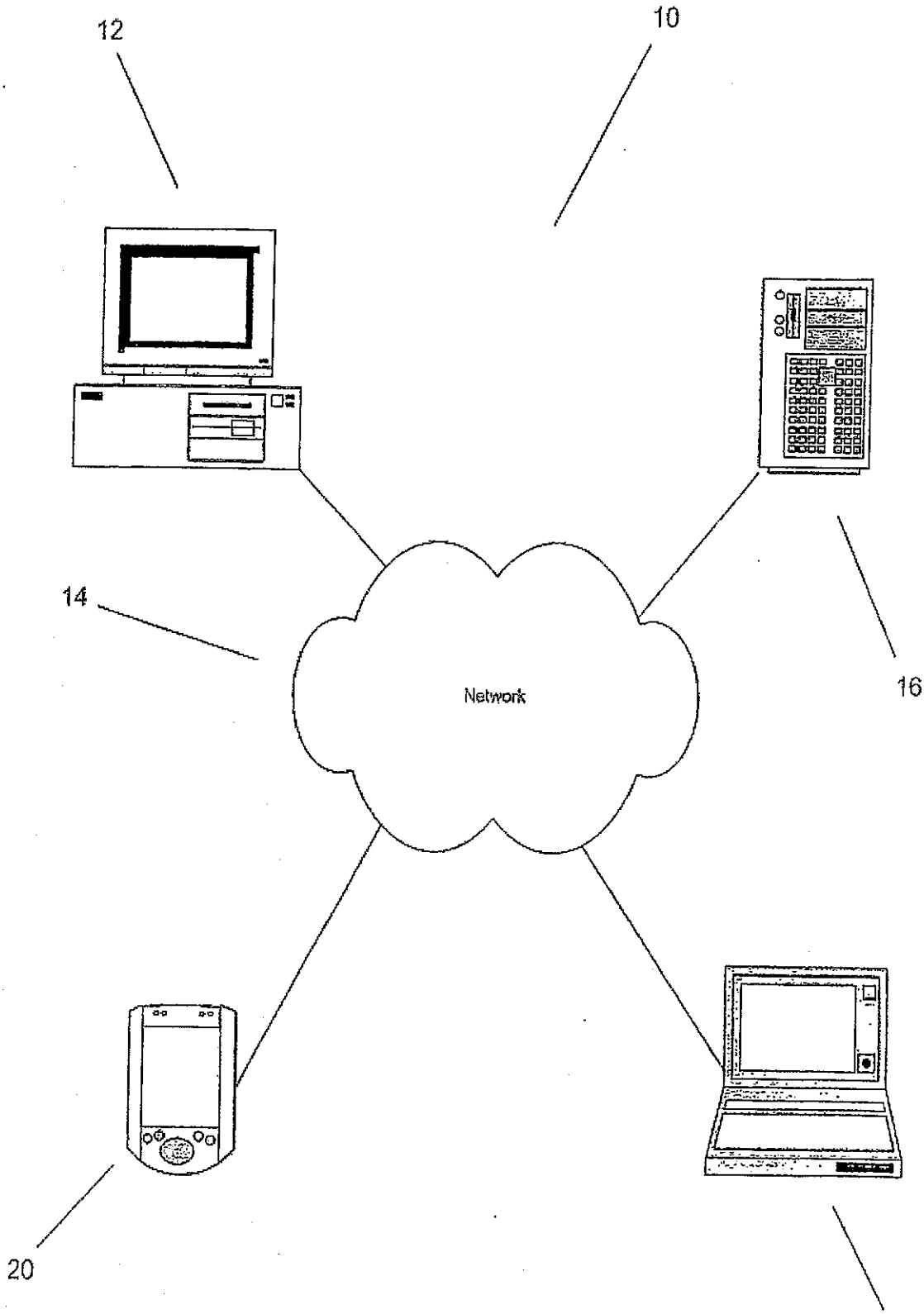


FIG. 1.

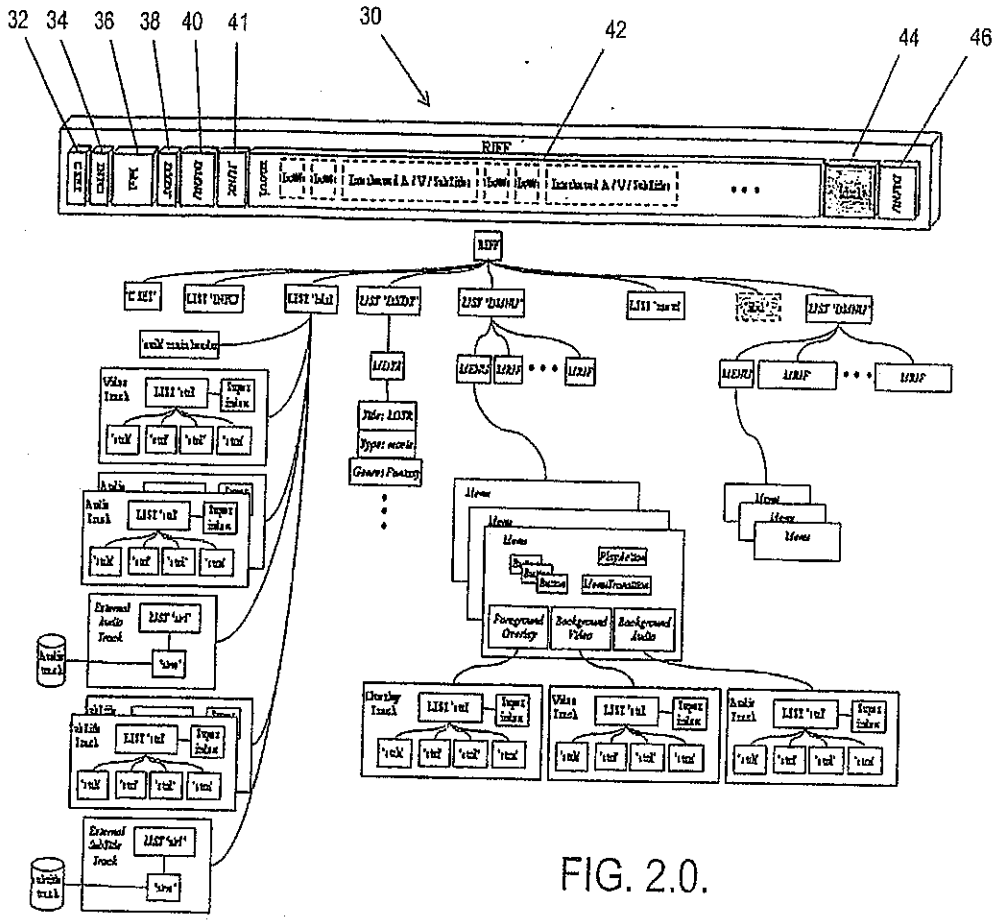


FIG. 2.0.

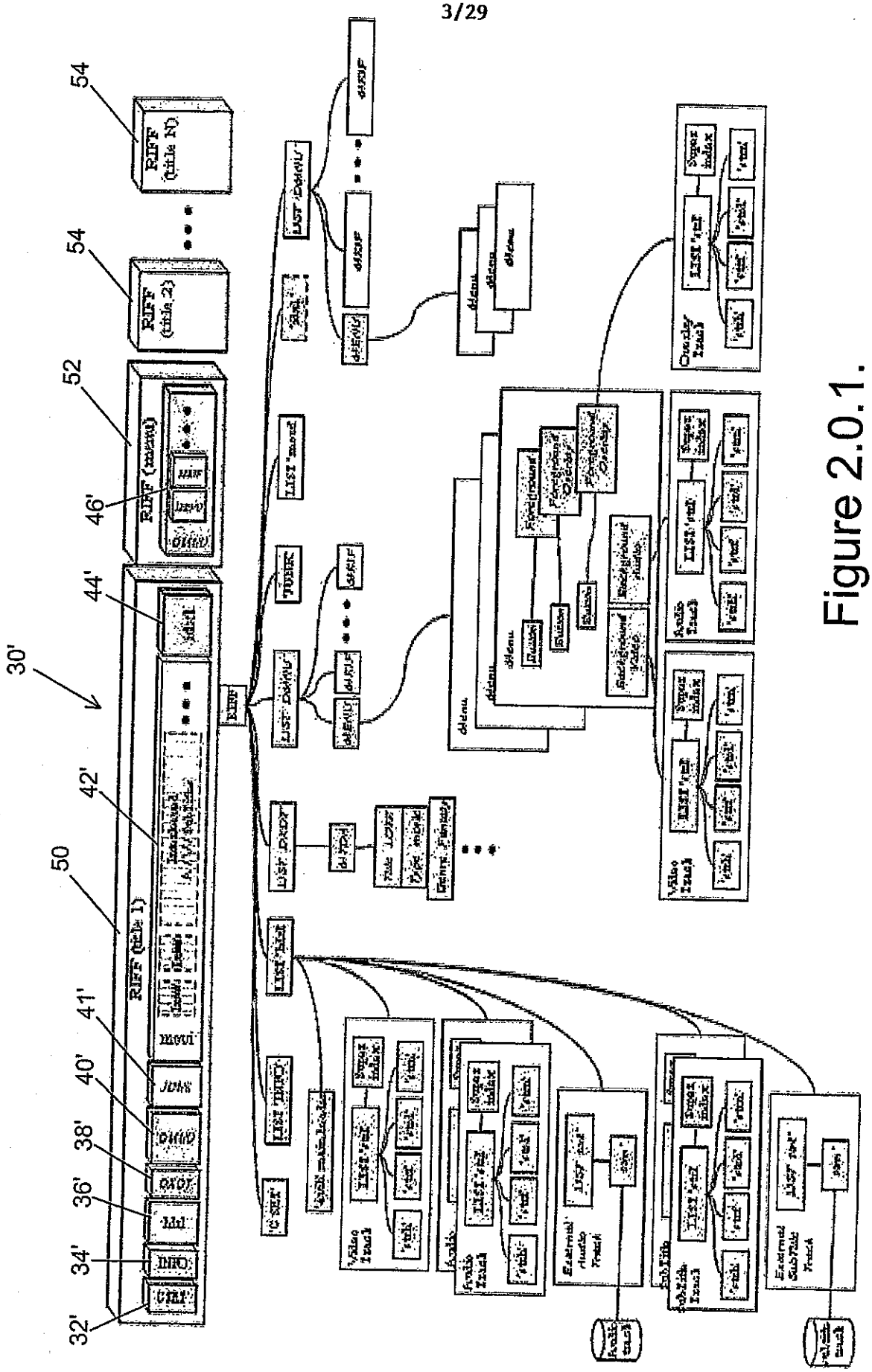

30'
32'
34'
36'
38'
40'
41'
42'
44'
46'
50
52
54
54
RIFF (title 1)
RIFF (title 2)
RIFF (title N)
RIFF

Figure 2.0.1.

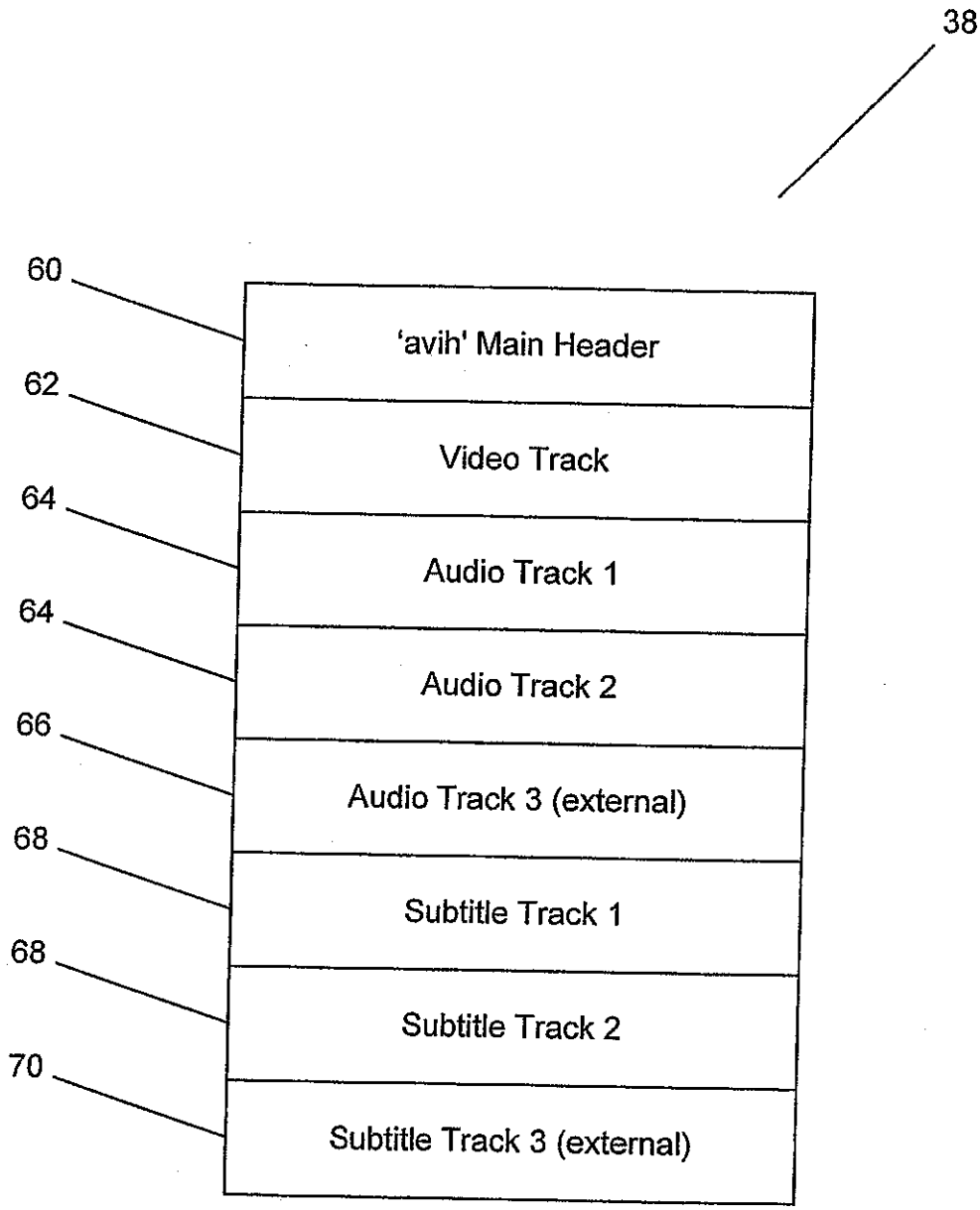

38
60
'avih' Main Header
62
Video Track
64
Audio Track 1
64
Audio Track 2
66
Audio Track 3 (external)
68
Subtitle Track 1
68
Subtitle Track 2
70
Subtitle Track 3 (external)

Fig. 2.1.

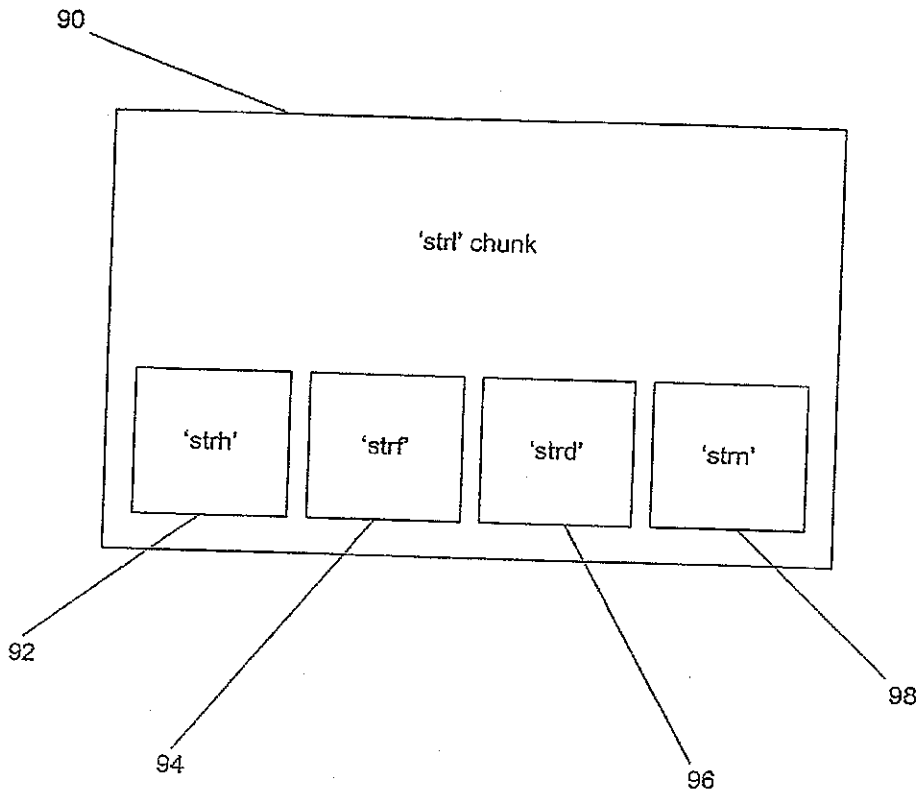


FIG. 2.2.

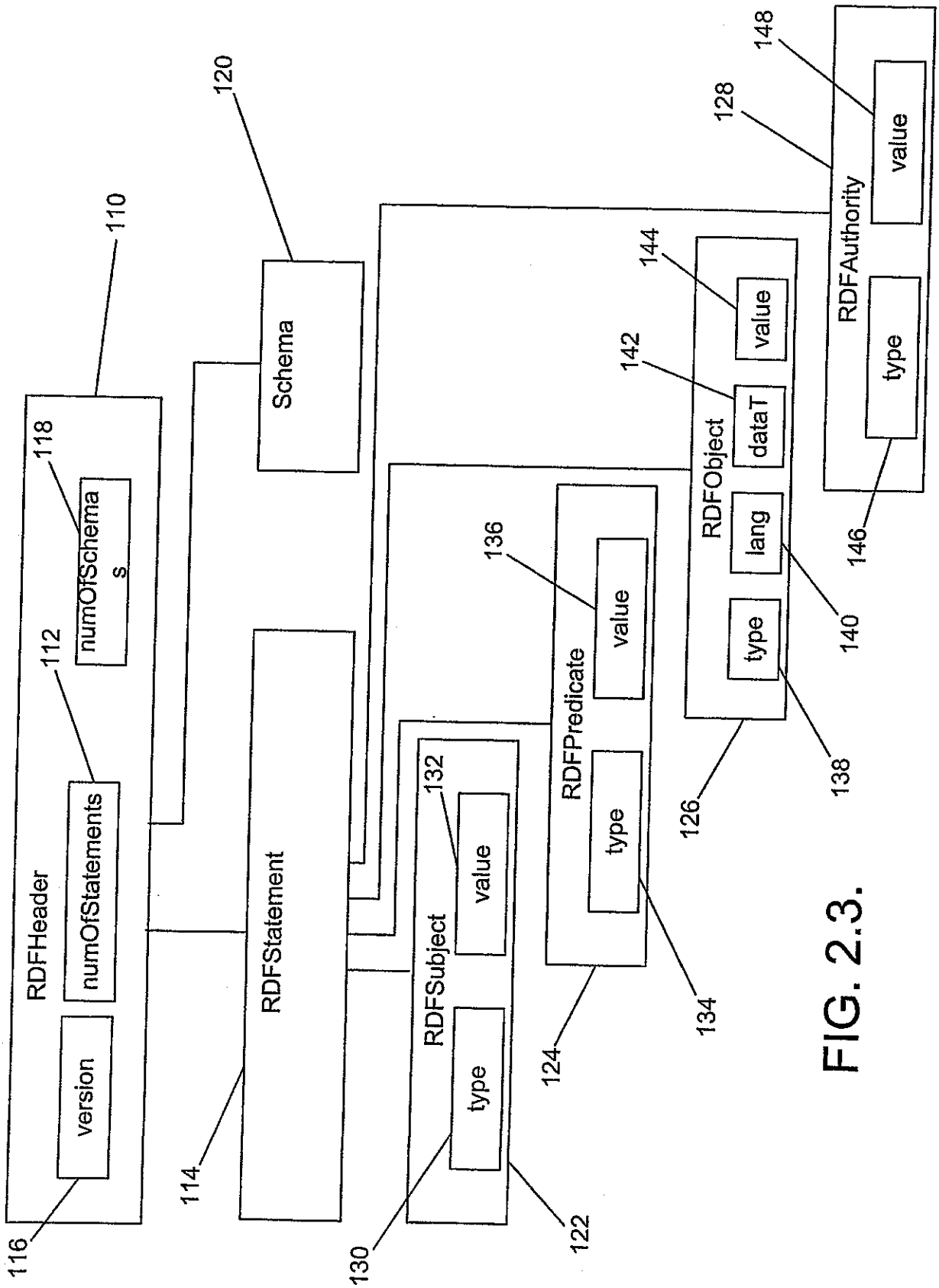
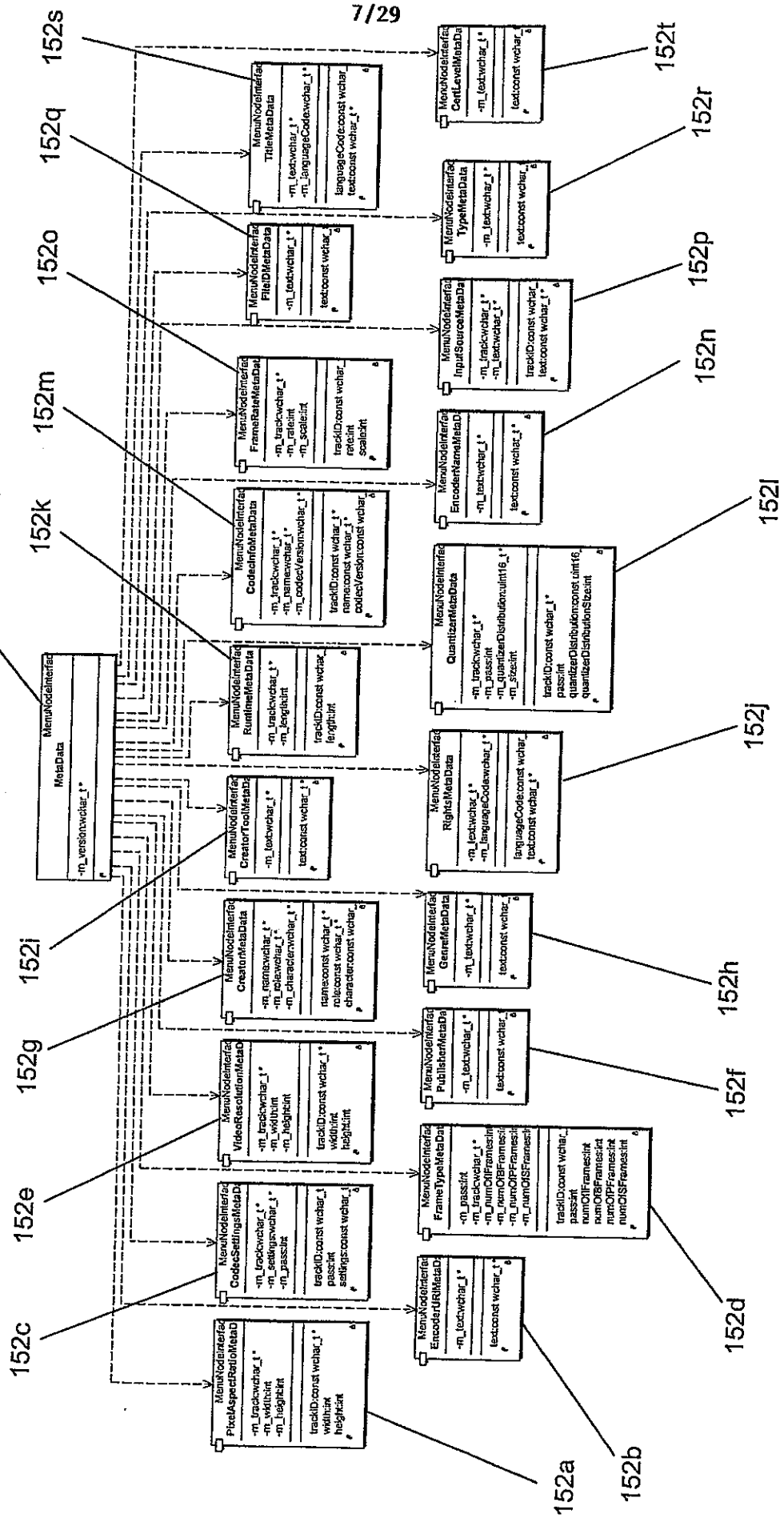

RDFHeader
version
numOfStatements
numOfSchemas
RDFStatement
RDFSubject
type
value
RDFPredicate
type
value
RDFObject
type
lang
dataT
value
RDFAuthority
type
value
Schema
110
112
114
116
118
120
122
124
126
128
130
132
134
136
138
140
142
144
146
148

FIG. 2.3.

FIG. 2.3.1.


150
152a
152b
152c
152d
152e
152f
152g
152h
152i
152j
152k
152l
152m
152n
152o
152p
152q
152r
152s
152t
MenuNodeInterface MetaData -m_versionwchar_t*
MenuNodeInterface PixelAspectRatioMetaData -m_trackwchar_t* -m_widthint -m_heightint trackIDconst wchar_t* widthint heightint
MenuNodeInterface EncoderURLMetaData -m_textwchar_t* textconst wchar_t*
MenuNodeInterface CodecSettingsMetaData -m_trackwchar_t* -m_settingswchar_t* -m_passint trackIDconst wchar_t* passint settingsconst wchar_t*
MenuNodeInterface FrameTypeMetaData -m_passint -m_trackwchar_t* -m_numOfIPFramesint -m_numOfBFramesint -m_numOfSFramesint trackIDconst wchar_t* passint numOfIFramesint numOfBFramesint numOfPFramesint numOfSFramesint
MenuNodeInterface VideoResolutionMetaData -m_trackwchar_t* -m_widthint -m_heightint trackIDconst wchar_t* widthint heightint
MenuNodeInterface PublisherMetaData -m_textwchar_t* textconst wchar_t*
MenuNodeInterface CreatorMetaData -m_namewchar_t* -m_rolewchar_t* -m_characterwchar_t* namesconst wchar_t* roleconst wchar_t* characterconst wchar_t*
MenuNodeInterface GenreMetaData -m_textwchar_t* textconst wchar_t*
MenuNodeInterface CreatorToolMetaData -m_textwchar_t* textconst wchar_t*
MenuNodeInterface RightsMetaData -m_textwchar_t* -m_languageCodewchar_t* languageCodeconst wchar_t* textconst wchar_t*
MenuNodeInterface RuntimeMetaData -m_trackwchar_t* -m_lengthint trackIDconst wchar_t* lengthint
MenuNodeInterface QuantizerMetaData -m_trackwchar_t* -m_passint -m_quantizerDistributionuint16_t* -m_sizeint trackIDconst wchar_t* passint quantizerDistributionconst uint16_t* quantizerDistributionSizeint
MenuNodeInterface EncoderNameMetaData -m_textwchar_t* textconst wchar_t*
MenuNodeInterface CodecInfoMetaData -m_trackwchar_t* -m_namewchar_t* -m_codecVersionwchar_t* trackIDconst wchar_t* nameconst wchar_t* codecVersionconst wchar_t*
MenuNodeInterface InputSourceMetaData -m_trackwchar_t* -m_textwchar_t* trackIDconst wchar_t* textconst wchar_t*
MenuNodeInterface FrameRateMetaData -m_trackwchar_t* -m_rateint -m_scaleint trackIDconst wchar_t* rateint scaleint
MenuNodeInterface TypeMetaData -m_textwchar_t* textconst wchar_t*
MenuNodeInterface FileIDMetaData -m_textwchar_t* textconst wchar_t*
MenuNodeInterface TitleMetaData -m_textwchar_t* -m_languageCodewchar_t* languageCodeconst wchar_t* textconst wchar_t*
MenuNodeInterface CertLevelMetaData -m_textwchar_t* textconst wchar_t*

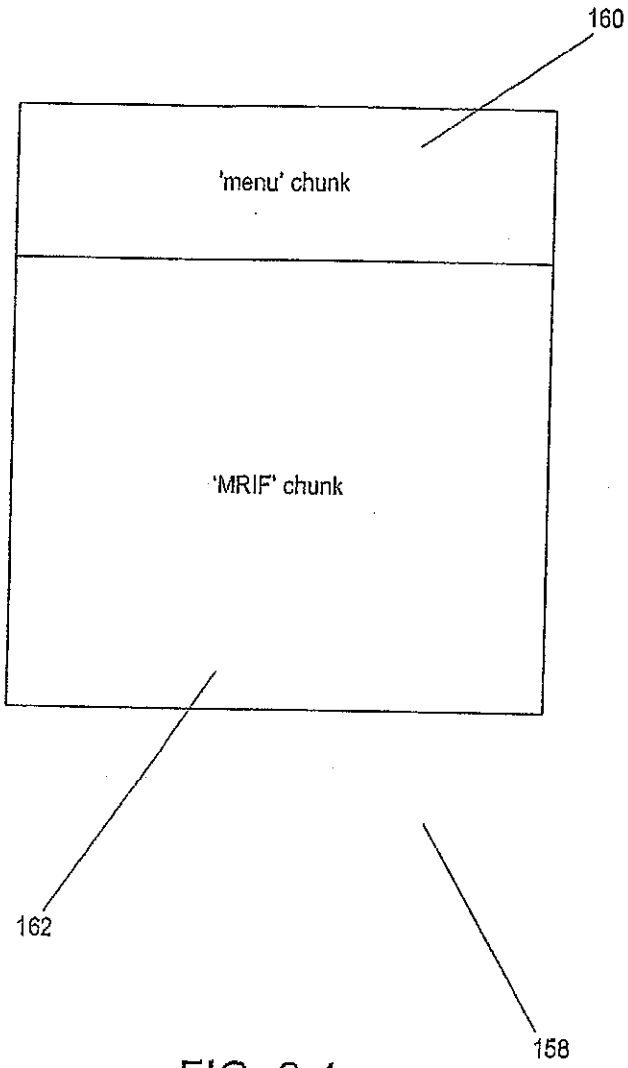


FIG. 2.4.

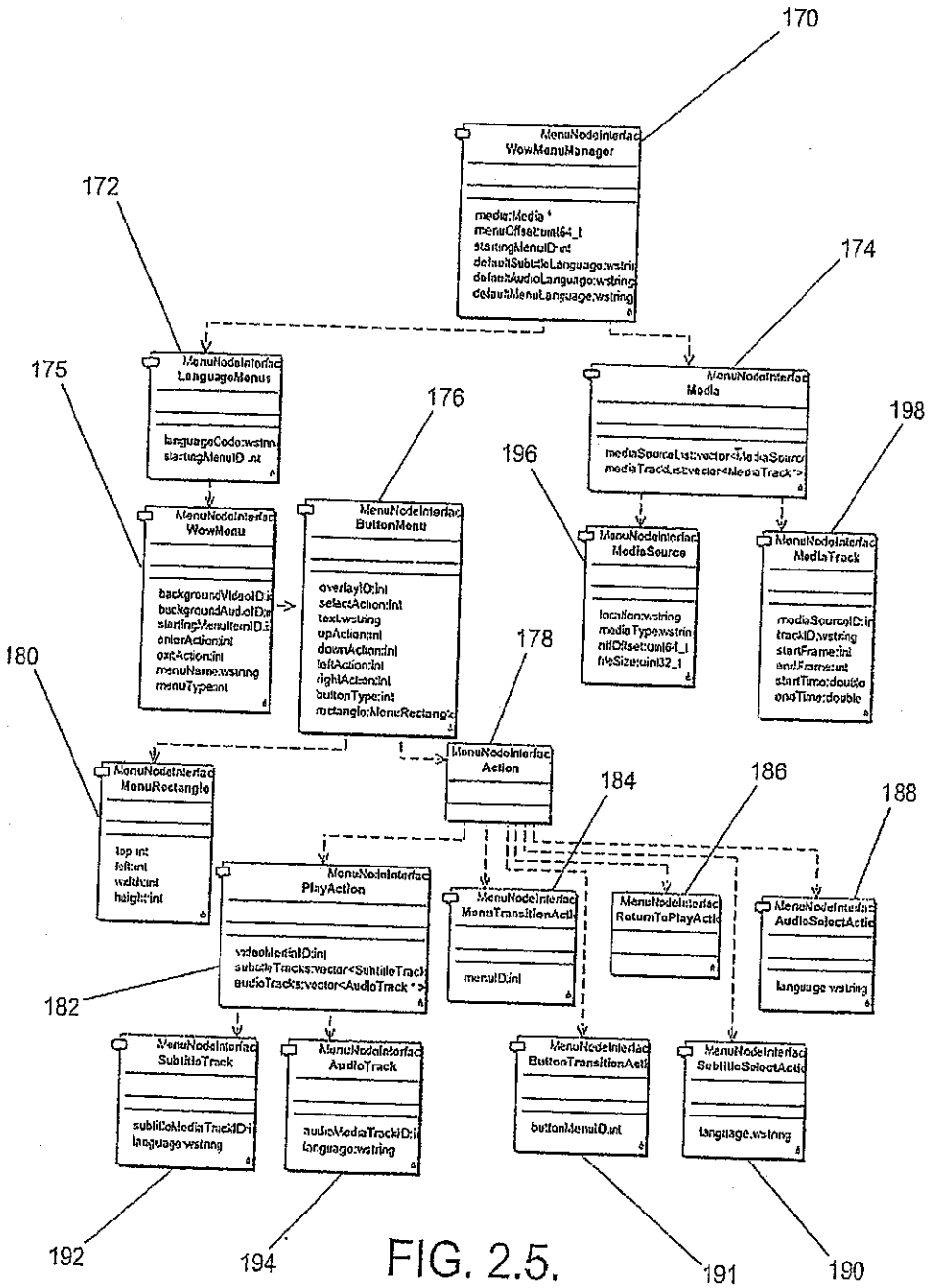

170
172
174
175
176
196
198
180
178
184
186
188
182
192
194
191
190
MenuNodeInterfac
WowMenuManager
media:Media *
LanguageMenus
languageCode:wstrin
WowMenu
backgroundVideoID:i
backgroundAudioID:i
enterAction:int
exitAction:int
menuName:wstring
menuType:int
ButtonMenu
overlayID:int
selectAction:int
text:wstring
upAction:int
downAction:int
leftAction:int
rightAction:int
buttonType:int
Media
mediaSourceList:vector<MediaSource
mediaTrackList:vector<MediaTrack*>
MediaSource
location:wstring
mediaType:wstrin
MediaTrack
mediaSourceID:in
trackID:wstring
startFrame:int
endFrame:int
startTime:double
endTime:double
Action
MenuRectangle
top:int
left:int
width:int
height:int
PlayAction
videoMediaID:int
subtitleTracks:vector<SubtitleTrack
audioTracks:vector<AudioTrack*>
MenuTransitionActi
menuID:int
ReturnToPlayActi
AudioSelectActio
language:wstring
SubtitleTrack
subtitleMediaTrackID:i
language:wstring
AudioTrack
audioMediaTrackID:i
language:wstring
ButtonTransitionActi
buttonMenuID:int
SubtitleSelectActi
language:wstring

FIG. 2.5.

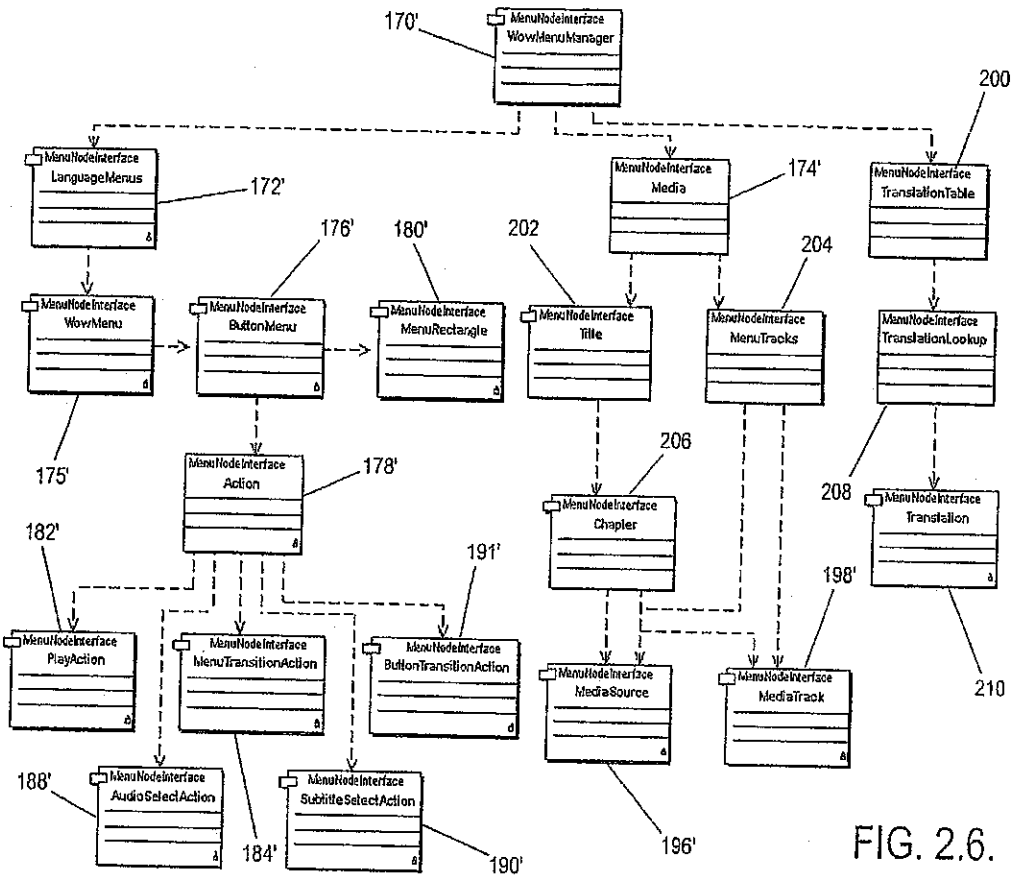

170'
MenuNodeInterface
WowMenuManager
200
MenuNodeInterface
LanguageMenus
172'
MenuNodeInterface
Media
174'
MenuNodeInterface
TranslationTable
176'
180'
202
204
MenuNodeInterface
WowMenu
MenuNodeInterface
ButtonMenu
MenuNodeInterface
MenuRectangle
MenuNodeInterface
Title
MenuNodeInterface
MenuTracks
MenuNodeInterface
TranslationLookup
175'
MenuNodeInterface
Action
178'
206
208
MenuNodeInterface
Chapter
MenuNodeInterface
Translation
182'
191'
198'
MenuNodeInterface
PlayAction
MenuNodeInterface
MenuTransitionAction
MenuNodeInterface
ButtonTransitionAction
MenuNodeInterface
MediaSource
MenuNodeInterface
MediaTrack
210
188'
MenuNodeInterface
AudioSelectAction
MenuNodeInterface
SubtitleSelectAction
184'
190'
196'

FIG. 2.6.

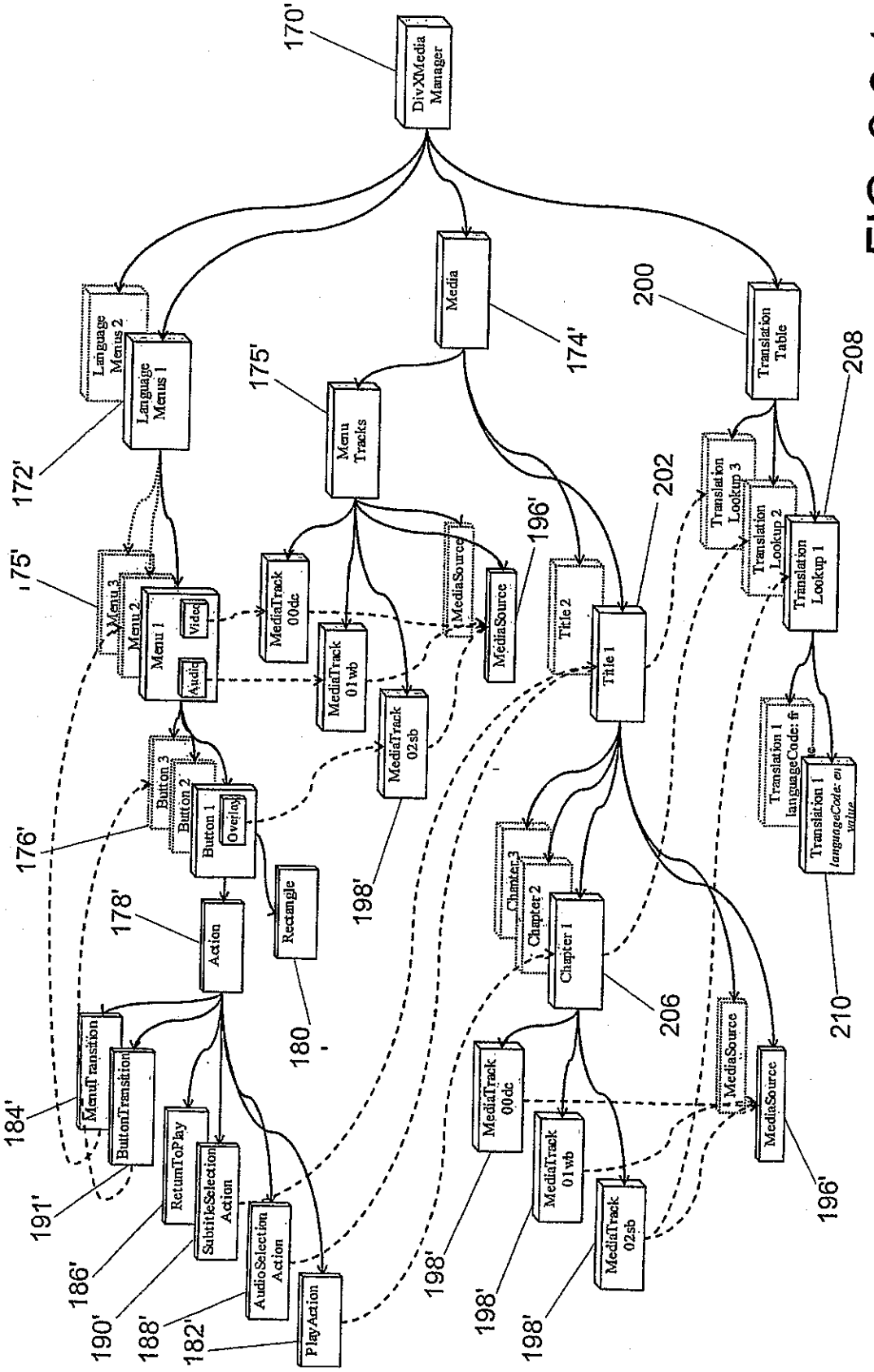

170'
DivXMedia Manager
Media
174'
Language Menus 2
Language Menus 1
172'
175'
Menu Tracks
MediaTrack 00dc
MediaTrack 01wb
MediaTrack 02sb
MediaSource
196'
Menu 3
Menu 2
Menu 1
Video
Audio
Button 3
Button 2
Button 1
Overlay
176'
178'
Action
Rectangle
180
198'
MenuTransition
ButtonTransition
184'
191'
ReturnToPlay
SubtitleSelection Action
AudioSelection Action
PlayAction
186'
190'
188'
182'
Title 2
Title 1
202
Chapter 3
Chapter 2
Chapter 1
206
200
Translation Table
208
Translation Lookup 3
Translation Lookup 2
Translation Lookup 1
Translation 1
languageCode: fr
Translation 1
languageCode: en
value
210

FIG. 2.6.1.

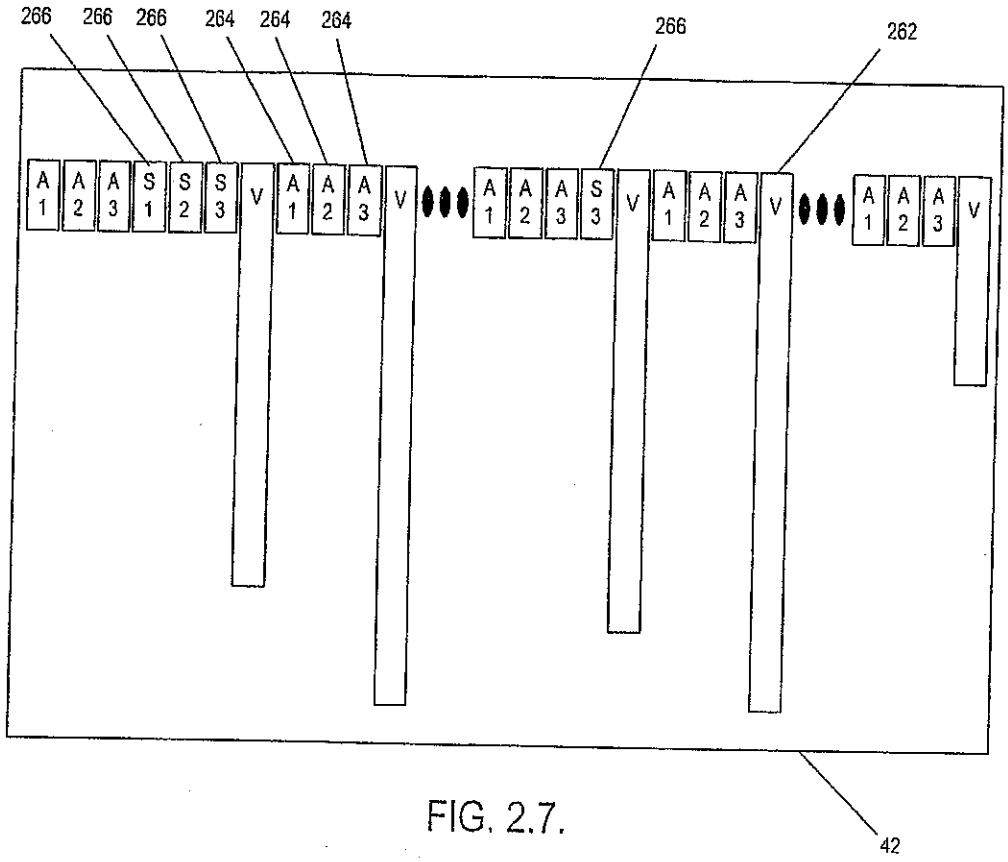


FIG. 2.7.

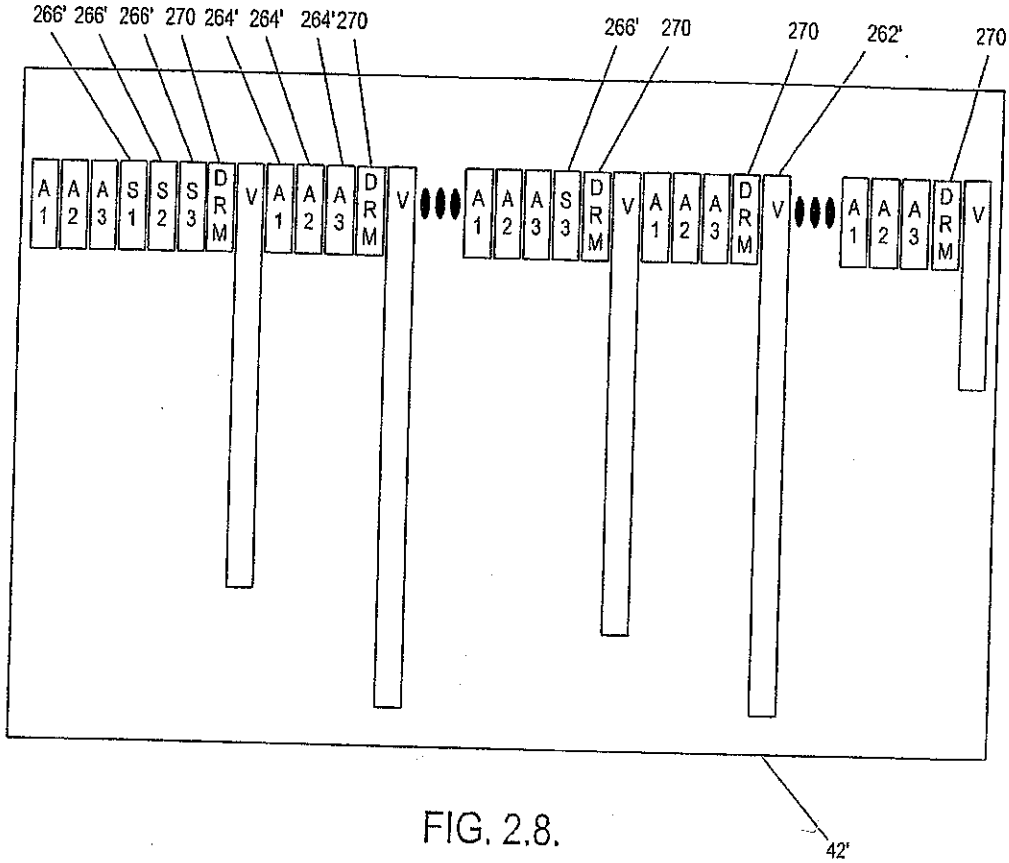

266' 266' 266' 270 264' 264' 264' 270
266' 270
270
262'
270
A1 A2 A3 S1 S2 S3 DRM V A1 A2 A3 DRM V
A1 A2 A3 S3 DRM V A1 A2 A3 DRM V
A1 A2 A3 DRM V
42'

FIG. 2.8.

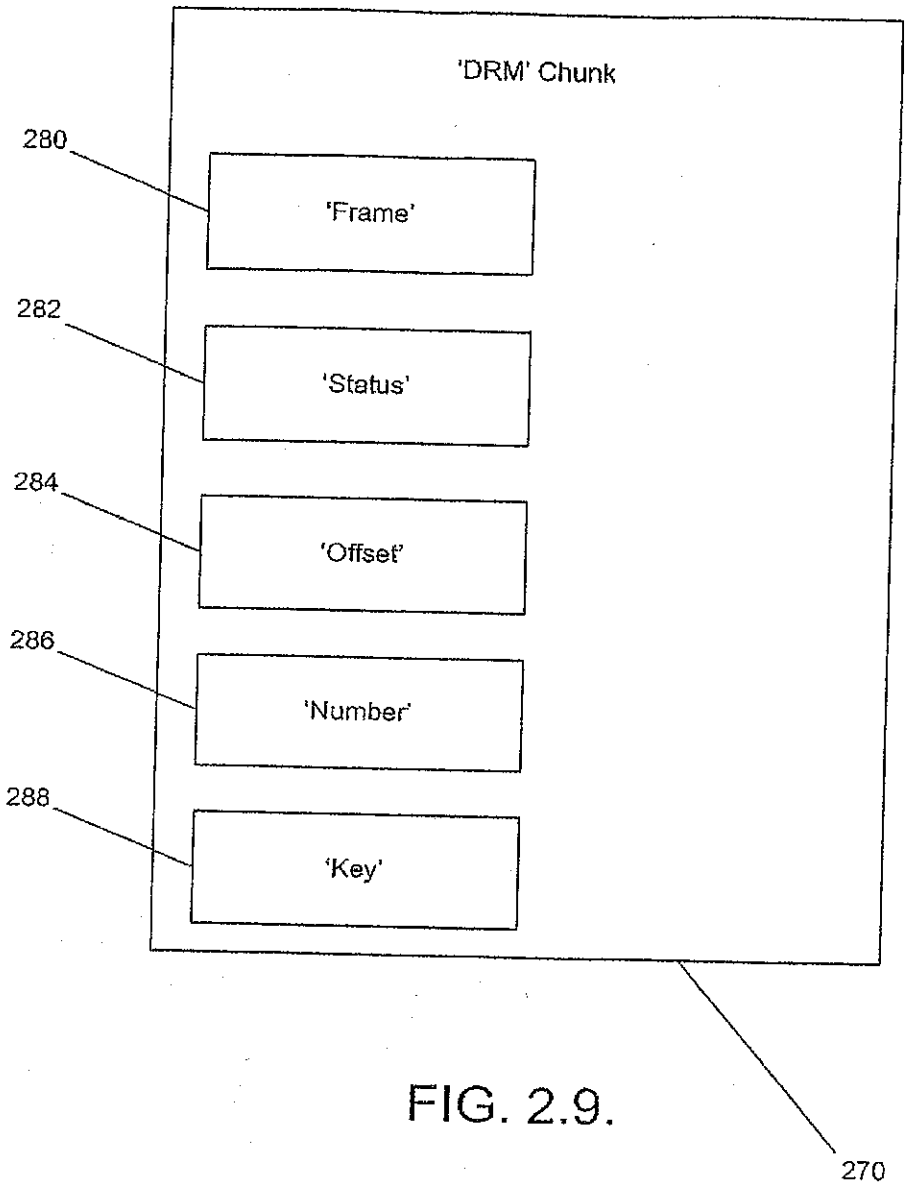
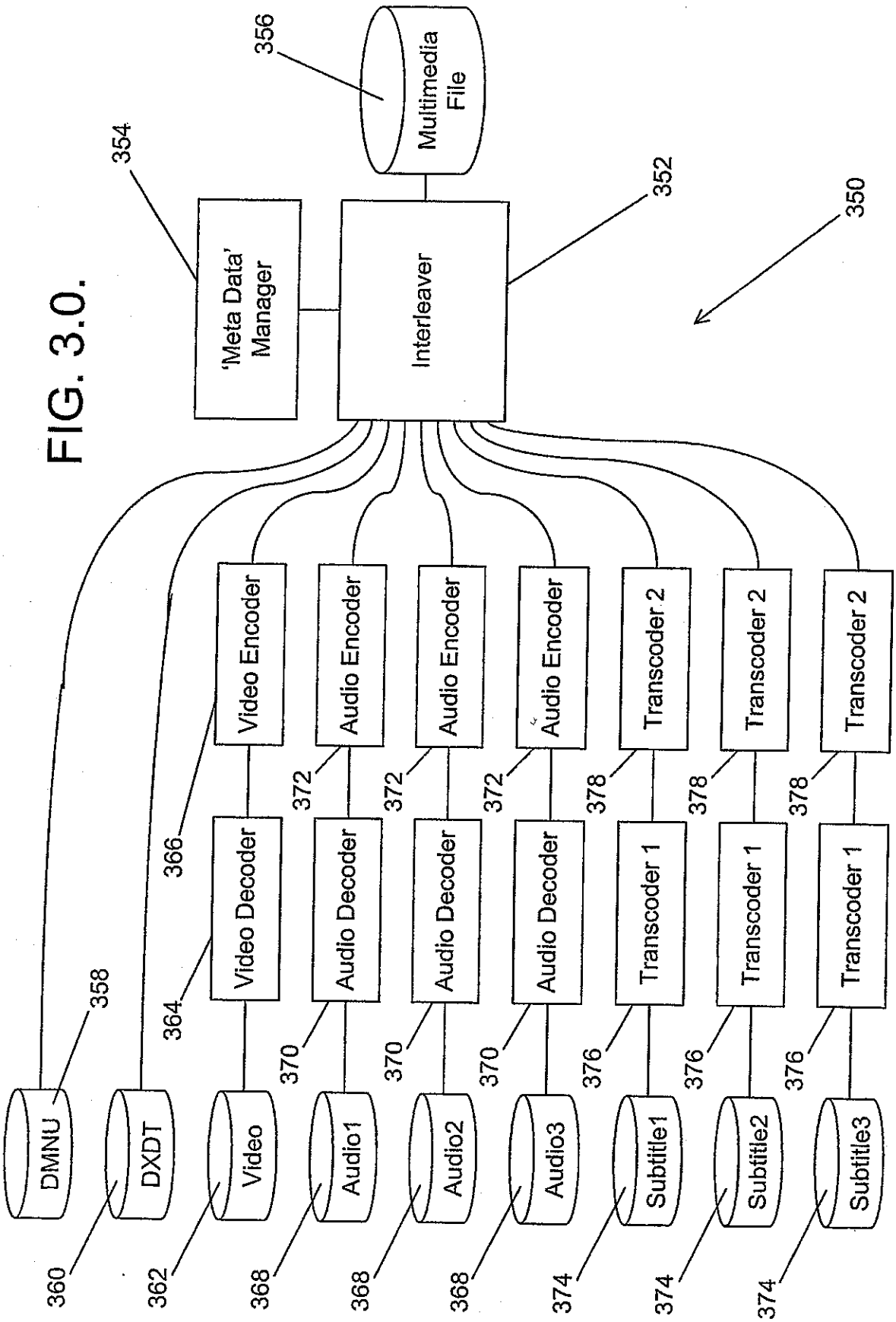

'DRM' Chunk
280
'Frame'
282
'Status'
284
'Offset'
286
'Number'
288
'Key'
270

FIG. 2.9.

FIG. 3.0.


350
352
354
356
Multimedia File
'Meta Data' Manager
Interleaver
Video Encoder
Audio Encoder
Audio Encoder
Audio Encoder
Transcoder 2
Transcoder 2
Transcoder 2
Video Decoder
Audio Decoder
Audio Decoder
Audio Decoder
Transcoder 1
Transcoder 1
Transcoder 1
DMNU
DXDT
Video
Audio1
Audio2
Audio3
Subtitle1
Subtitle2
Subtitle3
358
360
362
364
366
368
370
372
374
376
378

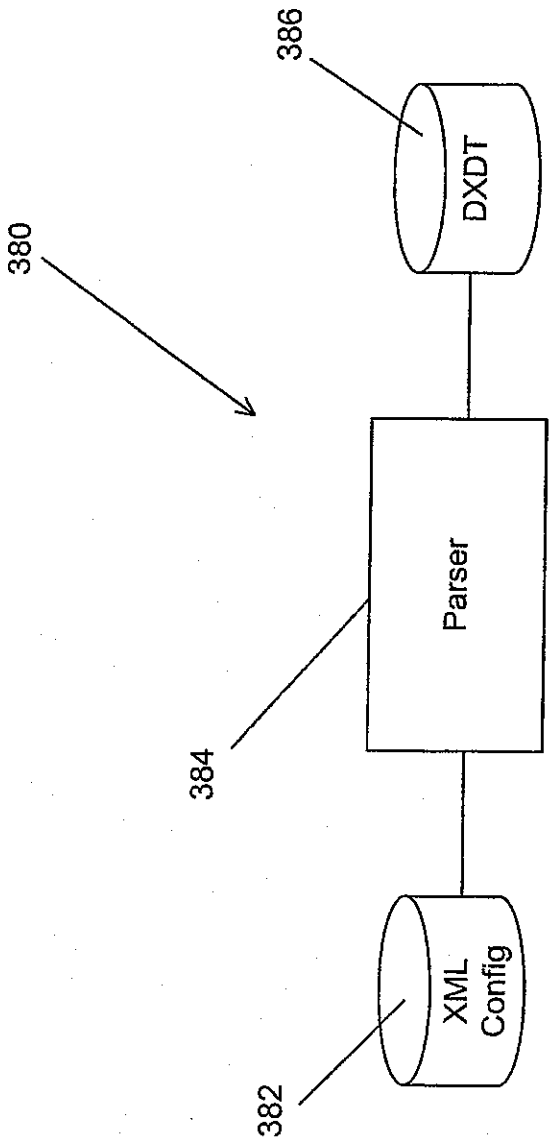


FIG. 3.1.

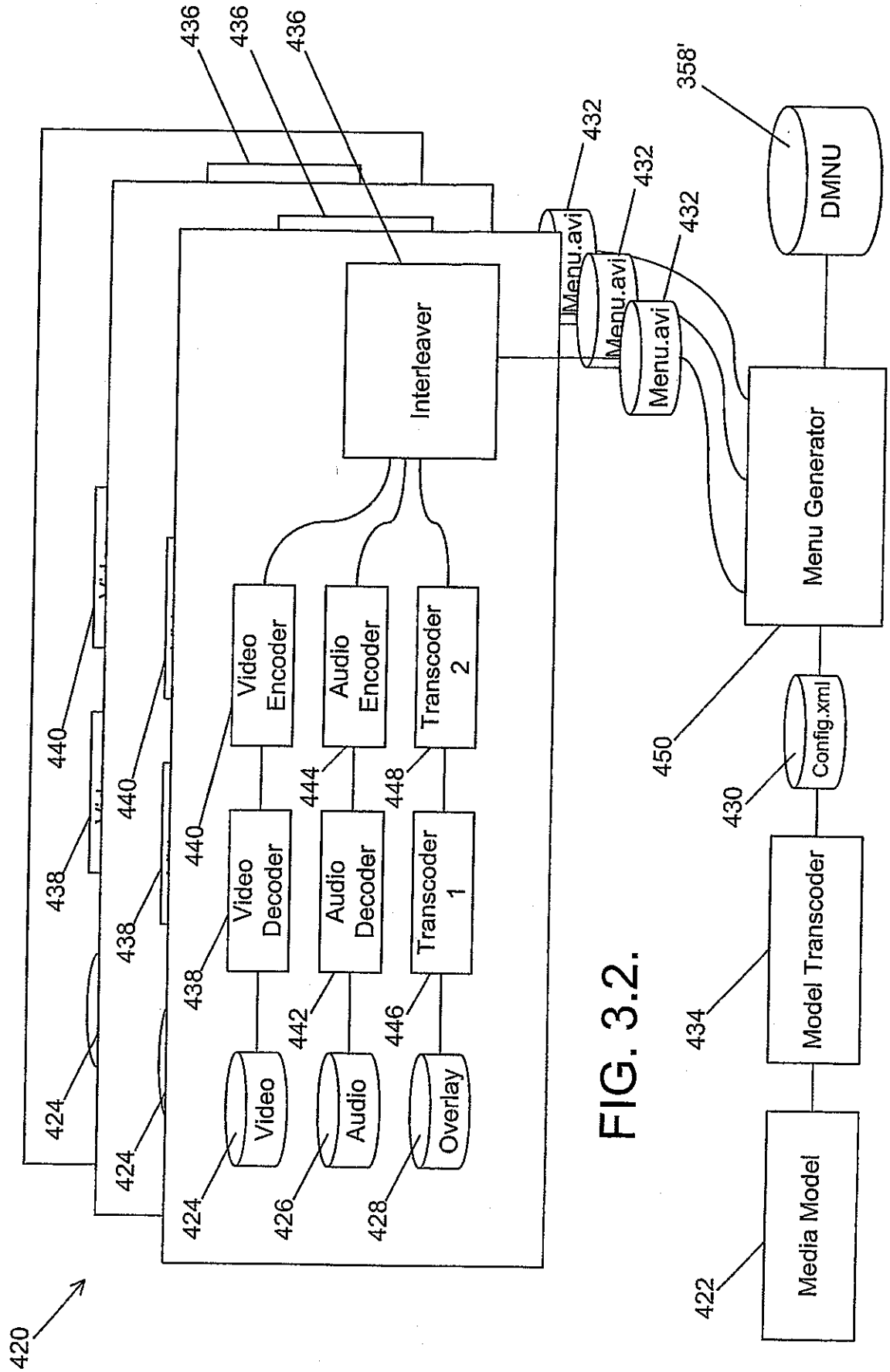

420
436
436
436
358'
DMNU
432
432
432
Menu.avi
Menu.avi
Menu.avi
Interleaver
Menu Generator
Video Encoder
Audio Encoder
Transcoder 2
Video Decoder
Audio Decoder
Transcoder 1
Video
Audio
Overlay
440
440
440
438
438
438
424
424
424
444
448
442
446
426
428
450
430
Config.xml
434
Model Transcoder
422
Media Model

FIG. 3.2.

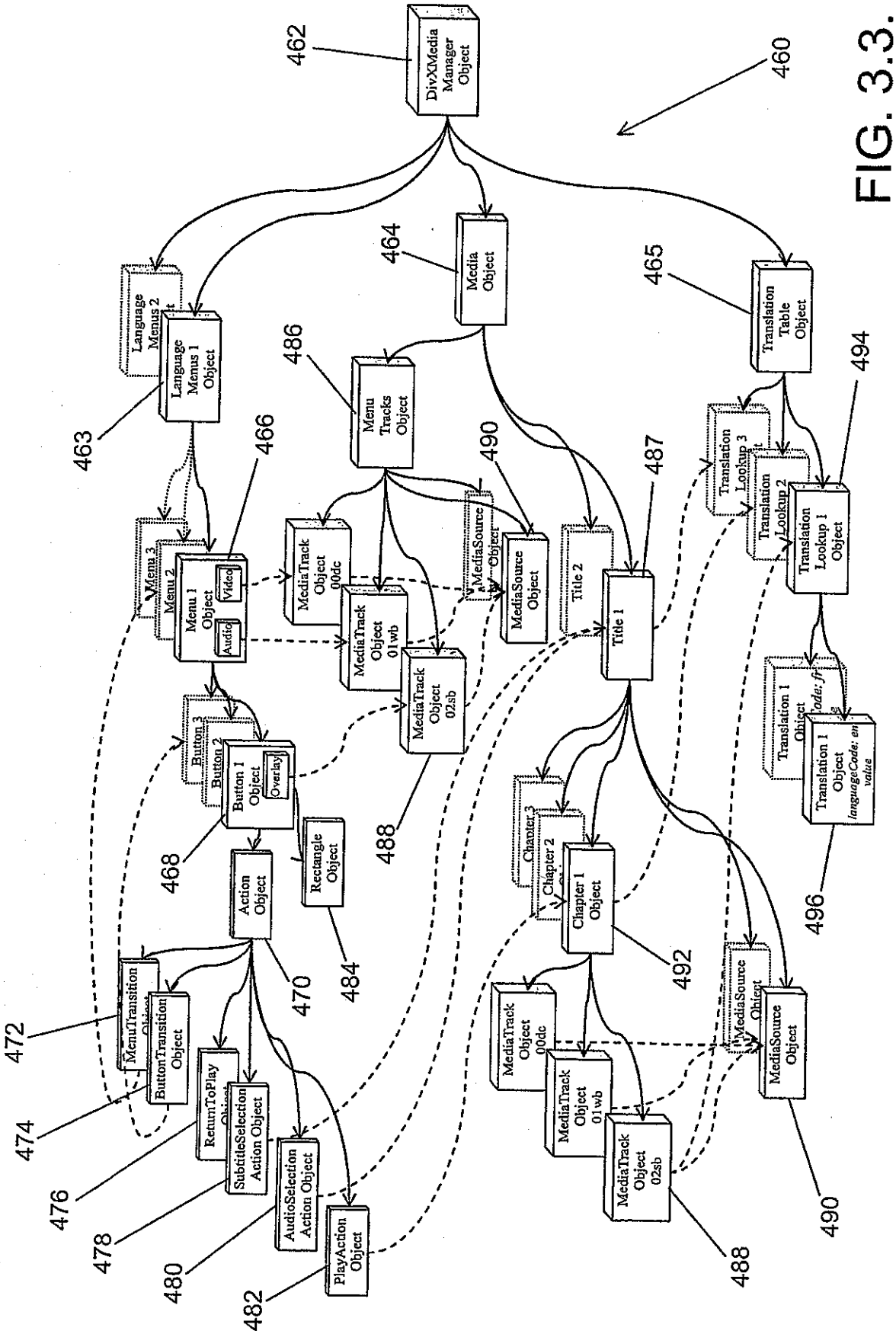

DivXMedia Manager Object
462
460
Media Object
464
Translation Table Object
465
Language Menus 2 Object
Language Menus 1 Object
463
Menu Tracks Object
486
494
Translation Lookup 3 Object
Translation Lookup 2 Object
Translation Lookup 1 Object
Menu 3
Menu 2
Menu 1 Object
Video
Audio
466
MediaTrack Object 00dc
MediaTrack Object 01wb
MediaTrack Object 02sb
MediaSource Object
490
Title 2
Title 1
487
Translation 1 Object
languageCode: fr
Translation 1 Object
languageCode: en
value
496
Button 3
Button 2
Button 1 Object
Overlay
468
488
Action Object
Rectangle Object
484
Chapter 3
Chapter 2
Chapter 1 Object
492
MenuTransition Object
ButtonTransition Object
ReturnToPlay Object
SubtitleSelection Action Object
AudioSelection Action Object
PlayAction Object
470
472
474
476
478
480
482

FIG. 3.3.

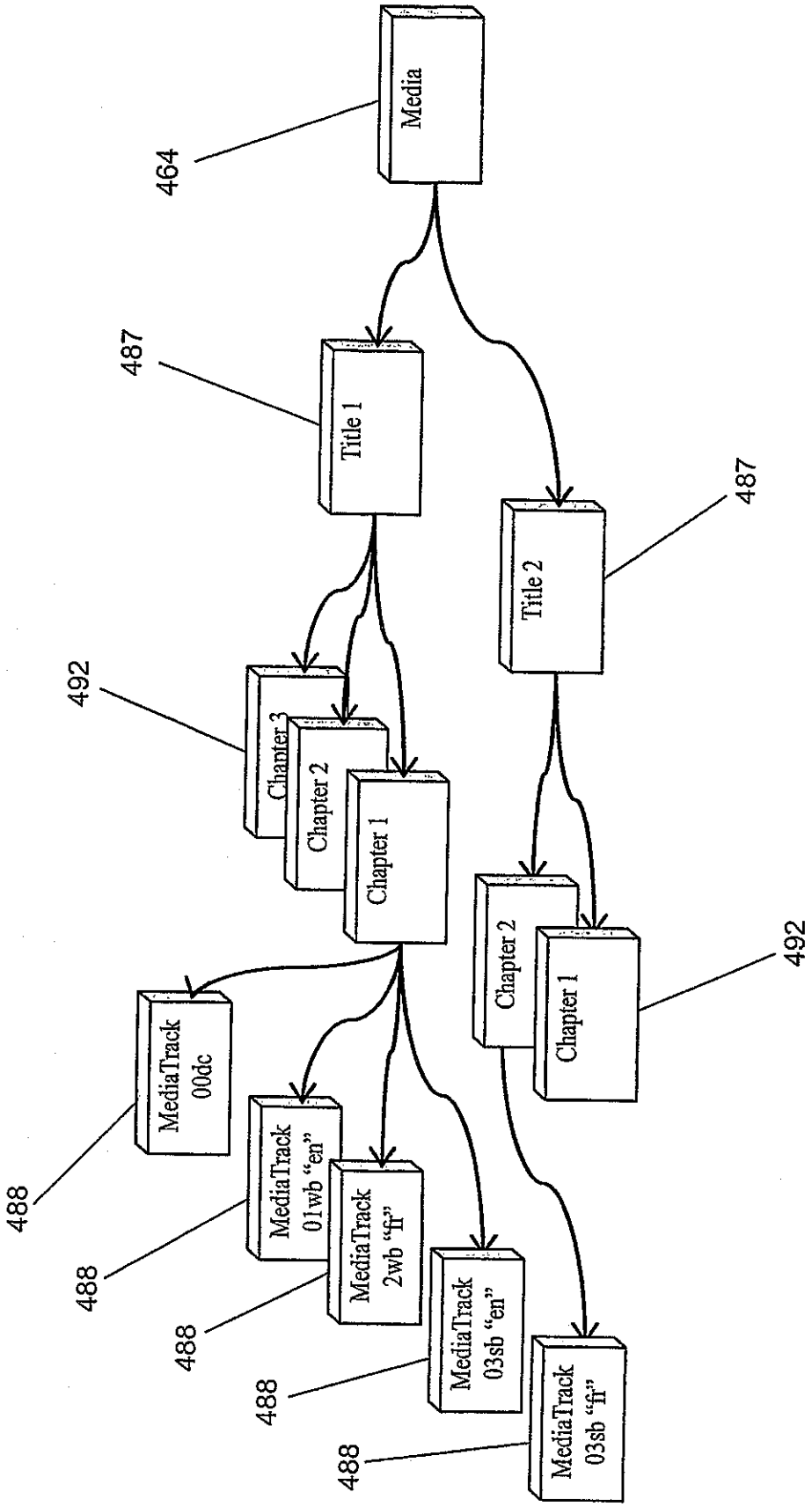

Media
464
Title 1
487
Title 2
487
Chapter 3
Chapter 2
Chapter 1
492
Chapter 2
Chapter 1
492
MediaTrack 00dc
MediaTrack 01wb "en"
MediaTrack 2wb "fr"
MediaTrack 03sb "en"
MediaTrack 03sb "fr"
488
488
488
488
488

FIG. 3.3.1.

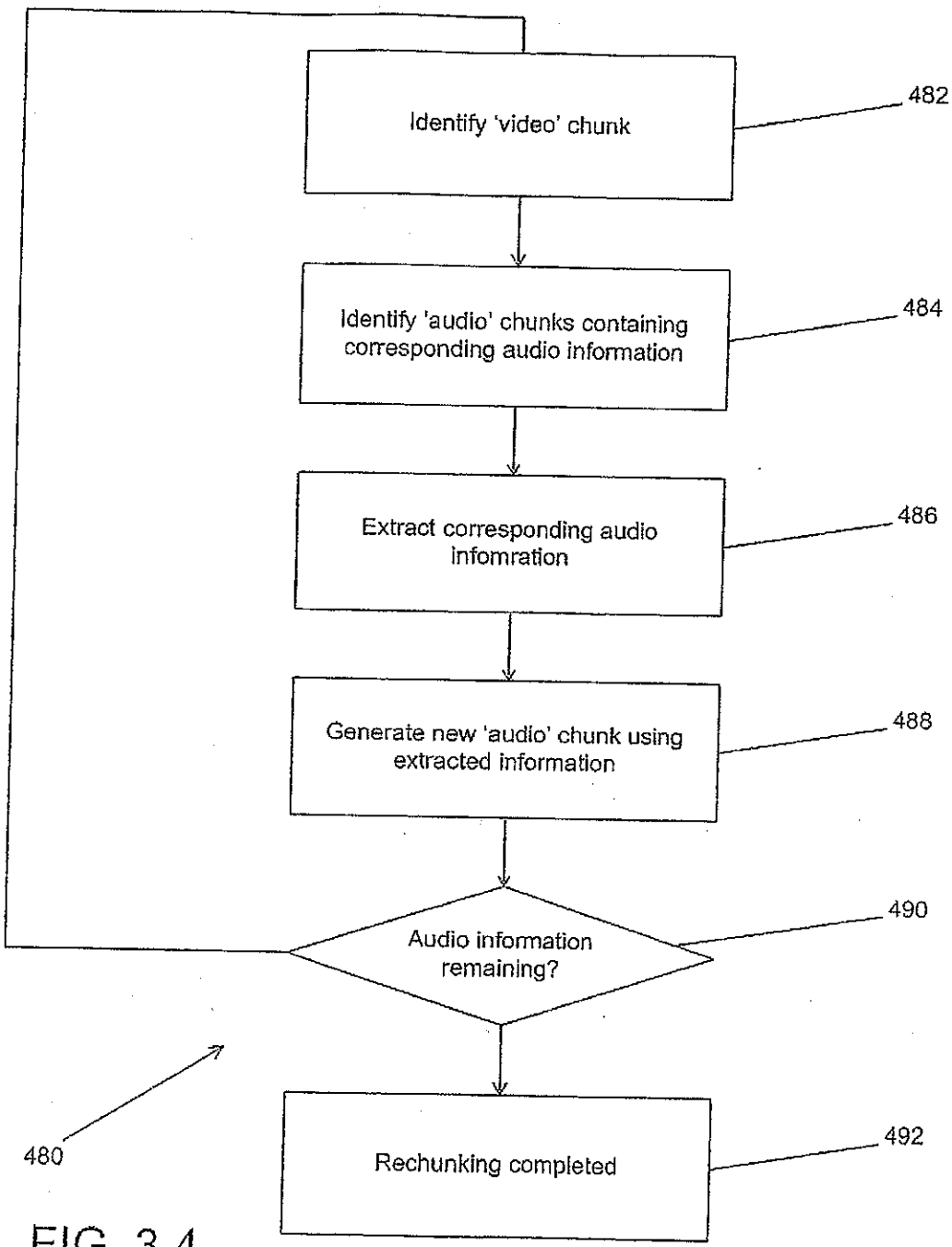

Identify 'video' chunk
482
Identify 'audio' chunks containing corresponding audio information
484
Extract corresponding audio infomration
486
Generate new 'audio' chunk using extracted information
488
Audio information remaining?
490
Rechunking completed
492
480

FIG. 3.4.

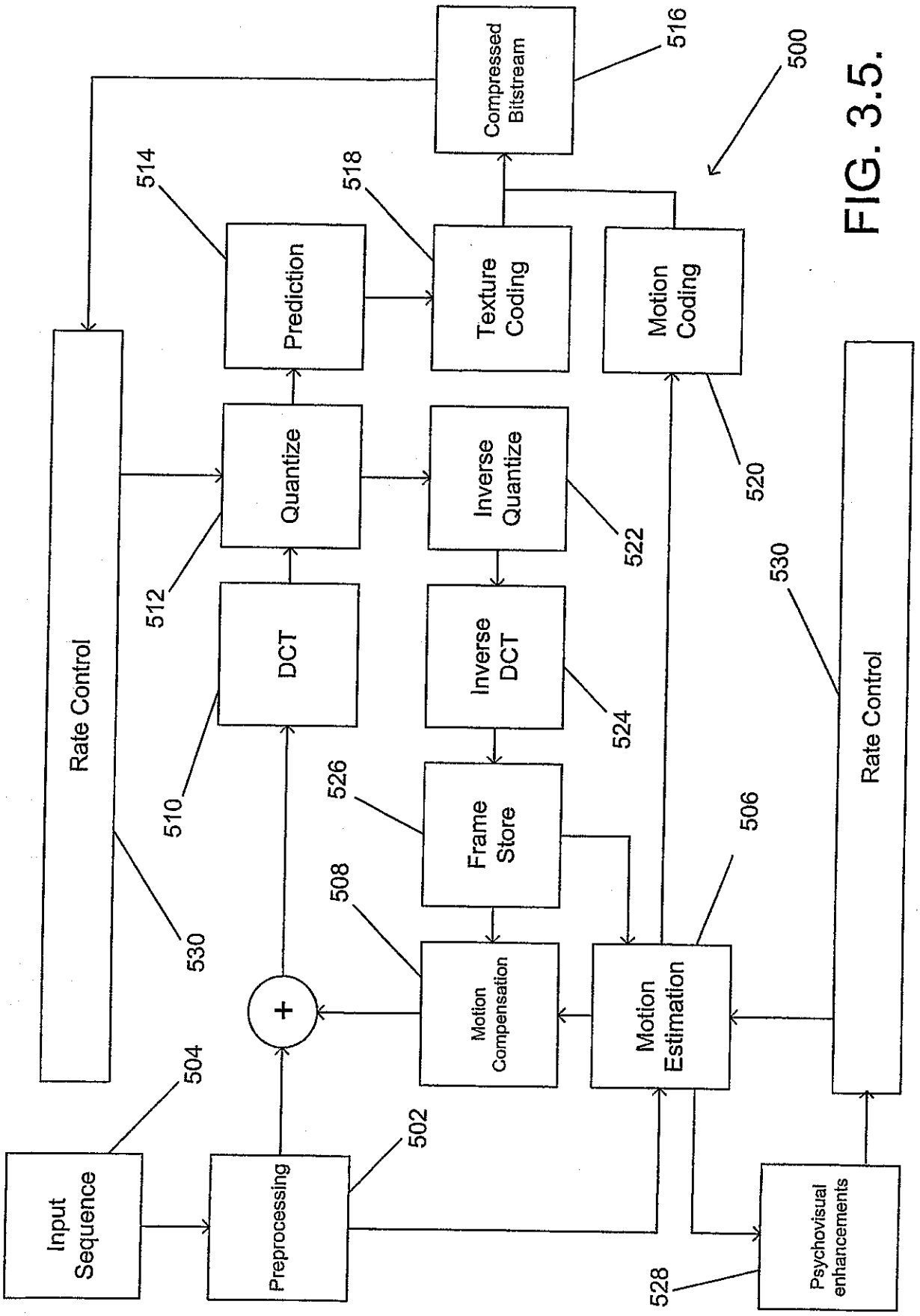

Compressed Bitstream
516
500
514
518
Prediction
Texture Coding
Motion Coding
Quantize
Inverse Quantize
520
522
512
530
Rate Control
DCT
Inverse DCT
524
510
526
Frame Store
506
508
Motion Compensation
Motion Estimation
+
504
502
Input Sequence
Preprocessing
528
Psychovisual enhancements

FIG. 3.5.

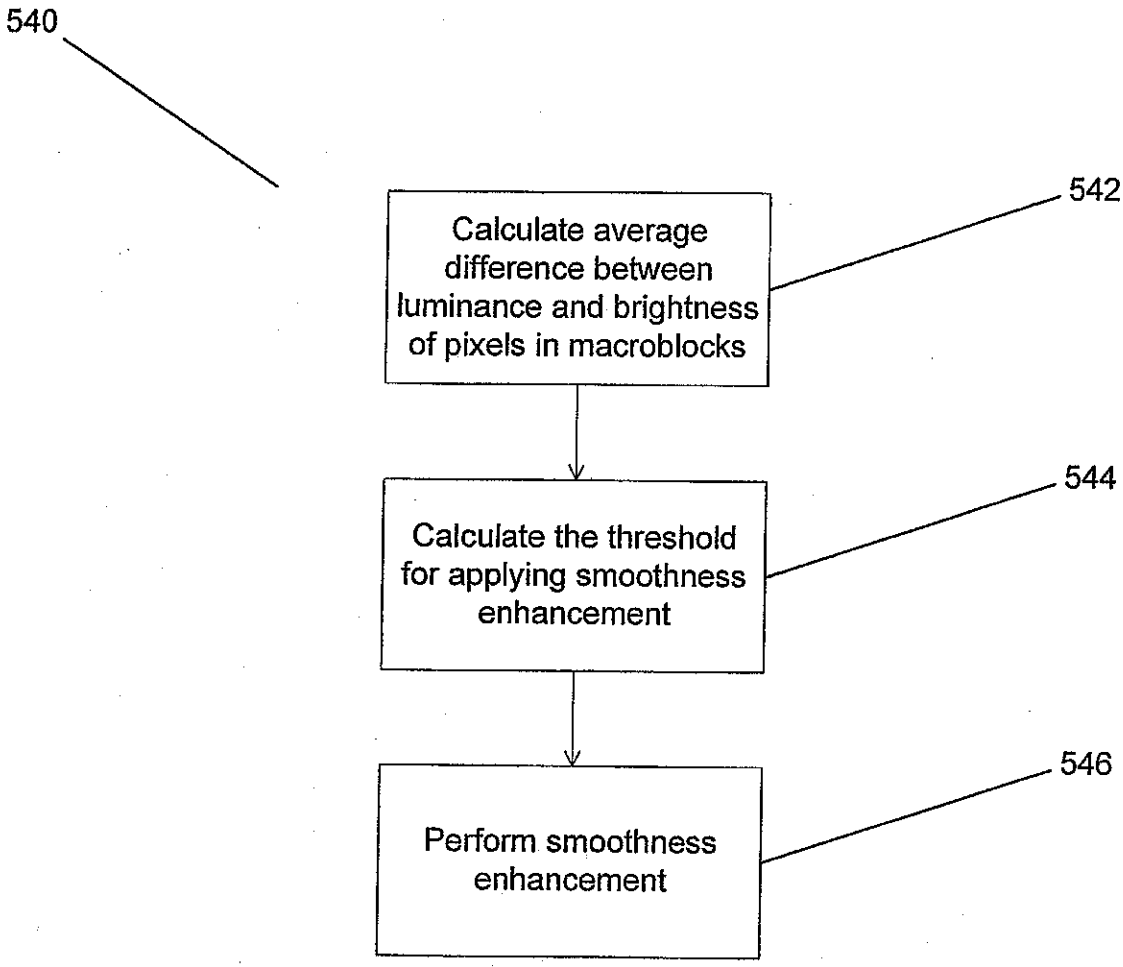

540
Calculate average difference between luminance and brightness of pixels in macroblocks
542
Calculate the threshold for applying smoothness enhancement
544
Perform smoothness enhancement
546

FIG. 3.6.

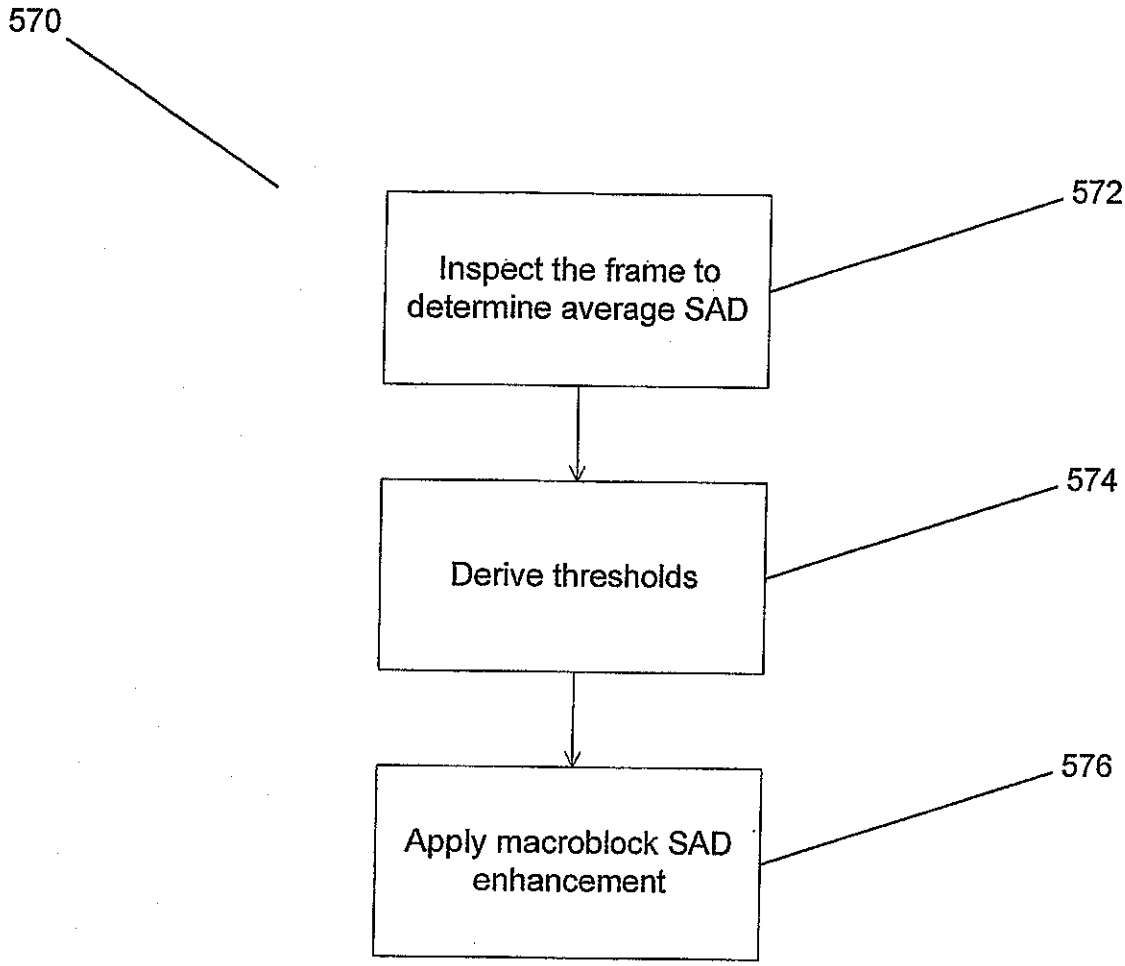

570
572
Inspect the frame to determine average SAD
574
Derive thresholds
576
Apply macroblock SAD enhancement

FIG. 3.7.

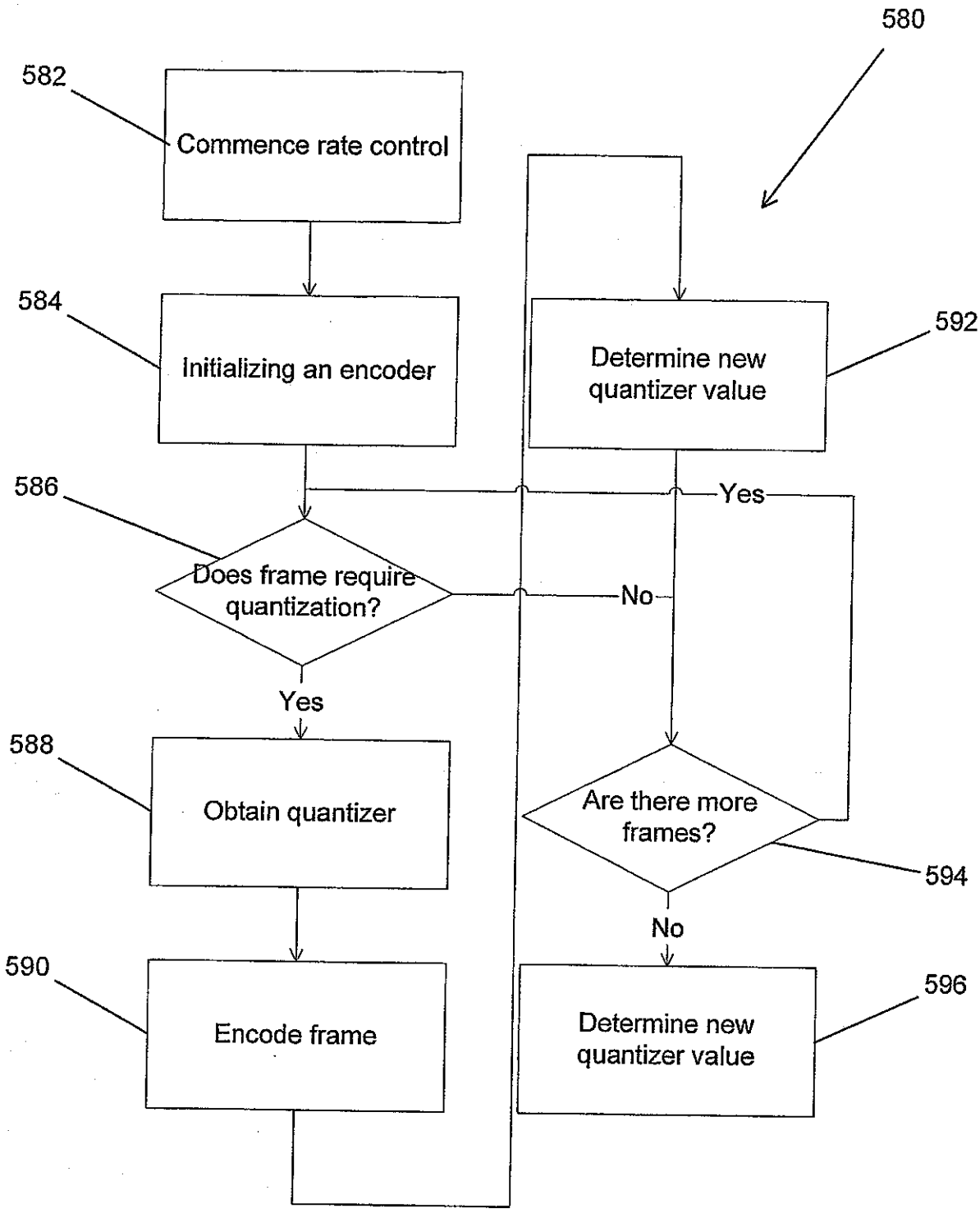

580
582
Commence rate control
584
Initializing an encoder
592
Determine new quantizer value
586
Yes
Does frame require quantization?
No
Yes
588
Obtain quantizer
Are there more frames?
594
No
590
Encode frame
596
Determine new quantizer value

FIG. 3.8.

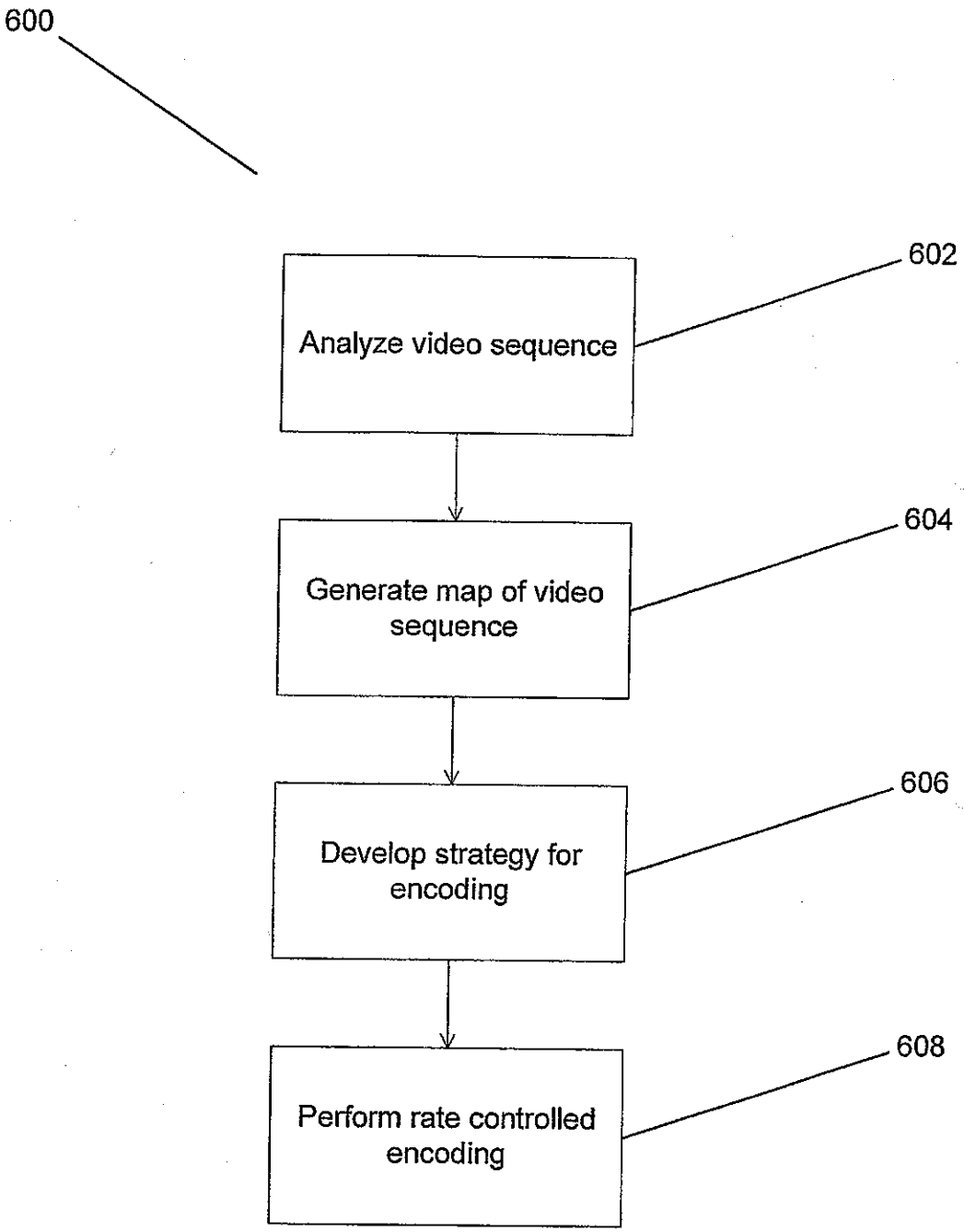

600
Analyze video sequence
602
Generate map of video sequence
604
Develop strategy for encoding
606
Perform rate controlled encoding
608

FIG. 3.9.

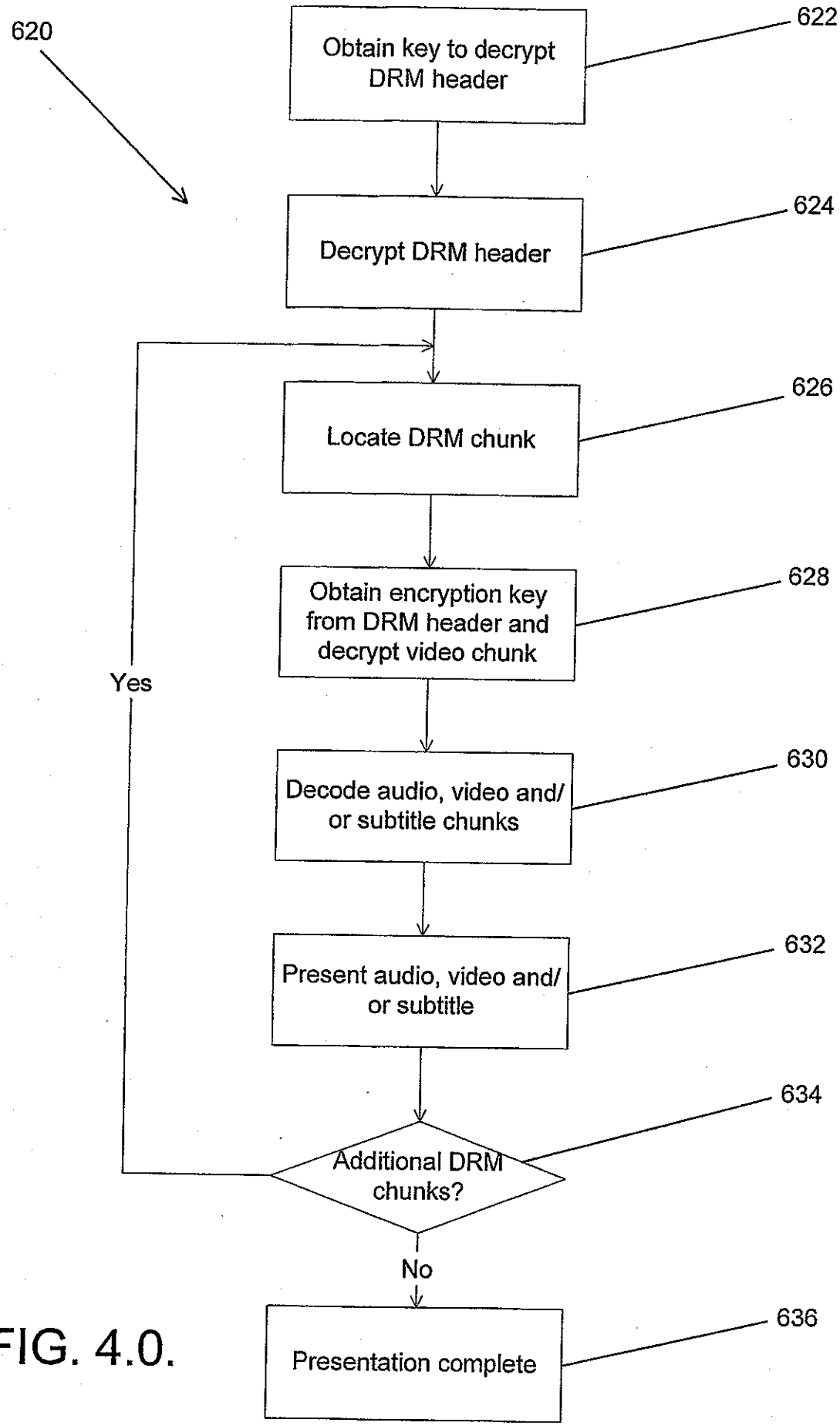

620
Obtain key to decrypt DRM header
622
Decrypt DRM header
624
Locate DRM chunk
626
Obtain encryption key from DRM header and decrypt video chunk
628
Yes
Decode audio, video and/ or subtitle chunks
630
Present audio, video and/ or subtitle
632
Additional DRM chunks?
634
No
Presentation complete
636

FIG. 4.0.

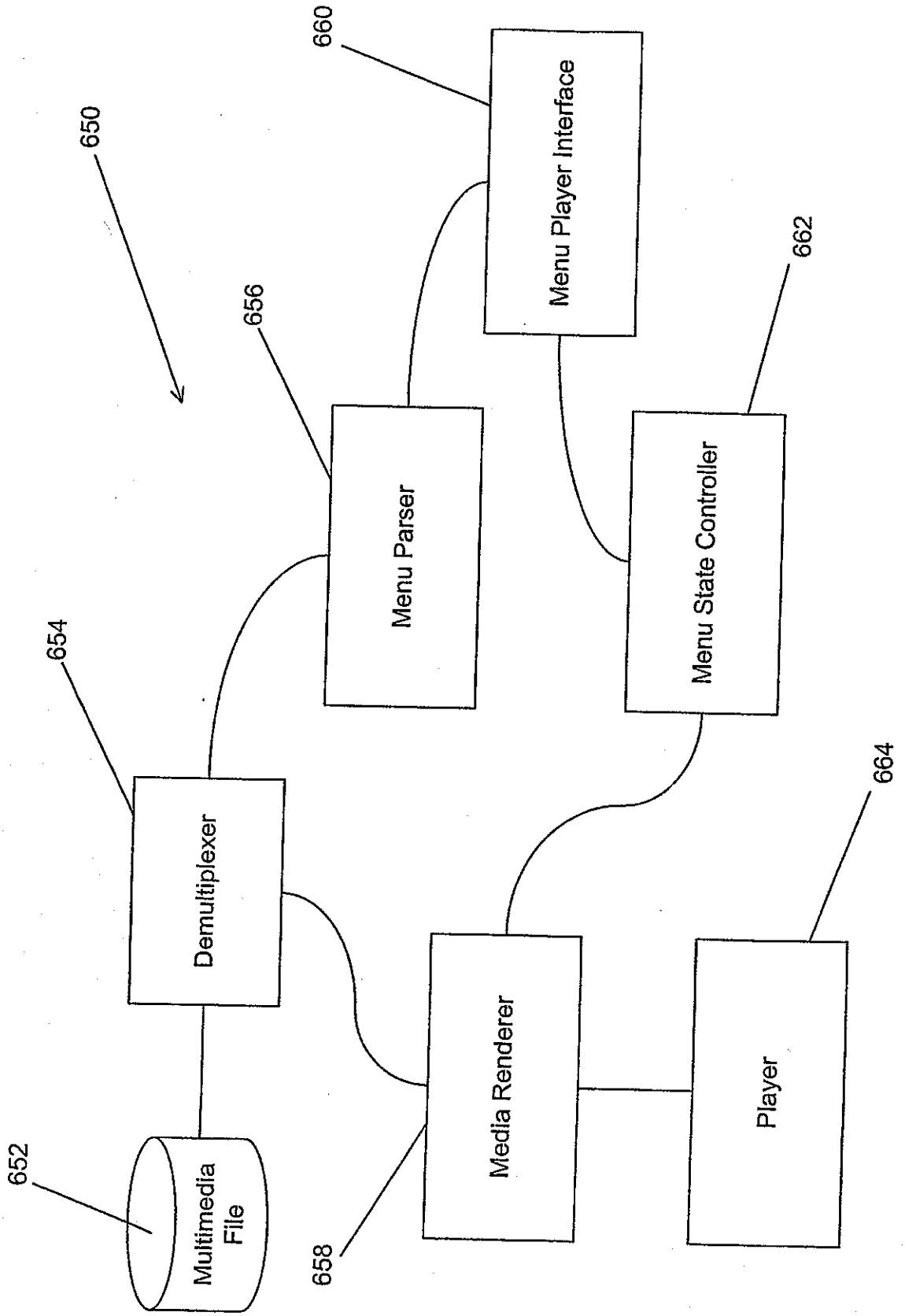

650
652
654
656
658
660
662
664
Multimedia File
Demultiplexer
Menu Parser
Menu Player Interface
Menu State Controller
Media Renderer
Player

FIG. 4.1.

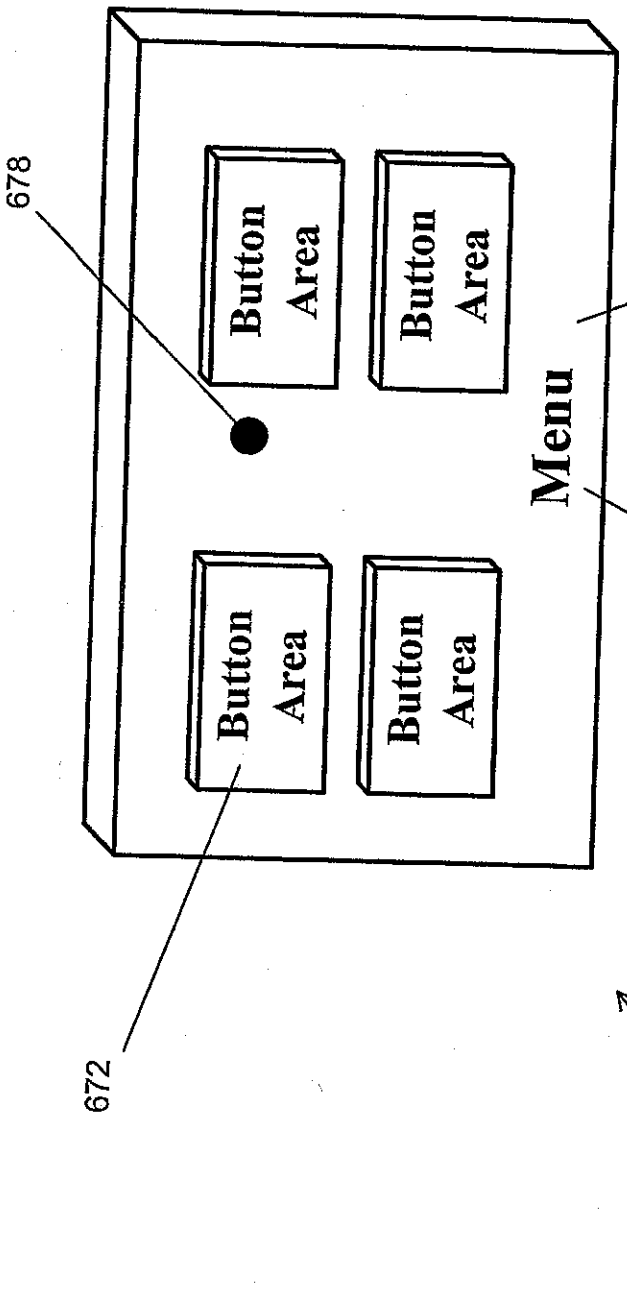

678
Button Area
Button Area
Menu
674
676
Button Area
Button Area
672
670

FIG. 4.2.

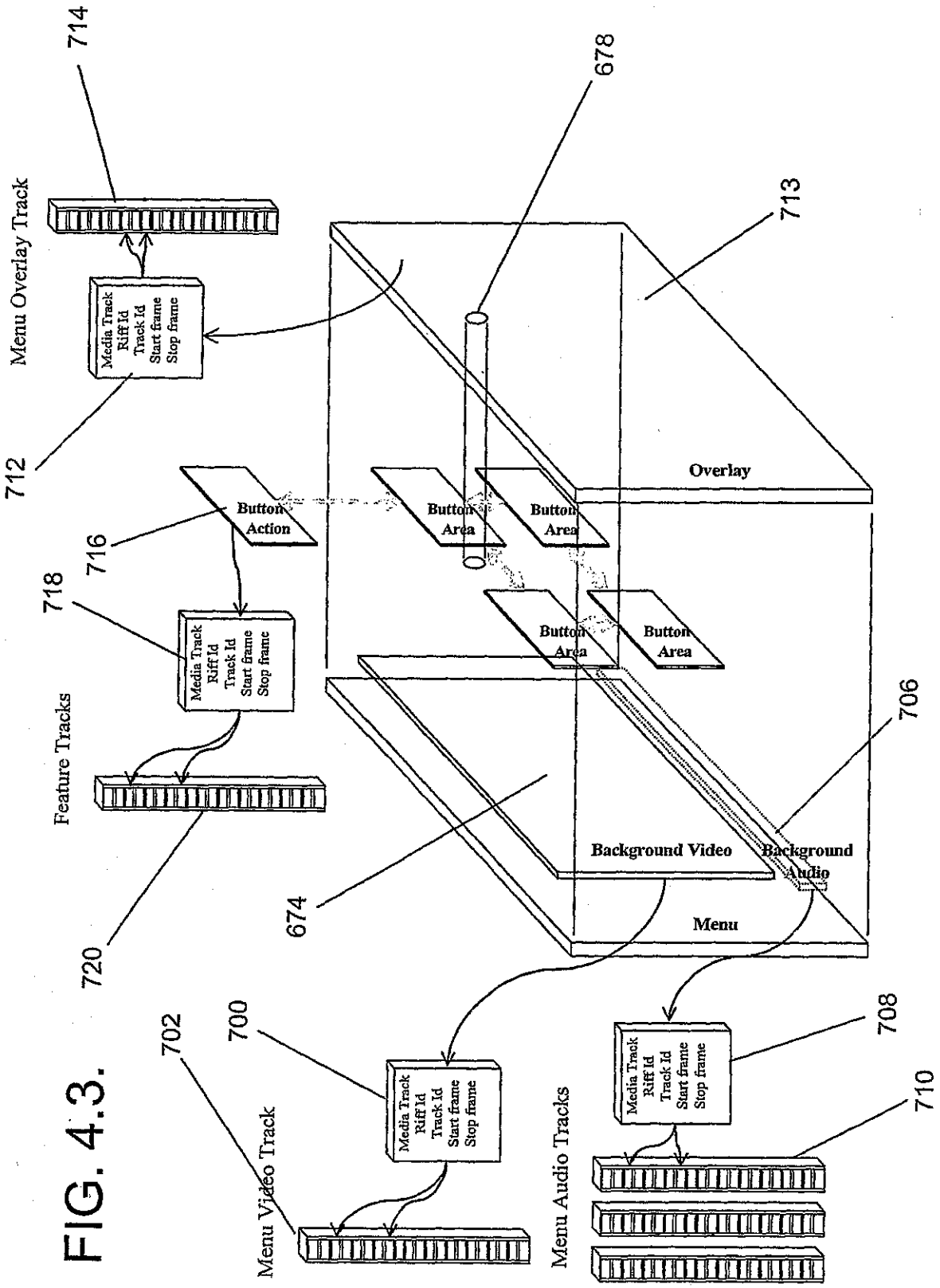

714
678
713
Menu Overlay Track
Media Track
Riff Id
Track Id
Start frame
Stop frame
712
Overlay
Button Action
Button Area
716
718
Feature Tracks
706
Background Video
Background Audio
674
Menu
720
700
702
708
710
Menu Video Track
Menu Audio Tracks

FIG. 4.3.