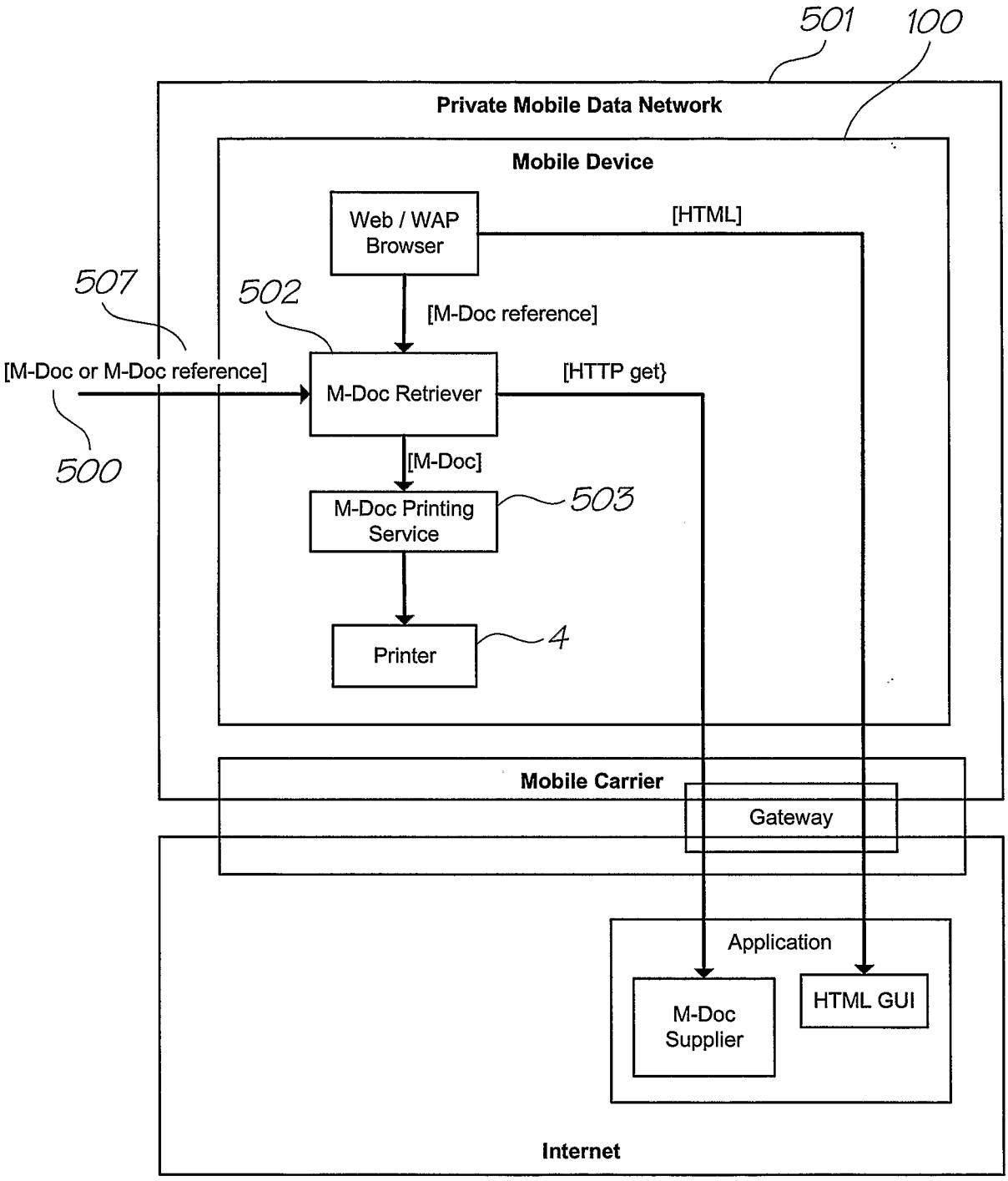
501
100
Private Mobile Data Network
Mobile Device
Web / WAP Browser
[HTML]
507
502
[M-Doc reference]
[M-Doc or M-Doc reference]
M-Doc Retriever
[HTTP get}
500
[M-Doc]
M-Doc Printing Service
503
Printer
4
Mobile Carrier
Gateway
Application
M-Doc Supplier
HTML GUI
Internet

FIG. 1

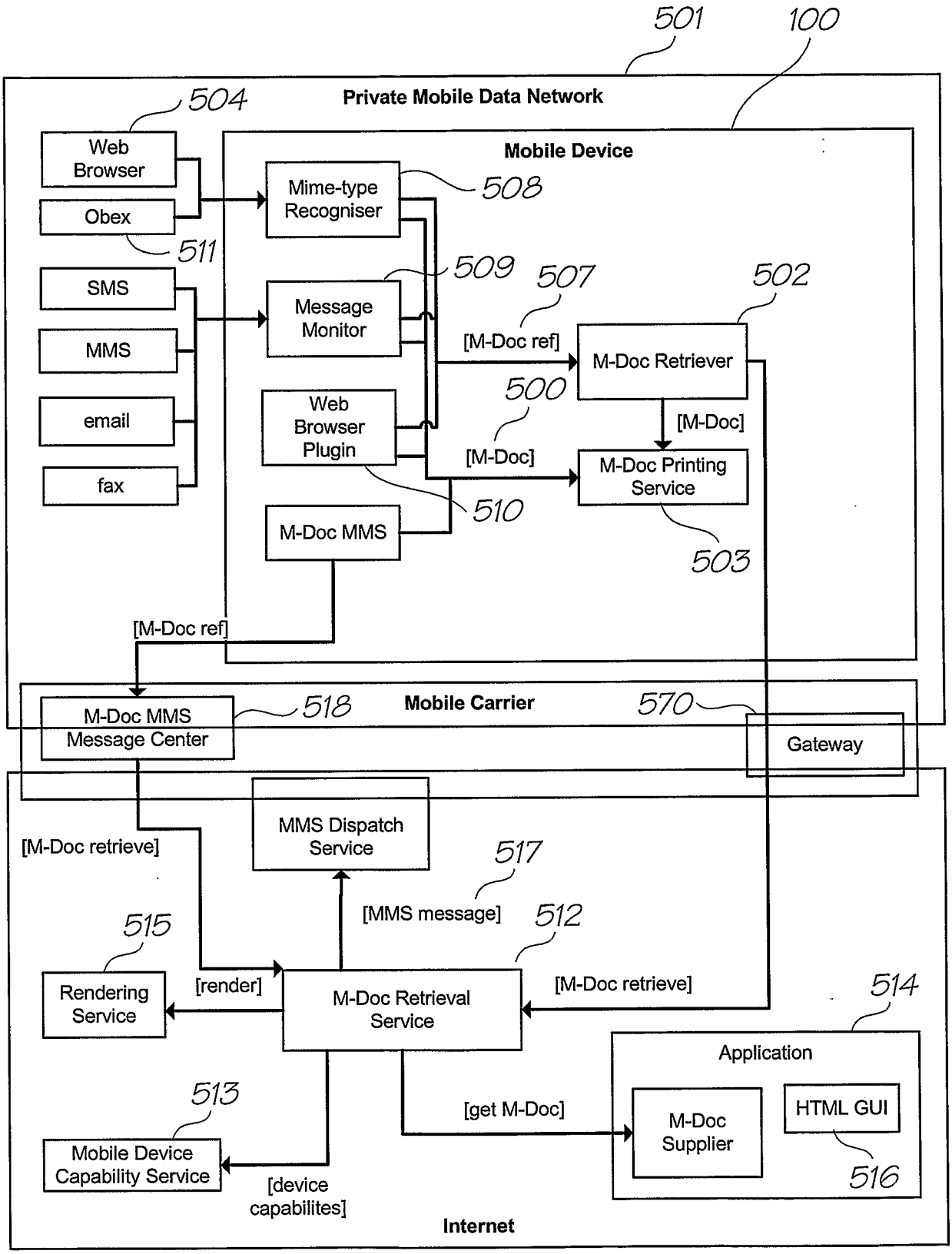
501
100
Private Mobile Data Network
504
Web Browser
Obex
511
SMS
MMS
email
fax
Mobile Device
Mime-type Recogniser
508
509
Message Monitor
507
[M-Doc ref]
502
M-Doc Retriever
500
Web Browser Plugin
[M-Doc]
M-Doc Printing Service
510
M-Doc MMS
503
[M-Doc ref]
Mobile Carrier
518
M-Doc MMS Message Center
570
Gateway
MMS Dispatch Service
[M-Doc retrieve]
517
[MMS message]
512
515
Rendering Service
[render]
M-Doc Retrieval Service
[M-Doc retrieve]
514
Application
M-Doc Supplier
HTML GUI
516
513
[get M-Doc]
Mobile Device Capability Service
[device capabilites]
Internet

FIG. 2

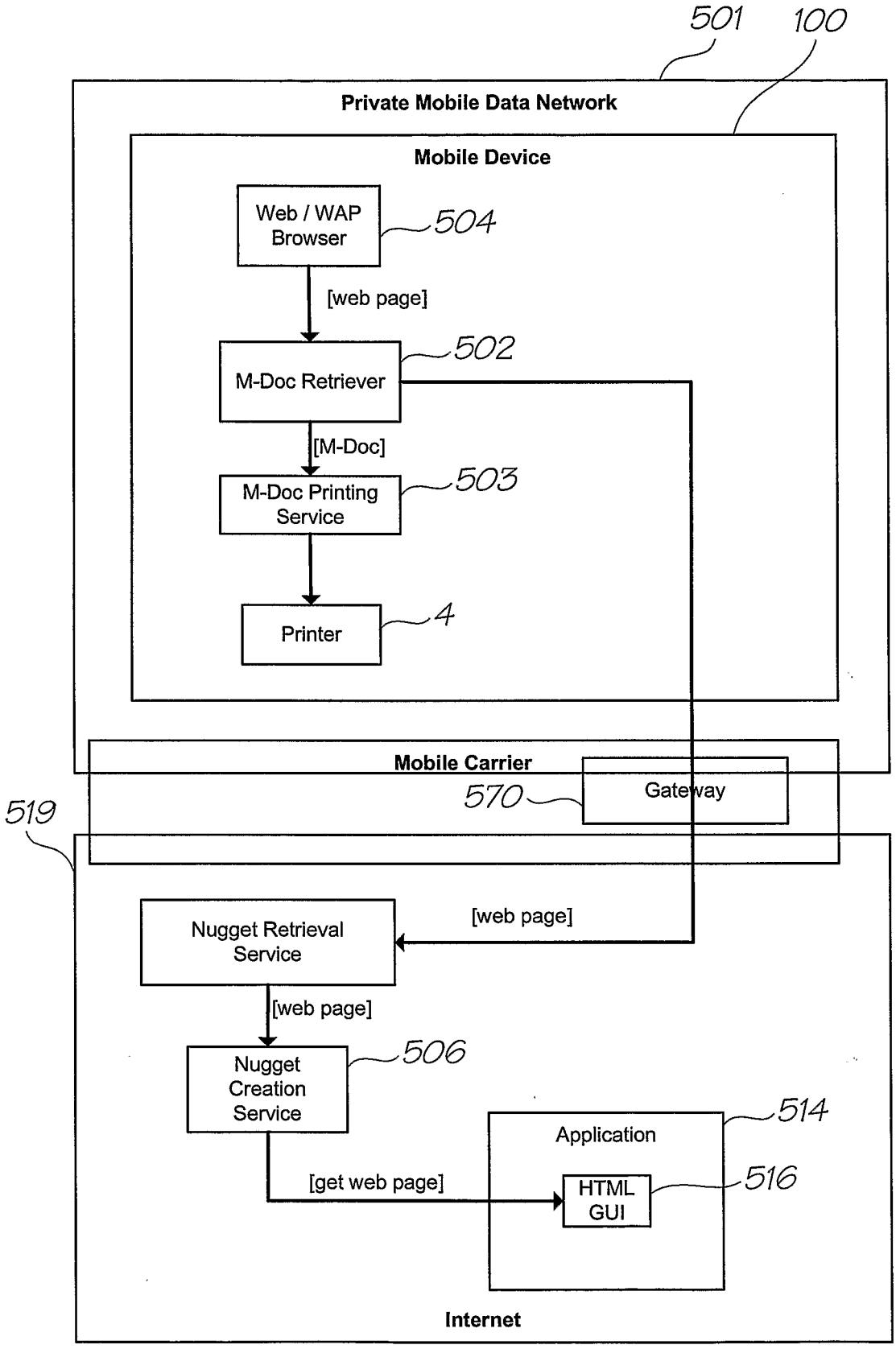
501
100
Private Mobile Data Network
Mobile Device
Web / WAP Browser
504
[web page]
M-Doc Retriever
502
[M-Doc]
M-Doc Printing Service
503
Printer
4
Mobile Carrier
570
Gateway
519
Nugget Retrieval Service
[web page]
[web page]
Nugget Creation Service
506
Application
514
[get web page]
HTML GUI
516
Internet

FIG. 3

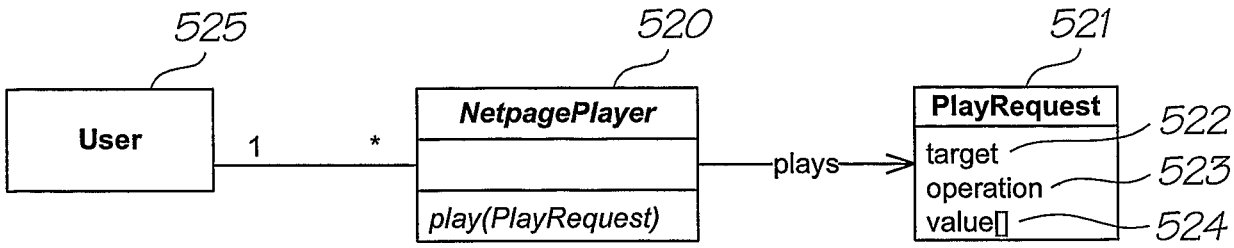


FIG. 4

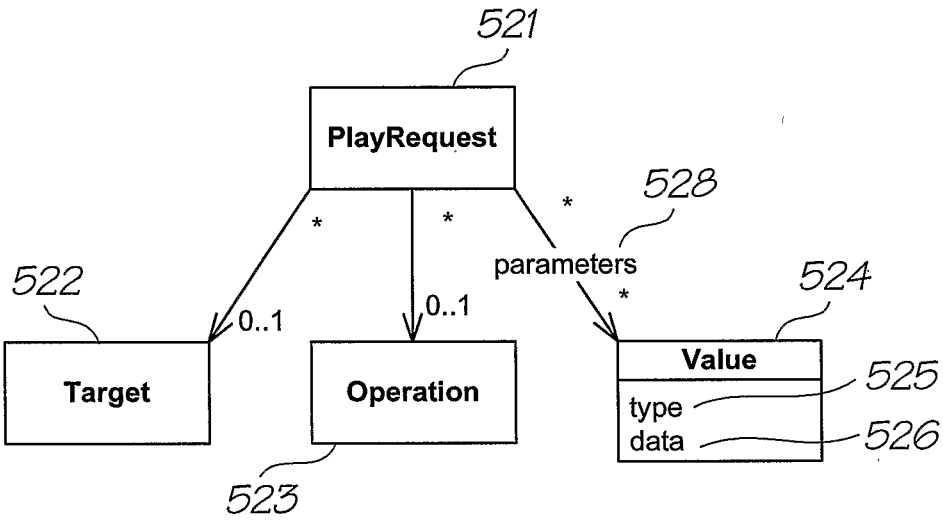


FIG. 5

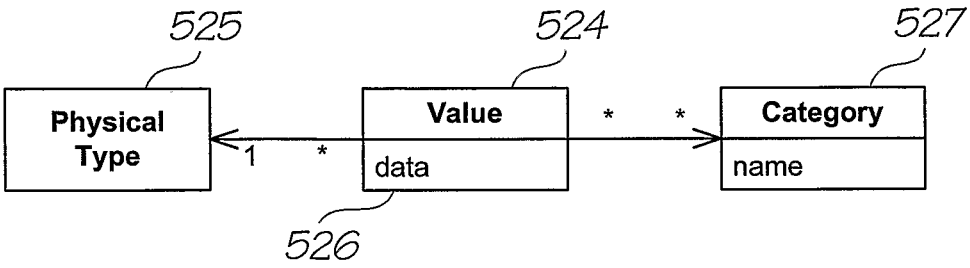


FIG. 6

532
Logo
530
Peter Wright
General Manager
Anti-Gravity Research Pty Ltd
1 Moon Street
Sydney NSW 2000 Australia
Phone +61 2 9810 2222
Mobile +61 409 811639
Fax +61 2 9810 1111
peter.wright@antigravityresearch.com
www.antigravity.com
WWW
MMS
SMS
email
FAX
NO LIMITS
531

FIG. 7

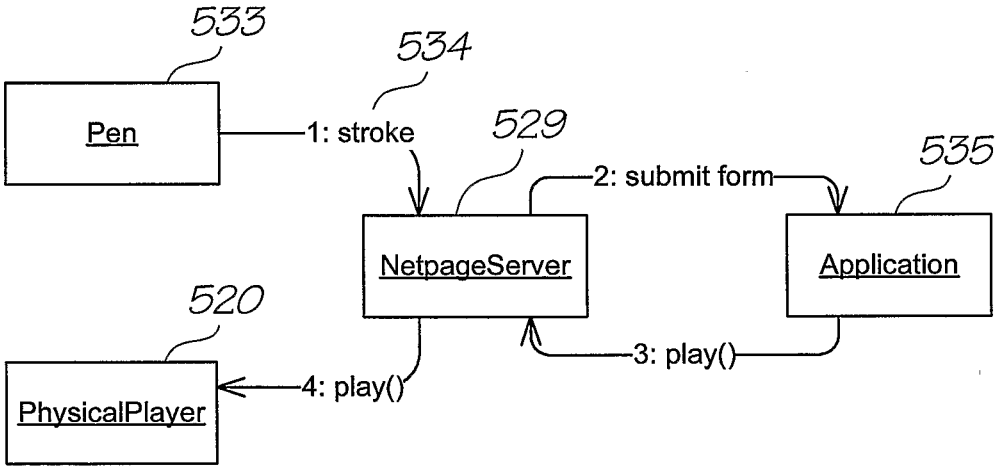
533
534
Pen
1: stroke
529
2: submit form
535
NetpageServer
Application
520
PhysicalPlayer
4: play()
3: play()

FIG. 8

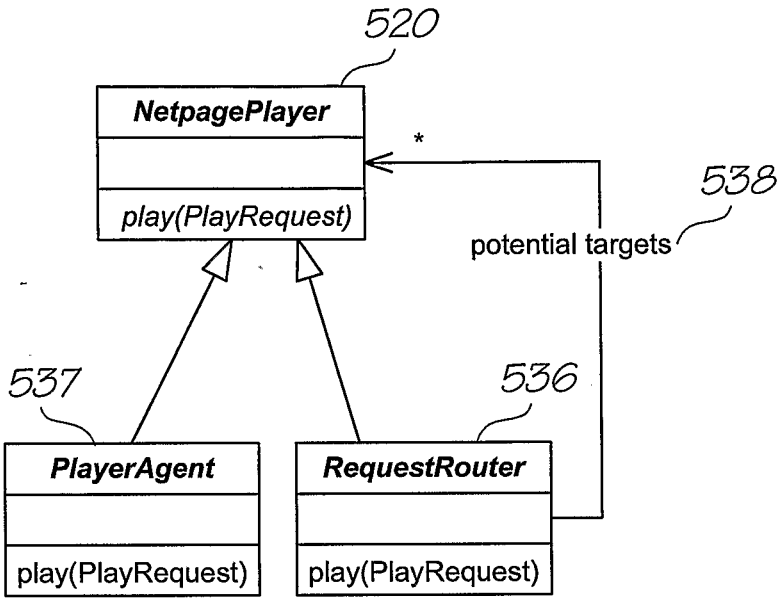
520
NetpagePlayer
play(PlayRequest)
*
538
potential targets
537
536
PlayerAgent
play(PlayRequest)
RequestRouter
play(PlayRequest)

FIG. 9

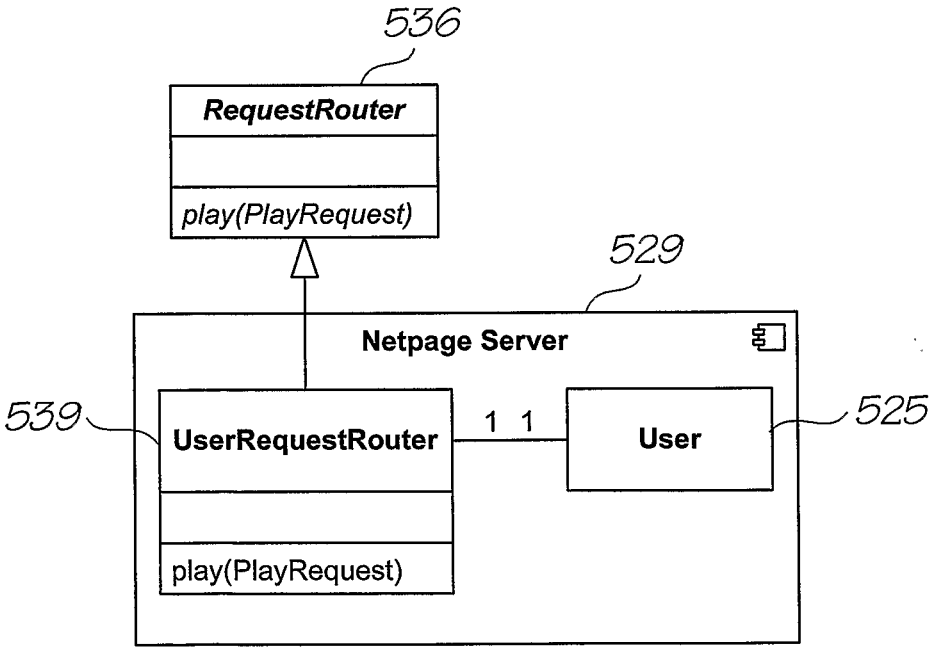
536
RequestRouter
play(PlayRequest)
529
Netpage Server
539
UserRequestRouter
play(PlayRequest)
1 1
User
525

FIG. 10

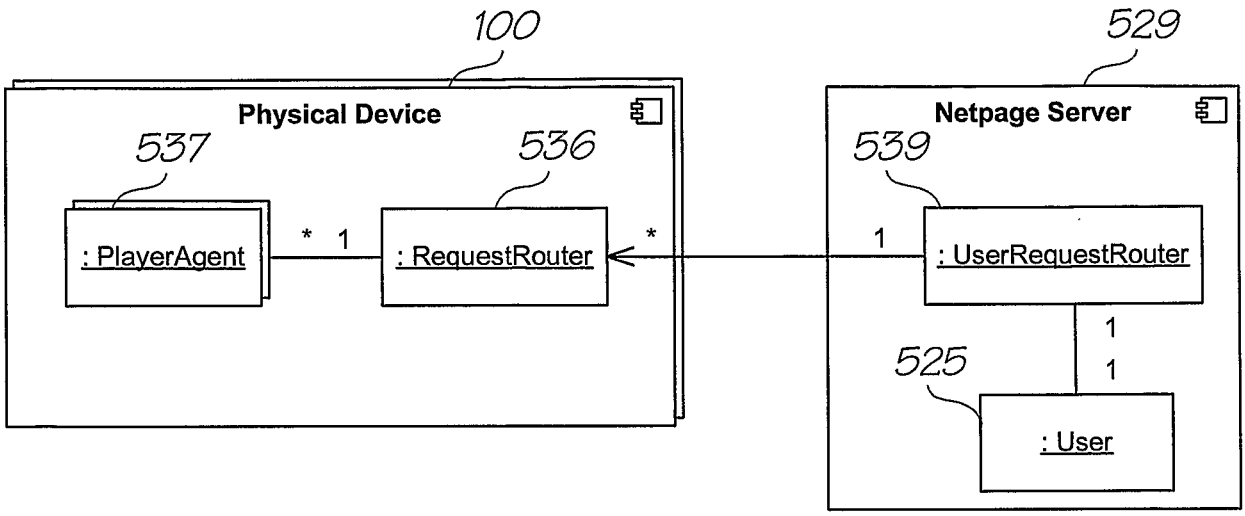
100
529
Physical Device
Netpage Server
537
536
539
: PlayerAgent
* 1
: RequestRouter
*
1
: UserRequestRouter
1
1
525
: User

FIG. 11

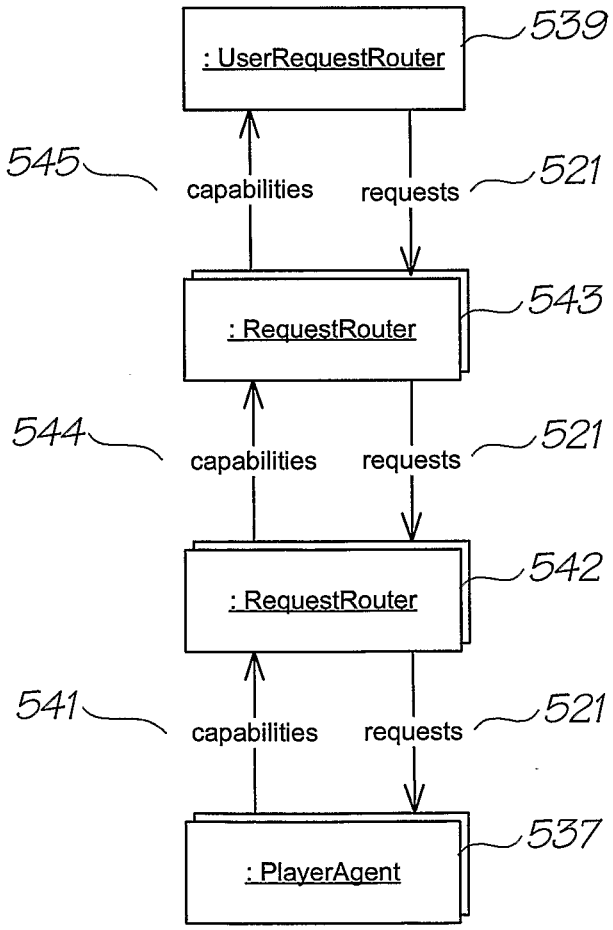
: UserRequestRouter
539
545
capabilities
requests
521
: RequestRouter
543
544
capabilities
requests
521
: RequestRouter
542
541
capabilities
requests
521
: PlayerAgent
537

FIG. 12

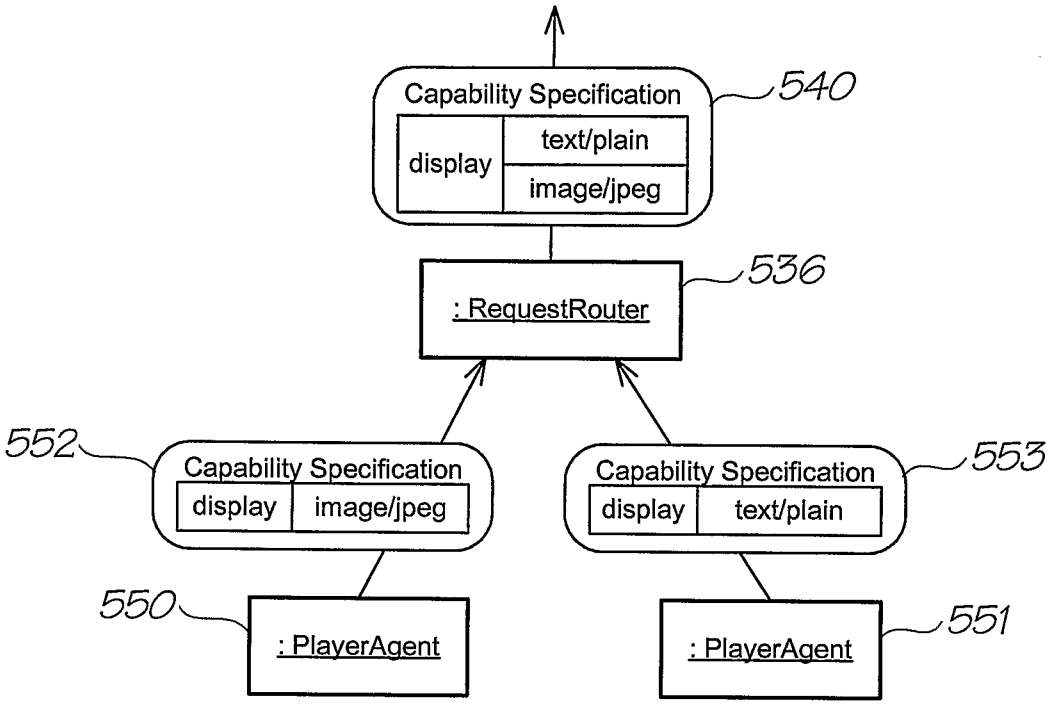
Capability Specification
display
text/plain
image/jpeg
540
: RequestRouter
536
552
Capability Specification
display
image/jpeg
Capability Specification
display
text/plain
553
550
: PlayerAgent
: PlayerAgent
551

FIG. 13

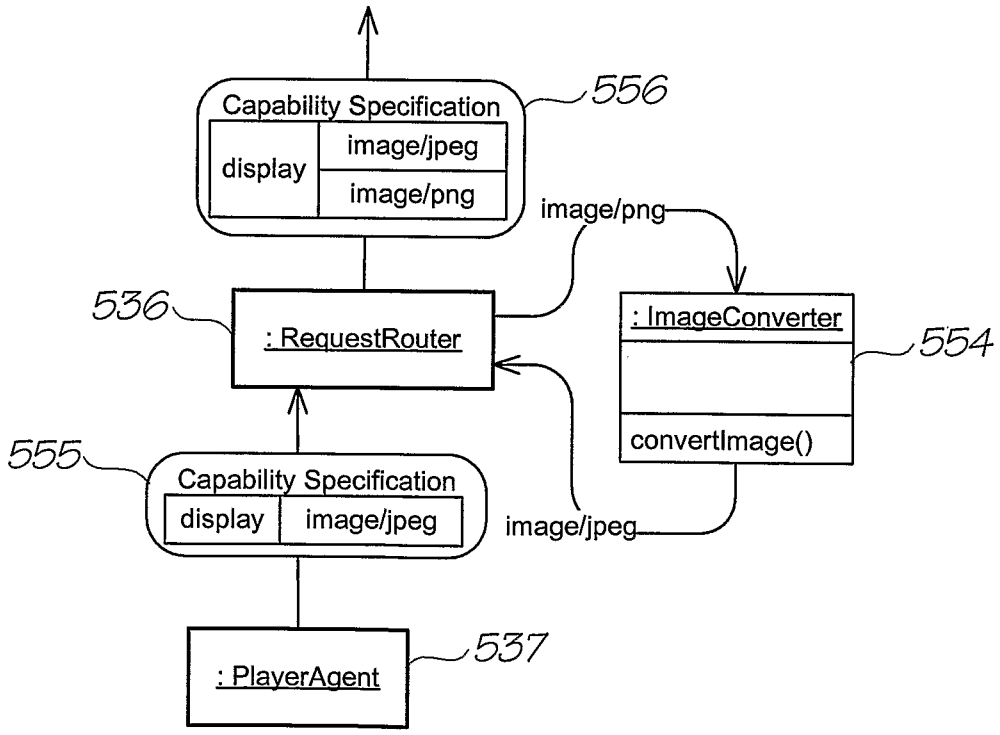
Capability Specification
display
image/jpeg
image/png
556
image/png
536
: RequestRouter
: ImageConverter
554
convertImage()
555
Capability Specification
display
image/jpeg
image/jpeg
: PlayerAgent
537

FIG. 14

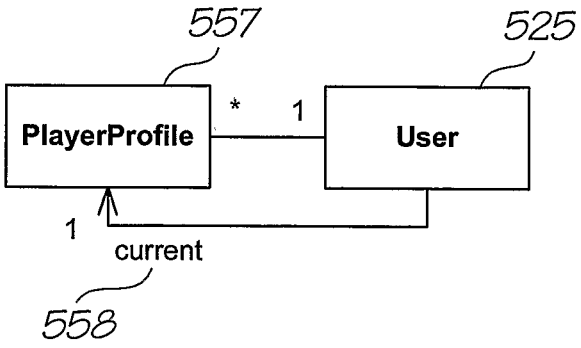
557
525
PlayerProfile
*
1
User
1
current
558

FIG. 15

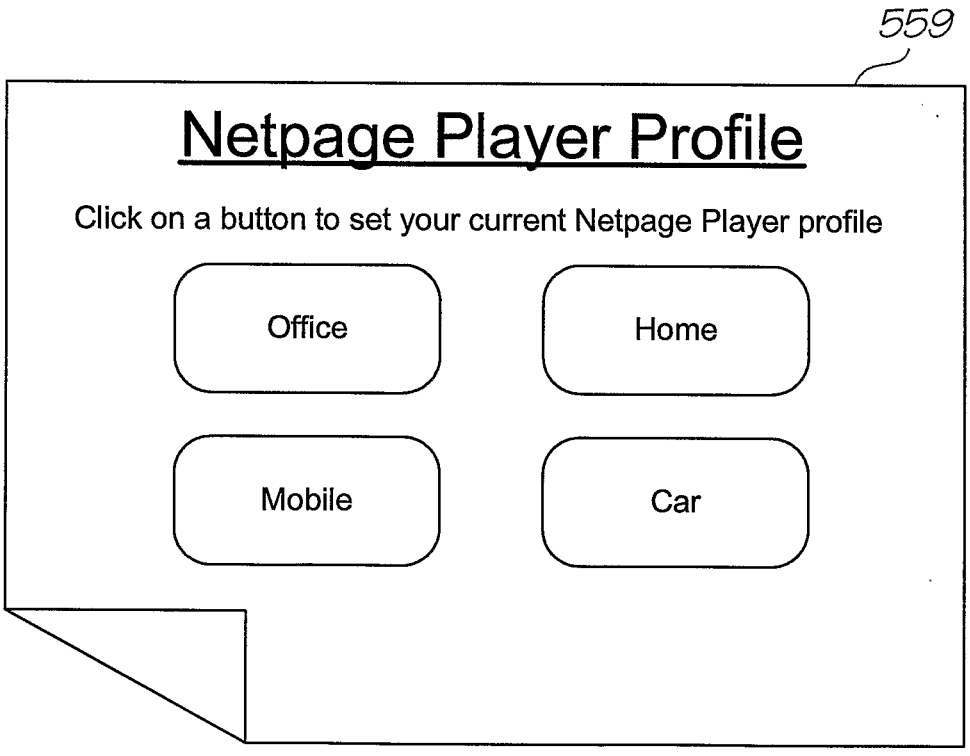
559
Netpage Player Profile
Click on a button to set your current Netpage Player profile
Office
Home
Mobile
Car

FIG. 16

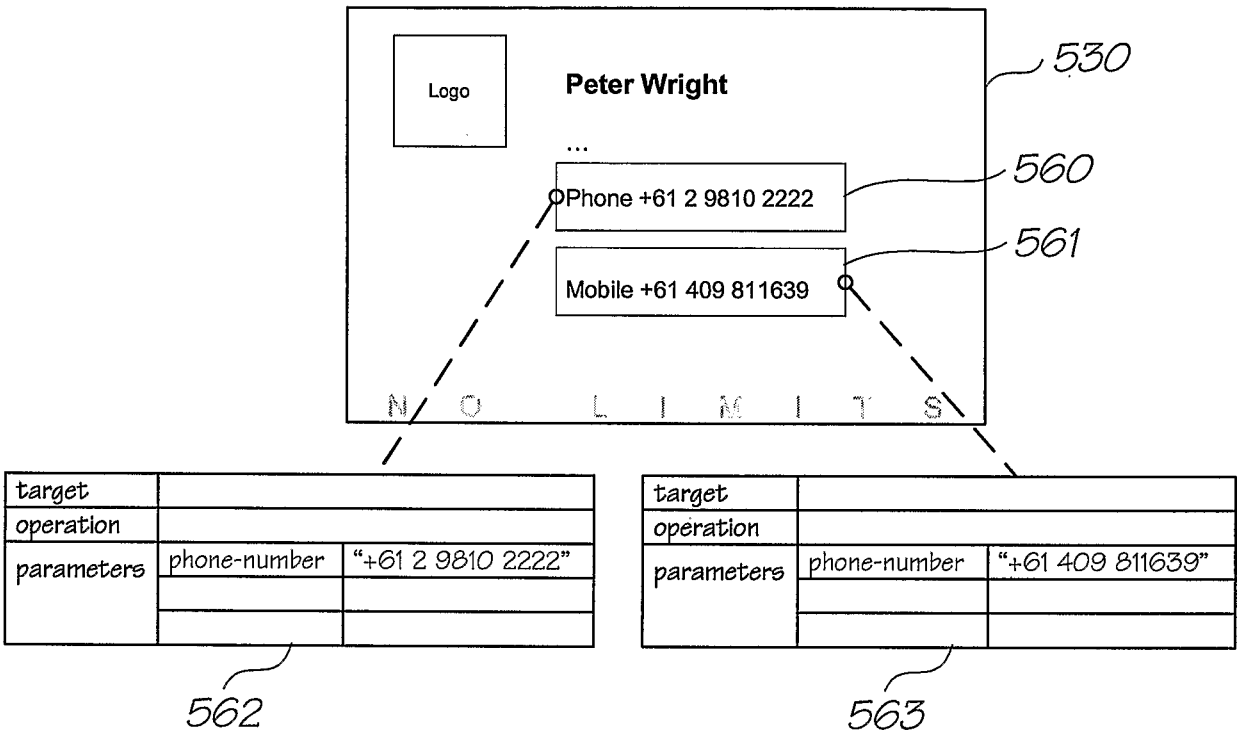
Logo
Peter Wright
...
Phone +61 2 9810 2222
Mobile +61 409 811639
N O L I M I T S
530
560
561
target
operation
parameters
phone-number
"+61 2 9810 2222"
562
target
operation
parameters
phone-number
"+61 409 811639"
563

FIG. 17

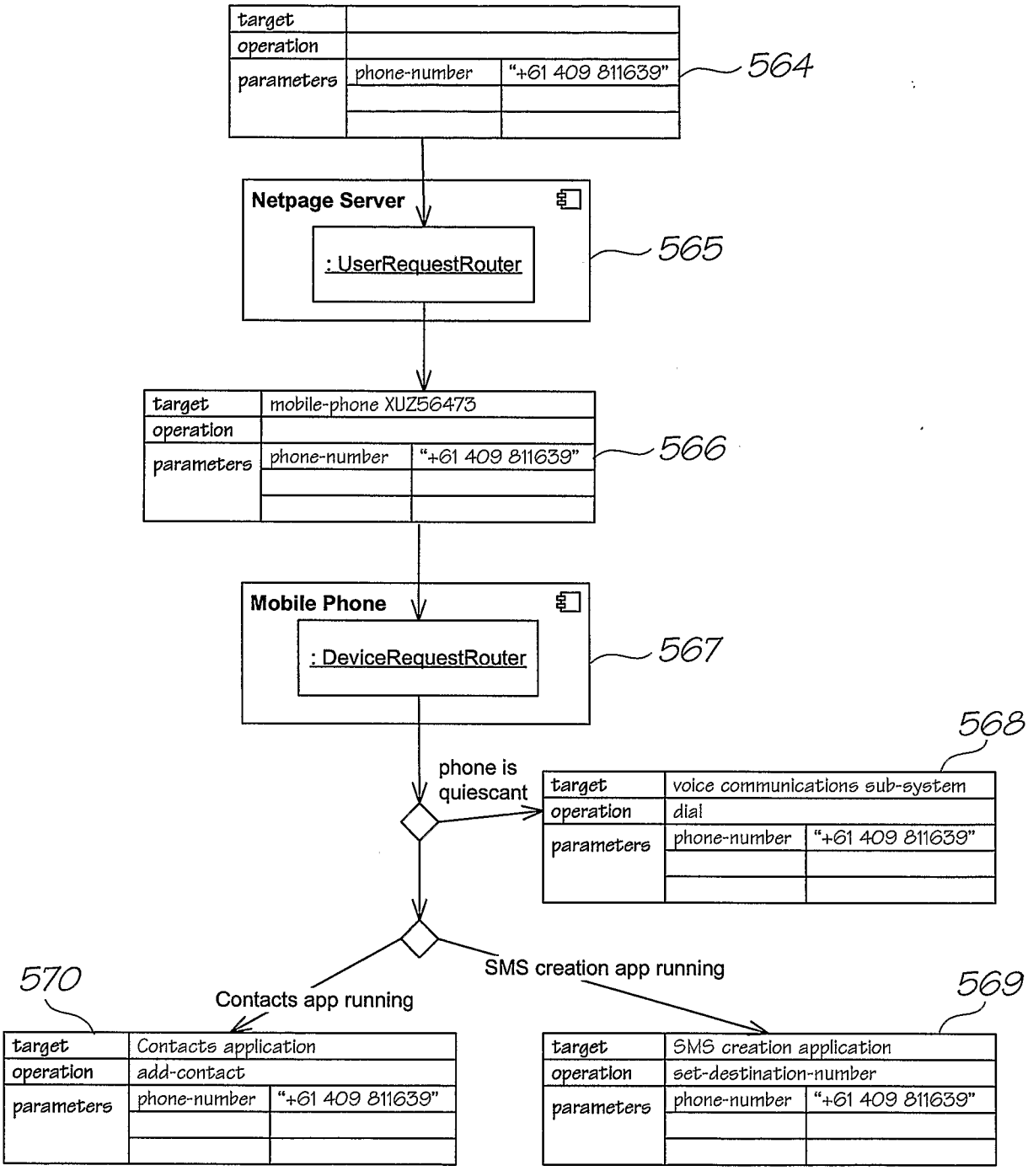
target
operation
parameters
phone-number
"+61 409 811639"
564
Netpage Server
: UserRequestRouter
565
target
mobile-phone XUZ56473
operation
parameters
phone-number
"+61 409 811639"
566
Mobile Phone
: DeviceRequestRouter
567
568
phone is quiescant
target
voice communications sub-system
operation
dial
parameters
phone-number
"+61 409 811639"
570
Contacts app running
SMS creation app running
569
target
Contacts application
operation
add-contact
parameters
phone-number
"+61 409 811639"
target
SMS creation application
operation
set-destination-number
parameters
phone-number
"+61 409 811639"

FIG. 18

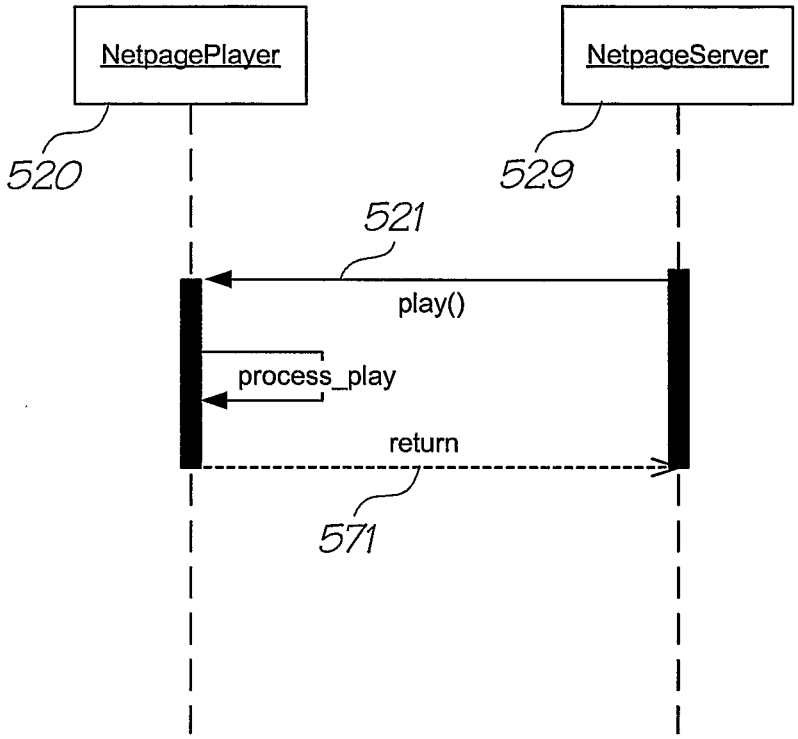
NetpagePlayer
NetpageServer
520
529
521
play()
process_play
return
571

FIG. 19

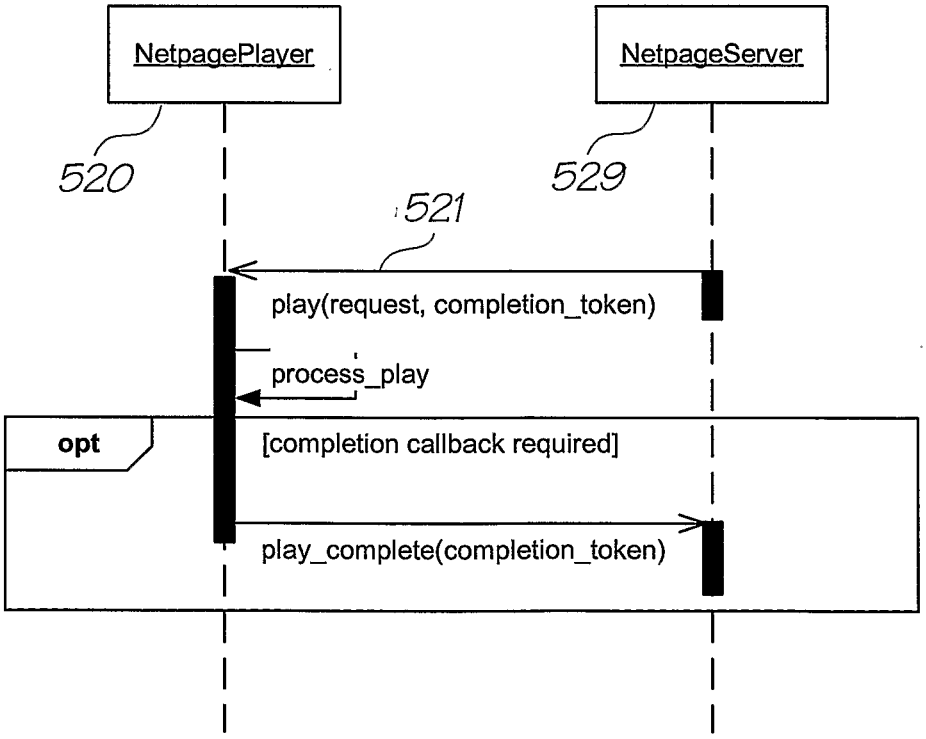
NetpagePlayer
NetpageServer
520
529
521
play(request, completion_token)
process_play
opt
[completion callback required]
play_complete(completion_token)

FIG. 20

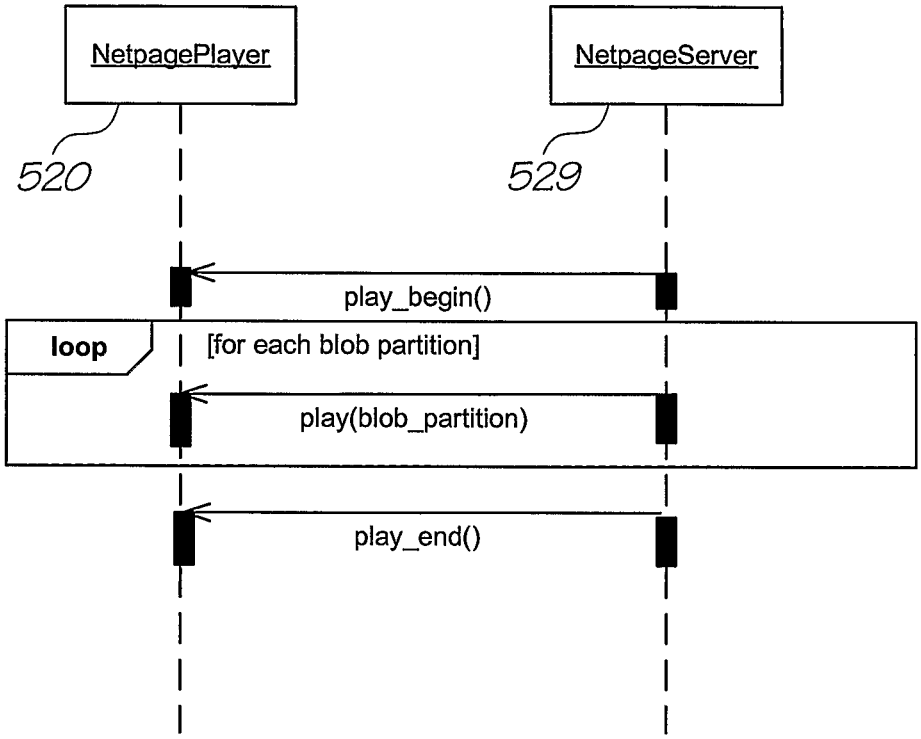
NetpagePlayer
NetpageServer
520
529
play_begin()
loop
[for each blob partition]
play(blob_partition)
play_end()

FIG. 21

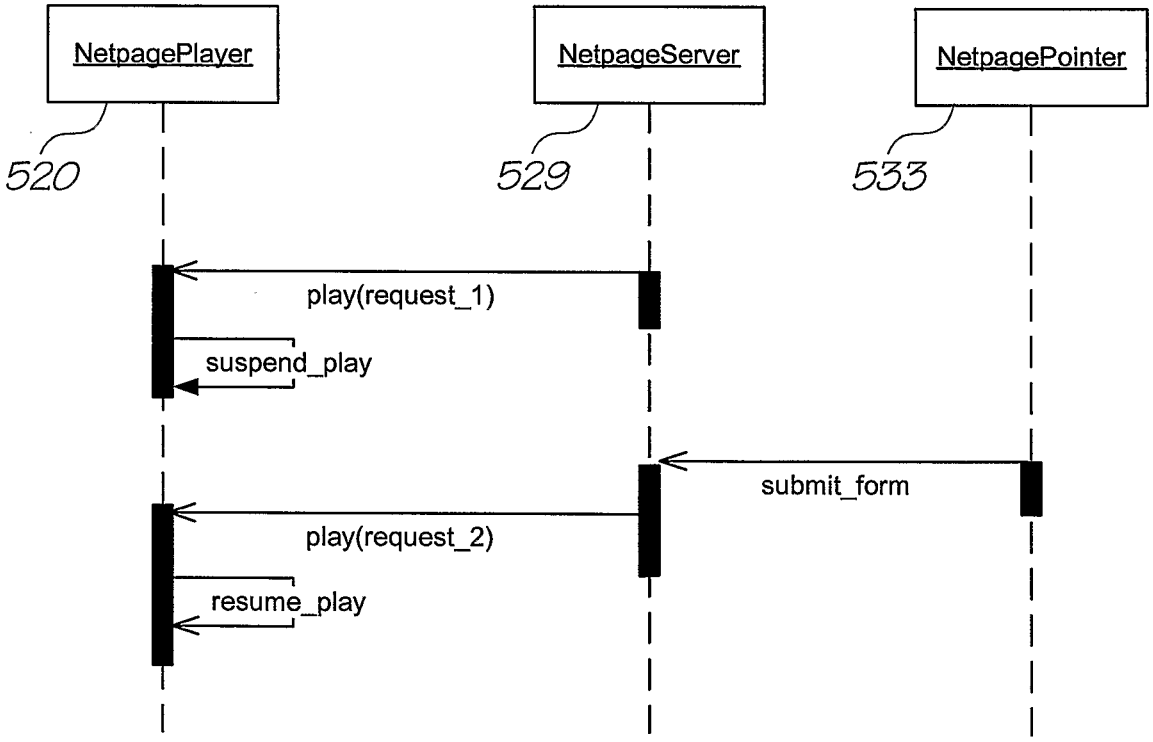
NetpagePlayer
NetpageServer
NetpagePointer
520
529
533
play(request_1)
suspend_play
submit_form
play(request_2)
resume_play

FIG. 22

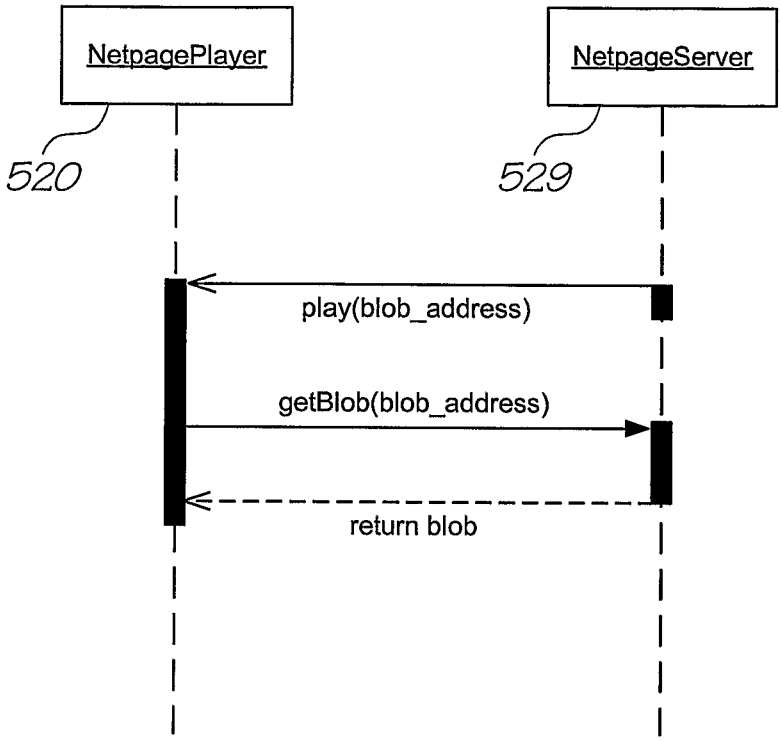
NetpagePlayer
NetpageServer
520
529
play(blob_address)
getBlob(blob_address)
return blob

FIG. 23

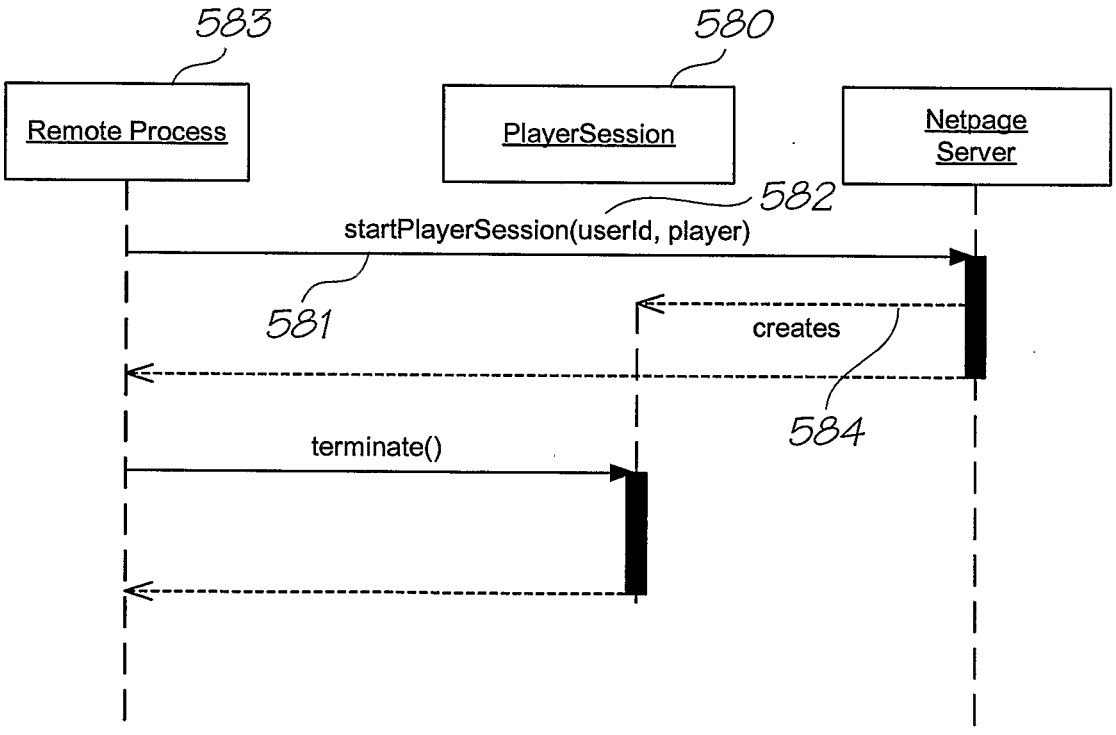
583
580
Remote Process
PlayerSession
Netpage Server
582
startPlayerSession(userId, player)
581
creates
584
terminate()

FIG. 24

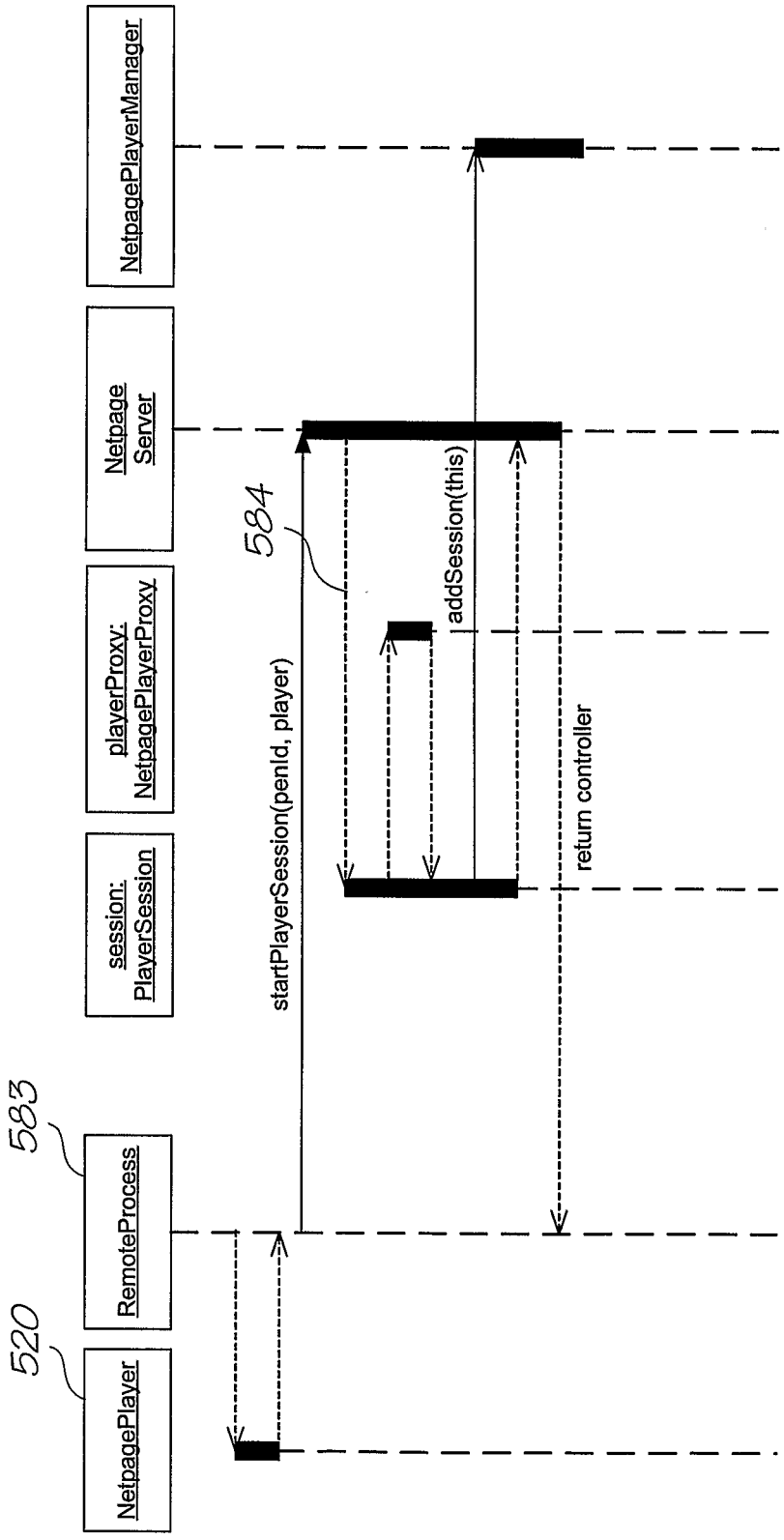
NetpagePlayerManager
Netpage Server
playerProxy: NetpagePlayerProxy
session: PlayerSession
RemoteProcess
NetpagePlayer
583
520
584
startPlayerSession(penId, player)
addSession(this)
return controller

FIG. 25

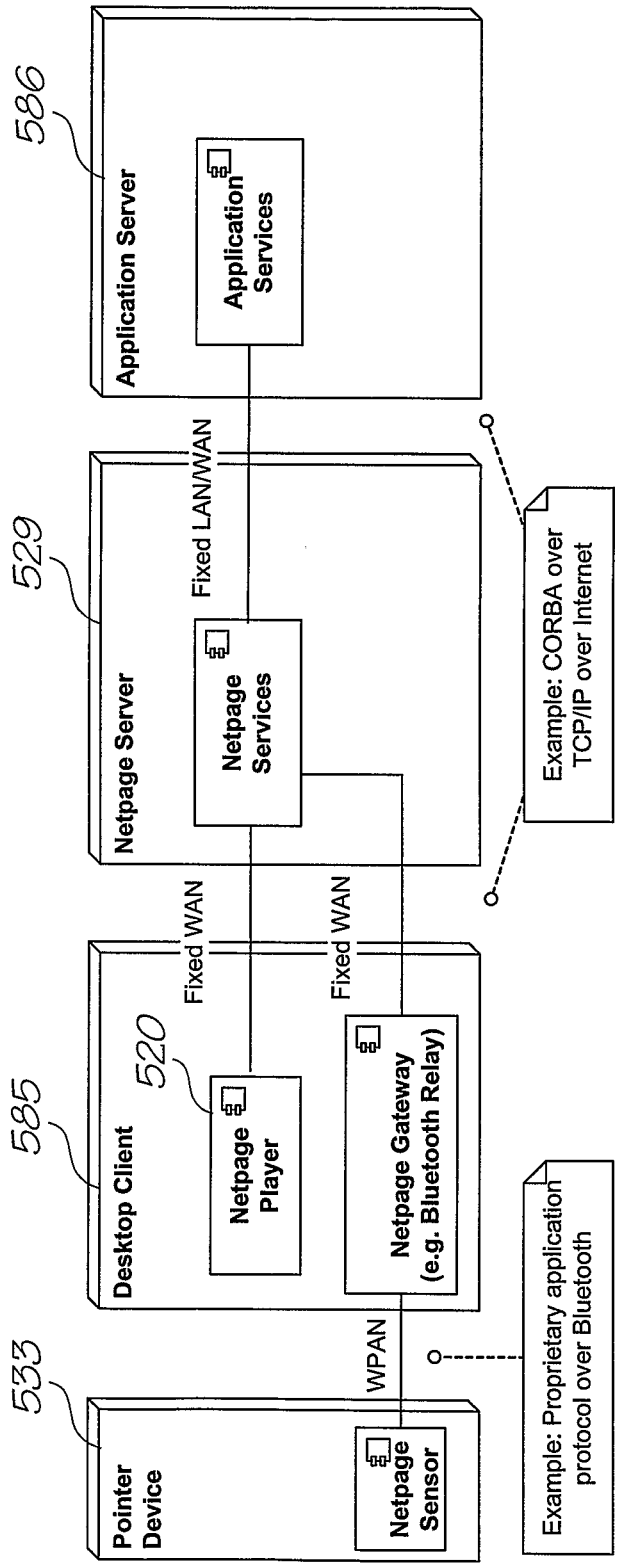
586
Application Server
Application Services
529
Netpage Server
Netpage Services
Fixed LAN/WAN
Example: CORBA over TCP/IP over Internet
Fixed WAN
Fixed WAN
585
Desktop Client
520
Netpage Player
Netpage Gateway (e.g. Bluetooth Relay)
WPAN
533
Pointer Device
Netpage Sensor
Example: Proprietary application protocol over Bluetooth

FIG. 26

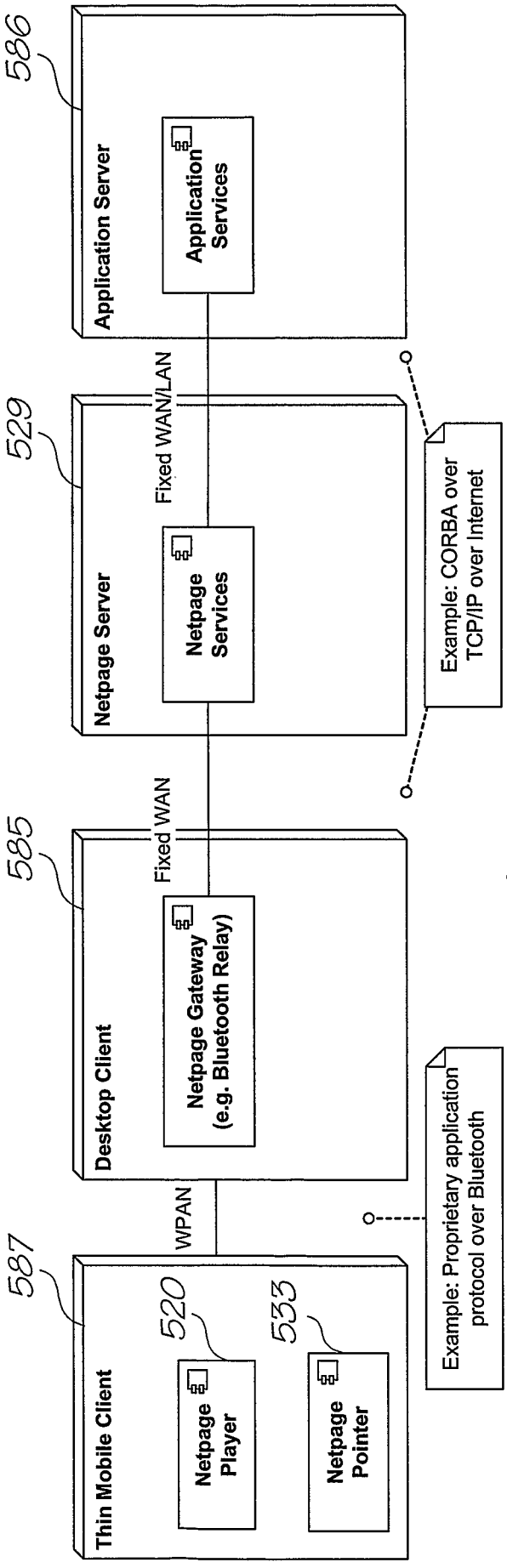
586
Application Server
Application Services
529
Netpage Server
Netpage Services
Fixed WAN/LAN
Example: CORBA over TCP/IP over Internet
585
Desktop Client
Netpage Gateway (e.g. Bluetooth Relay)
Fixed WAN
WPAN
Example: Proprietary application protocol over Bluetooth
587
Thin Mobile Client
520
Netpage Player
533
Netpage Pointer

FIG. 27

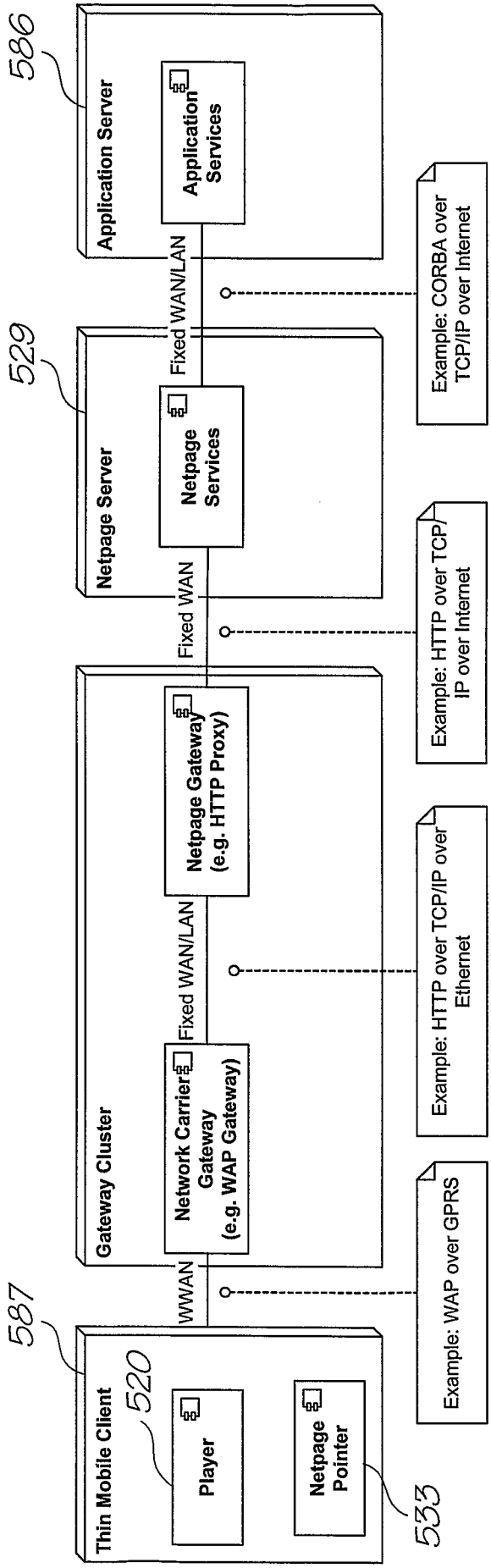
586
Application Server
Application Services
529
Netpage Server
Netpage Services
Gateway Cluster
Netpage Gateway (e.g. HTTP Proxy)
Network Carrier Gateway (e.g. WAP Gateway)
587
Thin Mobile Client
520
Player
Netpage Pointer
533
Fixed WAN/LAN
Fixed WAN
Fixed WAN/LAN
WWAN
Example: CORBA over TCP/IP over Internet
Example: HTTP over TCP/IP over Internet
Example: HTTP over TCP/IP over Ethernet
Example: WAP over GPRS

FIG. 28

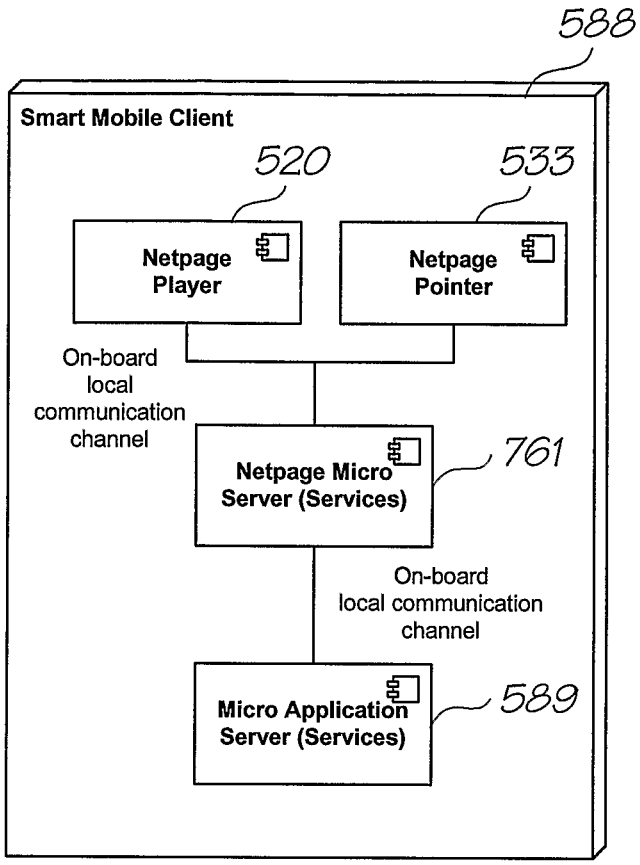
588
Smart Mobile Client
520
533
Netpage Player
Netpage Pointer
On-board local communication channel
Netpage Micro Server (Services)
761
On-board local communication channel
Micro Application Server (Services)
589

FIG. 29

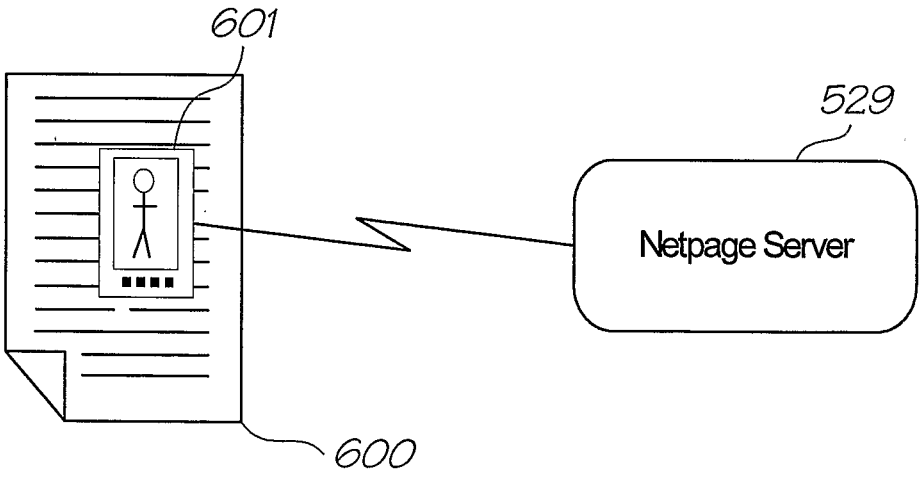
601
529
Netpage Server
600

FIG. 30

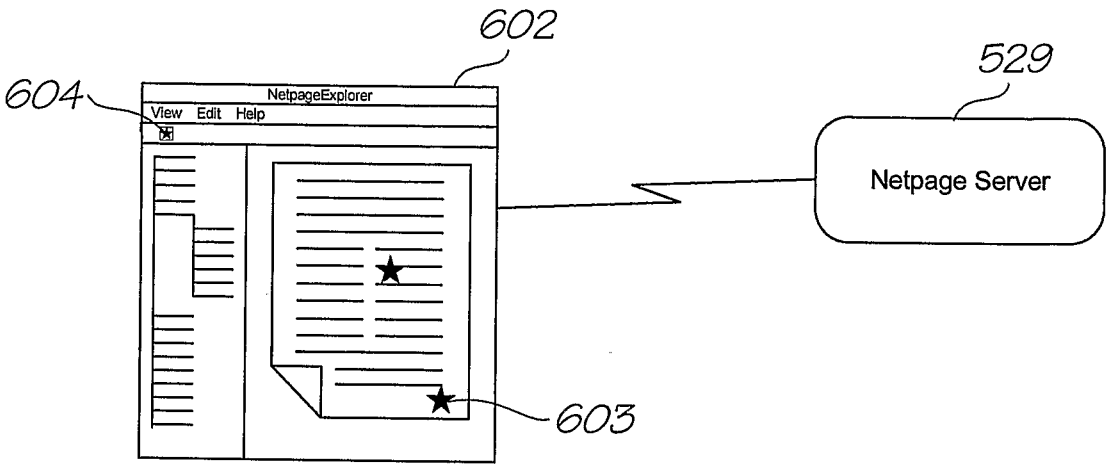
602
529
604
NetpageExplorer
View Edit Help
Netpage Server
603

FIG. 31

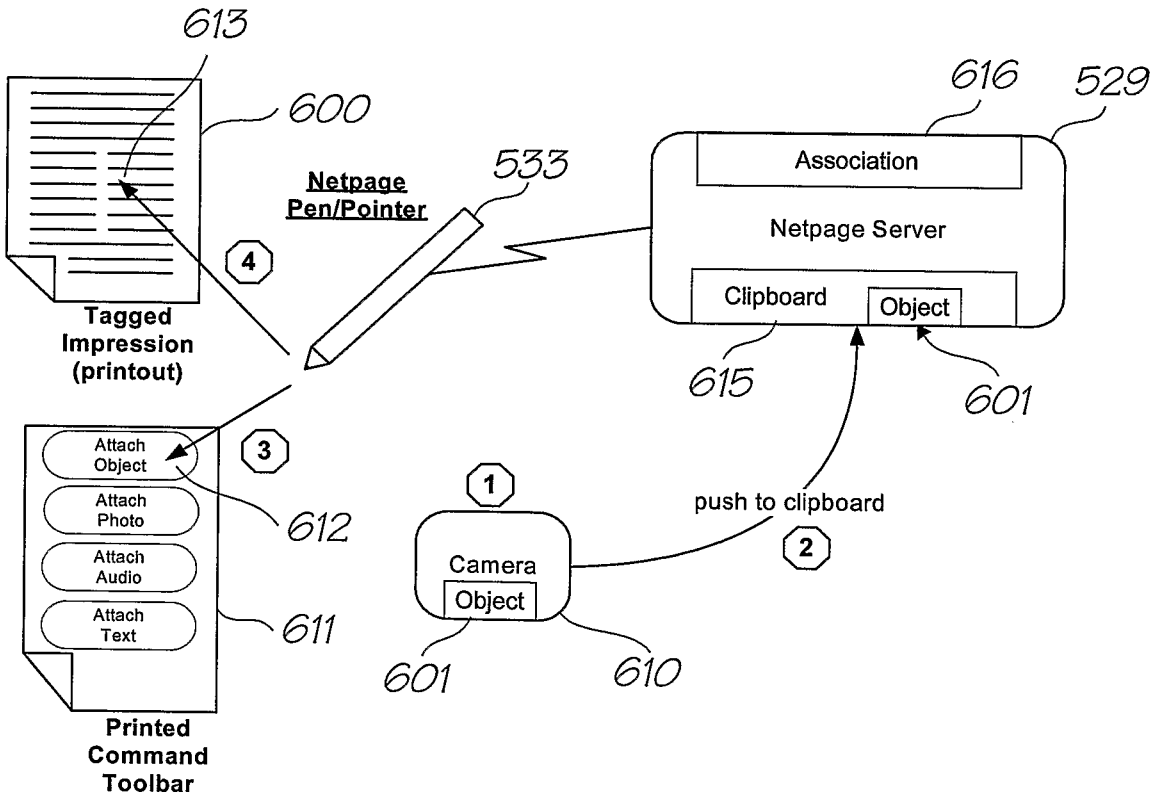
613
600
616
529
533
Association
Netpage Server
Netpage Pen/Pointer
4
Tagged Impression (printout)
Clipboard
Object
615
601
Attach Object
Attach Photo
Attach Audio
Attach Text
3
612
611
1
push to clipboard
2
Camera
Object
601
610
Printed Command Toolbar

FIG. 32

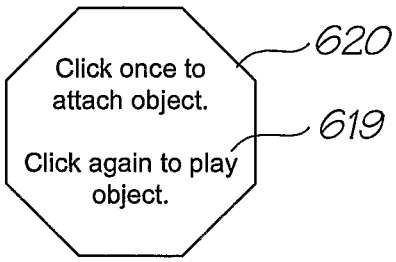


FIG. 33

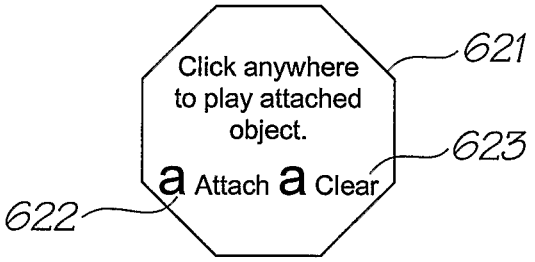


FIG. 34

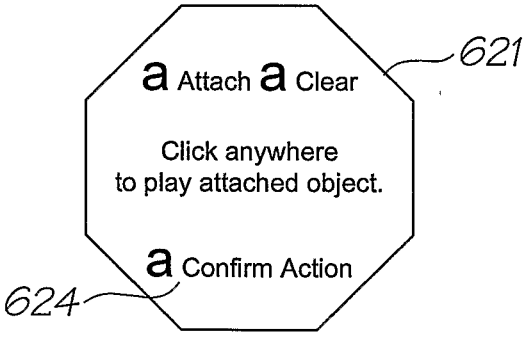


FIG. 35

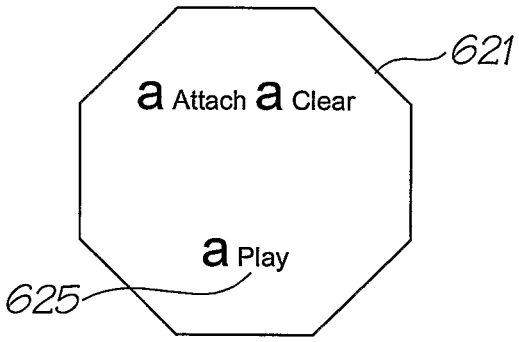


FIG. 36

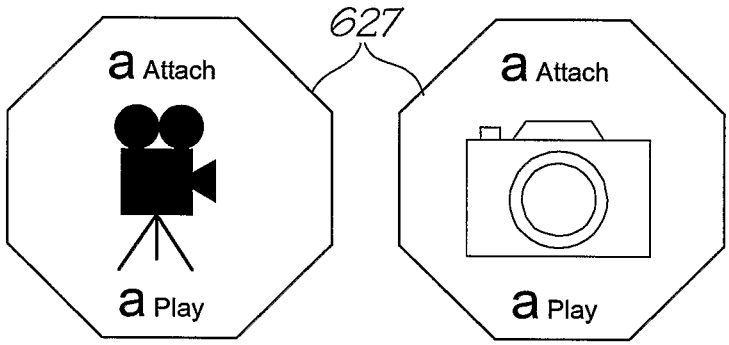


FIG. 37

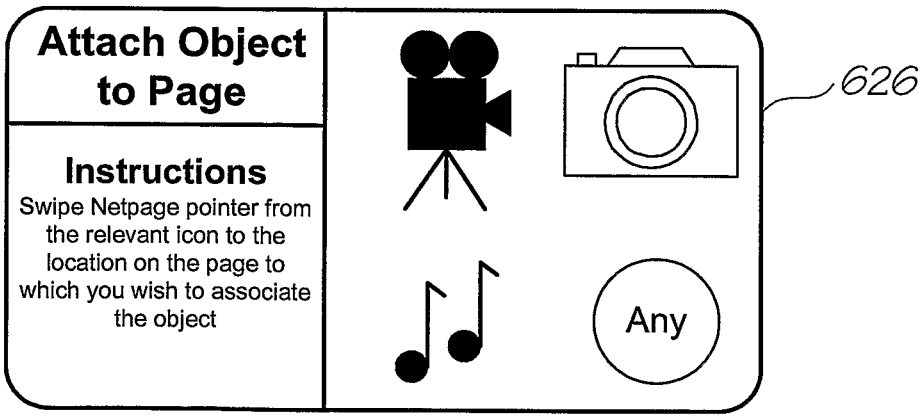


FIG. 38

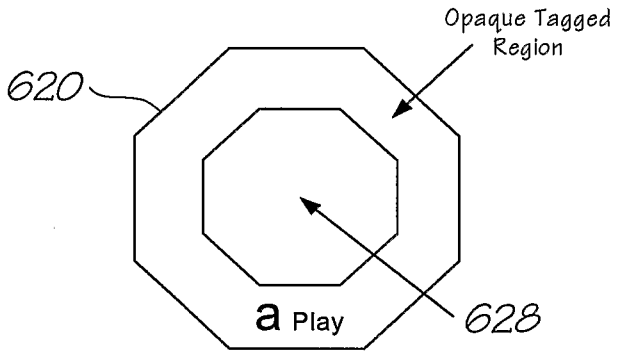


FIG. 39

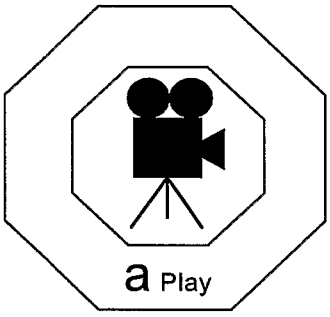


FIG. 40

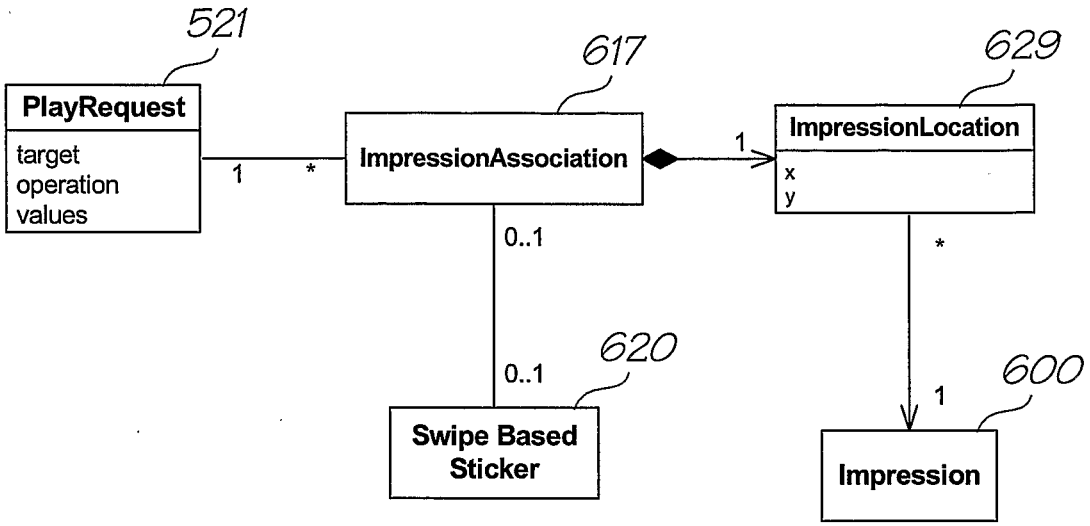
521
PlayRequest
target
operation
values
1
*
617
ImpressionAssociation
1
629
ImpressionLocation
x
y
*
0..1
0..1
620
Swipe Based Sticker
1
600
Impression

FIG. 41

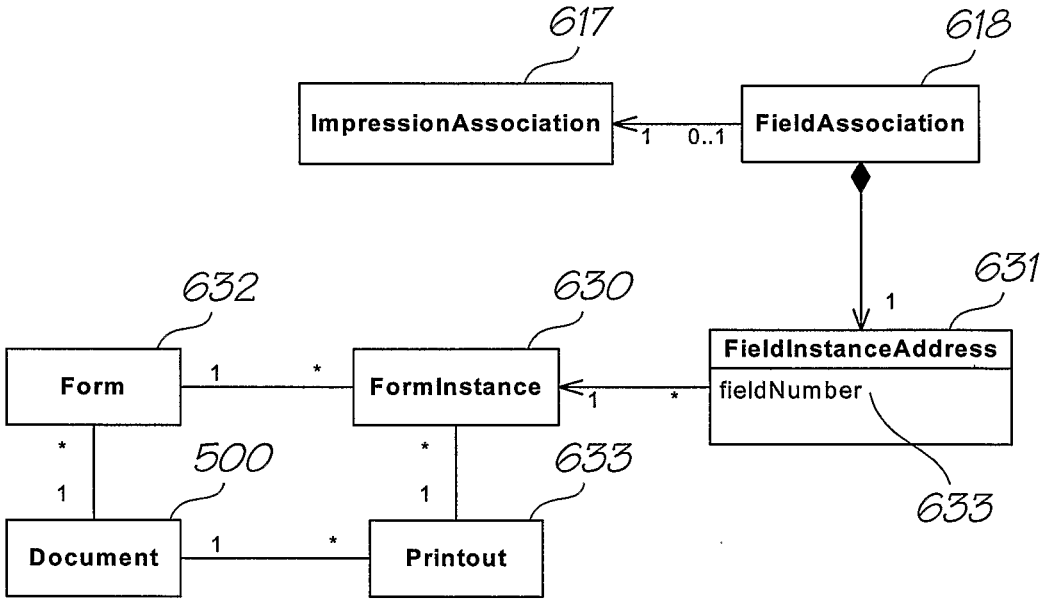
617
ImpressionAssociation
1
0..1
618
FieldAssociation
1
631
FieldInstanceAddress
fieldNumber
633
632
Form
1
*
630
FormInstance
1
*
*
1
500
Document
1
*
*
1
633
Printout

FIG. 42

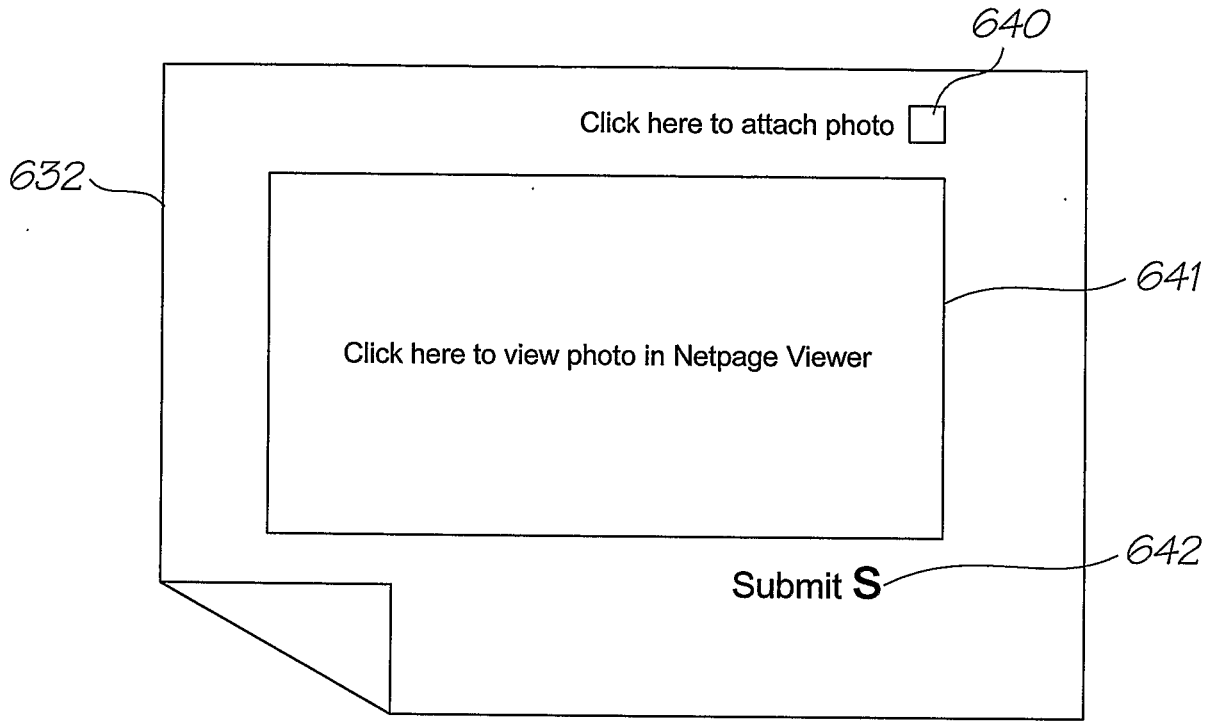
640
Click here to attach photo
632
641
Click here to view photo in Netpage Viewer
642
Submit S

FIG. 43

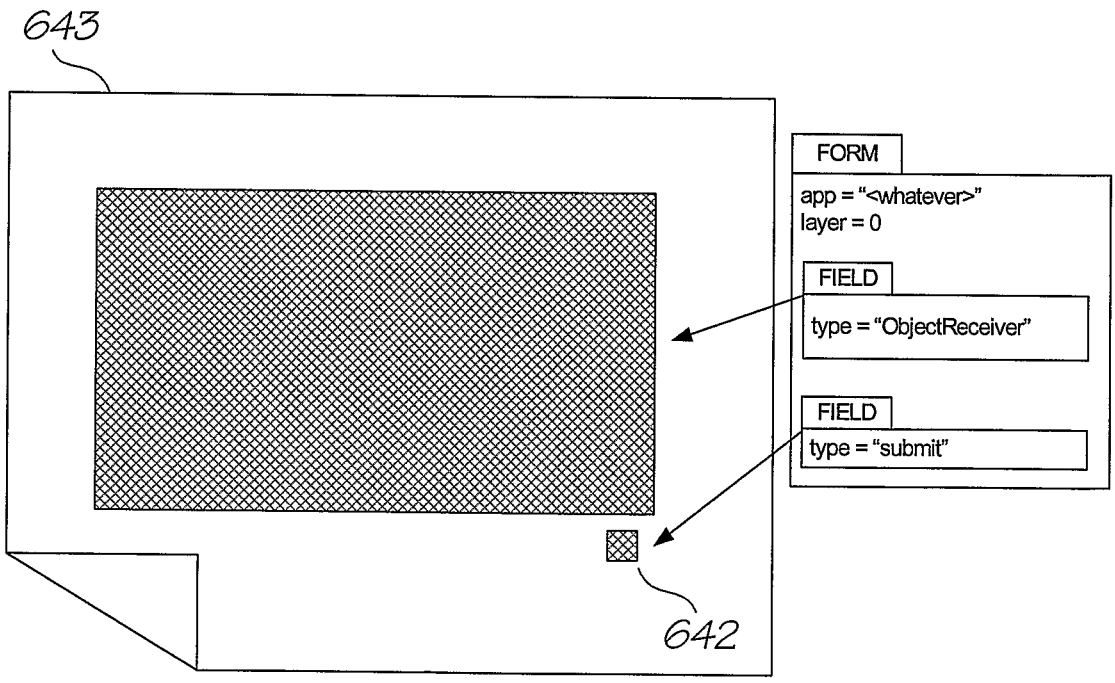
643
FORM
app = "<whatever>"
layer = 0
FIELD
type = "ObjectReceiver"
FIELD
type = "submit"
642

FIG. 44

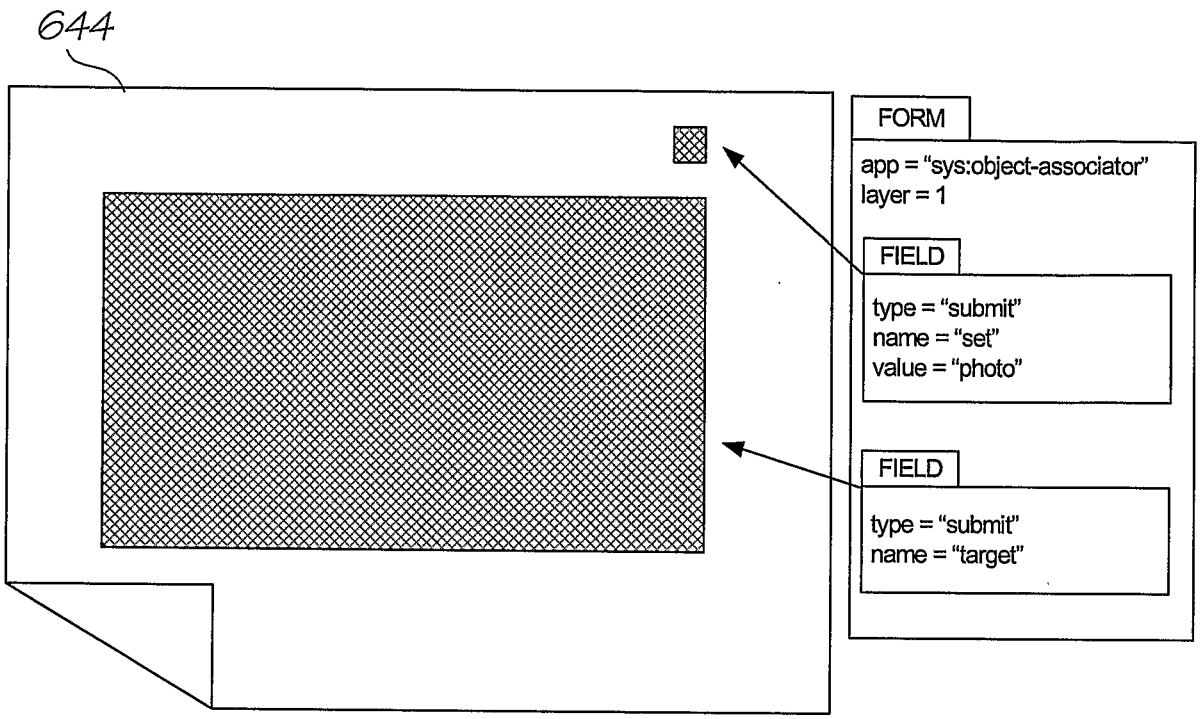
644
FORM
app = "sys:object-associator"
layer = 1
FIELD
type = "submit"
name = "set"
value = "photo"
FIELD
type = "submit"
name = "target"

FIG. 45

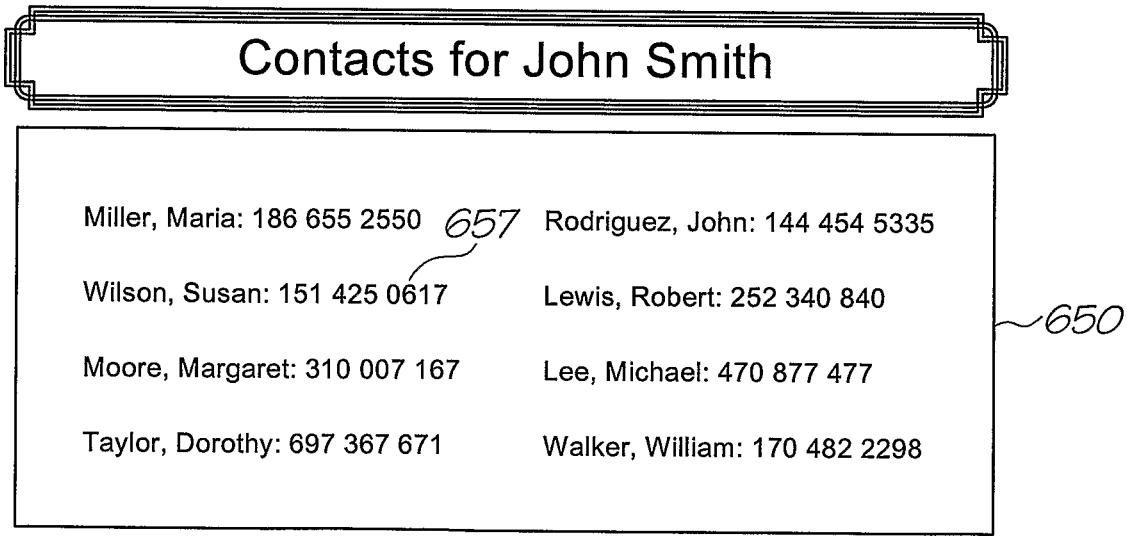
Contacts for John Smith
Miller, Maria: 186 655 2550
657
Rodriguez, John: 144 454 5335
Wilson, Susan: 151 425 0617
Lewis, Robert: 252 340 840
Moore, Margaret: 310 007 167
Lee, Michael: 470 877 477
Taylor, Dorothy: 697 367 671
Walker, William: 170 482 2298
650

FIG. 46

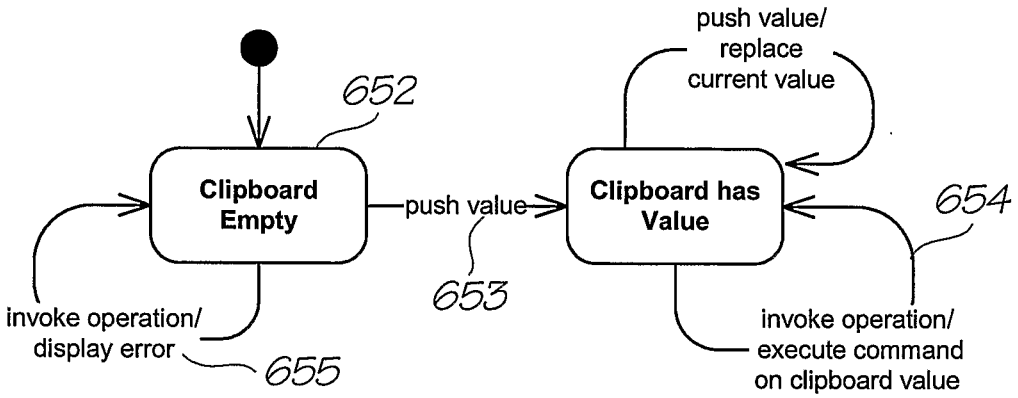
push value/
replace
current value
652
Clipboard
Empty
push value
Clipboard has
Value
654
653
invoke operation/
display error
655
invoke operation/
execute command
on clipboard value

FIG. 47

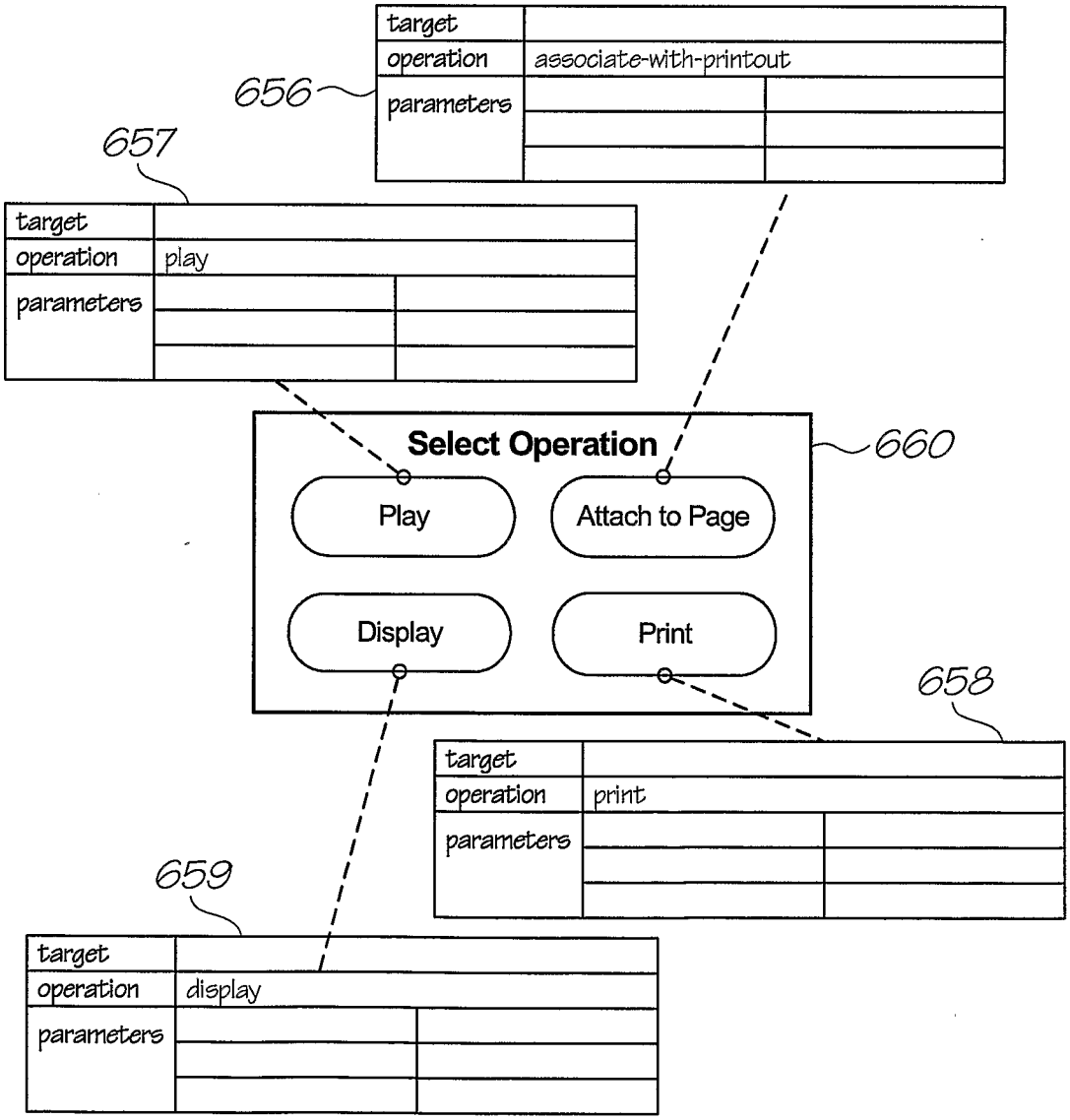
target
operation
associate-with-printout
parameters
656
657
target
operation
play
parameters
Select Operation
660
Play
Attach to Page
Display
Print
658
target
operation
print
parameters
659
target
operation
display
parameters

FIG. 48

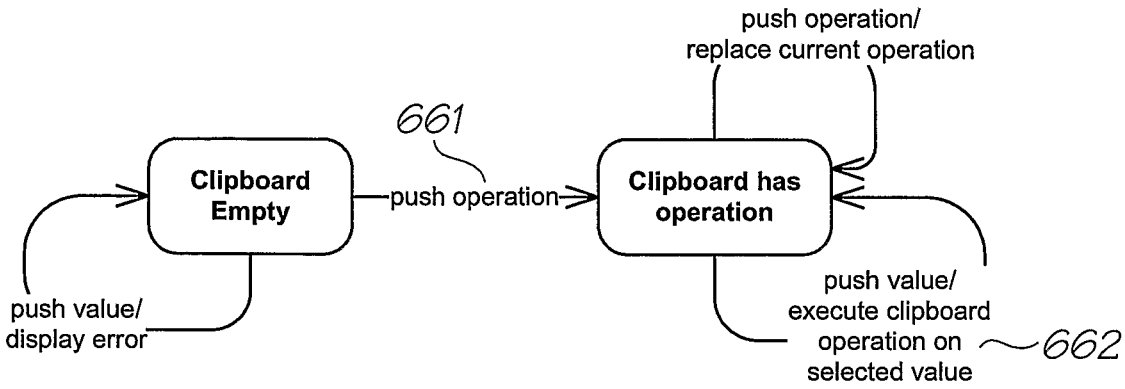


FIG. 49

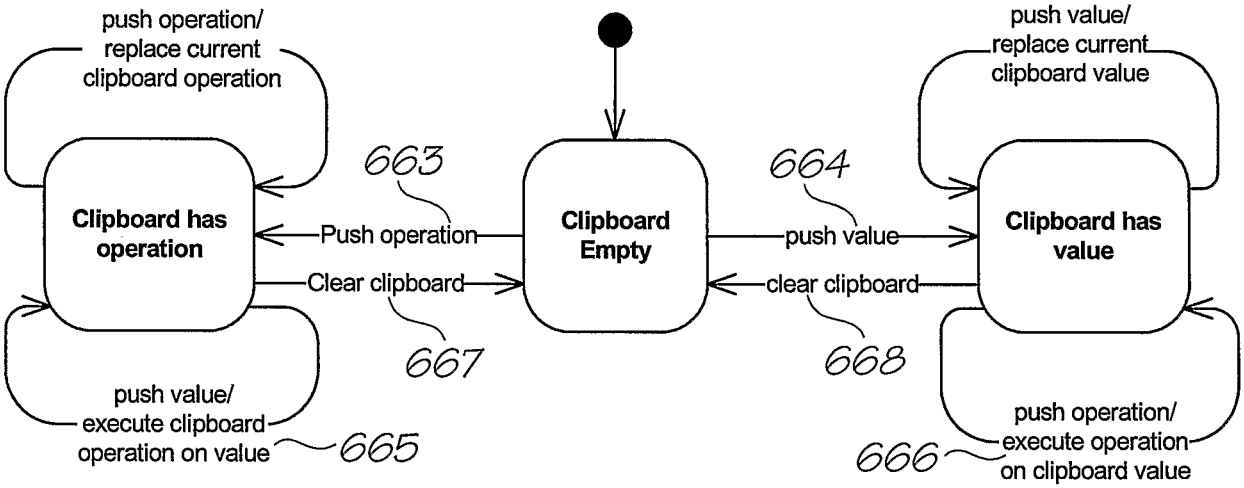


FIG. 50

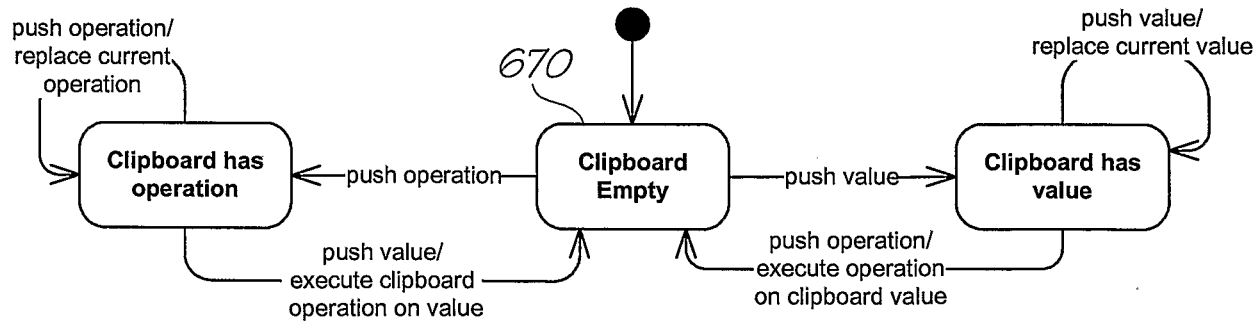


FIG. 51

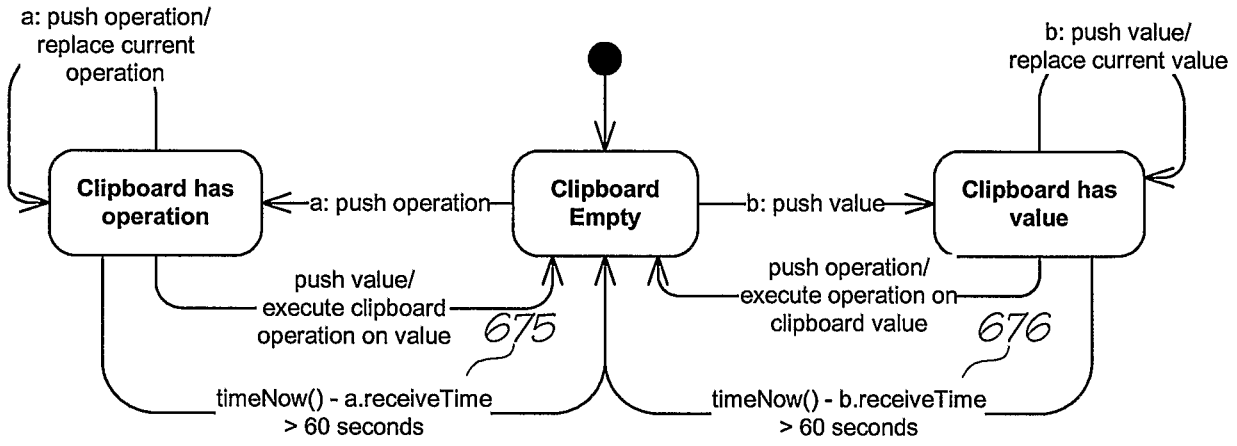


FIG. 52

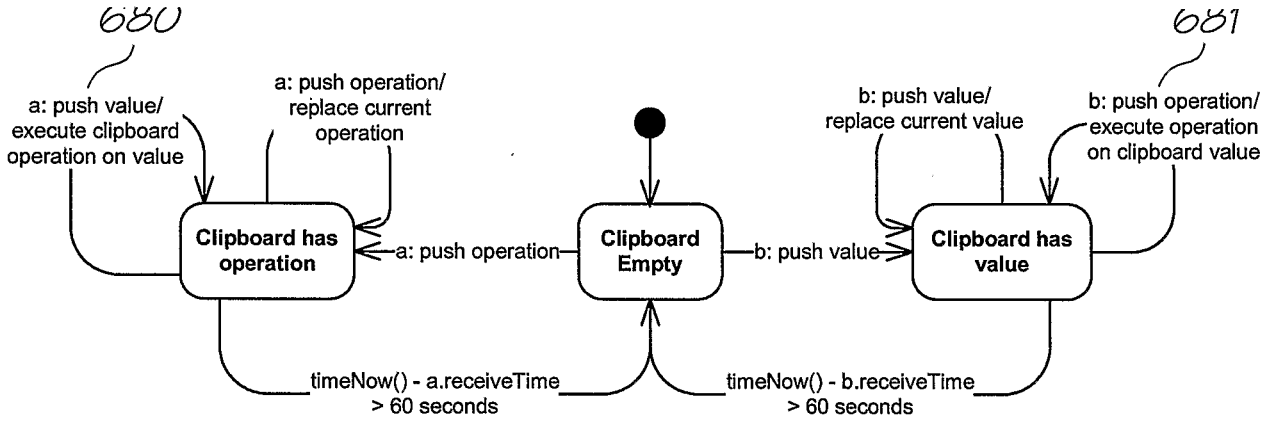


FIG. 53

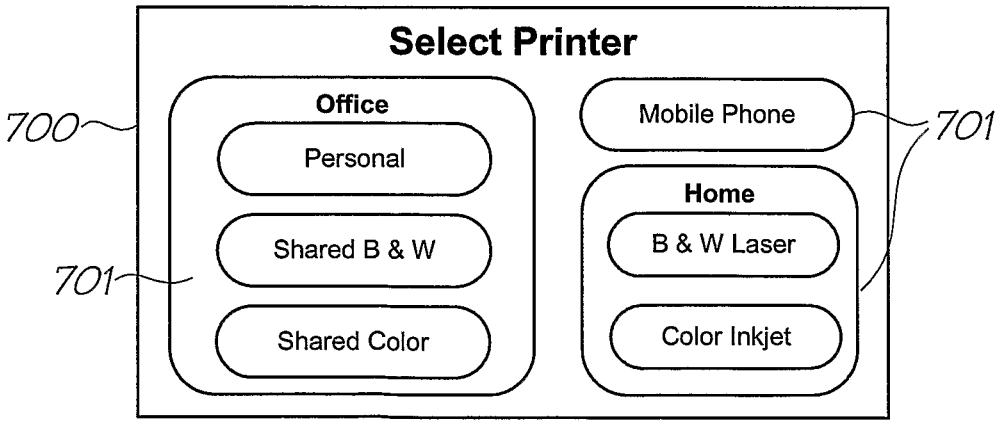


FIG. 54

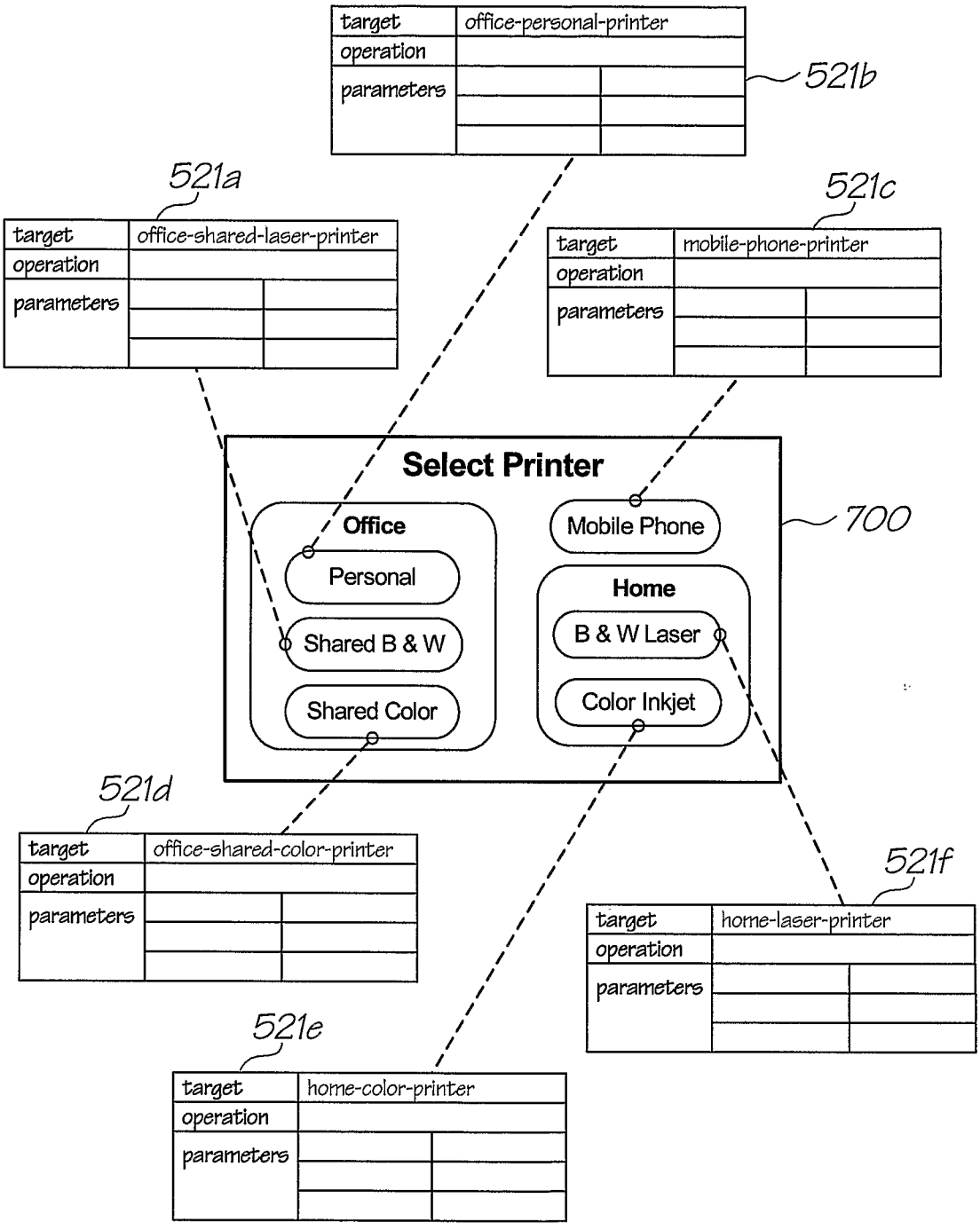
target
office-personal-printer
operation
parameters
521b
521a
target
office-shared-laser-printer
operation
parameters
521c
target
mobile-phone-printer
operation
parameters
Select Printer
700
Office
Personal
Shared B & W
Shared Color
Mobile Phone
Home
B & W Laser
Color Inkjet
521d
target
office-shared-color-printer
operation
parameters
521f
target
home-laser-printer
operation
parameters
521e
target
home-color-printer
operation
parameters

FIG. 55

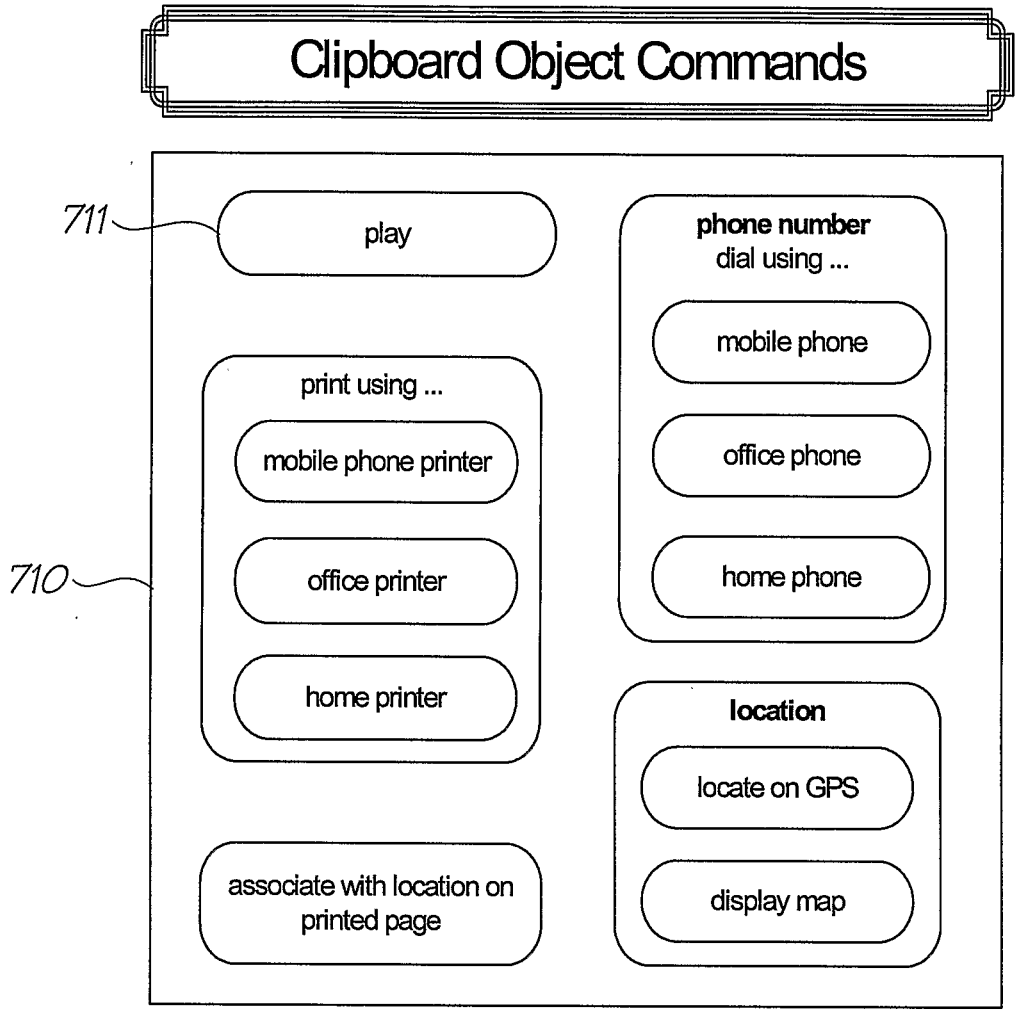
Clipboard Object Commands
711
play
phone number
dial using ...
mobile phone
office phone
home phone
print using ...
mobile phone printer
710
office printer
home printer
location
locate on GPS
display map
associate with location on printed page

FIG. 56

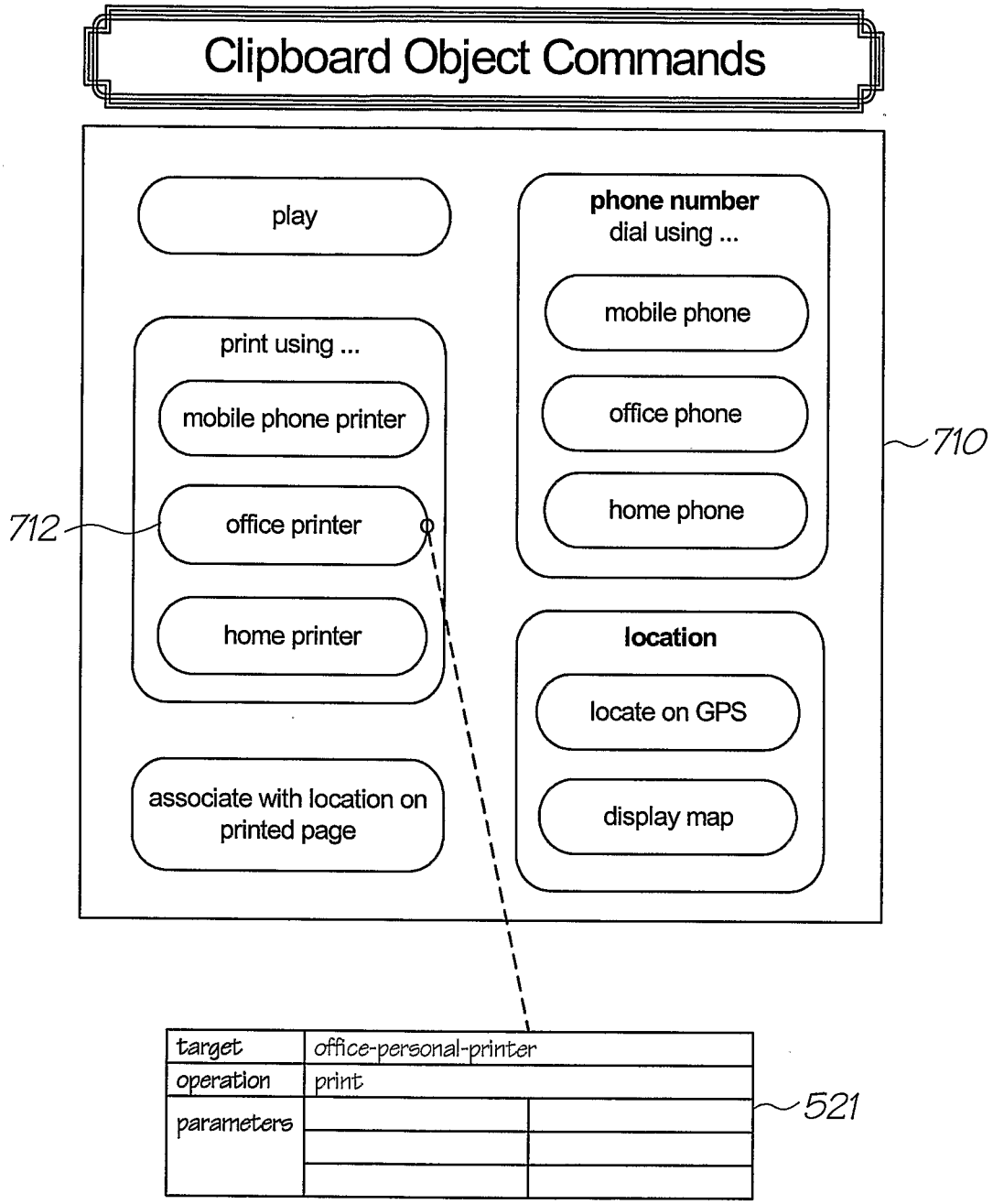
Clipboard Object Commands
play
print using ...
mobile phone printer
office printer
home printer
associate with location on printed page
phone number
dial using ...
mobile phone
office phone
home phone
location
locate on GPS
display map
710
712
target
office-personal-printer
operation
print
parameters
521

FIG. 57

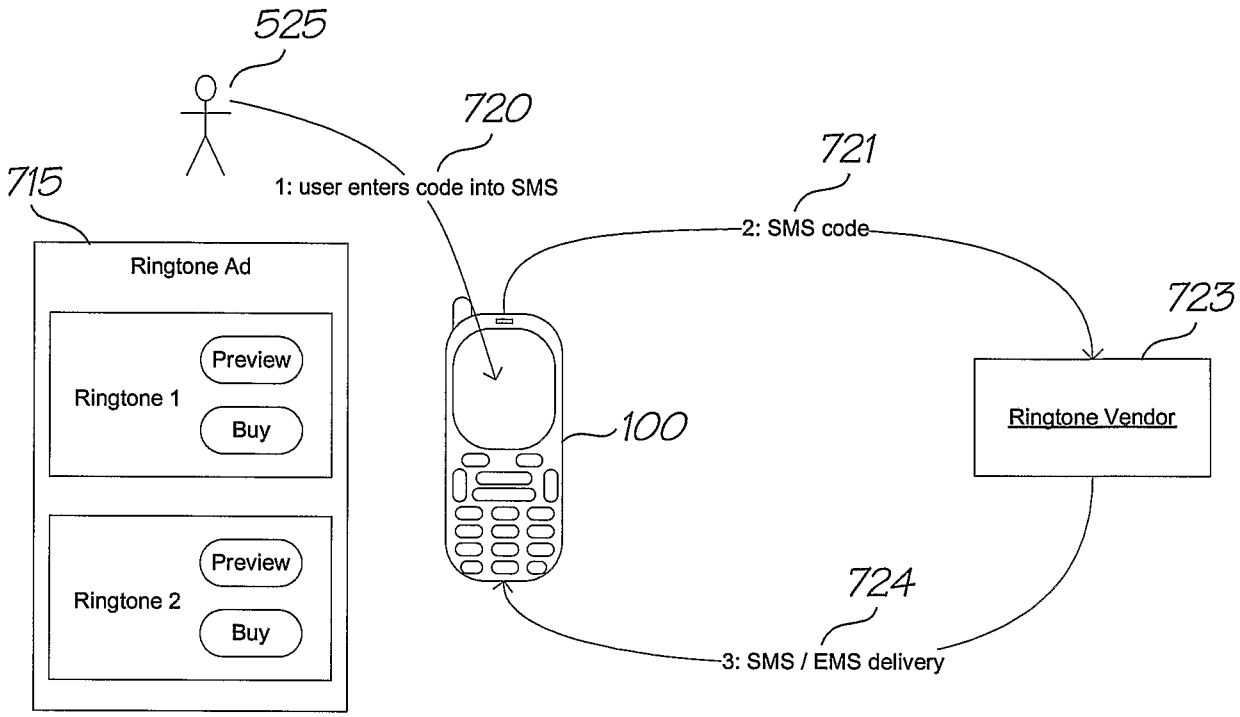
525
720
721
715
1: user enters code into SMS
2: SMS code
Ringtone Ad
Ringtone 1
Preview
Buy
Ringtone 2
Preview
Buy
100
723
Ringtone Vendor
724
3: SMS / EMS delivery

FIG. 58

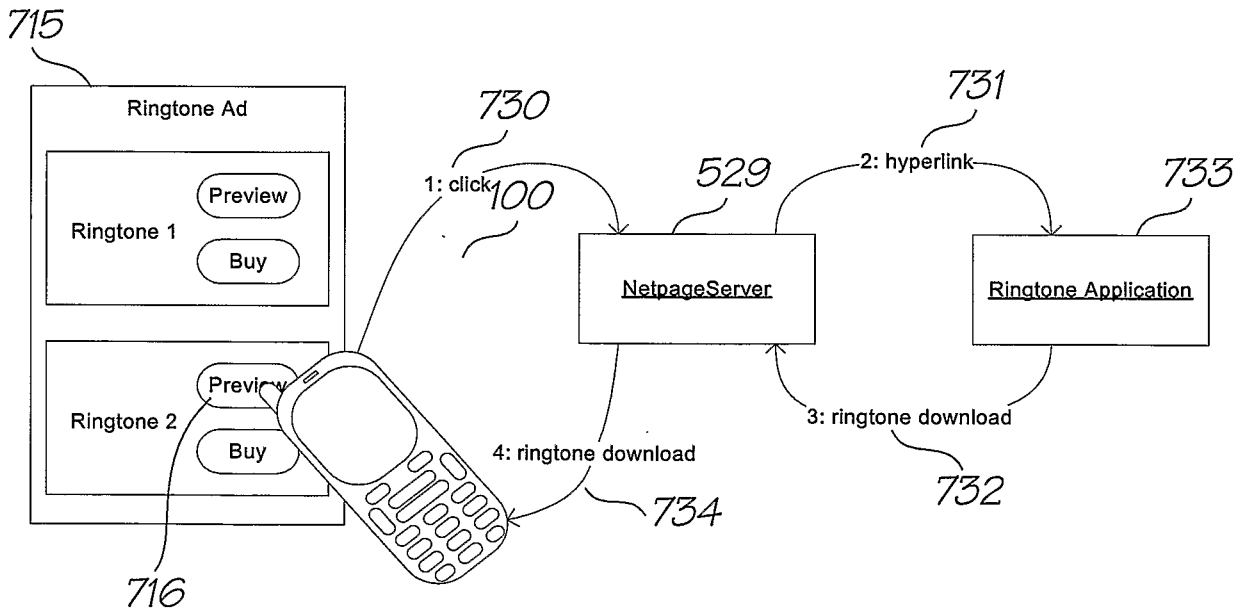
715
Ringtone Ad
730
731
1: click
100
529
2: hyperlink
733
Ringtone 1
Preview
Buy
NetpageServer
Ringtone Application
Ringtone 2
Preview
Buy
3: ringtone download
4: ringtone download
734
732
716

FIG. 59

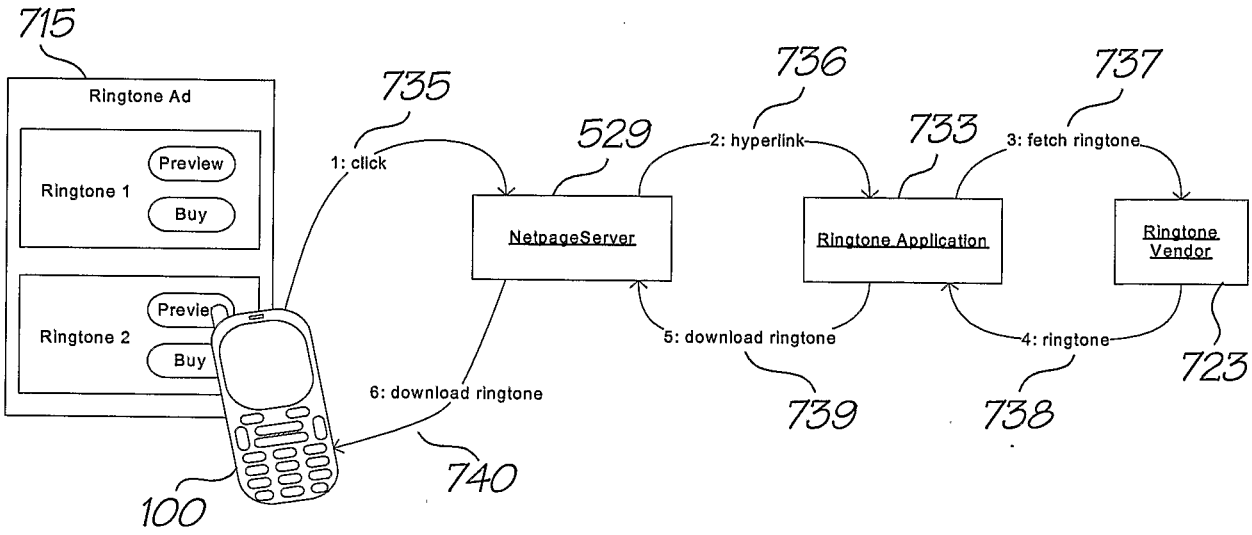
715
Ringtone Ad
Ringtone 1
Preview
Buy
Ringtone 2
Buy
735
1: click
529
NetpageServer
736
2: hyperlink
733
Ringtone Application
737
3: fetch ringtone
Ringtone Vendor
723
4: ringtone
738
5: download ringtone
739
6: download ringtone
740
100

FIG. 60

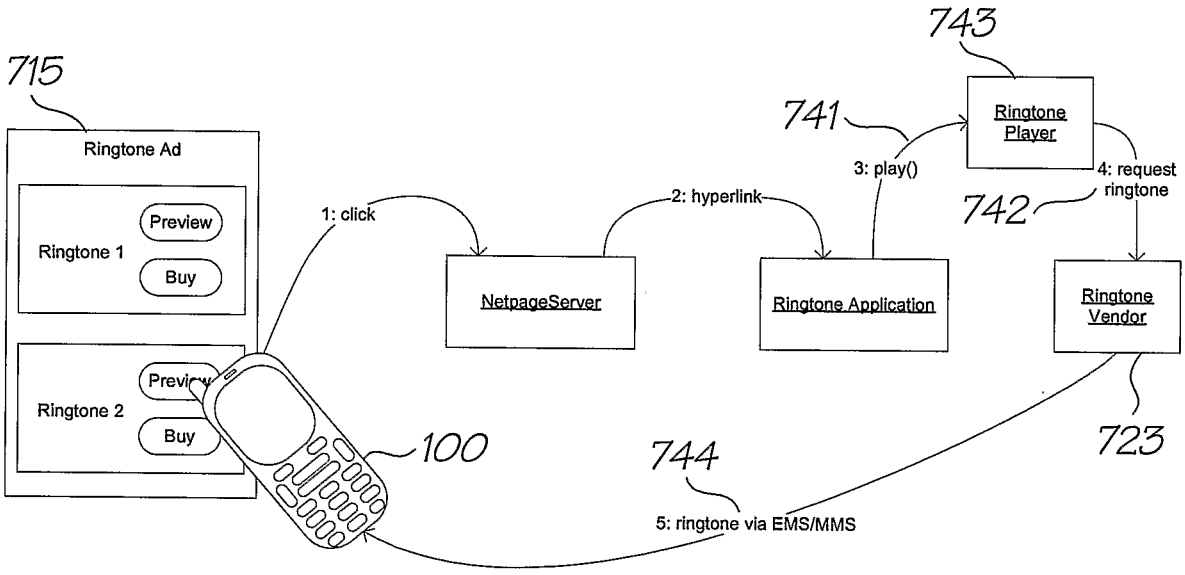
715
Ringtone Ad
Ringtone 1
Preview
Buy
Ringtone 2
Buy
1: click
NetpageServer
2: hyperlink
Ringtone Application
741
743
Ringtone Player
3: play()
4: request ringtone
742
Ringtone Vendor
723
100
744
5: ringtone via EMS/MMS

FIG. 61

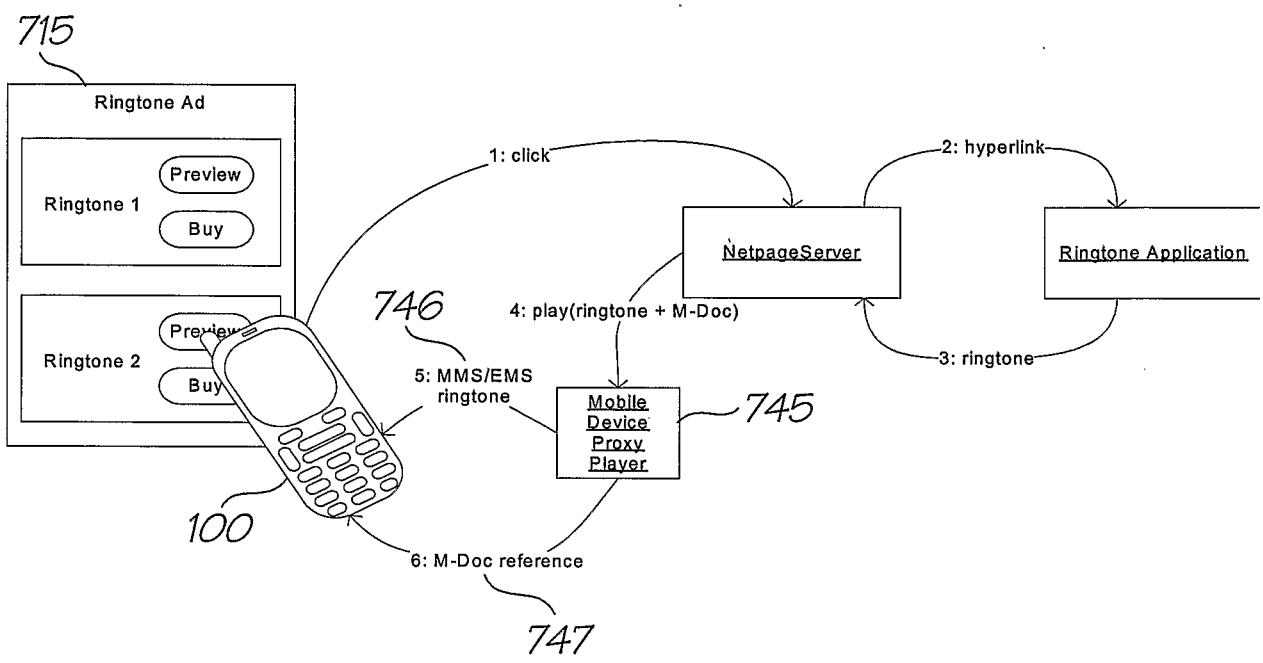
715
Ringtone Ad
Ringtone 1
Preview
Buy
Ringtone 2
Preview
Buy
1: click
2: hyperlink
NetpageServer
Ringtone Application
746
4: play(ringtone + M-Doc)
5: MMS/EMS ringtone
3: ringtone
Mobile Device Proxy Player
745
100
6: M-Doc reference
747

FIG. 62

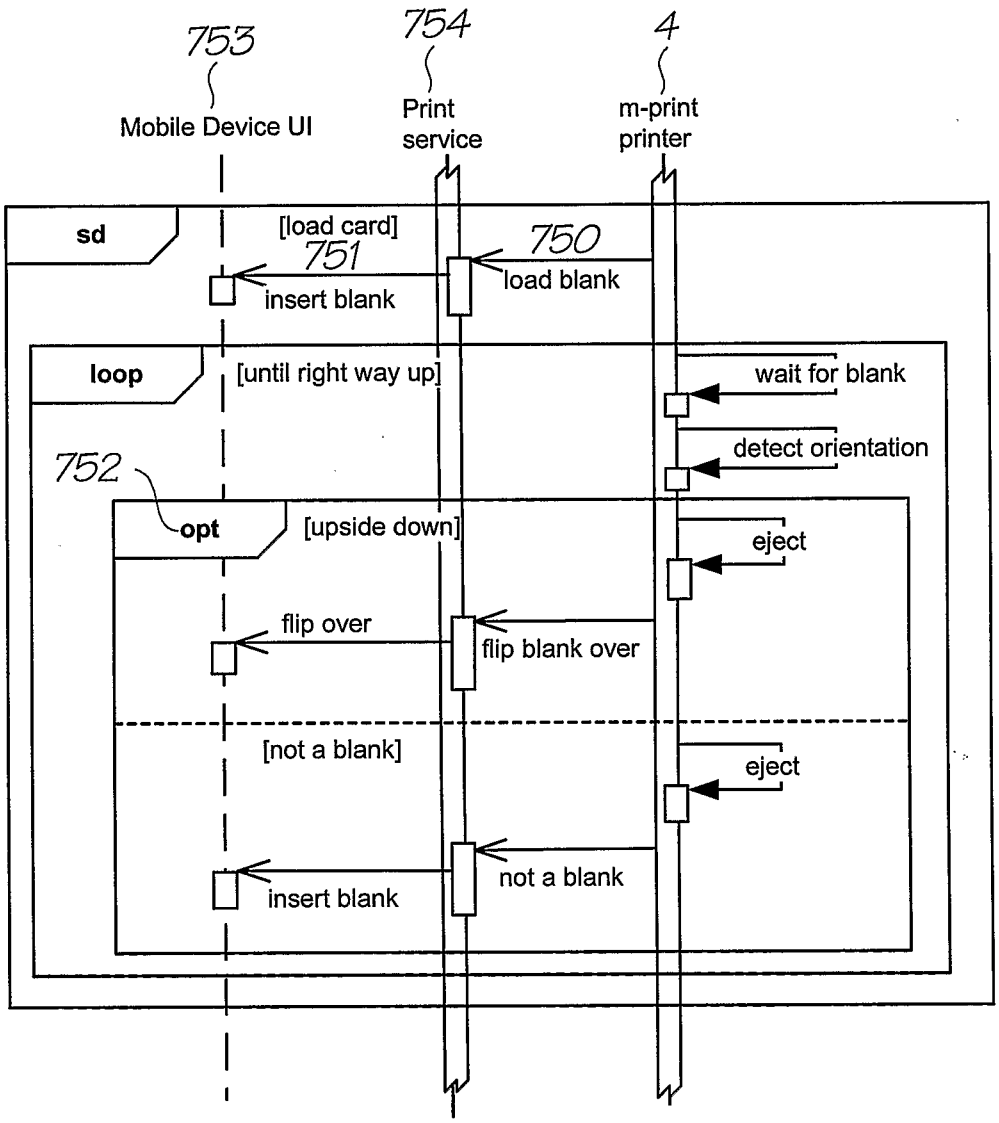
753
Mobile Device UI
754
Print service
4
m-print printer
sd
[load card]
751
insert blank
750
load blank
loop
[until right way up]
wait for blank
detect orientation
752
opt
[upside down]
eject
flip over
flip blank over
[not a blank]
eject
not a blank
insert blank

FIG. 63

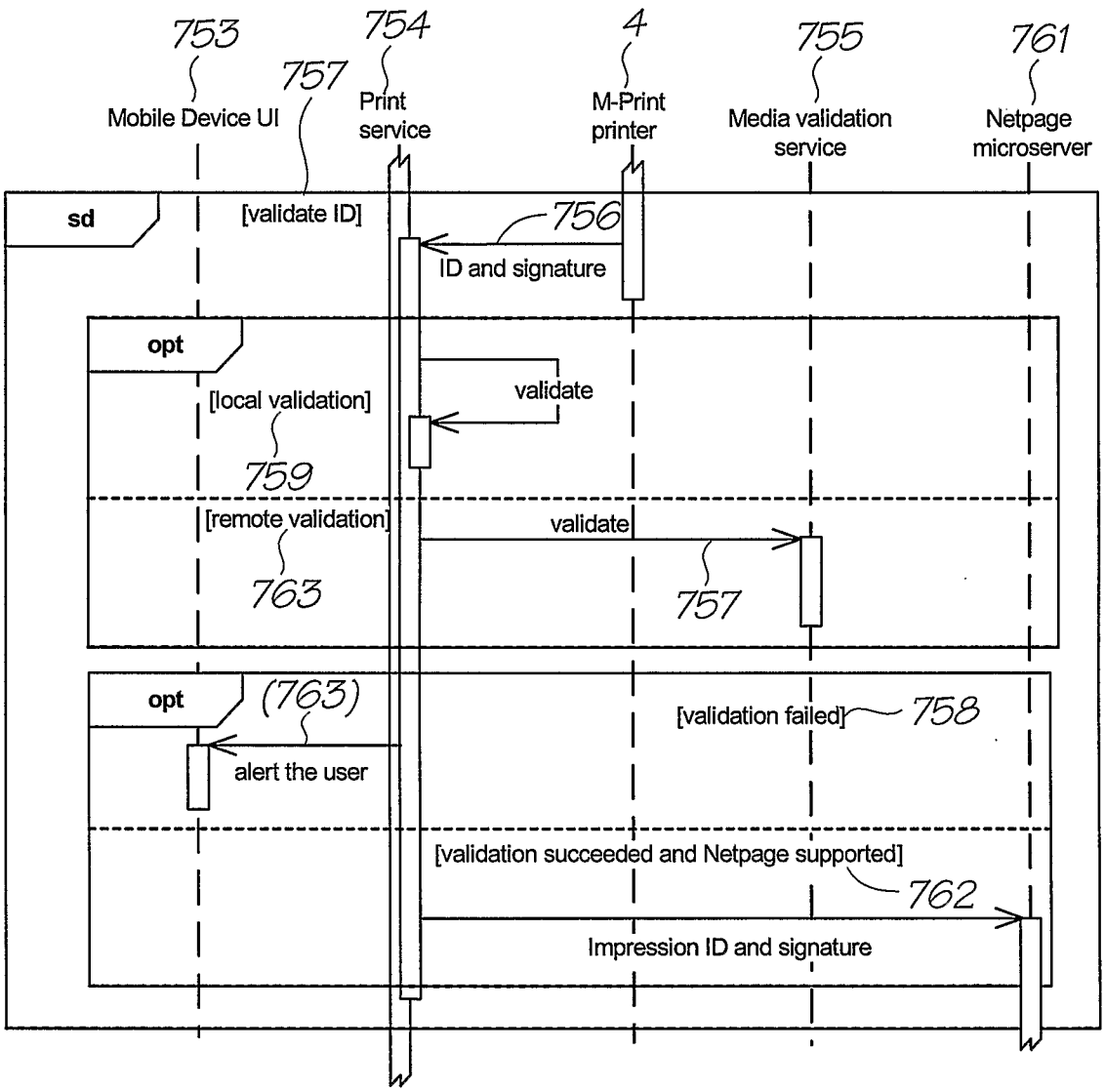
753
Mobile Device UI
757
754
Print service
4
M-Print printer
755
Media validation service
761
Netpage microserver
sd
[validate ID]
756
ID and signature
opt
[local validation]
validate
759
[remote validation]
validate
763
757
opt
(763)
alert the user
[validation failed]
758
[validation succeeded and Netpage supported]
762
Impression ID and signature

FIG. 64

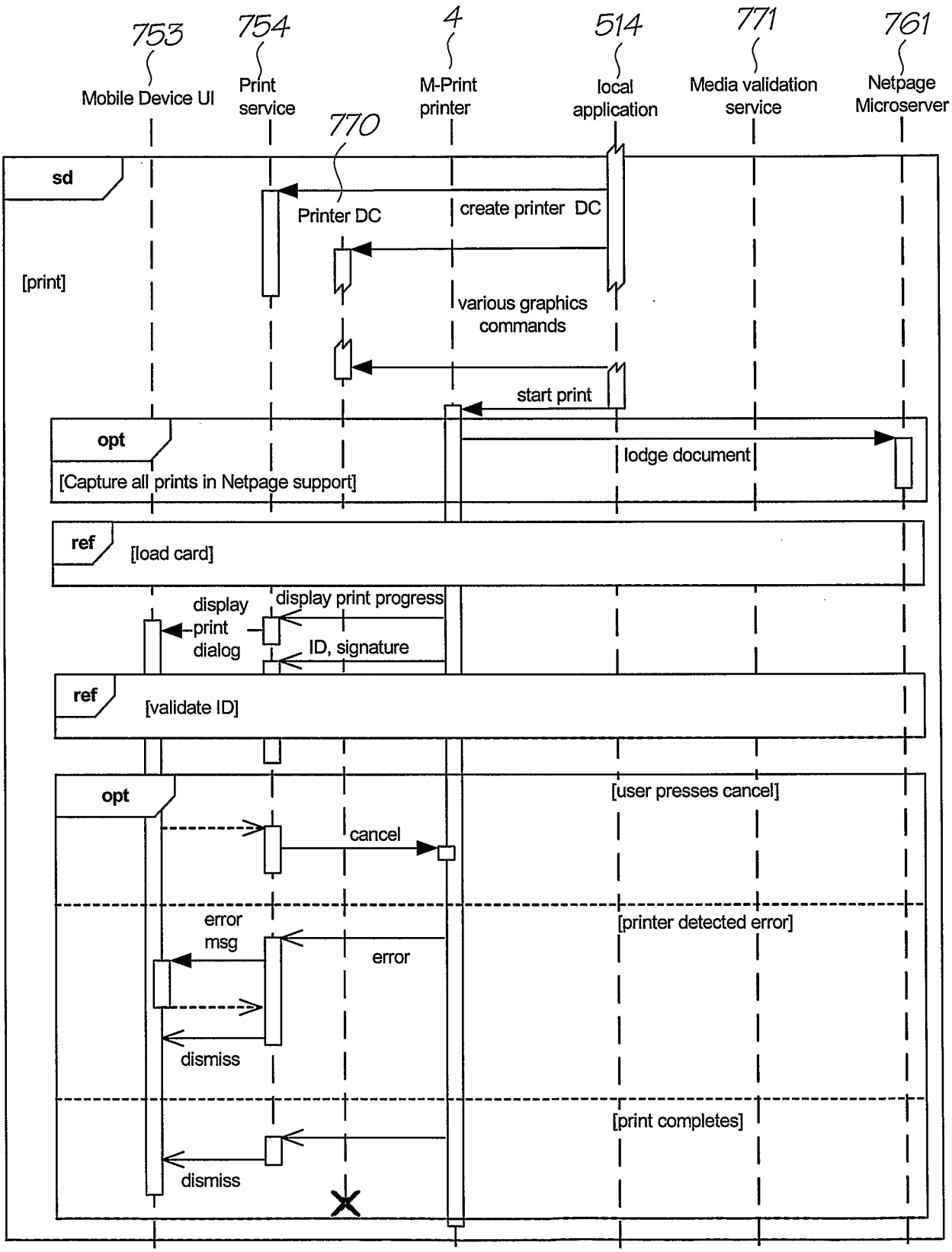
753
Mobile Device UI
754
Print service
770
4
M-Print printer
514
local application
771
Media validation service
761
Netpage Microserver
sd
[print]
Printer DC
create printer DC
various graphics commands
start print
opt
[Capture all prints in Netpage support]
lodge document
ref
[load card]
display print dialog
display print progress
ID, signature
ref
[validate ID]
opt
[user presses cancel]
cancel
error msg
error
[printer detected error]
dismiss
[print completes]
dismiss

FIG. 65

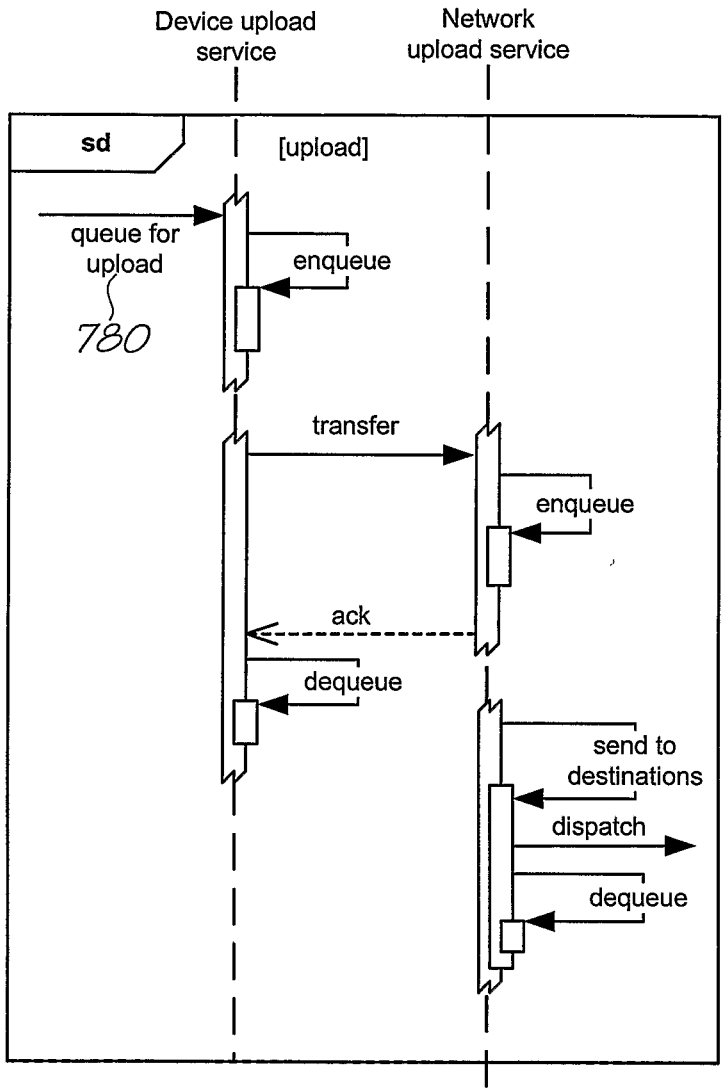
Device upload service
Network upload service
sd
[upload]
queue for upload
780
enqueue
transfer
enqueue
ack
dequeue
send to destinations
dispatch
dequeue

FIG. 66

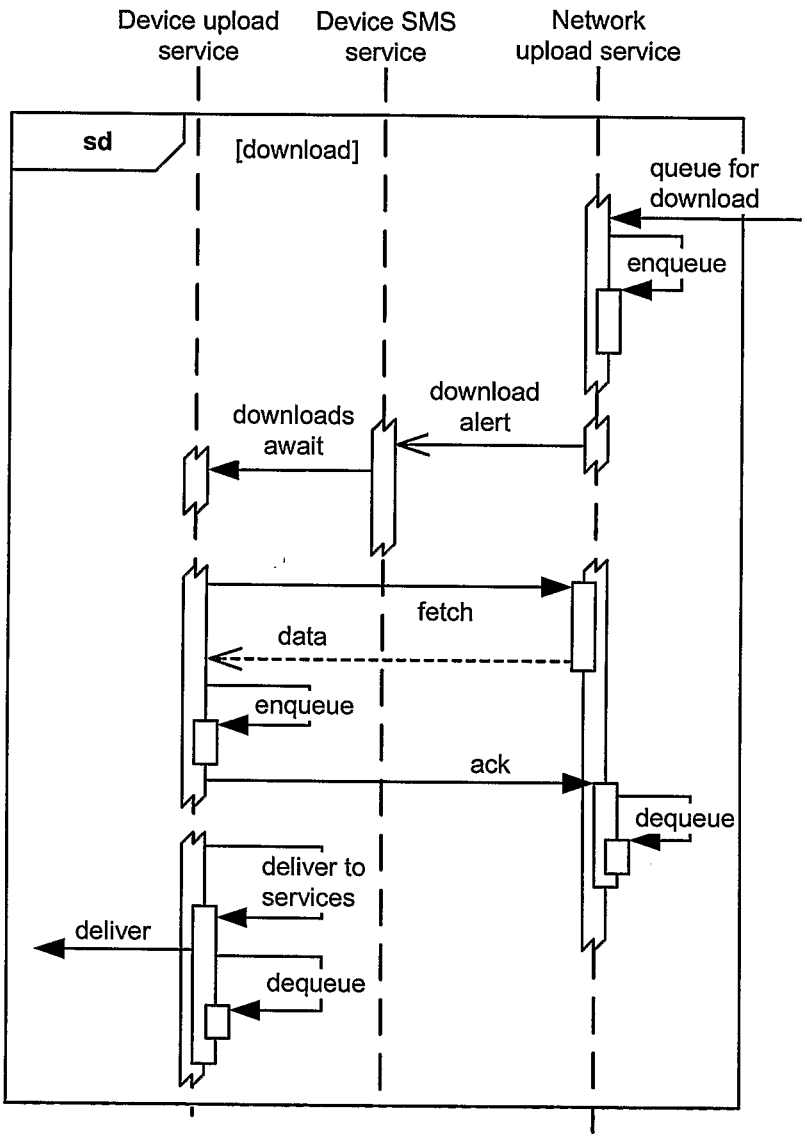
Device upload service
Device SMS service
Network upload service
sd
[download]
queue for download
enqueue
download alert
downloads await
fetch
data
enqueue
ack
dequeue
deliver to services
deliver
dequeue

FIG. 67

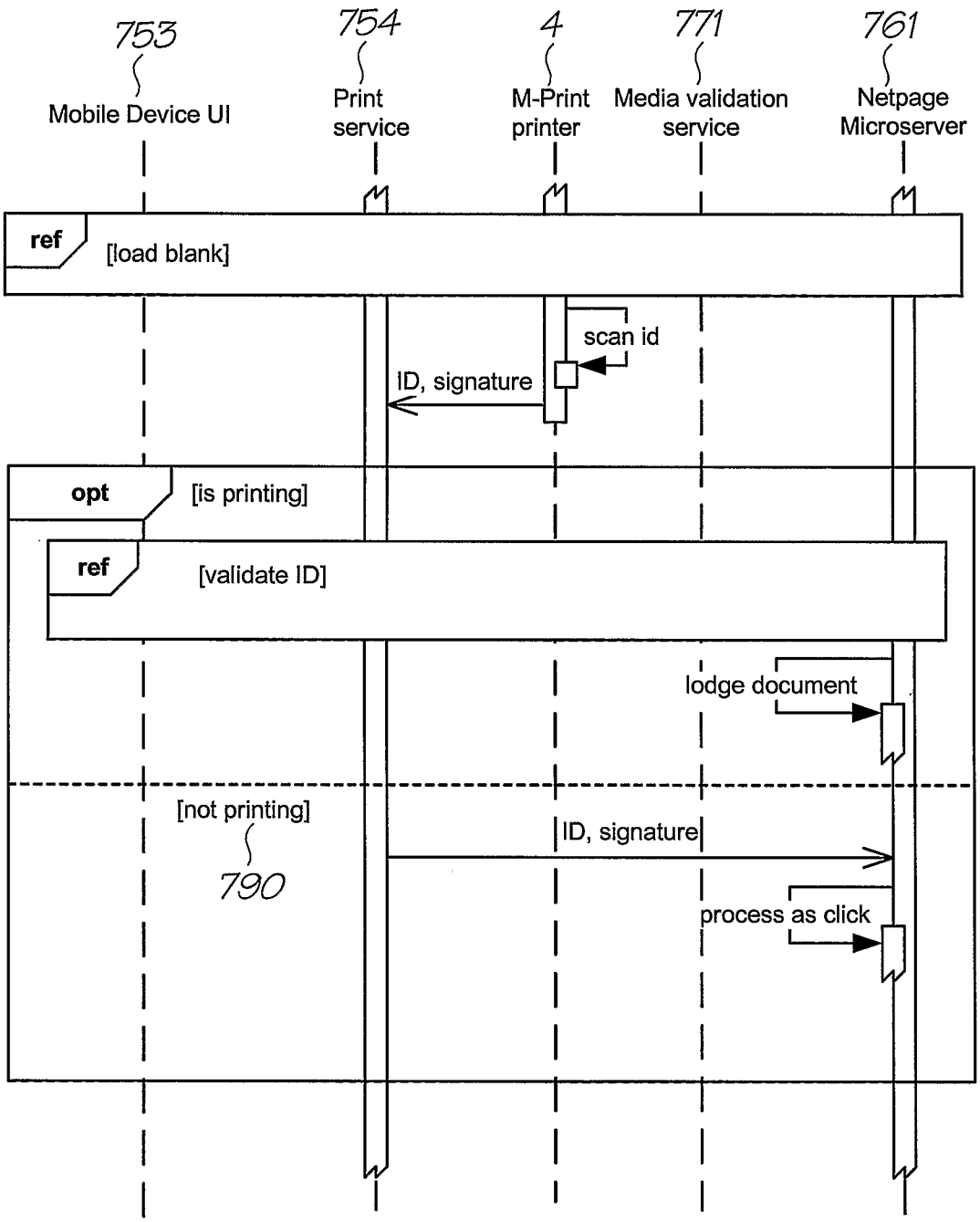
753
Mobile Device UI
754
Print service
4
M-Print printer
771
Media validation service
761
Netpage Microserver
ref
[load blank]
scan id
ID, signature
opt
[is printing]
ref
[validate ID]
lodge document
[not printing]
790
ID, signature
process as click

FIG. 68

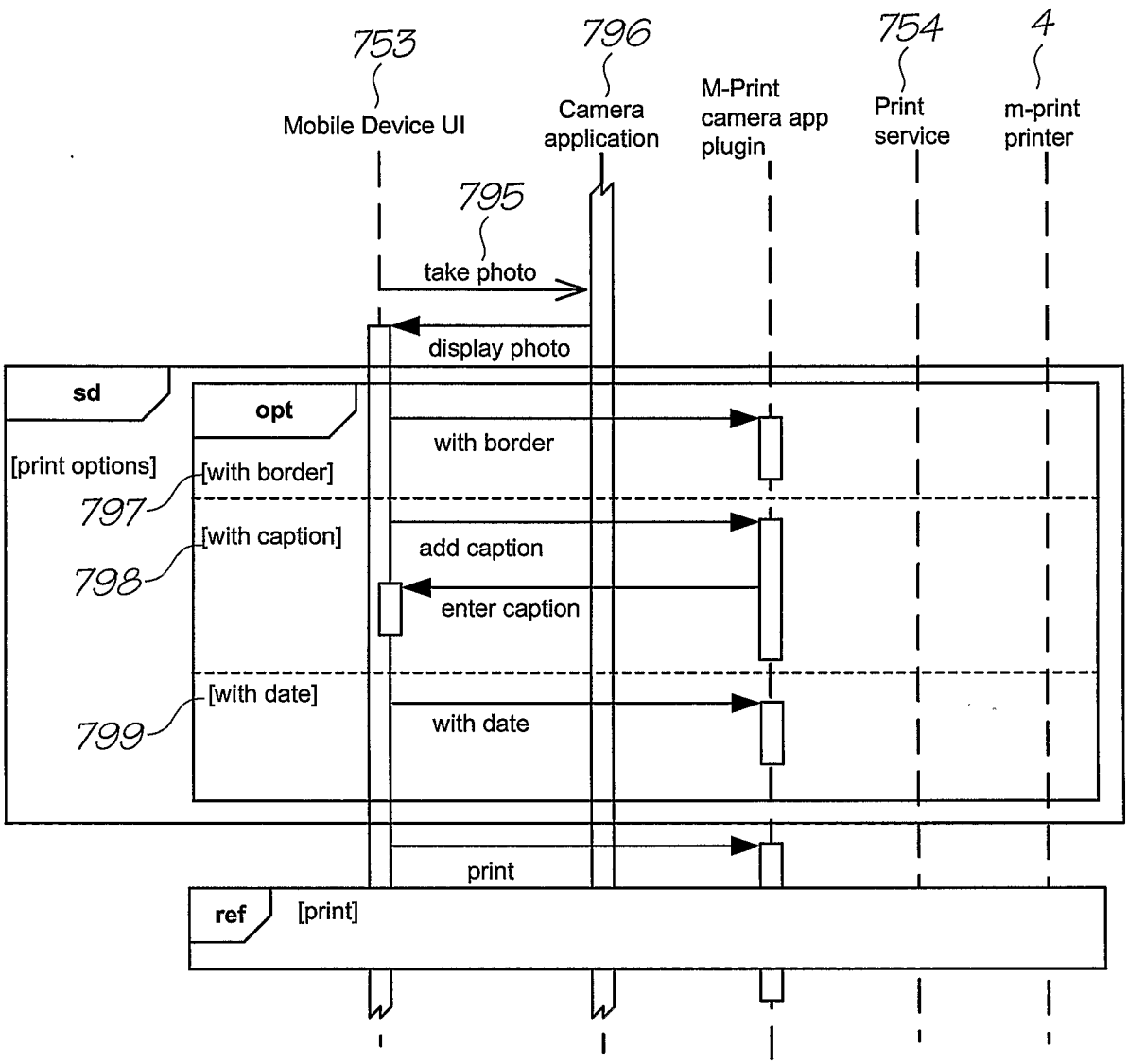
753
Mobile Device UI
796
Camera application
M-Print camera app plugin
754
Print service
4
m-print printer
795
take photo
display photo
sd
opt
[print options]
[with border]
with border
797
[with caption]
add caption
798
enter caption
[with date]
799
with date
print
ref
[print]

FIG. 69

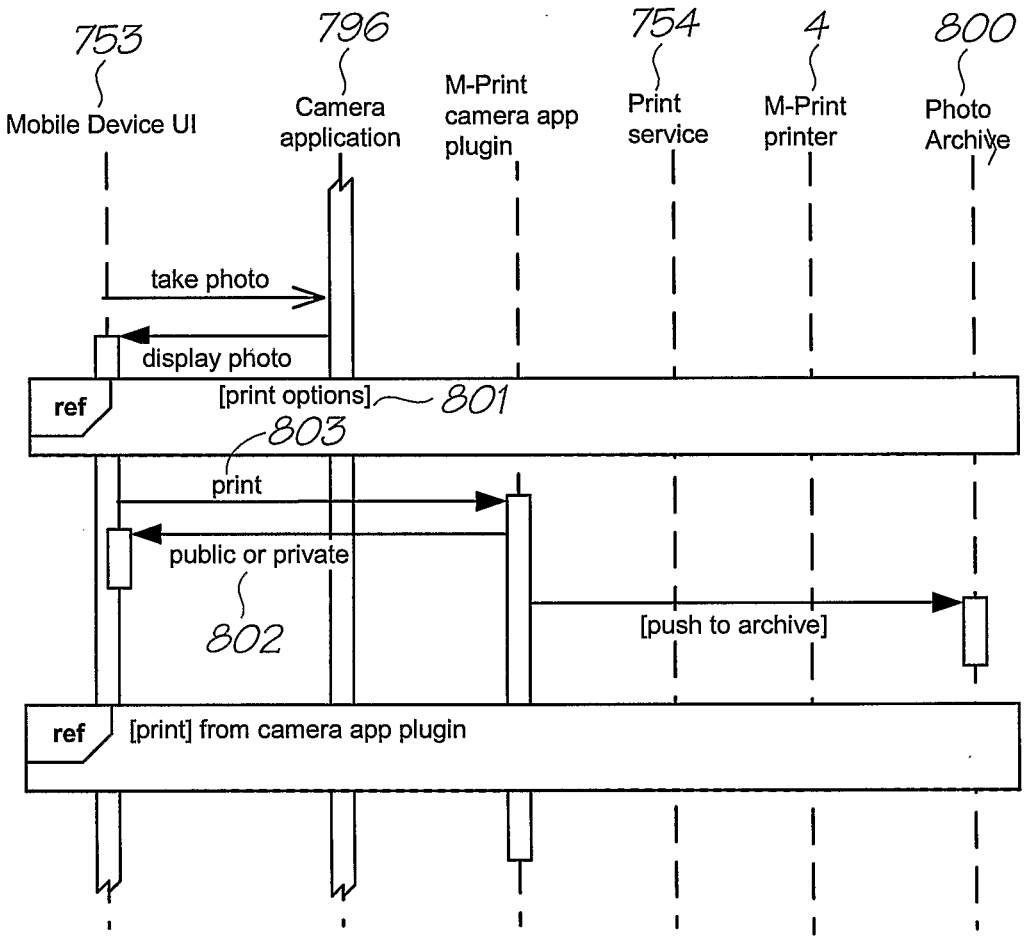
753
Mobile Device UI
796
Camera application
M-Print camera app plugin
754
Print service
4
M-Print printer
800
Photo Archive
take photo
display photo
ref
[print options]
801
803
print
public or private
802
[push to archive]
ref
[print] from camera app plugin

FIG. 70

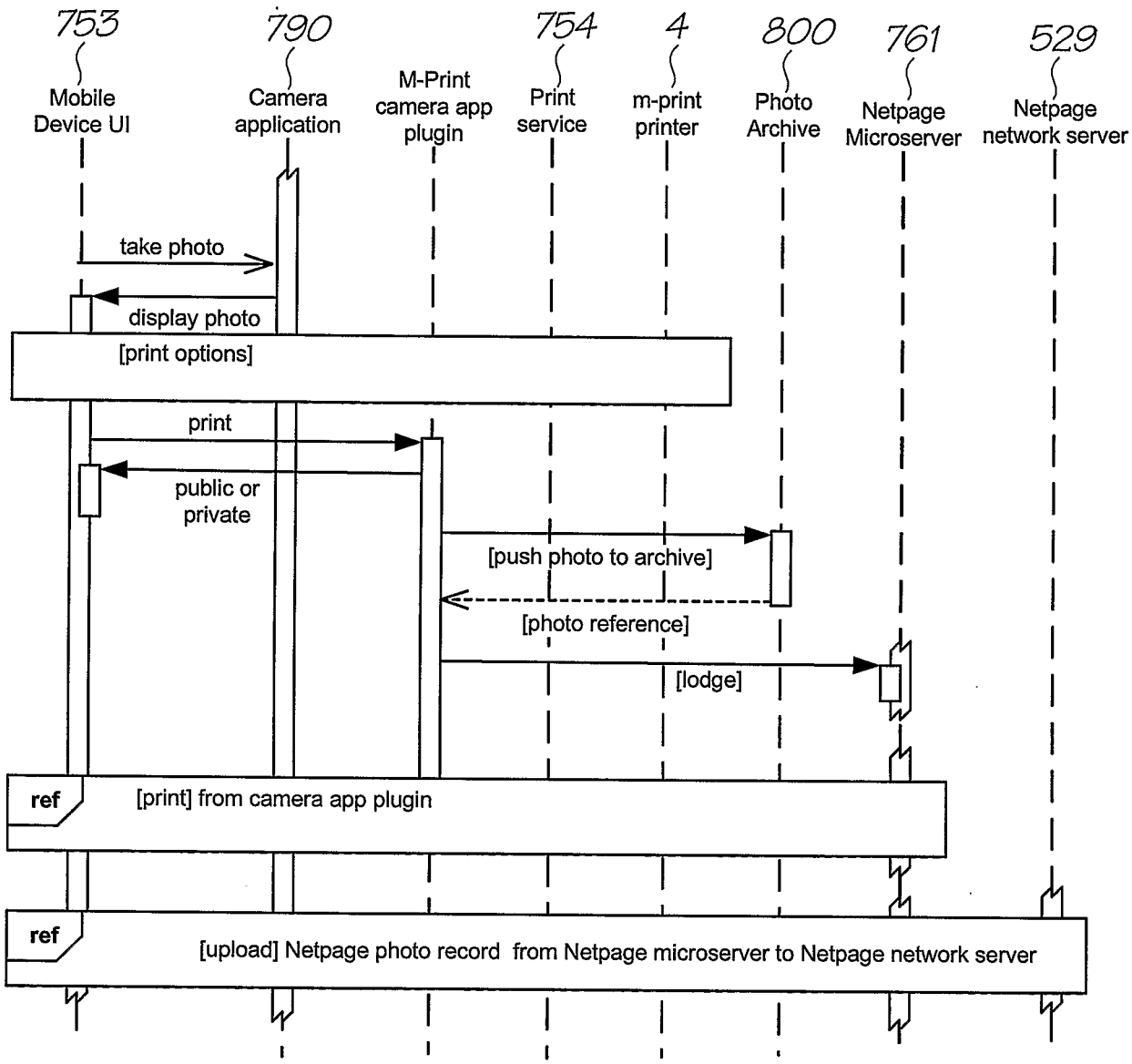
753
Mobile Device UI
790
Camera application
M-Print camera app plugin
754
Print service
4
m-print printer
800
Photo Archive
761
Netpage Microserver
529
Netpage network server
take photo
display photo
[print options]
print
public or private
[push photo to archive]
[photo reference]
[lodge]
ref
[print] from camera app plugin
ref
[upload] Netpage photo record from Netpage microserver to Netpage network server

FIG. 71

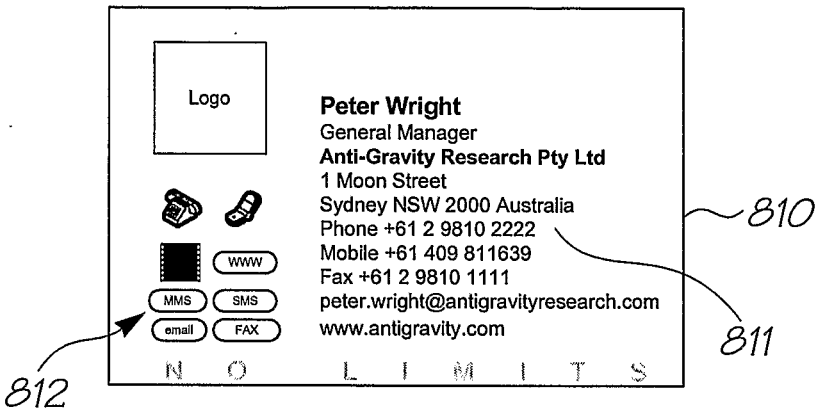
Logo
Peter Wright
General Manager
Anti-Gravity Research Pty Ltd
1 Moon Street
Sydney NSW 2000 Australia
Phone +61 2 9810 2222
Mobile +61 409 811639
Fax +61 2 9810 1111
peter.wright@antigravityresearch.com
www.antigravity.com
WWW
MMS
SMS
email
FAX
N O L I M I T S
810
811
812

FIG. 72

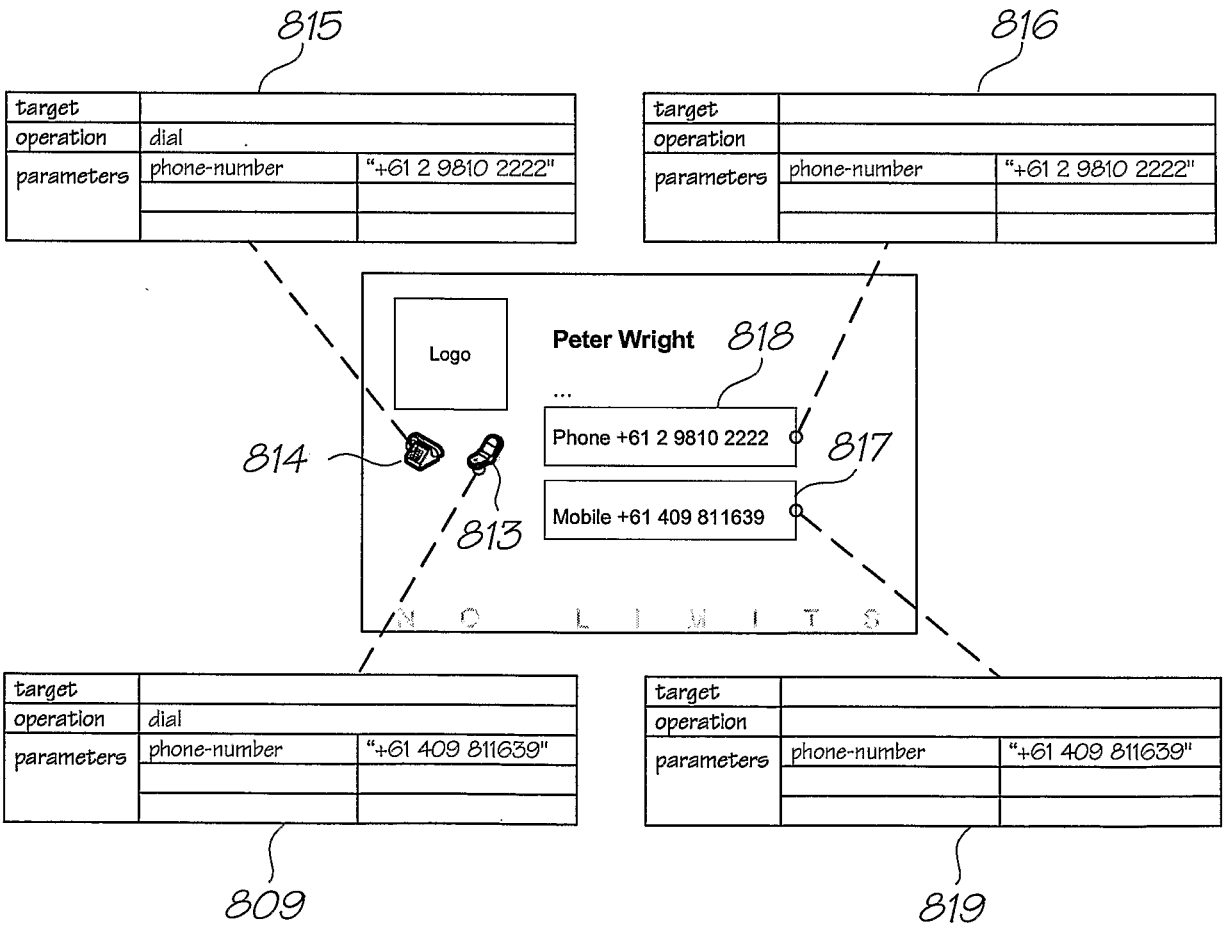
815
target
operation
dial
parameters
phone-number
"+61 2 9810 2222"
816
target
operation
parameters
phone-number
"+61 2 9810 2222"
Logo
Peter Wright
818
...
Phone +61 2 9810 2222
817
Mobile +61 409 811639
814
813
N O L I M I T S
target
operation
dial
parameters
phone-number
"+61 409 811639"
target
operation
parameters
phone-number
"+61 409 811639"
809
819

FIG. 73

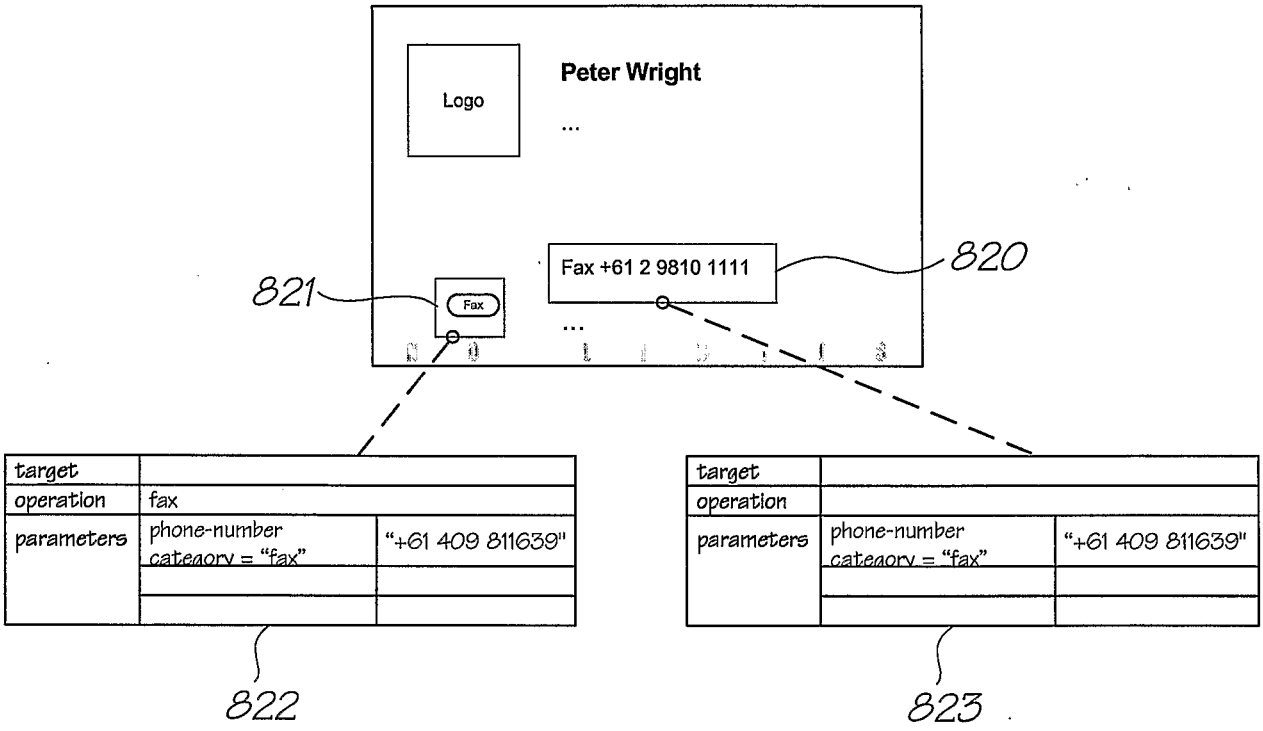
Logo
Peter Wright
...
Fax +61 2 9810 1111
820
821
Fax
...
target
operation
fax
parameters
phone-number
category = "fax"
"+61 409 811639"
822
target
operation
parameters
phone-number
category = "fax"
"+61 409 811639"
823

FIG. 74

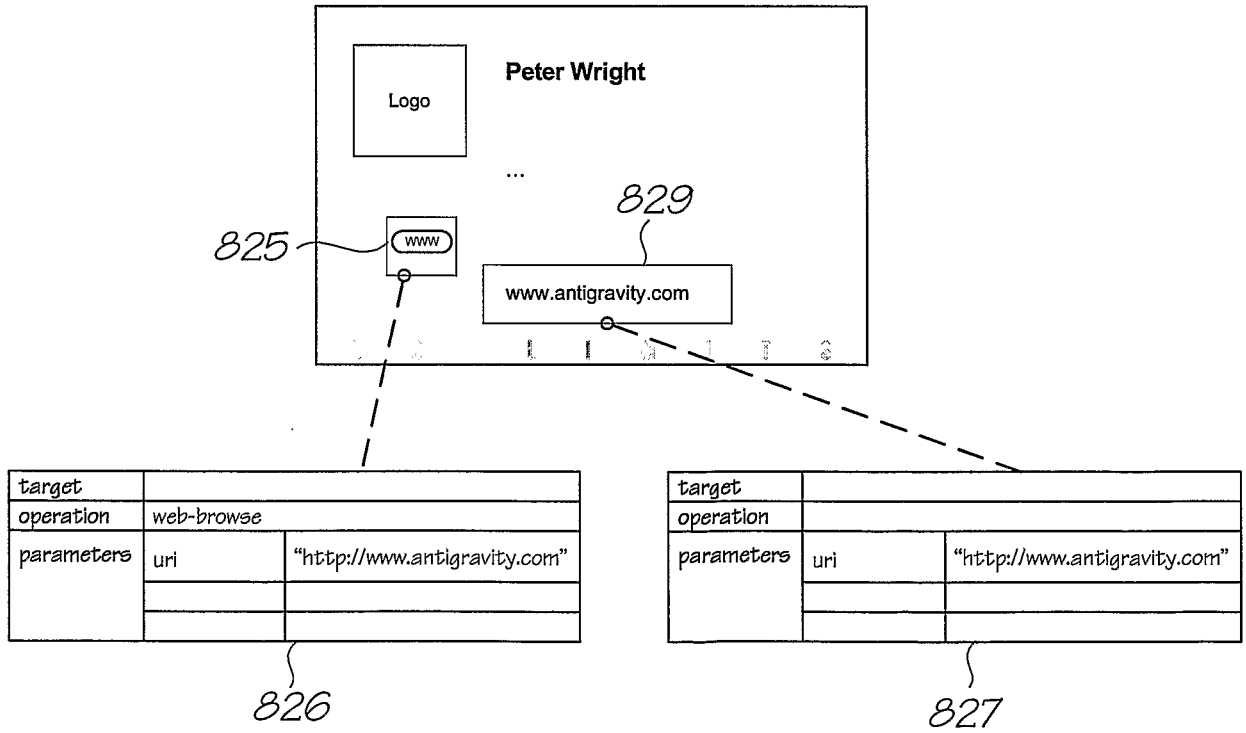
Logo
Peter Wright
...
829
825
www
www.antigravity.com
target
operation
web-browse
parameters
uri
"http://www.antigravity.com"
826
target
operation
parameters
uri
"http://www.antigravity.com"
827

FIG. 75

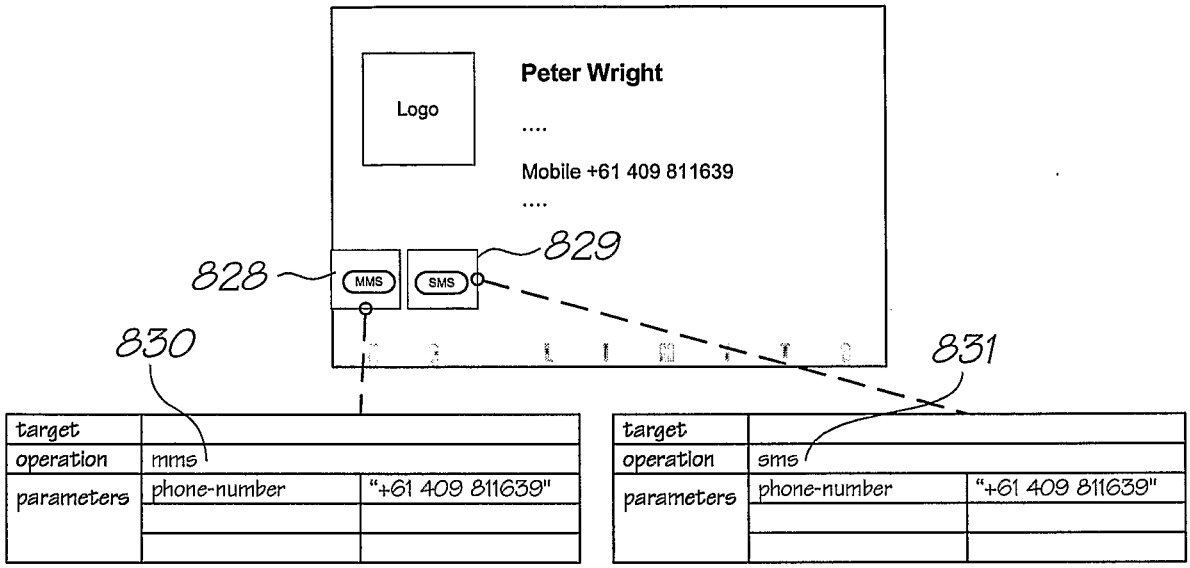
Logo
Peter Wright
....
Mobile +61 409 811639
....
828
MMS
SMS
829
830
831
target
operation
mms
parameters
phone-number
"+61 409 811639"
target
operation
sms
parameters
phone-number
"+61 409 811639"

FIG. 76

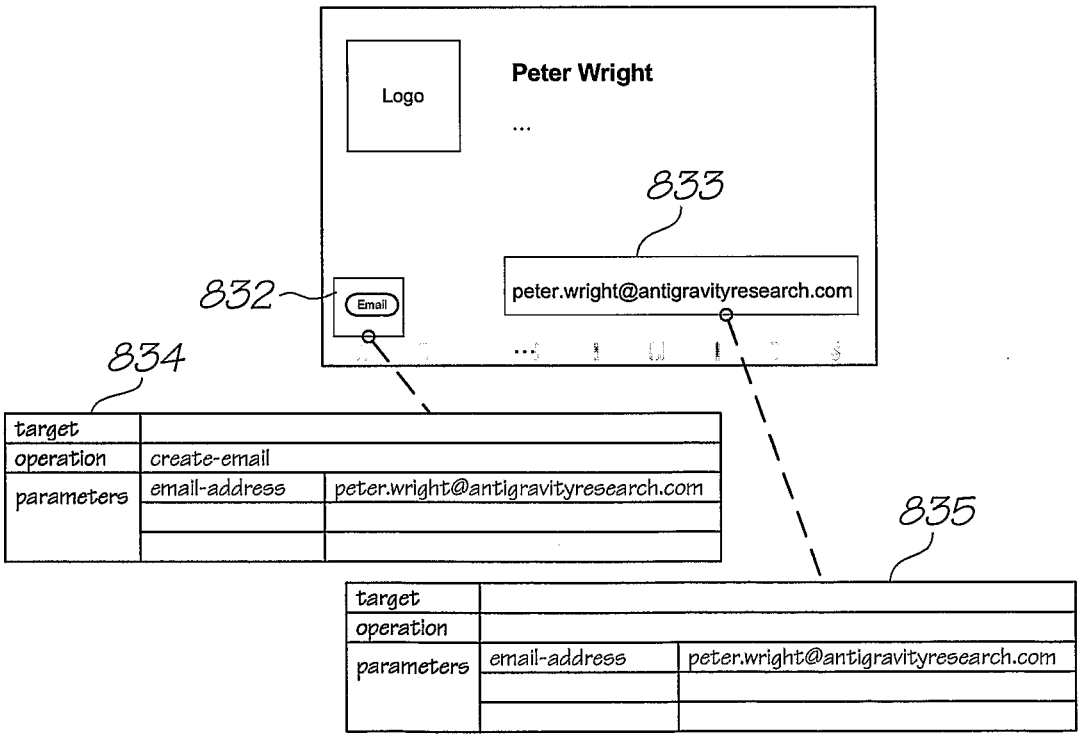
Logo
Peter Wright
...
833
832
Email
peter.wright@antigravityresearch.com
834
target
operation
create-email
parameters
email-address
peter.wright@antigravityresearch.com
835
target
operation
parameters
email-address
peter.wright@antigravityresearch.com

FIG. 77

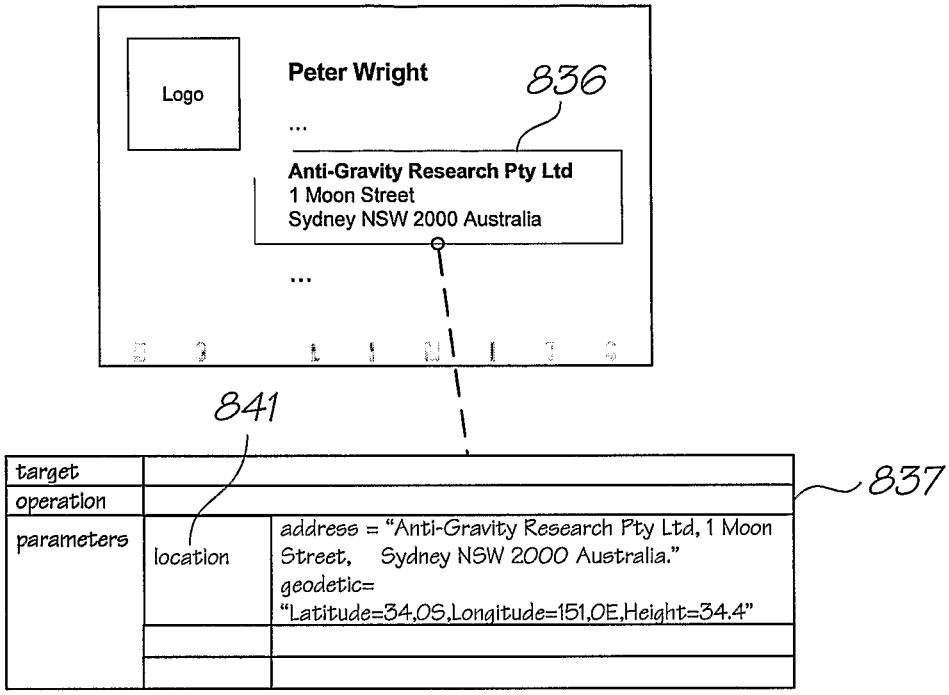
Logo
Peter Wright
836
...
Anti-Gravity Research Pty Ltd
1 Moon Street
Sydney NSW 2000 Australia
...
841
target
operation
parameters
location
address = "Anti-Gravity Research Pty Ltd, 1 Moon Street, Sydney NSW 2000 Australia."
geodetic=
"Latitude=34.0S,Longitude=151.0E,Height=34.4"
837

FIG. 78

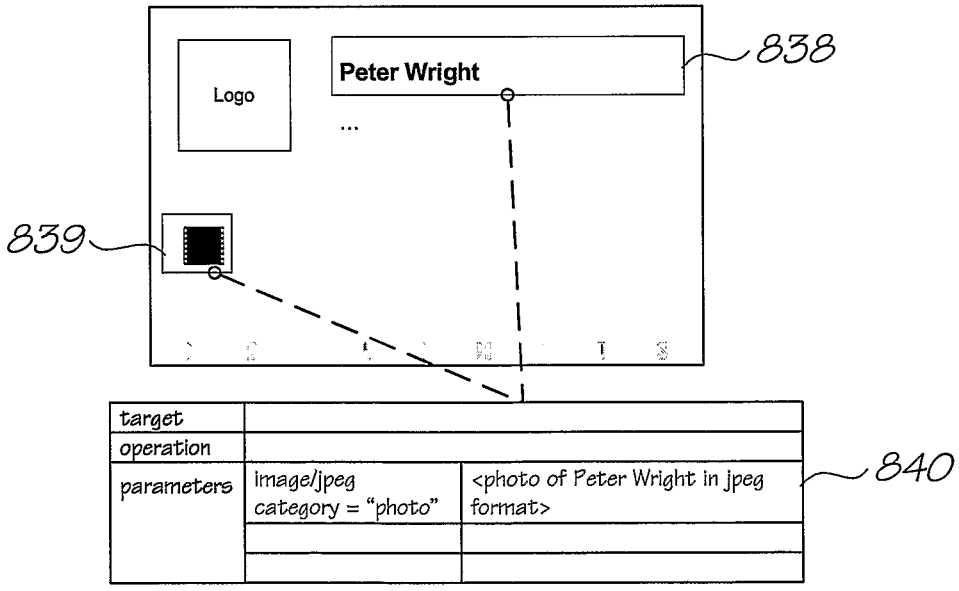
Logo
Peter Wright
838
...
839
target
operation
parameters
image/jpeg
category = "photo"
<photo of Peter Wright in jpeg format>
840

FIG. 79

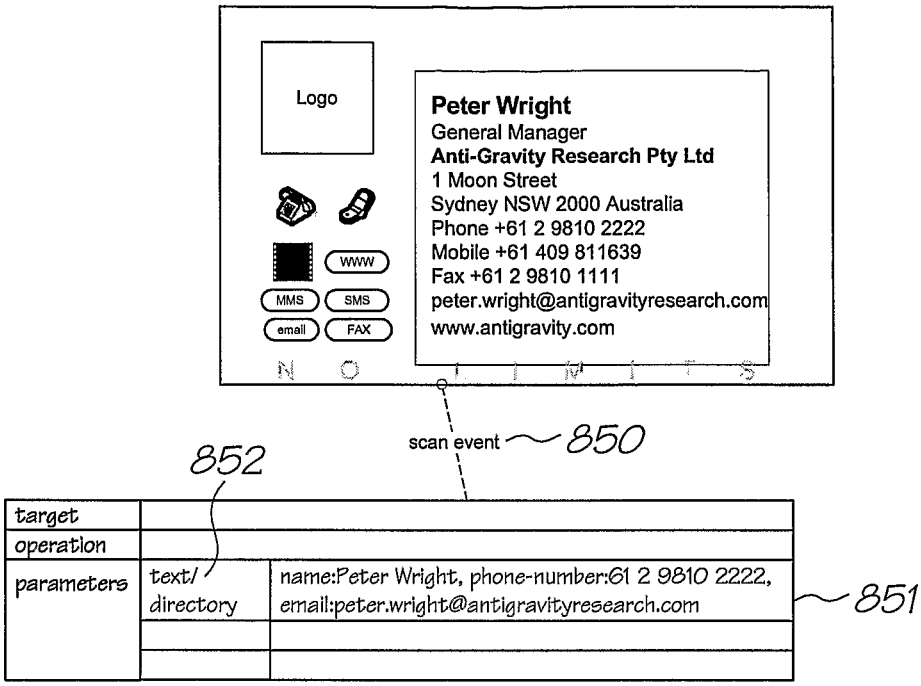
Logo
Peter Wright
General Manager
Anti-Gravity Research Pty Ltd
1 Moon Street
Sydney NSW 2000 Australia
Phone +61 2 9810 2222
Mobile +61 409 811639
Fax +61 2 9810 1111
peter.wright@antigravityresearch.com
www.antigravity.com
WWW
MMS
SMS
email
FAX
scan event
850
852
target
operation
parameters
text/ directory
name:Peter Wright, phone-number:61 2 9810 2222, email:peter.wright@antigravityresearch.com
851

FIG. 80

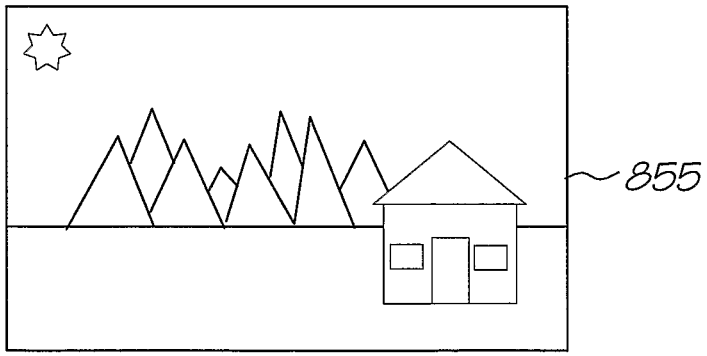
855

FIG. 81

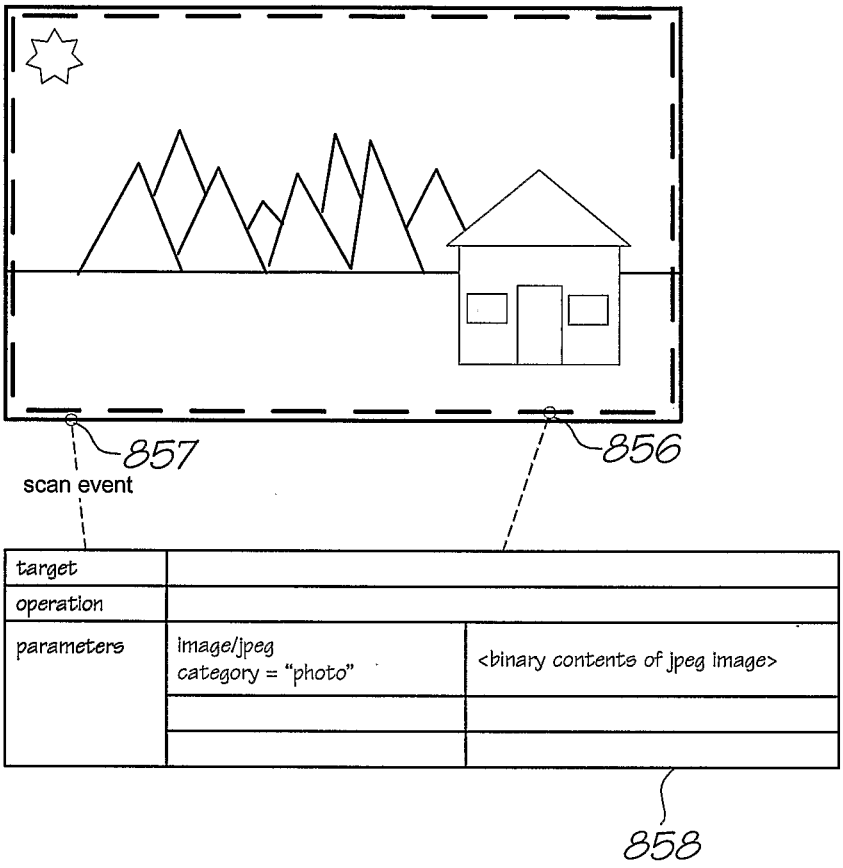
857
scan event
856
target
operation
parameters
image/jpeg
category = "photo"
<binary contents of jpeg image>
858

FIG. 82

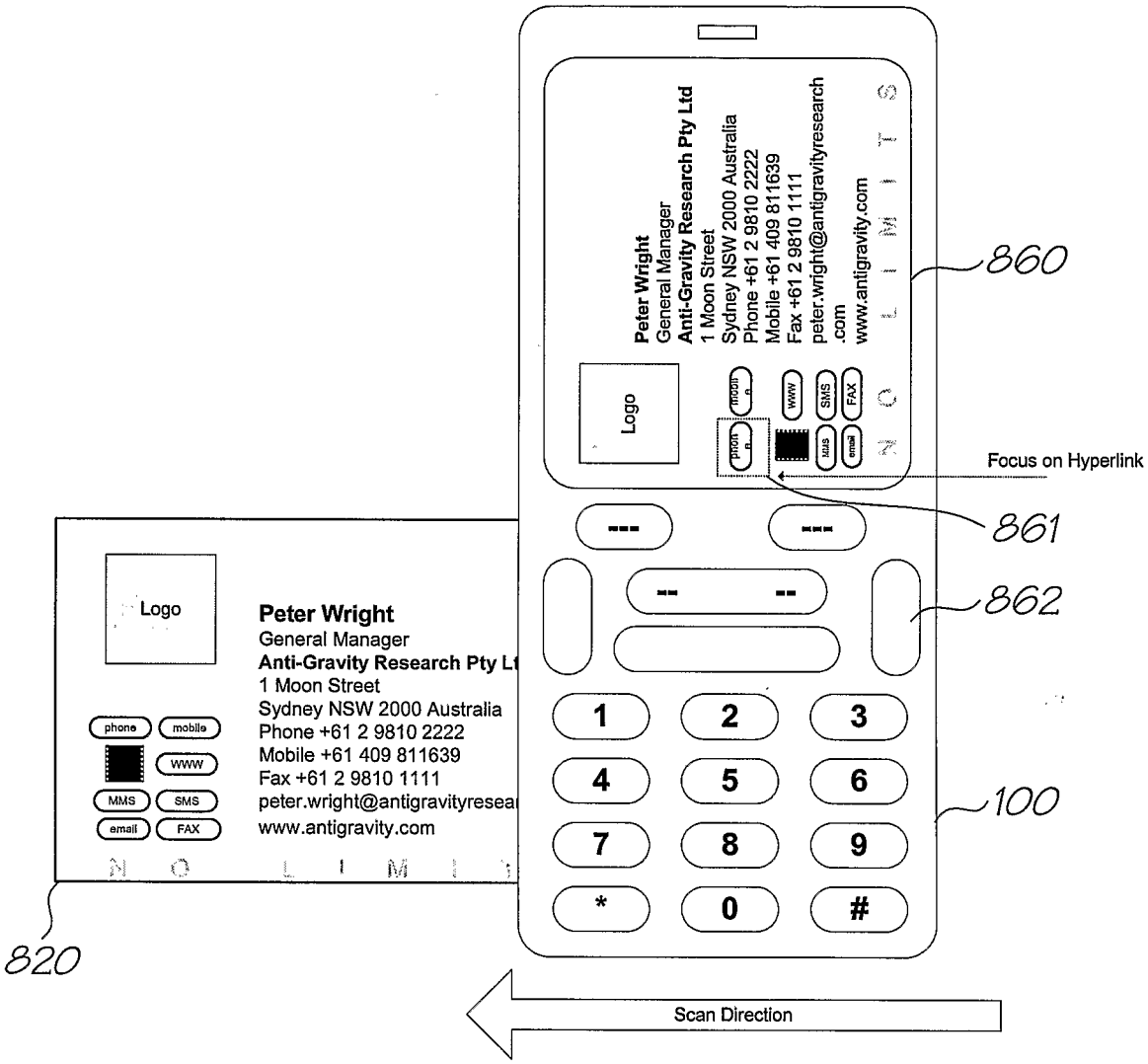
Logo
Peter Wright
General Manager
Anti-Gravity Research Pty Ltd
1 Moon Street
Sydney NSW 2000 Australia
Phone +61 2 9810 2222
Mobile +61 409 811639
Fax +61 2 9810 1111
peter.wright@antigravityresearch.com
www.antigravity.com
860
Focus on Hyperlink
861
862
100
820
Scan Direction
phone
mobile
WWW
MMS
SMS
email
FAX
1
2
3
4
5
6
7
8
9
*
0
#

FIG. 83

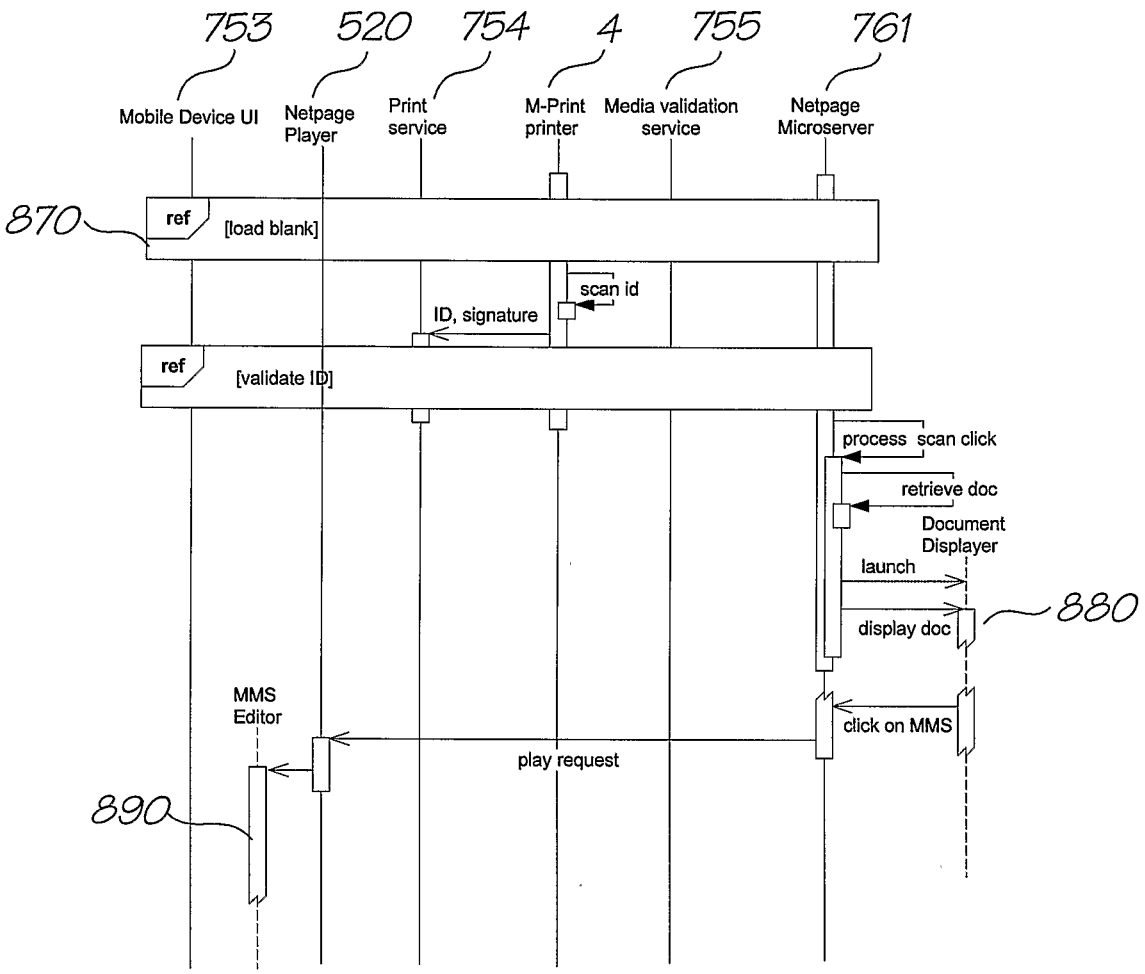
753
520
754
4
755
761
Mobile Device UI
Netpage Player
Print service
M-Print printer
Media validation service
Netpage Microserver
870
ref
[load blank]
scan id
ID, signature
ref
[validate ID]
process scan click
retrieve doc
Document Displayer
launch
880
display doc
MMS Editor
click on MMS
play request
890

FIG. 84

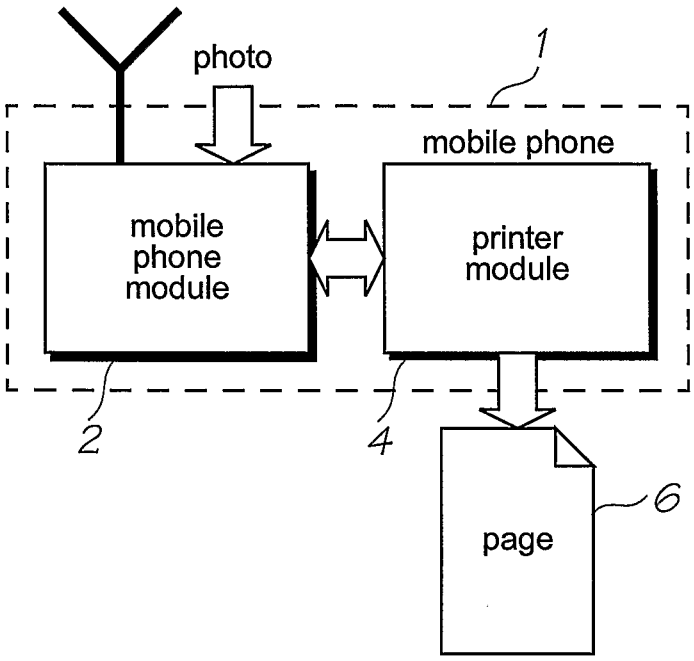
photo
1
mobile phone
mobile phone module
printer module
2
4
page
6

FIG. 85

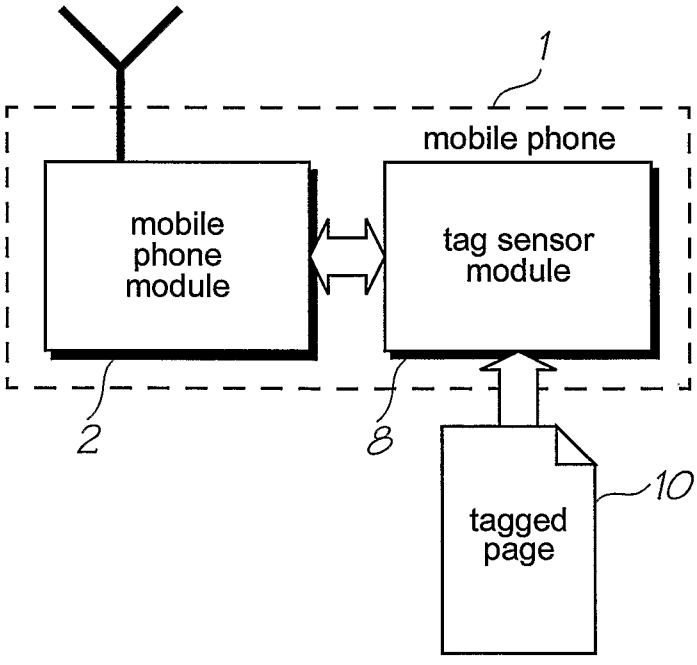
1
mobile phone
mobile phone module
tag sensor module
2
8
tagged page
10

FIG. 86

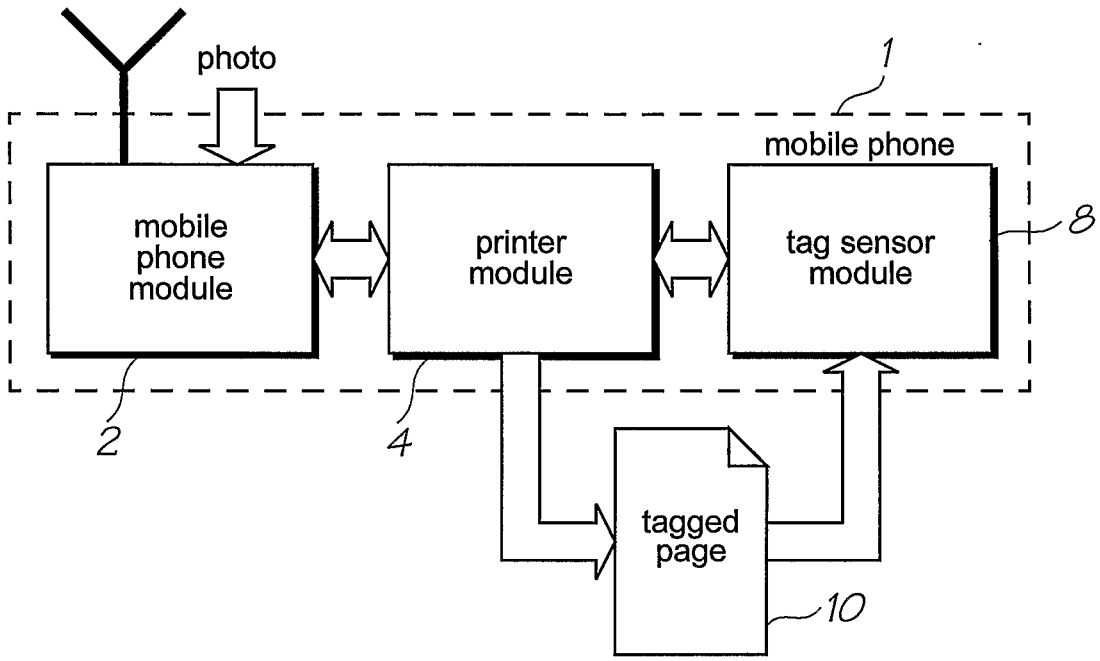
photo
1
mobile phone
mobile phone module
printer module
tag sensor module
8
2
4
tagged page
10

FIG. 87

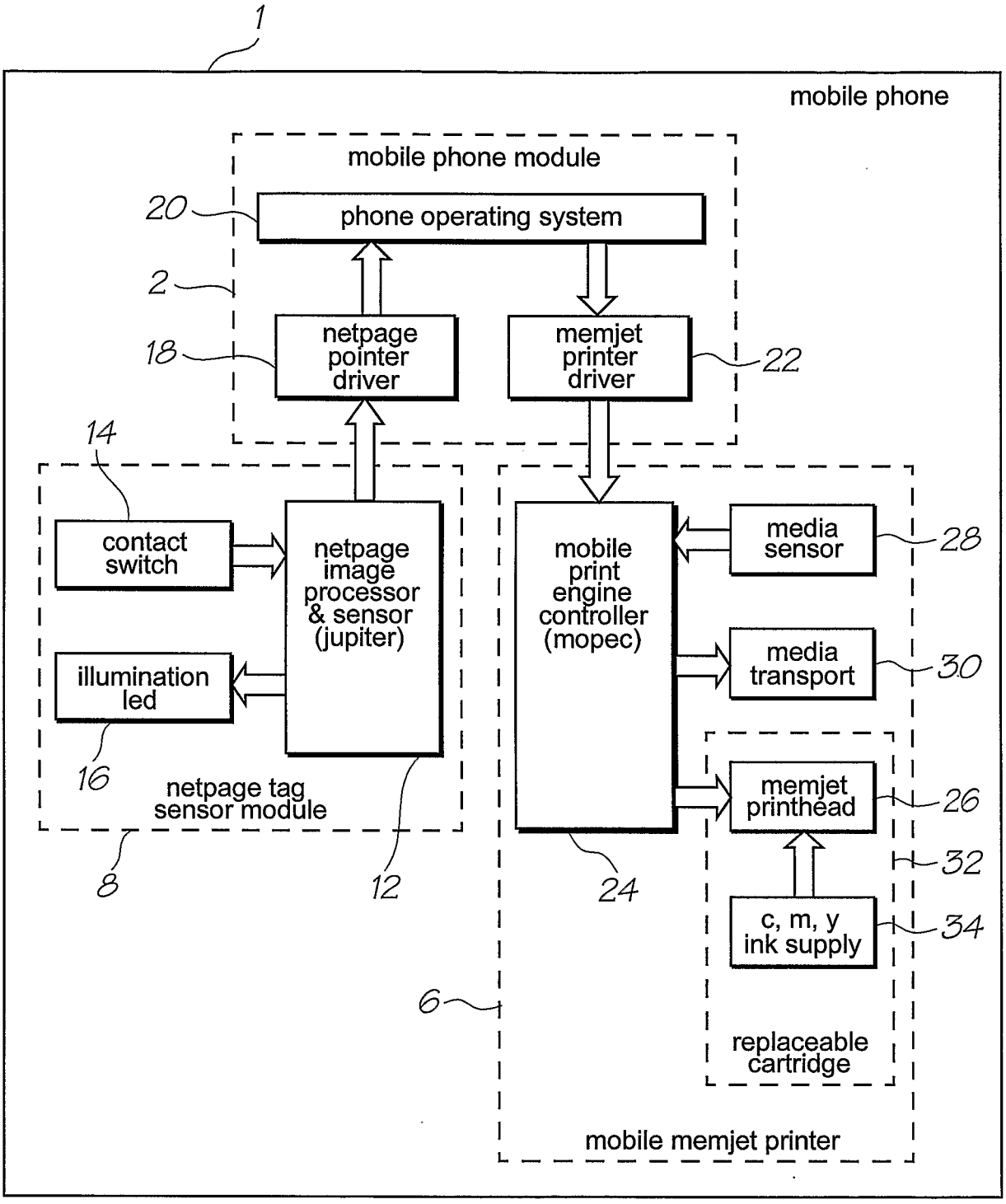
1
mobile phone
mobile phone module
20
phone operating system
2
18
netpage pointer driver
memjet printer driver
22
14
contact switch
netpage image processor & sensor (jupiter)
illumination led
16
netpage tag sensor module
8
12
mobile print engine controller (mopec)
24
media sensor
28
media transport
30
memjet printhead
26
32
c, m, y ink supply
34
6
replaceable cartridge
mobile memjet printer

FIG. 88

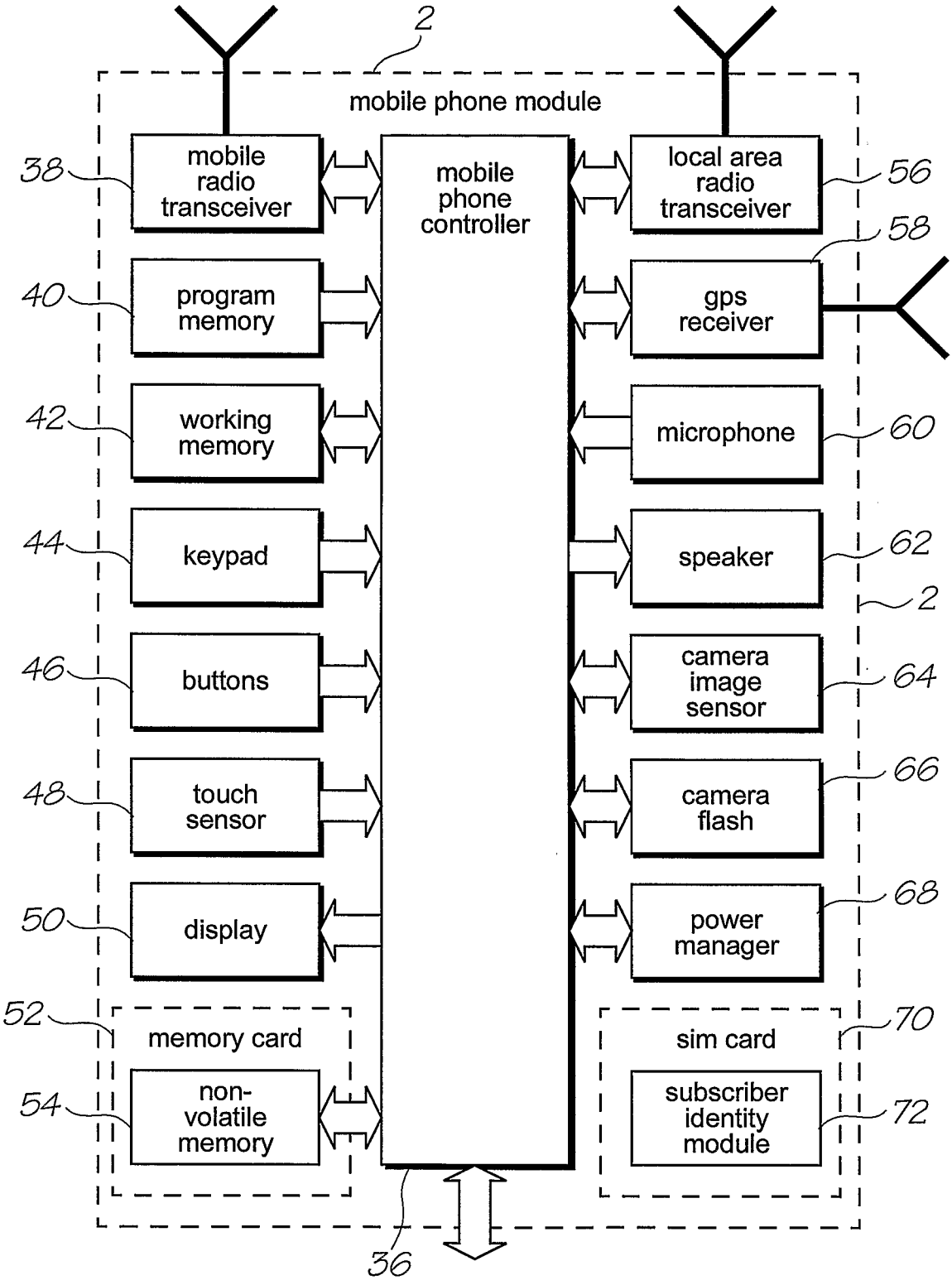
2
mobile phone module
38
mobile radio transceiver
mobile phone controller
local area radio transceiver
56
58
40
program memory
gps receiver
42
working memory
microphone
60
44
keypad
speaker
62
2
46
buttons
camera image sensor
64
48
touch sensor
camera flash
66
50
display
power manager
68
52
memory card
sim card
70
54
non-volatile memory
subscriber identity module
72
36

FIG. 89

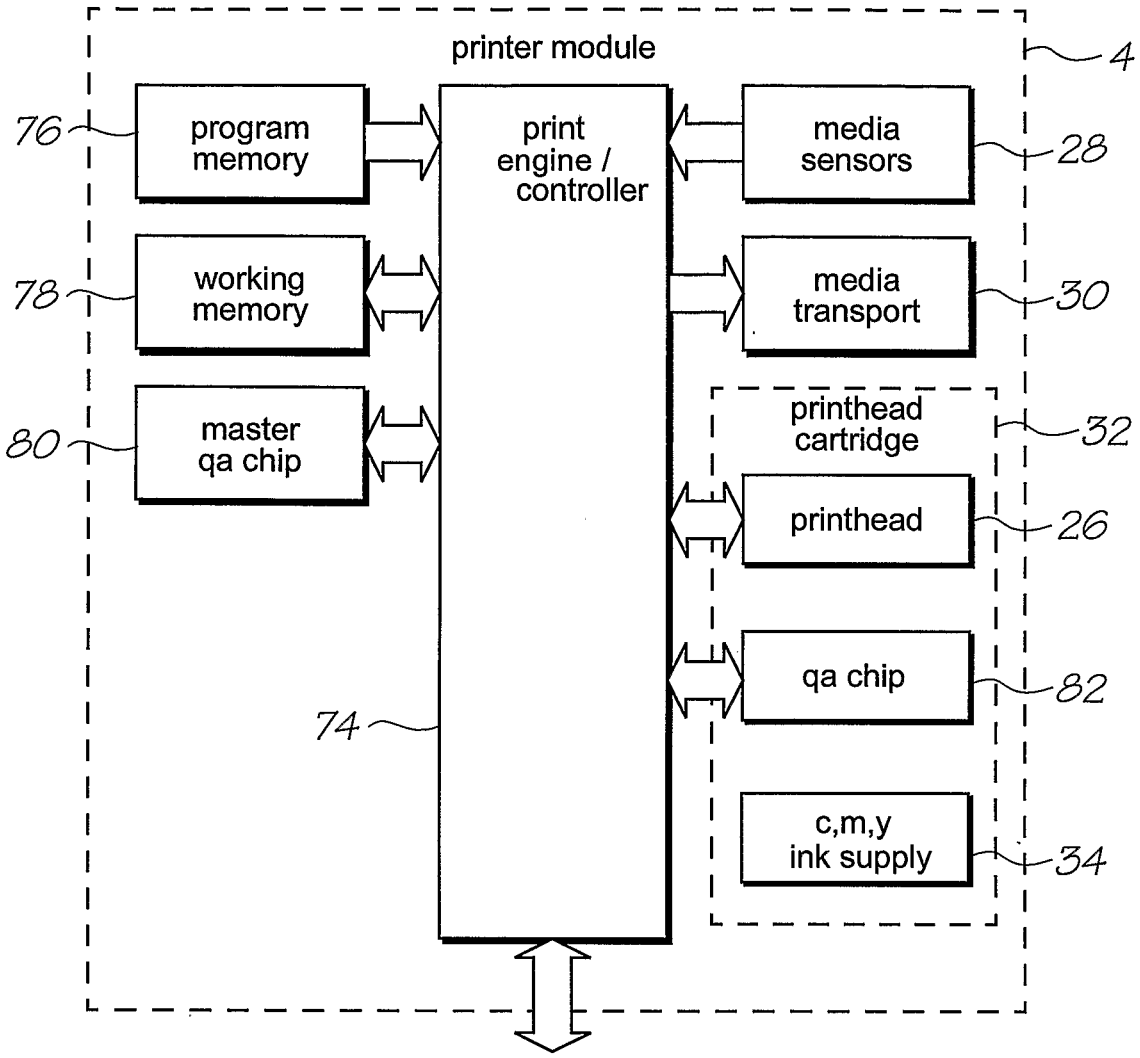
printer module
4
76
program memory
print engine / controller
media sensors
28
78
working memory
media transport
30
80
master qa chip
printhead cartridge
32
printhead
26
qa chip
82
74
c,m,y ink supply
34

FIG. 90

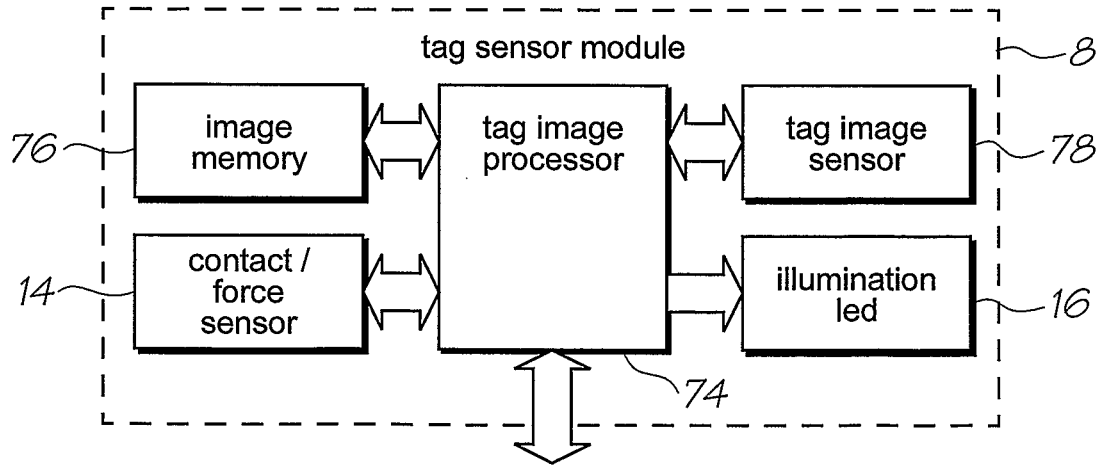
tag sensor module
8
76
image memory
tag image processor
tag image sensor
78
14
contact / force sensor
illumination led
16
74

FIG. 91

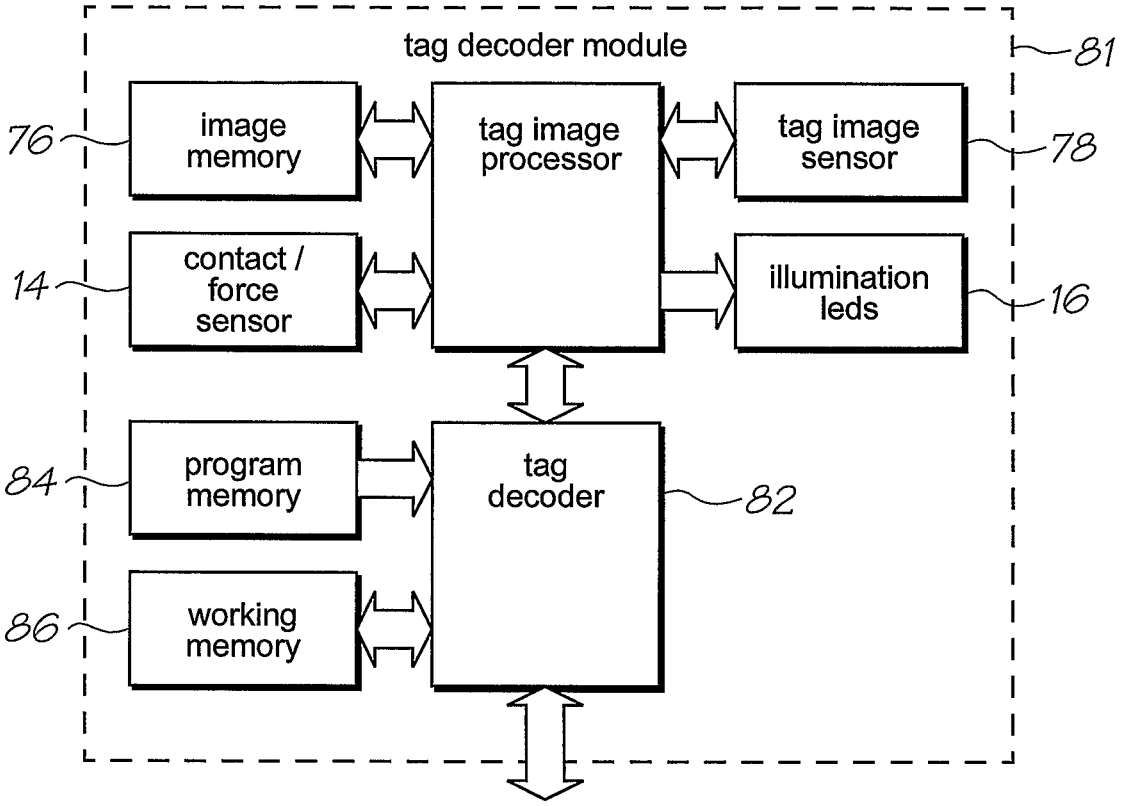
tag decoder module
81
76
image memory
tag image processor
tag image sensor
78
14
contact / force sensor
illumination leds
16
84
program memory
tag decoder
82
86
working memory

FIG. 92

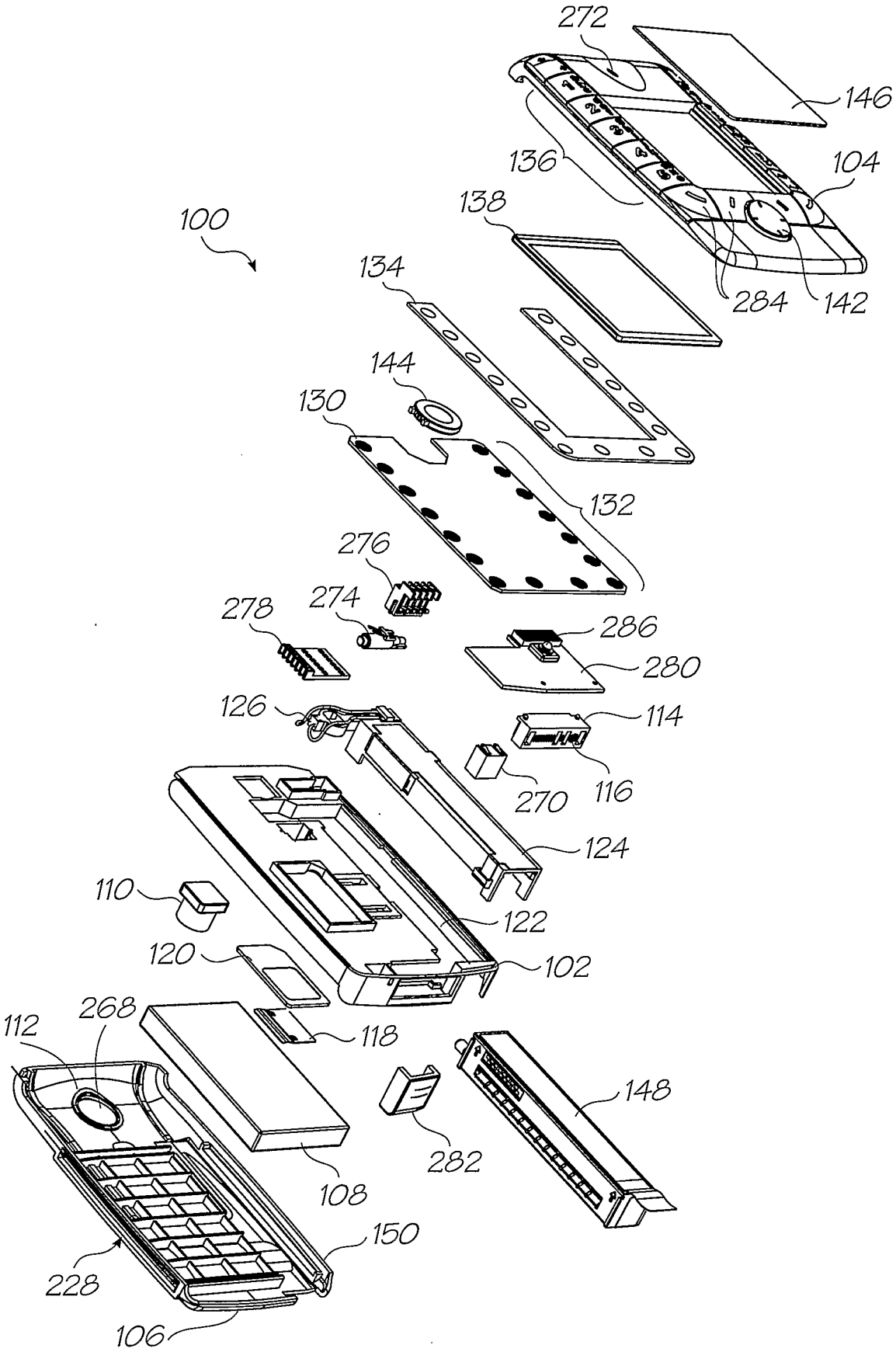
272
146
136
104
138
100
134
284
142
144
130
132
276
274
278
286
280
126
114
270
116
124
110
122
120
102
112
268
118
148
282
108
150
228
106

FIG. 93

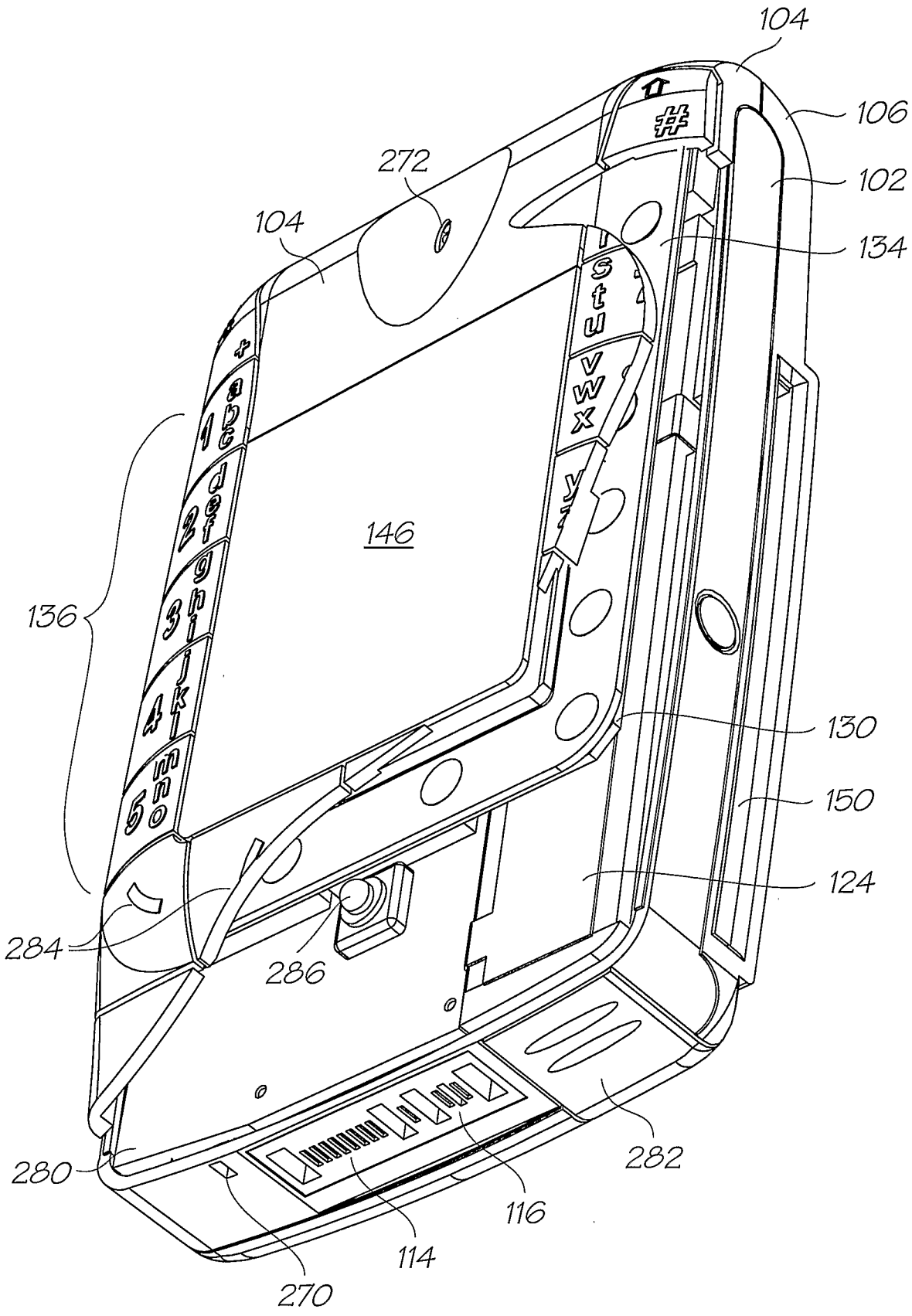
104
106
102
134
272
104
146
136
130
150
124
284
286
280
282
116
114
270

FIG. 94

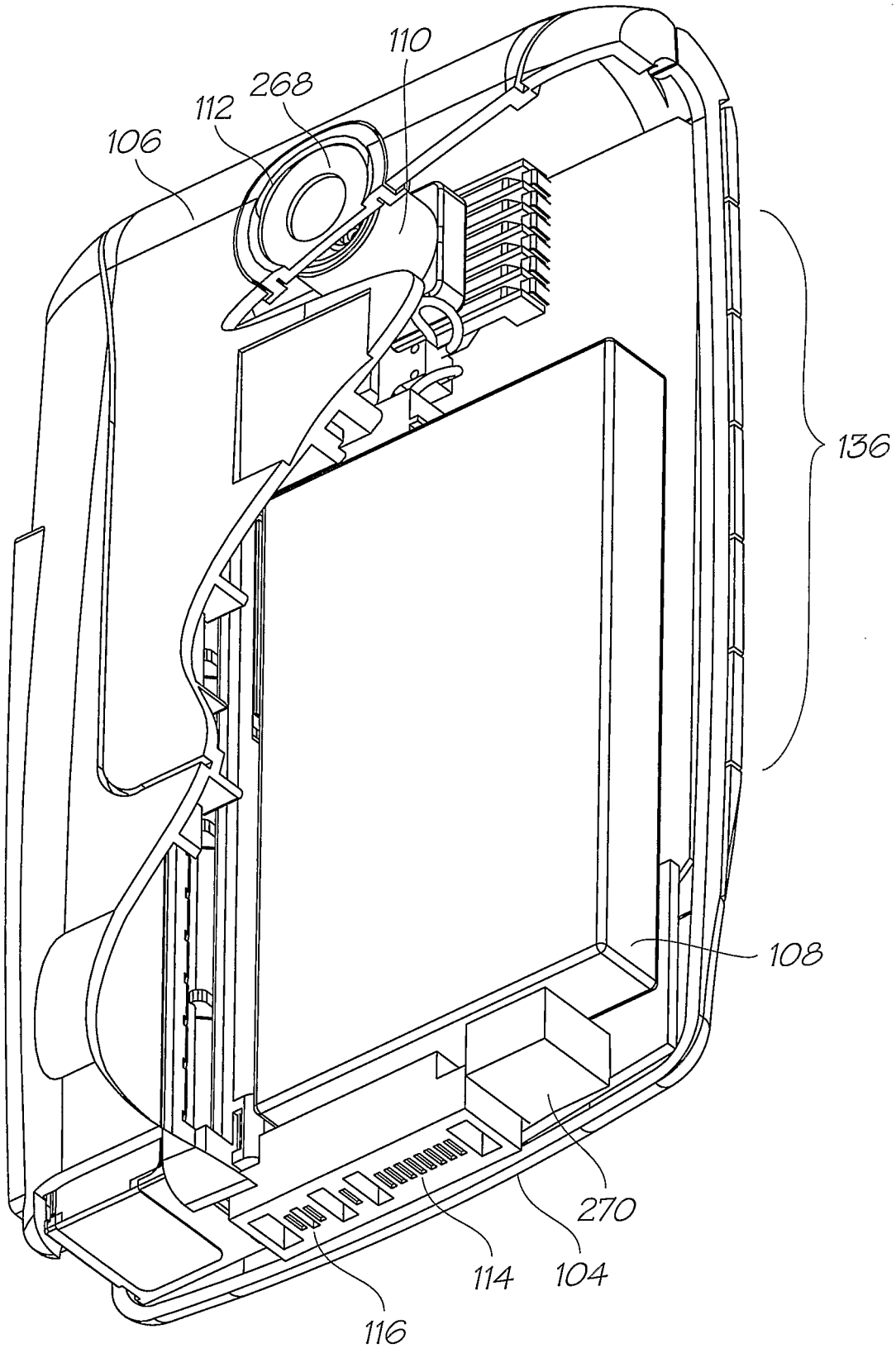


FIG. 95

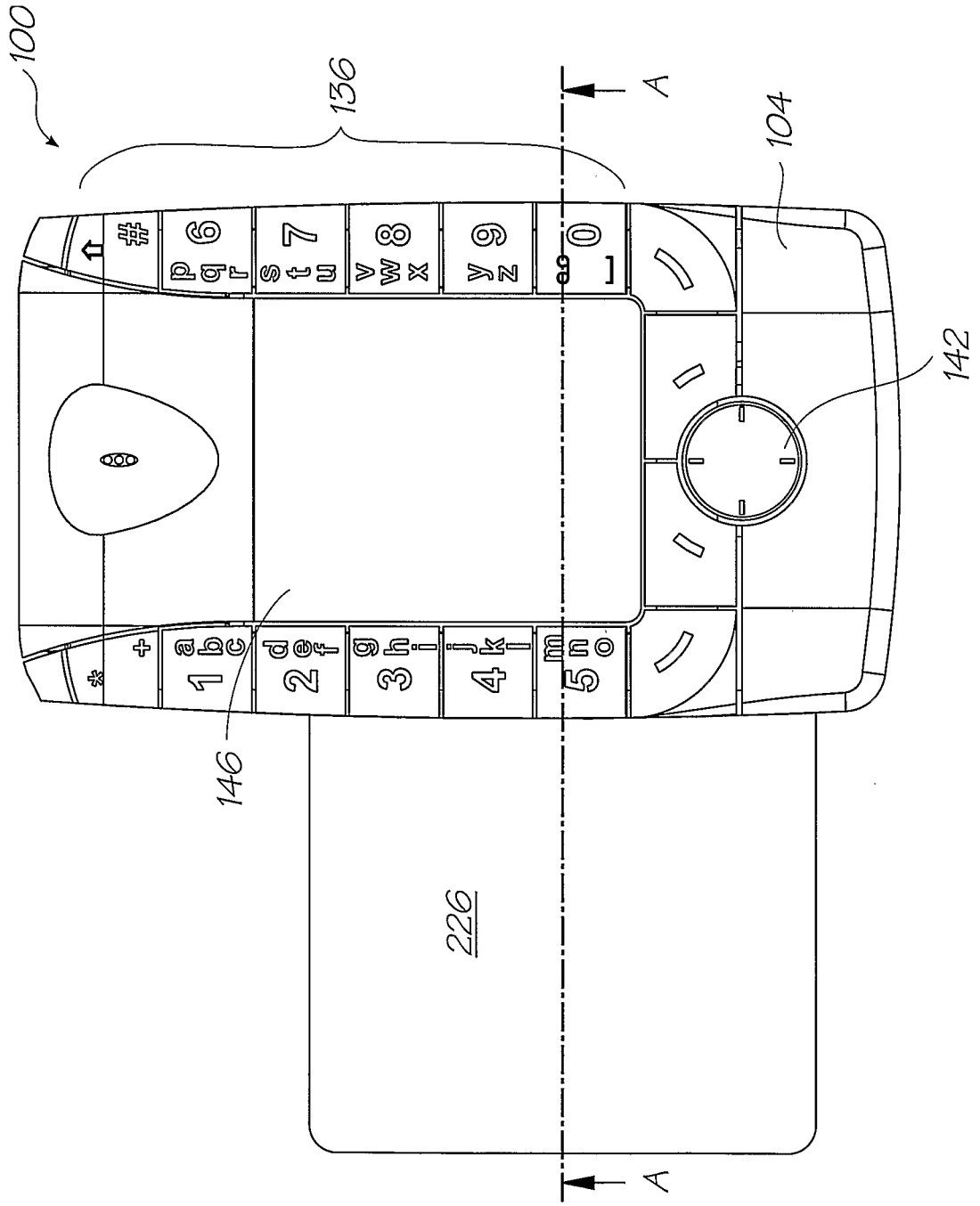


FIG. 96

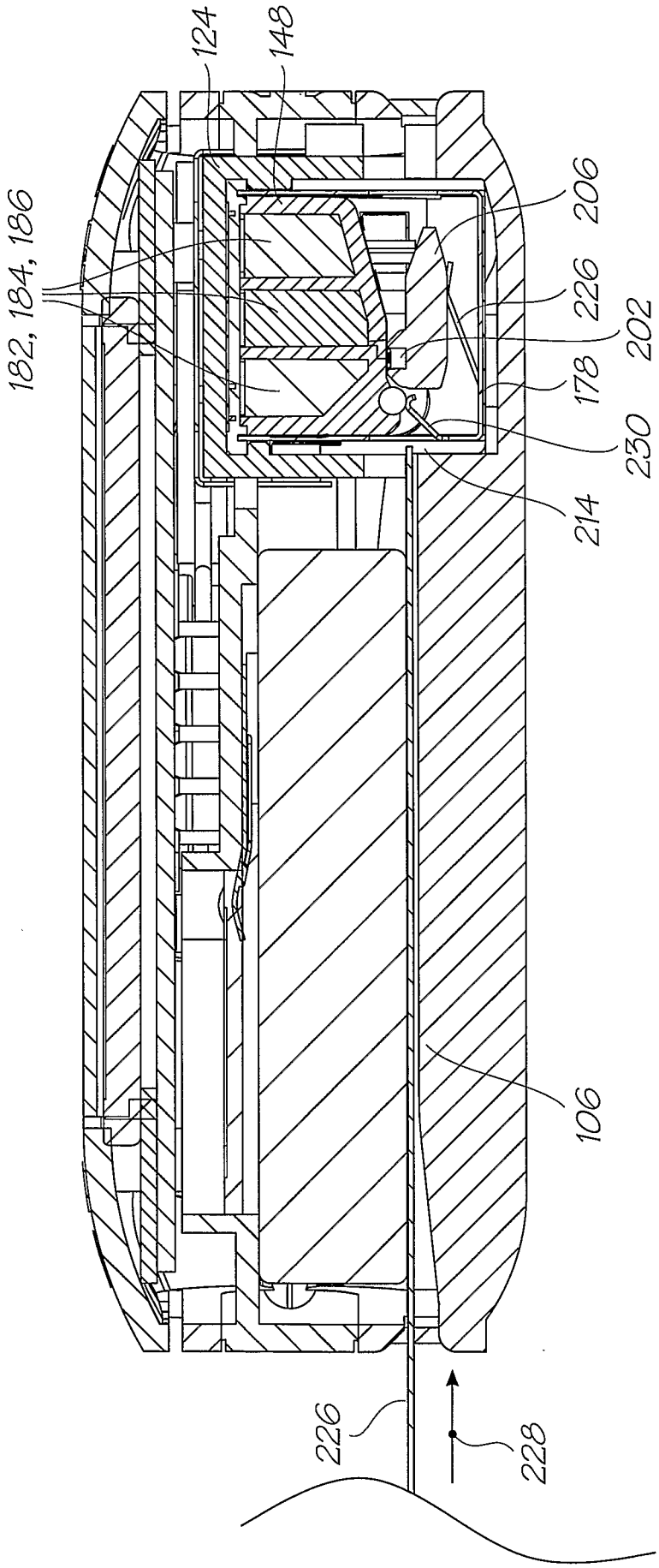


FIG. 97

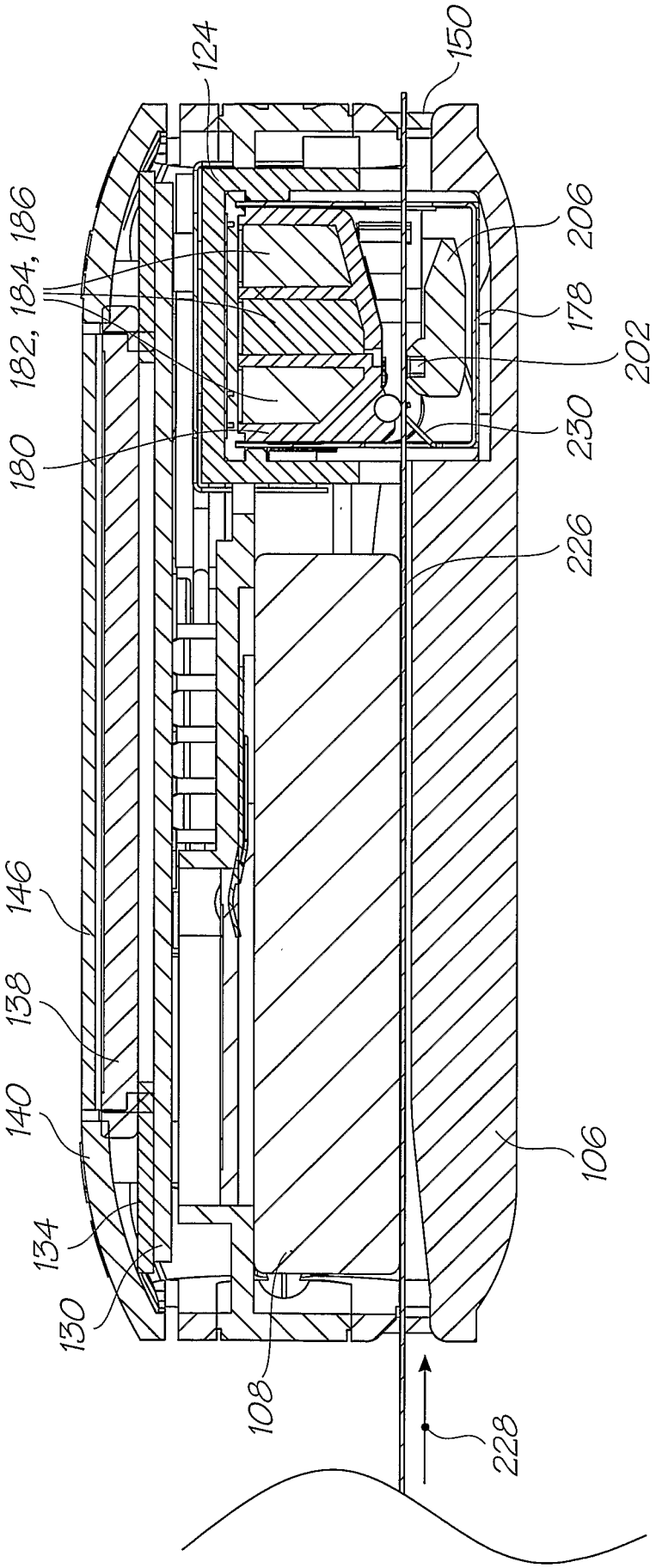
124
150
206
178
202
230
226
180
182, 184, 186
146
138
140
134
130
108
106
228

FIG. 98

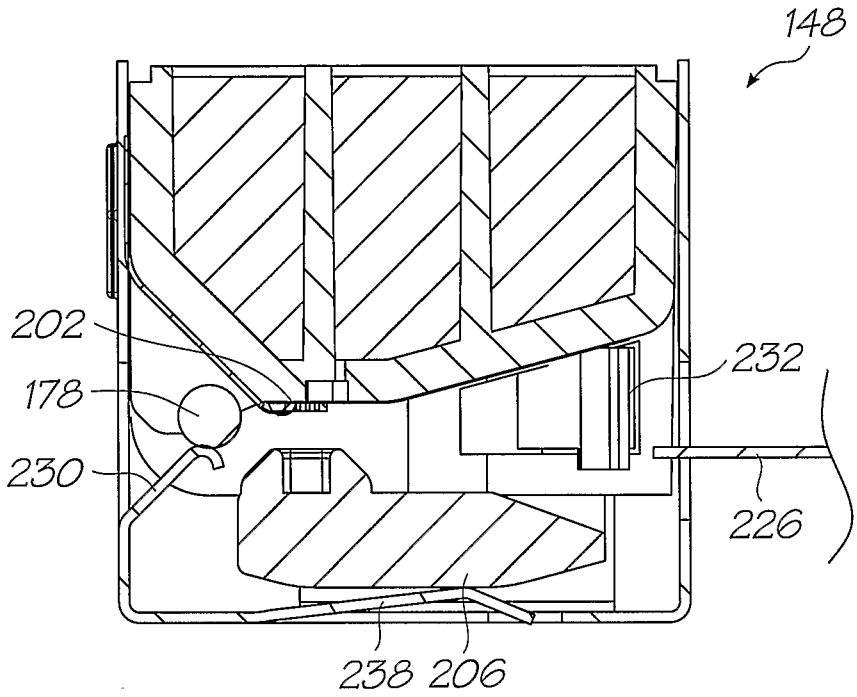


FIG. 99

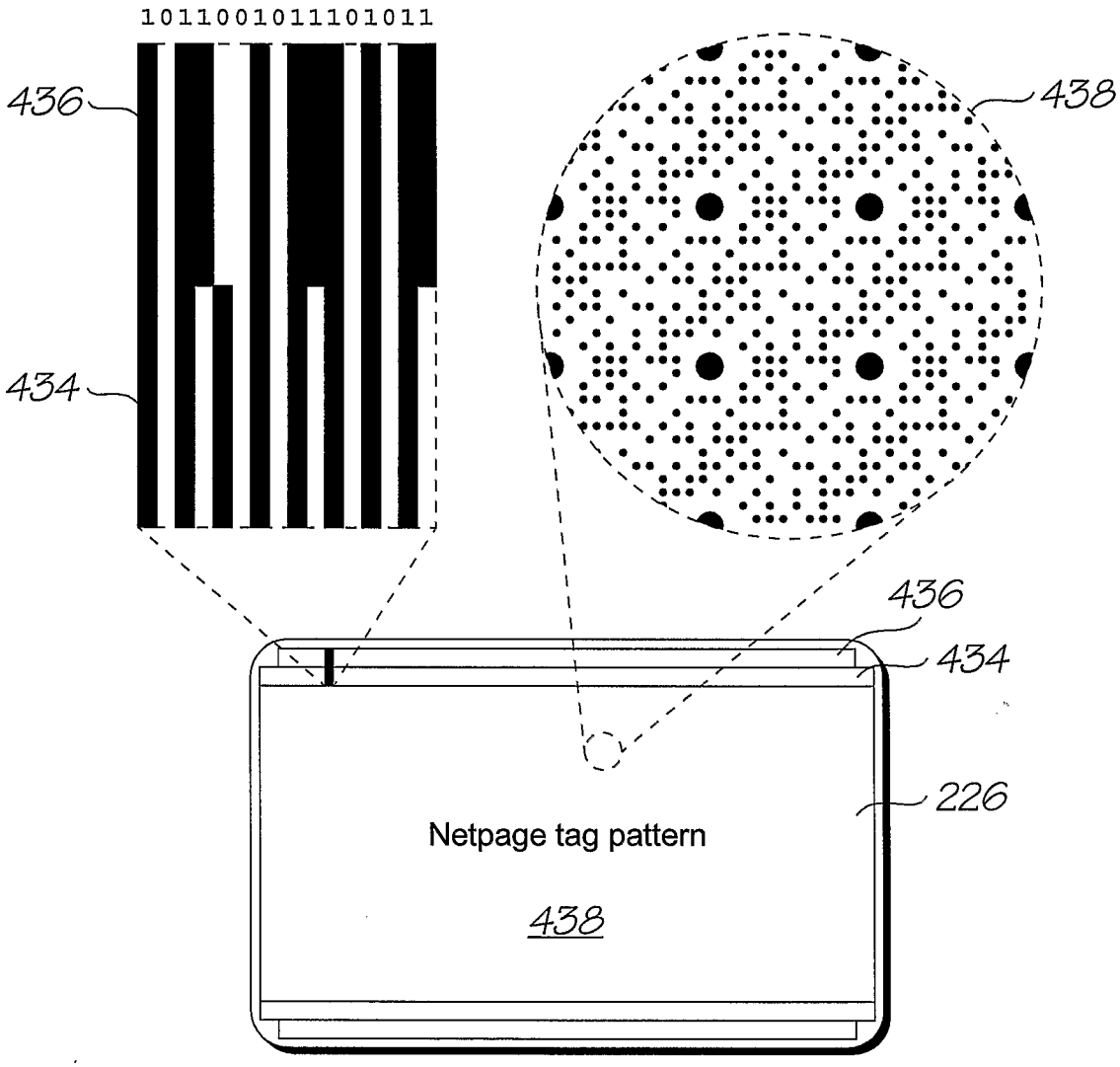
1011001011101011
436
434
438
436
434
226
Netpage tag pattern
438

FIG. 100

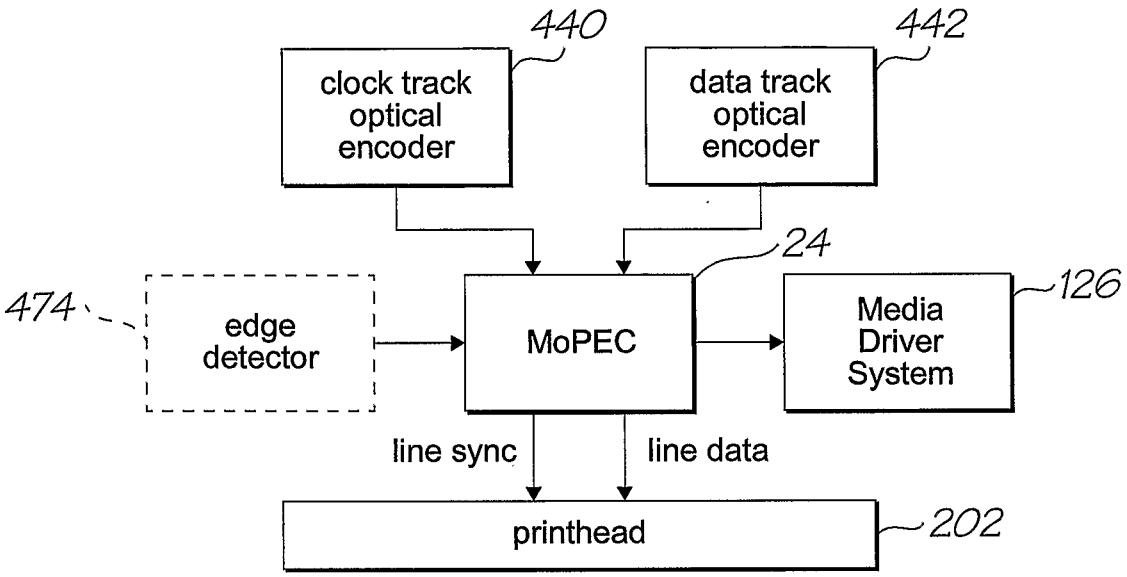


FIG. 101

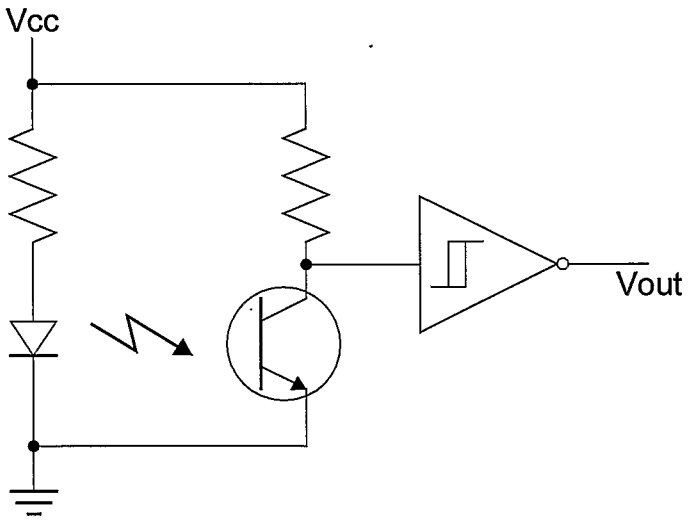


FIG. 102

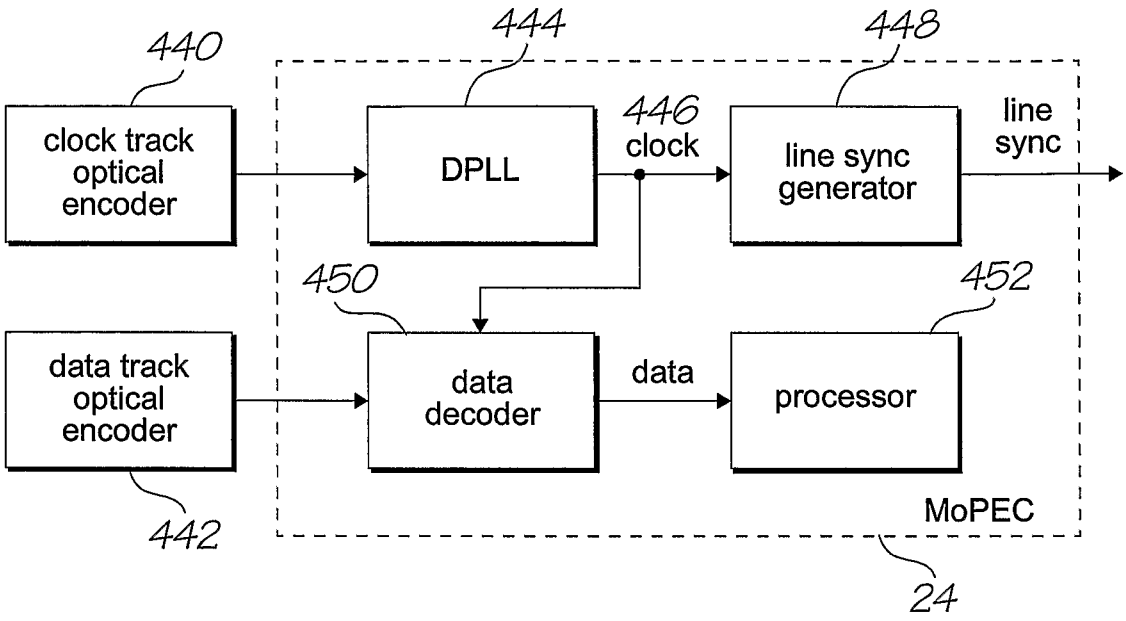


FIG. 103

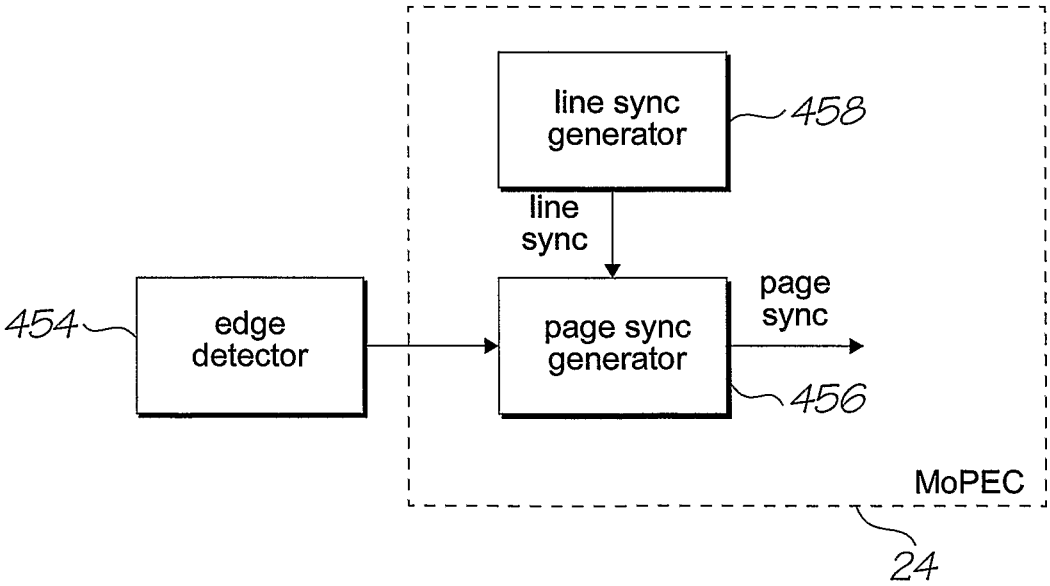


FIG. 104

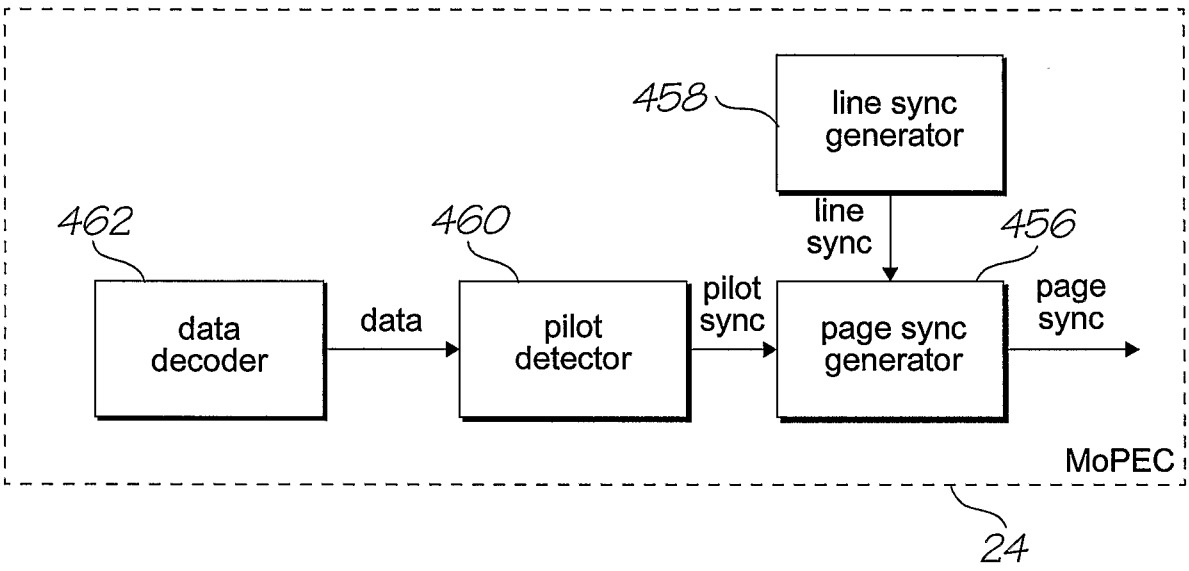


FIG. 105

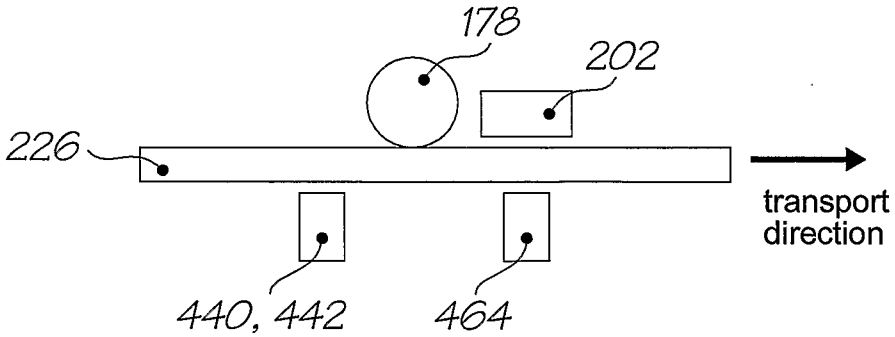


FIG. 106

FIG. 107

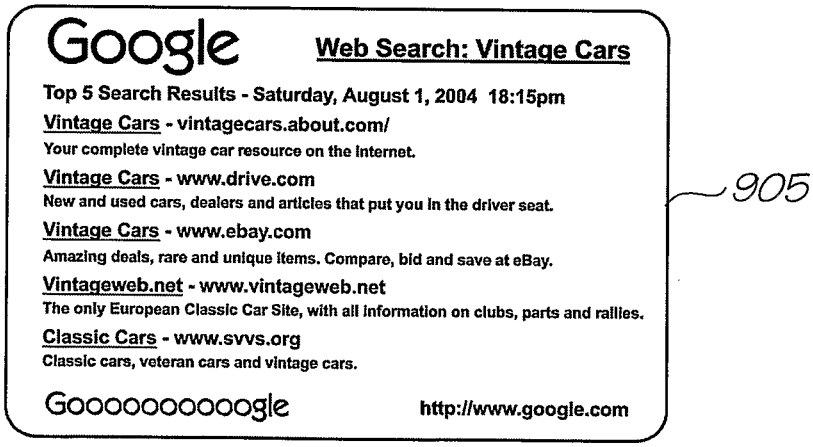


FIG. 108

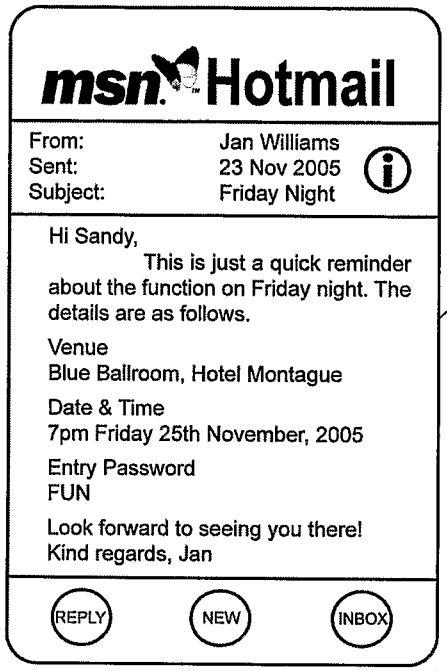


FIG. 109

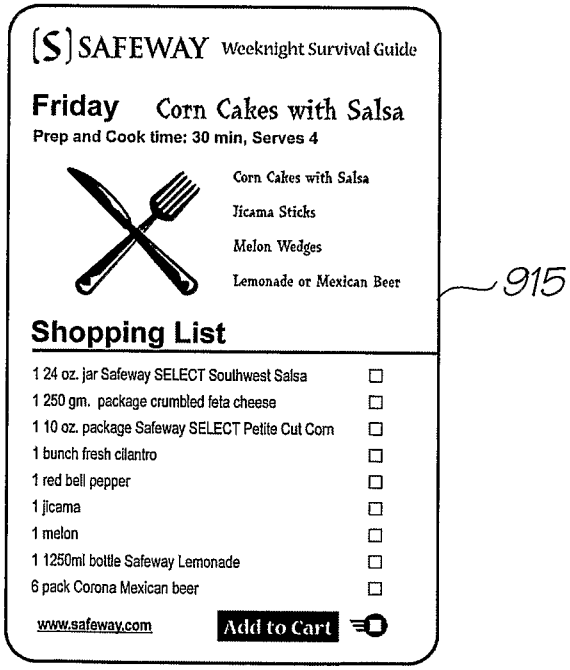


FIG. 110

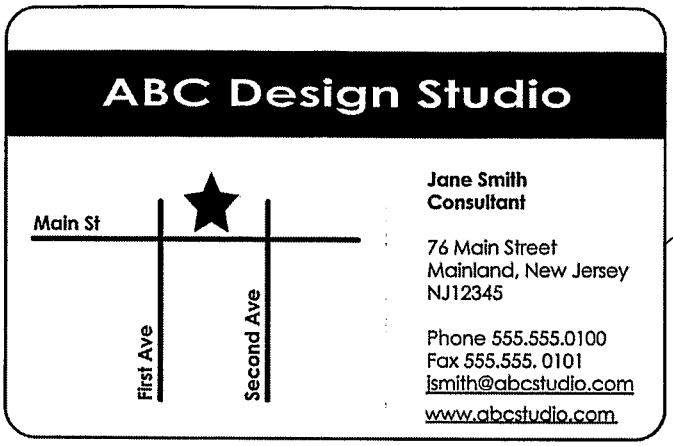


FIG. 111

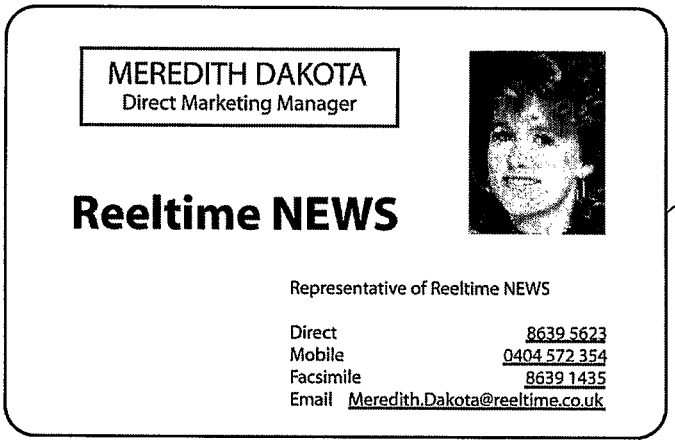


FIG. 112

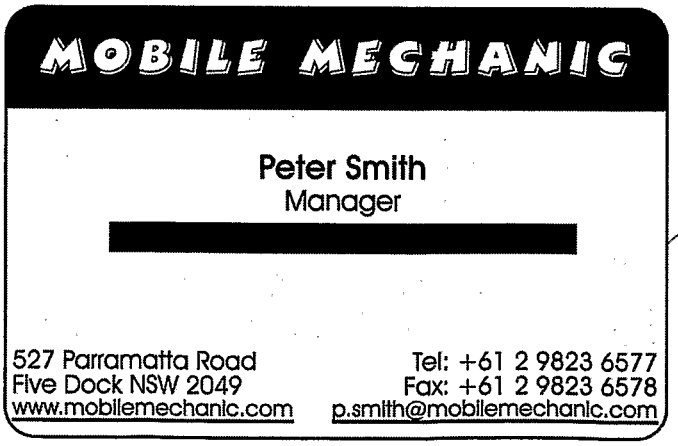


FIG. 113

FIG. 114

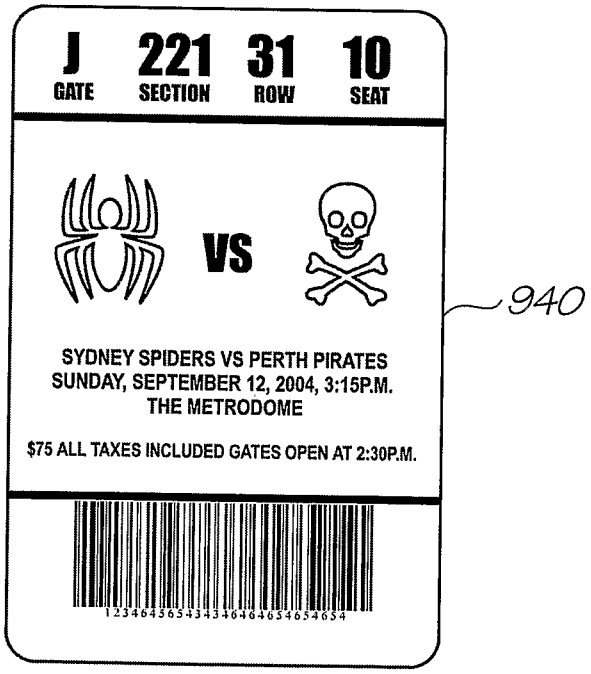


FIG. 115

FIG. 116

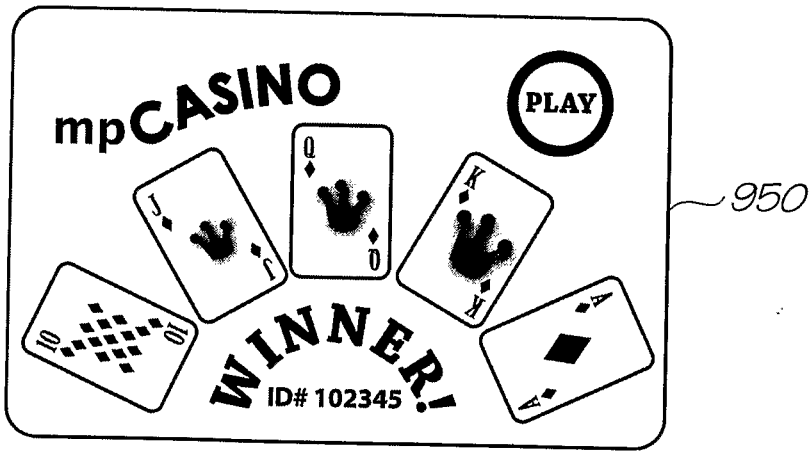


FIG. 117

FIG. 118

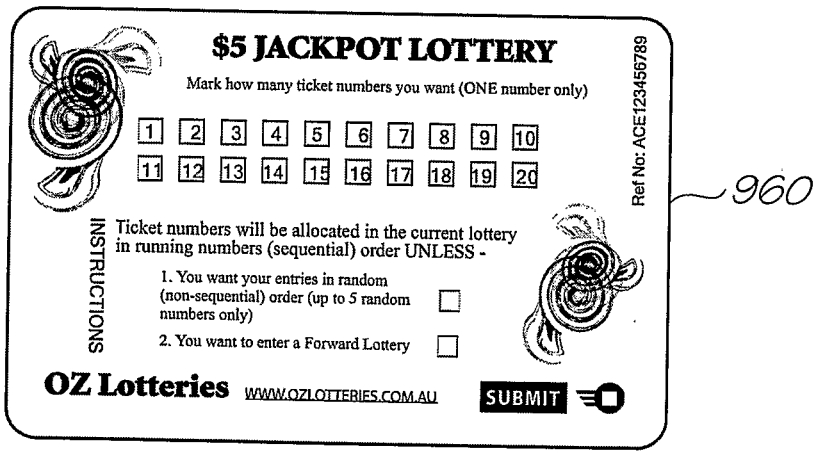


FIG. 119

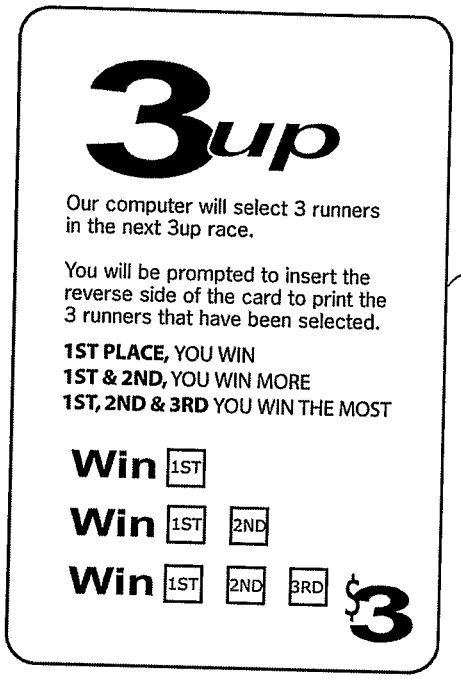


FIG. 120

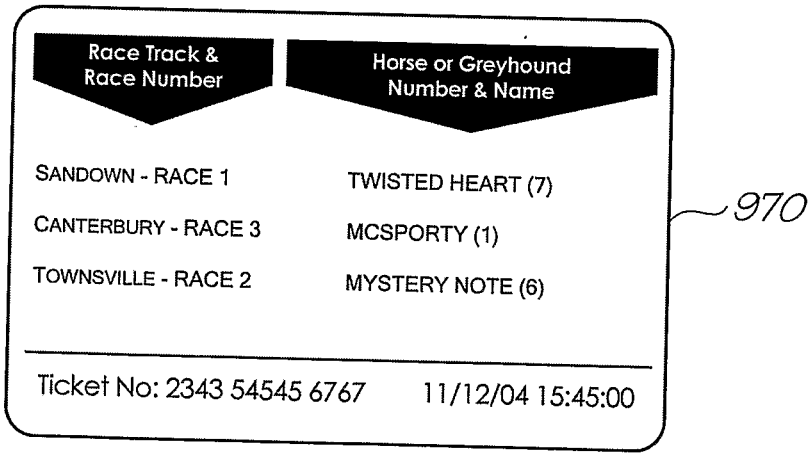


FIG. 121

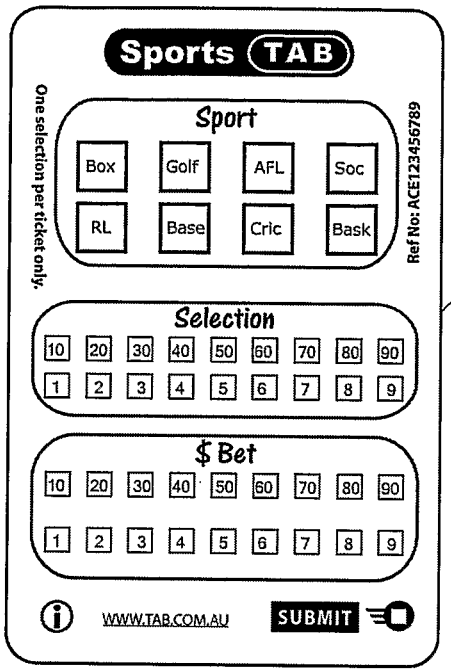


FIG. 122

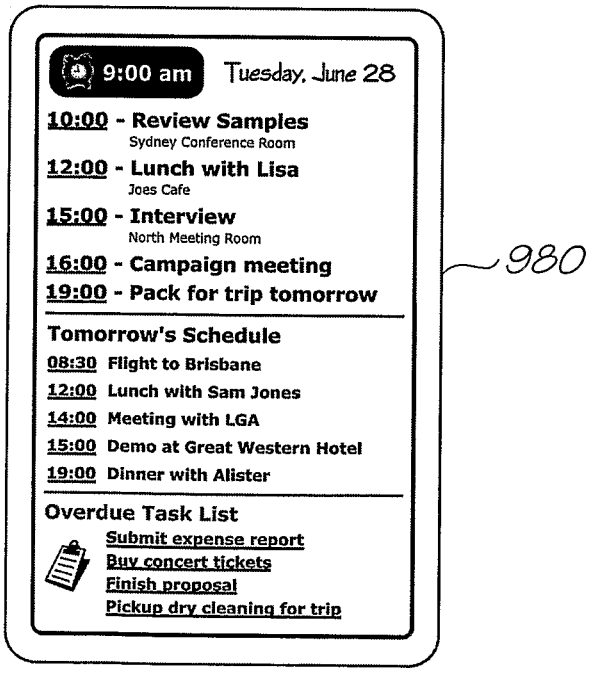


FIG. 123

FIG. 124

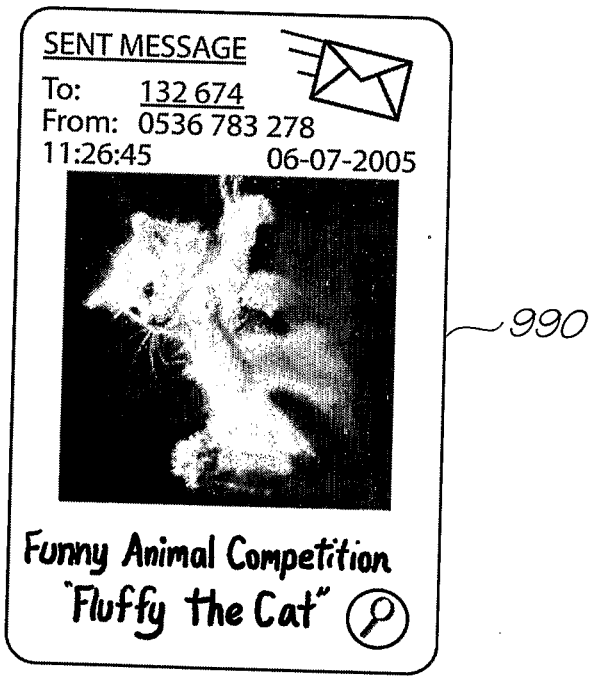


FIG. 125

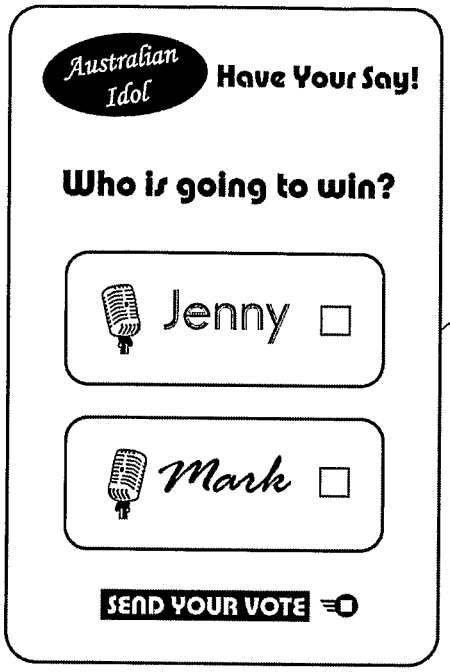


FIG. 126

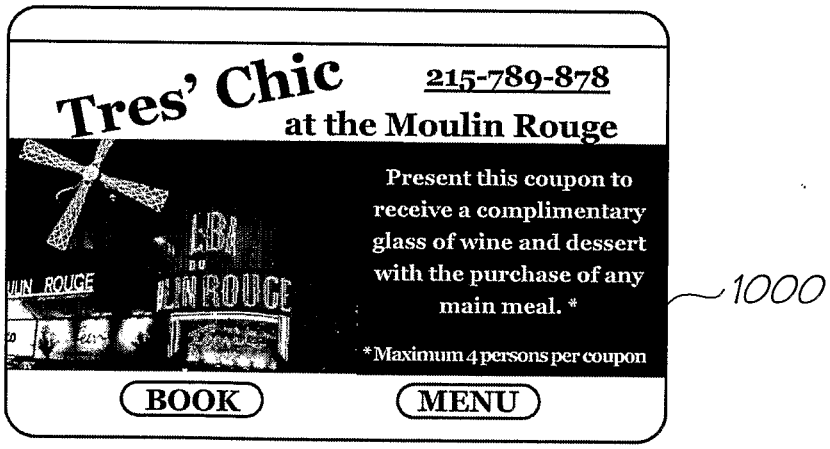


FIG. 127

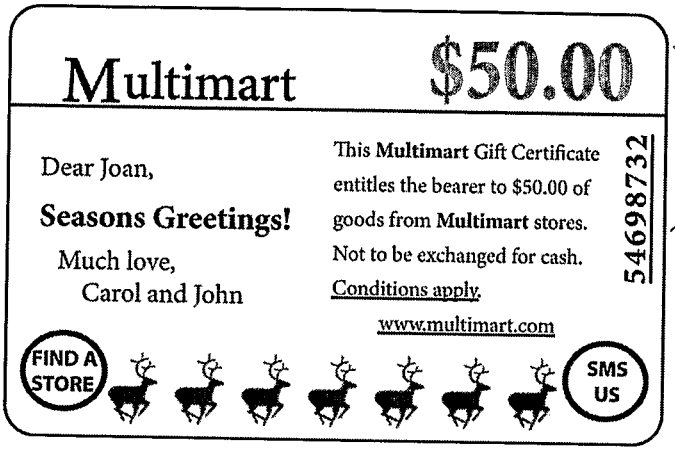


FIG. 128

FIG. 129

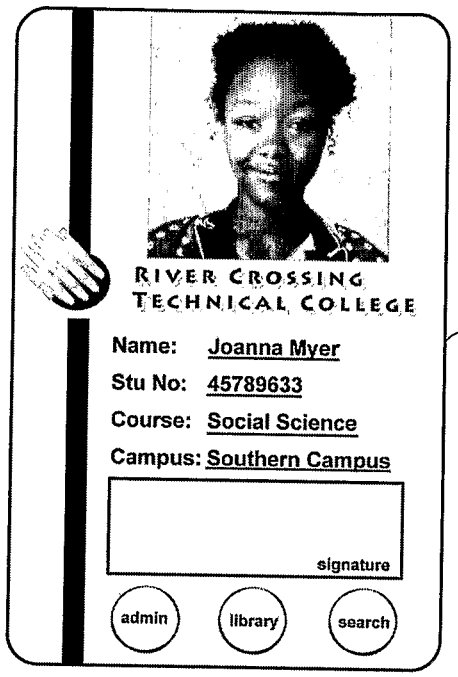


FIG. 130

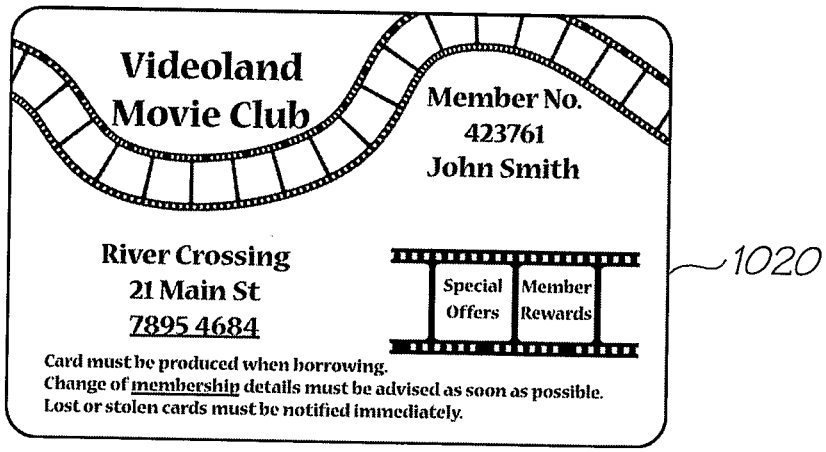


FIG. 131

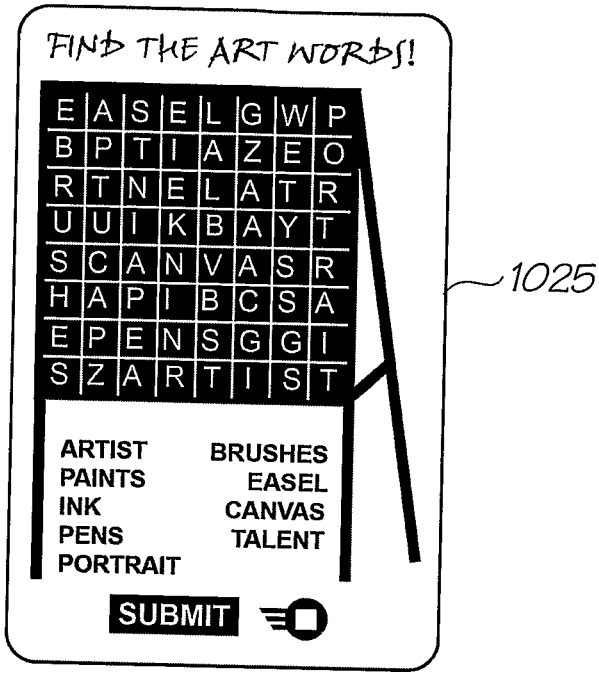


FIG. 132

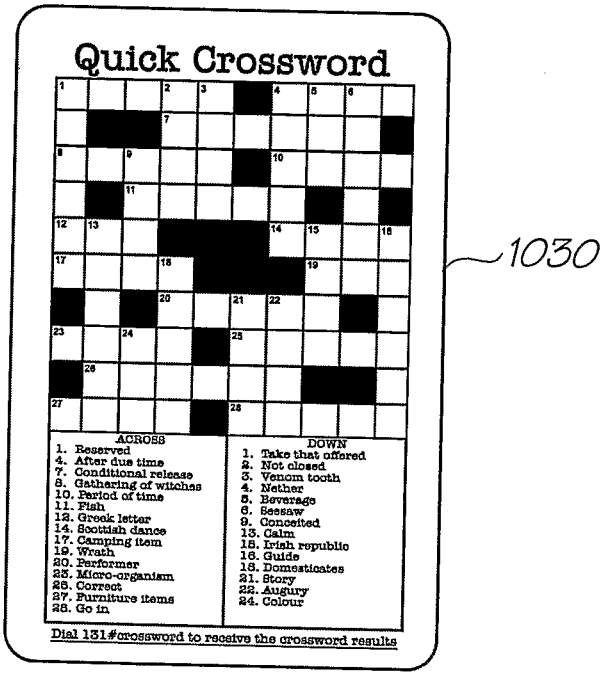


FIG. 133

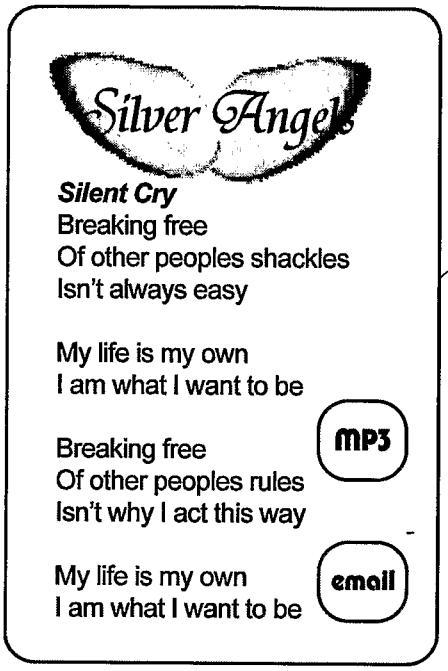


FIG. 134

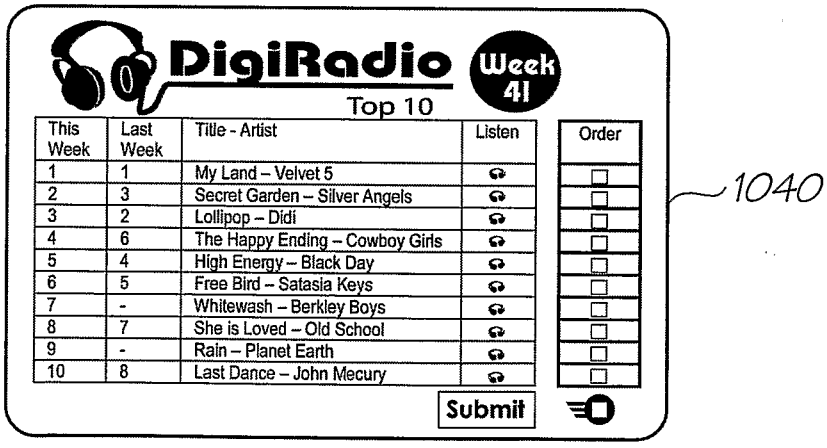


FIG. 135

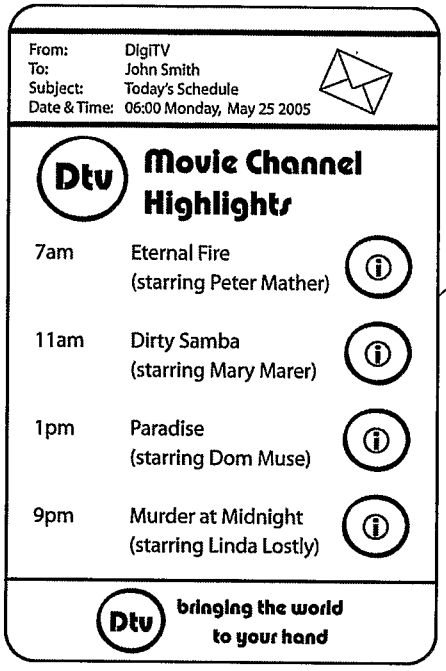


FIG. 136

FIG. 137

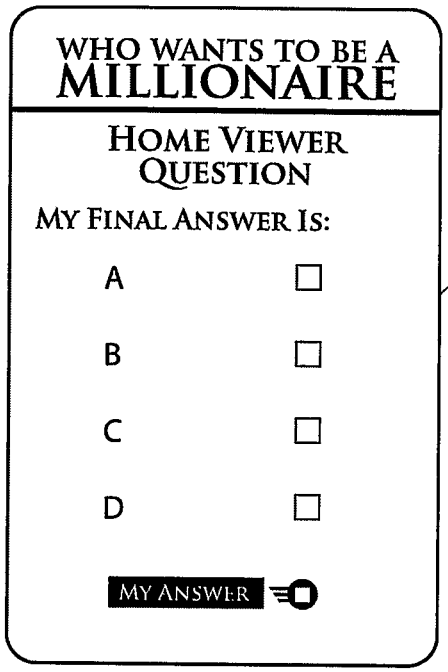


FIG. 138

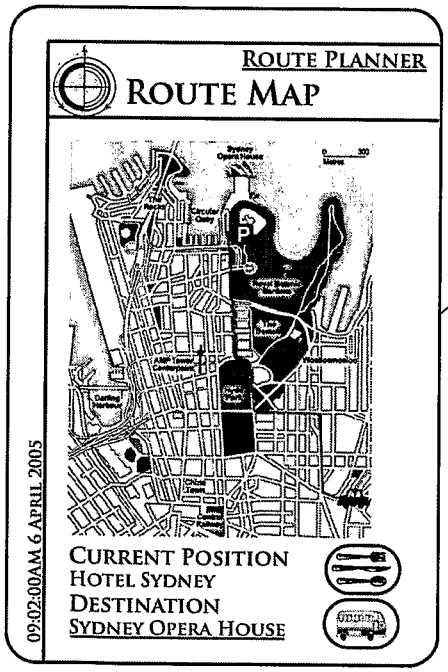


FIG. 139

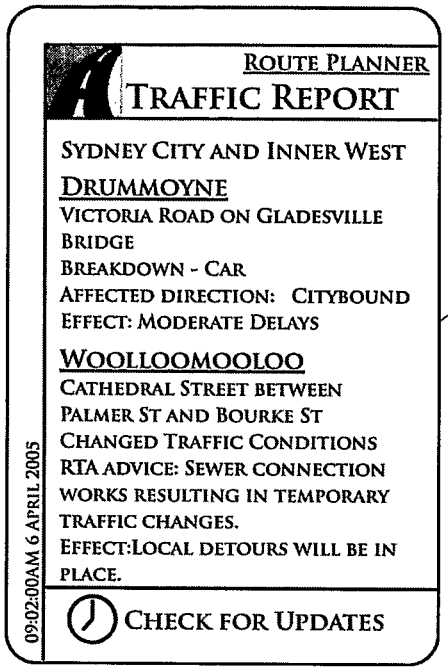


FIG. 140

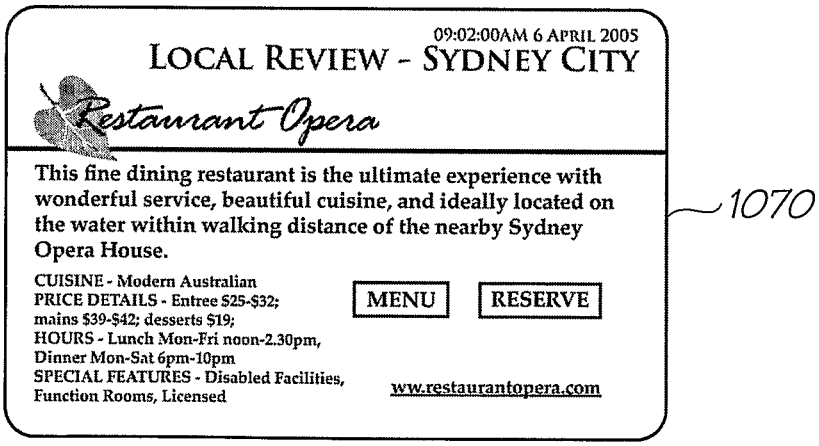


FIG. 141

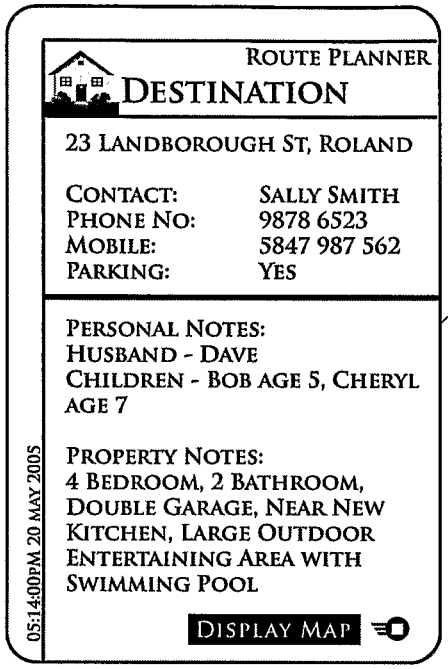


FIG. 142

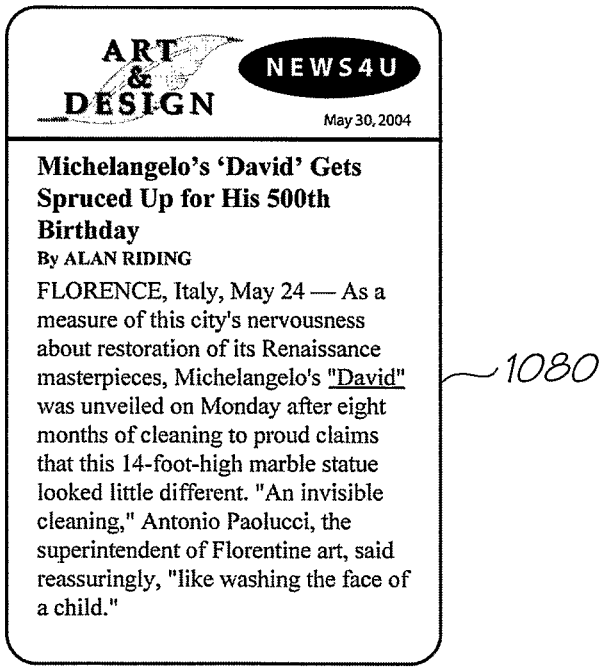


FIG. 143

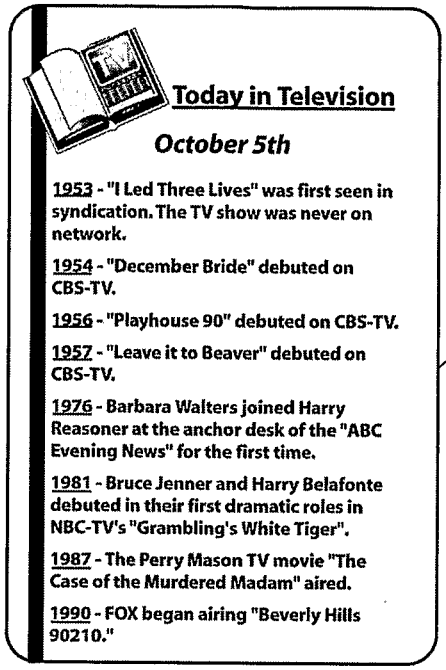


FIG. 144

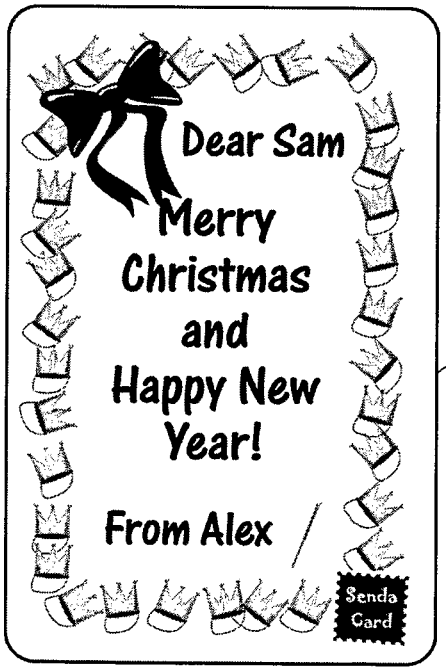


FIG. 145

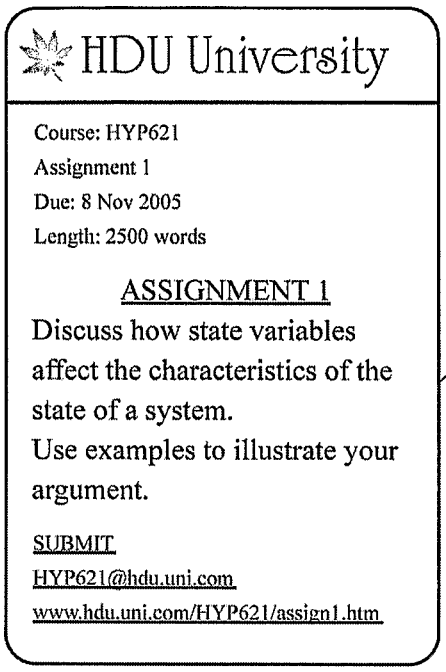


FIG. 146

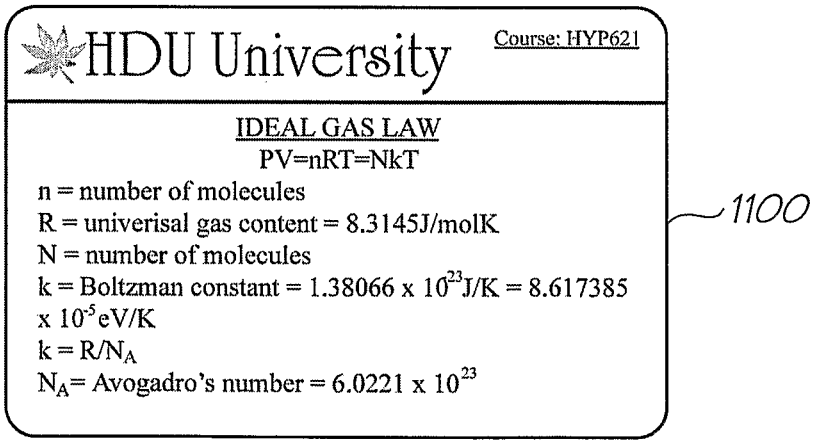


FIG. 147

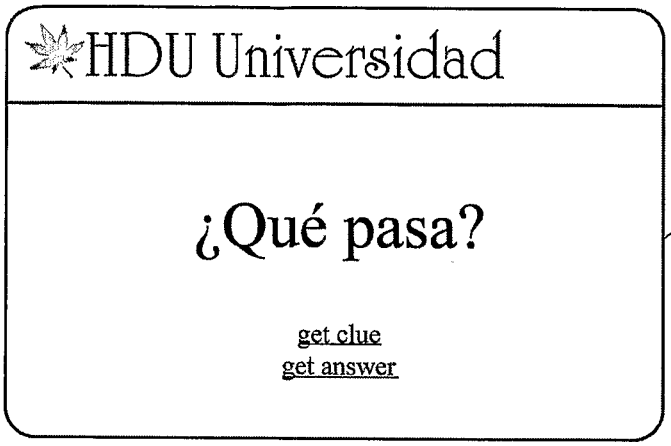


FIG. 148

FIG. 149

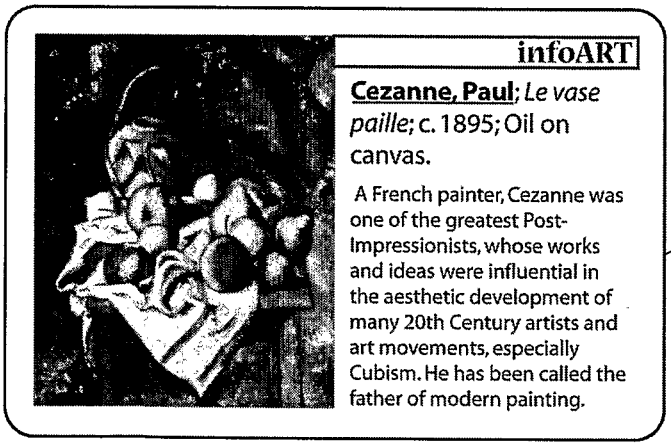


FIG. 150

FIG. 151

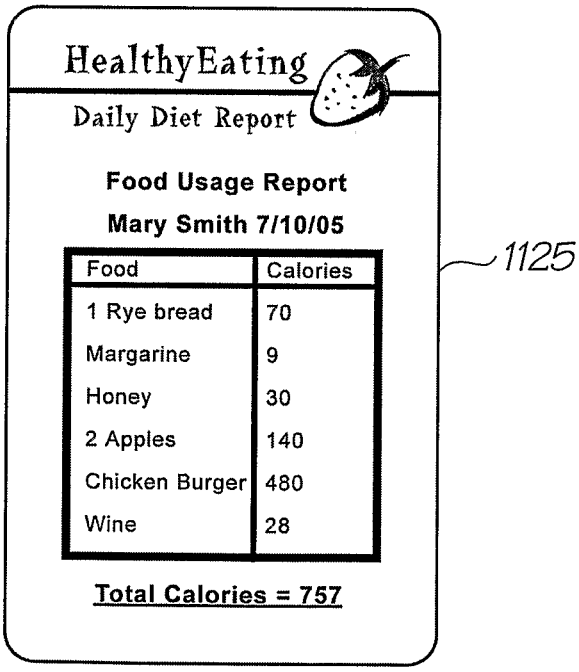


FIG. 152

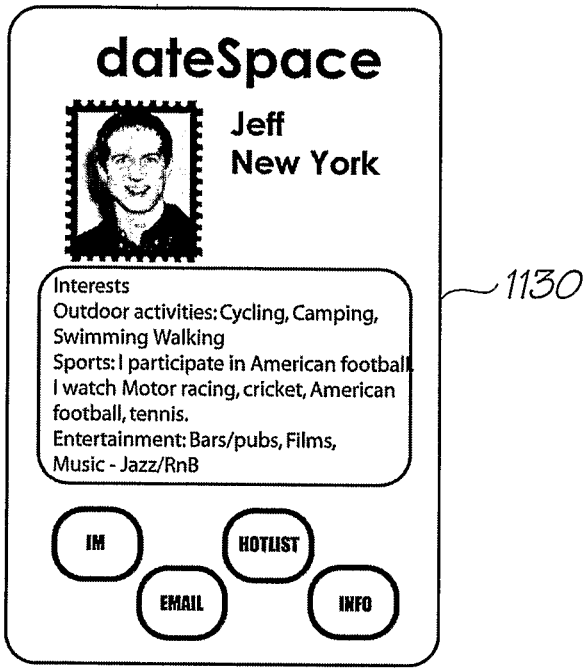


FIG. 153

FIG. 154