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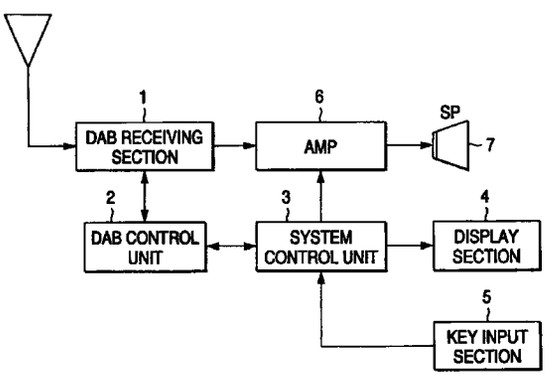
(54) Receiver for receiving Digital Audio Broadcast (DAB) programmes comprising language information

(57) A digital broadcast receiving apparatus for receiving digital audio broadcast which transmits digital signals indicating language information about the type of a language for use in each component for constituting a service such that the digital signals are transmitted together with audio information of each of the components, the digital broadcast receiving apparatus incorporates: a structure for determining whether or not a component having a previously instructed language information exists in a service when the service is selected, wherein a predetermined component is selected in accordance with a result of the determination.

FIG. 7



EP 0 954 130 A2

Description

[0001] The present invention relates to a digital broadcast receiving apparatus, and more particularly to a receiving apparatus for receiving digital audio broadcasting (herein called "DAB") which is at the practical phase in Europe.

[0002] As a system for transmitting broadcasting waves including data signals containing digital audio signals and formed into a predetermined format and receiving the broadcasting waves, the DAB system abided by the Europe Standard (Eureka 147) is available. In the foregoing system, one ensemble is composed of a plurality of services. Each service is composed of a plurality of components, such as English and German. Therefore, a user selects a certain ensemble to obtain information about a plurality of services and components. Moreover, instantaneous switching to a different service or a component is permitted.

[0003] In the DAB broadcasting, information indicating the language of each component is transmitted. Information of the foregoing type to be transmitted is formed into a format called type 0 field for extension 5. One of methods of using the DAB broadcast receiving apparatus is using of information of the foregoing type to determine a component which must be selected from a plurality of the components.

[0004] Therefore, an object of the present invention is to provide a digital broadcast receiving apparatus which is capable of receiving a component having language information required by a user while giving priority to the component.

[0005] According to one aspect of the present invention as in aspect 1, there is provided a digital broadcast receiving apparatus for receiving digital audio broadcast which transmits digital signals indicating language information about the type of a language for use in each component for constituting a service such that the digital signals are transmitted together with audio information of each of the components, the digital broadcast receiving apparatus comprising: means for determining whether or not a component having a previously instructed language information exists in a service when the service is selected, wherein a predetermined component is selected in accordance with at least a result of the determination.

[0006] According to another aspect of the present invention as in aspect 2, there is provided a digital broadcast receiving apparatus having a structure according to aspect 1, wherein when a determination is made that the component having previously instructed language information does not exist in the service, a component primarily provided for the service is selected.

[0007] According to another aspect of the present invention as in aspect 3, there is provided a digital broadcast receiving apparatus having a structure according to aspect 1, wherein when a determination is made that the component having previously instructed language information exists in the service, a component having a previously instructed language information is selected.

[0008] According to another aspect of the present invention as in aspect 4, there is provided a digital broadcast receiving apparatus for receiving digital audio broadcast which transmits digital signals indicating language information about the type of a language for use in each component for constituting each of a plurality of services which constitute each ensembles such that the digital signals are transmitted together with audio information of each of the components, the digital broadcast receiving apparatus comprising: means for determining whether or not a component having a previously instructed language information exists in an ensemble when the ensemble is selected, wherein a predetermined component is selected in accordance with at least a result of the determination.

[0009] According to another aspect of the present invention as in aspect 4, there is provided a digital broadcast receiving apparatus having a structure according to aspect 5, wherein when a determination is made that the component having previously instructed language information does not exist in a service in the ensemble, whether or not the component having previously instructed language information exists in another service in the ensemble is determined.

[0010] According to another aspect of the present invention as in aspect 6, there is provided a digital broadcast receiving apparatus having a structure according to aspect 4, wherein when a determination is made that the component having previously instructed language information does not exist in any of the services in the ensemble, a component primarily provided for any of the services in the ensemble is selected.

[0011] According to another aspect of the present invention as in aspect 7, there is provided a digital broadcast receiving apparatus having a structure according to aspect 4, wherein when a determination is made the component having previously instructed language information exist in the ensemble, the component having previously instructed language information is selected.

In the drawings:

[0012]

Fig. 1 is a flow chart for executing ensemble search according to the present invention.

Figs. 2A and 2B are diagrams showing an order of search or the ensemble search according to the present invention.

Fig. 3 is a flow chart for executing a service changing process according to the present invention.

Figs. 4A and 4B are diagrams showing an order of search which is performed in a service changing

process according to the present invention.

Fig. 5 is a flow chart for executing PTY search according to the present invention.

Fig. 6 is a diagram showing an order of PTY search according to the present invention.

Fig. 7 is a block diagram showing a DAB receiving apparatus.

[0013] An embodiment of the present invention will now be described with reference to the drawings.

[0014] Fig. 7 is a block diagram showing a DAB receiving apparatus according to an embodiment of the present invention. The DAB receiving apparatus incorporates a DAB receiving section 1, a DAB control unit 2, a system control unit 3, a display unit 4, a key input section 5, an amplifier 6 and a speaker unit 7.

[0015] The DAB receiving section 1 includes an FFT (Fast Fourier Transform) section for demodulating a transmitted OFDM wave, a Viterbi decoding section for correcting an error and an audio decoder for restoring compressed audio data to original audio data. Since the above-mentioned structure is a known fact disclosed in documents, the foregoing structure is omitted from description.

[0016] The DAB control unit 2 controls the DAB receiving section 1 and reads a variety or information data items included in FIC (Fast Information Channel) which is demodulated by the DAB receiving section 1. Information above includes language information for use in the present invention and program content identification information (PTy information).

[0017] The DAB control unit 2 responds to a requirement issued from the system control unit 3 to transmit required information to the system control unit 3.

[0018] The system control unit 3 controls the overall body of the receiving apparatus. Specifically, the system control unit 3 performs a corresponding control in accordance with information supplied from the key input section 5. The corresponding control includes control of sound volume of the amplifier 6, change of the frequency and setting of a language filter to be described later. The system control unit 3 controls the display unit 4 by outputting display information to the display unit 4. The DAB receiving apparatus has the above-mentioned schematic structure.

(First Embodiment)

[0019] The operation of the system control unit 3 according to the present invention will now be described. Fig. 1 is a flow chart of the operation of the system control unit 3 for performing ensemble search according to the present invention. The foregoing flow chart is executed when ensemble search is instructed from the key input section 5.

[0020] When a usual receiving operation is performed (step S1), ensemble search is set by a user by using the key input section 5. Thus, the operation of the system control unit 3 is shifted to step S2 to issue an instruction to the DAB control unit 2 to select another ensemble which can be received. The DAB control unit 2, which has received the foregoing instruction, controls the DAB receiving section 1 to change the frequency which must be received in order to select an ensemble which can be received. When the DAB control unit 2 has detected the ensemble which can be received, the DAB control unit 2 extracts information about components which constitute the ensemble to transmit information above to the system control unit 3.

[0021] Then, the system control unit 3 determines whether or not a language filter mode for adding language information to the conditions under which a component is selected has been set (step S3). Specifically, language information given priority to the user and information indicating whether or not the language filter mode has been turned on are input from the key input section 5. The system control unit 3 determines whether or not the foregoing inputs have been made so as to determine whether or not the language given priority and the language filter mode have been turned on.

[0022] When the language filter mode has been turned on, a leading service is, in step S6, searched in an order of service Id (SId) among audio services in the selected ensemble.

[0023] Then, the operation is shifted to step S7a so that whether or not language information of the component primarily provided for the searched service coincides with the instructed language is determined.

[0024] When language information items coincides with the language, the component is selected in step S8 so that sound is output through the speaker unit 7. If language information items do not coincide with the language, whether or not language information of a next (a secondary) language information in the service coincides with the instructed language is determined (step S7b).

[0025] The foregoing process is performed for each component. If language information of a component positioned immediately before the component and primarily provided for the service do not coincide with the instructed language (step S7n), a component having the instructed language information cannot be selected in the service. Therefore, a next audio service in the selected ensemble is searched (step S9) in the order of the service Id (SId). The service is similarly subjected to the processes in steps S7a to S7n.

[0026] As a result of a loop formed by steps S7a to S7n and step S9, language information in each component in a certain ensemble is compared with instructed language information. If a coincident component exists, the component is reproduced.

[0027] Therefore, when the ensemble is changed, a component having a required language can be presented to a user such that priority is given to the foregoing component.

[0028] If a determination is made in step S9 that a

component having the corresponding language information cannot be detected after the search has been performed to a final service, a leading audio service in the ensemble is selected in step S10. Thus, sound primarily provided for the service is output through the speaker unit 7 (step S11).

[0029] If a determination is made in step S3 that the language filter mode for adding language information to conditions under which a component is selected has not been set, the operation is shifted to step S4. Thus, an audio service in the selected ensemble is searched in the order of the service Id (SId). Thus, sound of the component primarily provided for the service is reproduced (step S5).

[0030] Figs. 2A and 2B are diagrams showing a state of search which is performed in an ensemble searching process shown in Fig. 1. In Fig. 2, an assumption is made that one ensemble exists in each of frequency bands across an ensemble (a secondary component in a service 1 in an ensemble 2) which is being received. Moreover, each ensemble has two, audio services, and each service has two components. Fig. 2A shows a state of search which is performed when the language filter mode has not been set. Fig. 2B shows a state of search which is performed when the language filter mode has been set.

[0031] When the language filter mode has not been set, the service 1 of the ensemble (the ensemble 1 or 3 before (or after) the present ensemble is selected, as shown in Fig. 2A. The component among the components constituting the service and primarily provided for the service is selected. Thus, sound of the foregoing component is output.

[0032] If the language filter mode has been set, the service 1 in the ensemble (the ensemble 1 or 3) before (or after) the present ensemble is selected. Then, whether or not language information of each component constituting the service coincides with instructed language information is determined. If the language information items coincide with each other, the component is reproduced.

[0033] If the component having instructed language information does not exist in the service 1, a next service (the service 2 in the ensemble 1 or 3) is selected. Similarly, whether or not leading end of each component constituting the service coincides with instructed language information is determined. If the component having instructed language information does not exist in the service 2, the ensemble has not the component having instructed language information. Therefore, the primary of the leading audio service (the service 1) of the ensemble is selected and reproduced. Thus, the searching process is completed.

(Second Embodiment)

[0034] In the first embodiment, the process for changing the ensemble has been described. Use of language information is not limited to the foregoing case. Language information may be used in a process for changing the service. In the second embodiment, language information is used to change the service. Note that the illustrated flow chart is executed when change of the service has been instructed from the key input section 5.

[0035] When change of the service has been set through the key input section 5 by the user during a usual receiving operation (step S11), the operation of the system control unit 3 is shifted to step S12 to determine whether or not the language filter mode for adding language information to the conditions under which a component is selected has been set (step S12). Specifically, similarly to the first embodiment, language information given priority to the user and information whether or not the language filter mode is turned on are input from the key input section 5. The system control unit 3 determines the foregoing inputs to determine language information which must be given priority and whether or not the language filter mode is turned on.

[0036] If the language filter mode has been turned on, the operation is shifted to step S15 so that a next audio service in the selected service is searched.

[0037] Then, whether or not language information of the component primarily provided for the searched service coincide with the instructed language is determined in step S16a.

[0038] If the language information items coincide with each other, the component is selected in step S17. Thus, sound is output through the speaker unit 7. If the language information items do not coincide with each other, whether or not language information of a next (secondary) component of the service coincides with the instructed language is determined (step S16b).

[0039] A similar process is performed for each component. If a determination is made that language information of a component positioned immediately before the component in the service does not coincide with the instructed language (step S16n), selection of the component having the instructed language cannot be selected in the service. Therefore, the sound of the component primarily provided for the selected audio service is reproduced (step S18).

[0040] As a result of steps S16a to step S16n, language information of each component in a certain service is compared with instructed language information. If a coincident component exists, the component is reproduced. Therefore, when the service is changed, a component having a required language can be presented for a user such that priority is given to the required language.

[0041] If a determination is made that the language filter mode for adding language information to the conditions under which a component is selected has not been set, the operation is shifted to steps S13 and 14. Thus, the component primarily provided for a next audio service is selected and reproduced.

[0042] Figs. 4A and 4B are diagram showing a state of search which is performed in a process for changing the service shown in Fig. 3. In Fig. 4, an assumption is made that each ensemble exists across the selected service (a secondary component in the service 2). Moreover, each service has three components. Fig. 4A shows a state of search which is performed when the language filter mode has not been set. Fig. 4B shows a state of search which is performed when the language filter mode has been set.

[0043] When the language filter mode has not been set, a service (the service 1 or 3) before (or after) the present service is selected, as shown in Fig. 4A. Thus, the component included in the components constituting the service and primarily provided for the service is reproduced.

[0044] If the language filter mode has been set, a service (the service 1 or 3) before (or after) the present service is selected, as shown in Fig. 4B. Then, a determination is made whether or not language information of each component constituting the service coincides with instructed language information. If the language information items coincide with each other, the component is reproduced. If a component having the instructed language information does not exist in the services 1 and 3, the component having the instructed language information does not exist in the service. Therefore, the primary component is selected and reproduced. Thus, the searching operation is completed.

(Third Embodiment)

[0045] A third embodiment of the present invention will now be described. In this embodiment, the language filter mode function is applied to PTY search. The PTY search is a function with which a user instructs a required program to give priority to the program to be reproduced. The PTY search has been put into practical use to be applied to the RDS. In the DAB, the PTY (Program Type) of each service is encoded in extension 17 of type 0 of the transmission format. When information of the PTY is used, the PTY search can be performed. Also the flow chart according to this embodiment is performed when the PTY search has been instructed from the key input section 5.

[0046] Fig. 5 is a diagram showing transition of the state of the PTY search. An example case will now be described in which a PTY search key has been turned on during a period in a certain service has been selected.

[0047] When the PTY search key has been depressed, whether or not the PTY of a service next to the present service coincides with the instructed PTY is determined. If the PTY coincides with each other, the service is selected in step S40.

[0048] If a determination is made in step S32a that the PTY do not coincides with each other, a similar comparison of the PTY of a next service is performed (step S32b). If the PTY coincide with each other, the service is selected in step S40.

[0049] Similar processes are repeated. If an instructed PTY is not detected after the search has been performed to a service before a last service (the service selected when the PTY search has been started) (step S32n), a service which can be selected does not exist in the present ensemble. Therefore, instruction is issued to the DAB control unit 2 to change the frequency in order to search a next ensemble. The DAB control unit 2 receives the foregoing instruction to control the DAB receiving section 1 to receive the next ensemble. Moreover, a tuning process is performed and information about a next ensemble determined such that the ensemble can be received is obtained from its FIC. Thus, the DAB control unit 2 transmits information above to the system control unit 3.

[0050] Whether or not the service included in the obtained next ensemble and having the leading SId (Service Identifier: Service ID) coincides with the instructed PTY is determined (step S34a). If the PTY coincide with each other, the service is selected in step S40.

[0051] If a determination is made in step S34a that the PTY do not coincide with each other, a comparison of the PTY of a next service is performed (step S32b). If the PTY coincide with each other, the service is selected in step S40, similarly to the foregoing process. If an instructed PTY is not detected (not detected in step S32n) after the search has been performed to the service before the last service (a leading service having a leading SId), a similar process is performed for a next ensemble.

[0052] If a required PTY cannot be obtained after the overall receiving band has been searched, an "error" indicating the foregoing fact is displayed on the display unit 4 (step S35). Moreover, control is performed to select the last service (the service selected when the PTY search has been started) (step S36).

[0053] When the last service still exists, whether or not a last component (the component selected when the PTY search has been started) of the last service exist is determined.

[0054] When the last component exists, the component is selected and reproduced (step S39). If the last component does not exist, the primary component is selected and reproduced (step S38).

[0055] The completion of the primary component means completion of the service. However, the completion of a secondary component does not always mean completion of the service. In the foregoing state, the primary component is reproduced.

[0056] The language filter mode will now be described. When the language filter mode has been turned on (step S41; ON), whether or not language information of the component primarily provided for the selected service coincides with the instructed language

is determined.

[0057] If language information items coincide with each other, the component is selected in step S44. Thus, sound is output through the speaker unit 7. If language information items do not coincide with each other, whether or not language information of a next (a secondary) component in the service coincides with the instructed language is determined (step S43b).

[0058] A similar process is performed for each component. If a determination is made that language information of a component before the primary component of the service does not coincide with the instructed language (not coincided in step S43n), a component having the instructed language cannot be selected in the audio service selected in step S40. Thus, the primary component is selected and reproduced (step S38).

[0059] As a result of steps S43a to S43n, language information of each component in a certain service is compared with instructed language information. If coincident component exists, the component is reproduced. Therefore, the PTY search can be performed such that a component having a required language is given priority to be presented to a user.

[0060] If a determination is made in step S41 that the language filter mode for adding language information to the conditions under which a component is selected has not been set, the operation is shifted to step S42. Thus, the primary component is selected and reproduced.

[0061] Fig. 6 is a flow chart of the search which is performed in the PTY search shown in Fig. 4. In Fig. 6, the language filter mode is turned off. Two ensembles (each having three services) which can be received exist in the receipt band. A state is illustrated in which a second component an the service 2 of the ensemble 1 is being reproduced.

[0062] When the PTY search has been started, whether or not a next service (the service 3 in the ensemble 1) coincides with the instructed PTY is determined. If the PTY coincides with each other, the primary component is reproduced.

[0063] If the instructed PTY is not detected after the search has been performed to a service (the service 1) before the last service (the service 2 in the ensemble 1), instruction is issued to the DAB control unit 2 to change the frequency in order to search a next ensemble.

[0064] Then, whether or not the service (the service 1) included in information of the tuned next ensemble (the ensemble 2) and having the leading SId coincides with the instructed PTY coincide with each other. If a determined is made that the PTY coincide with each other, the sound of the primary component is reproduced.

[0065] If a determination is made that the PTY do not coincide with each other, a comparison of the PTY of a next service is performed similarly. If the instructed PTY is not detected after the search has been performed to a service (the service 3 in the ensemble 2) before the last service (the service 1 during search of a different ensemble), the overall received band has been searched. Therefore, an error is displayed on the display unit 4. Moreover, the last service (the secondary component of the service 2 of the ensemble 1) is selected and reproduced.

[0066] As described above, according to the present invention, a component having language information required to be received by a user can be given priority so as to be received.

Claims

1. A digital broadcast receiving apparatus for receiving digital audio broadcast which transmits digital signals indicating language information about the type or a language for use in each component for constituting a service such that the digital signals are transmitted together with audio information of each of the components,
said digital broadcast receiving apparatus comprising:

means for determining whether or not a component having a previously instructed language information exists in a service when the service is selected, wherein a predetermined component is selected in accordance with at least a result of the determination.

2. The digital broadcast receiving apparatus according to claim 1, wherein
when a determination is made that the component having previously instructed language information does not exist in the service, a component primarily provided for the service is selected.

3. The digital broadcast receiving apparatus according to claim 1, wherein
when a determination is made that the component having previously instructed language information exists in the service, a component having a previously instructed language information is selected.

4. A digital broadcast receiving apparatus for receiving digital audio broadcast which transmits digital signals indicating language information about the type of a language for use in each component for constituting each of a plurality of services which constitute each ensembles such that the digital signals are transmitted together with audio information of each of the components,
said digital broadcast receiving apparatus comprising:

means for determining whether or not a component having a previously instructed language information exists in an ensemble when the ensemble is selected, wherein a predeter-

mined component is selected in accordance with at least a result of the determination.

5. The digital broadcast receiving apparatus according to claim 4, wherein
when a determination is made that the component having previously instructed language information does not exist in a service in the ensemble, whether or not the component having previously instructed language information exists in another service in the ensemble is determined.

6. The digital broadcast receiving apparatus according to claim 4, wherein
When a determination is made that the component having previously instructed language information does not exist in any of the services in the ensemble, a component primarily provided for any of the services in the ensemble is selected.

7. The digital broadcast receiving apparatus according to claim 4, wherein
when a determination is made the component having previously instructed language information exist in the ensemble, the component having previously instructed language information is selected.

FIG. 1

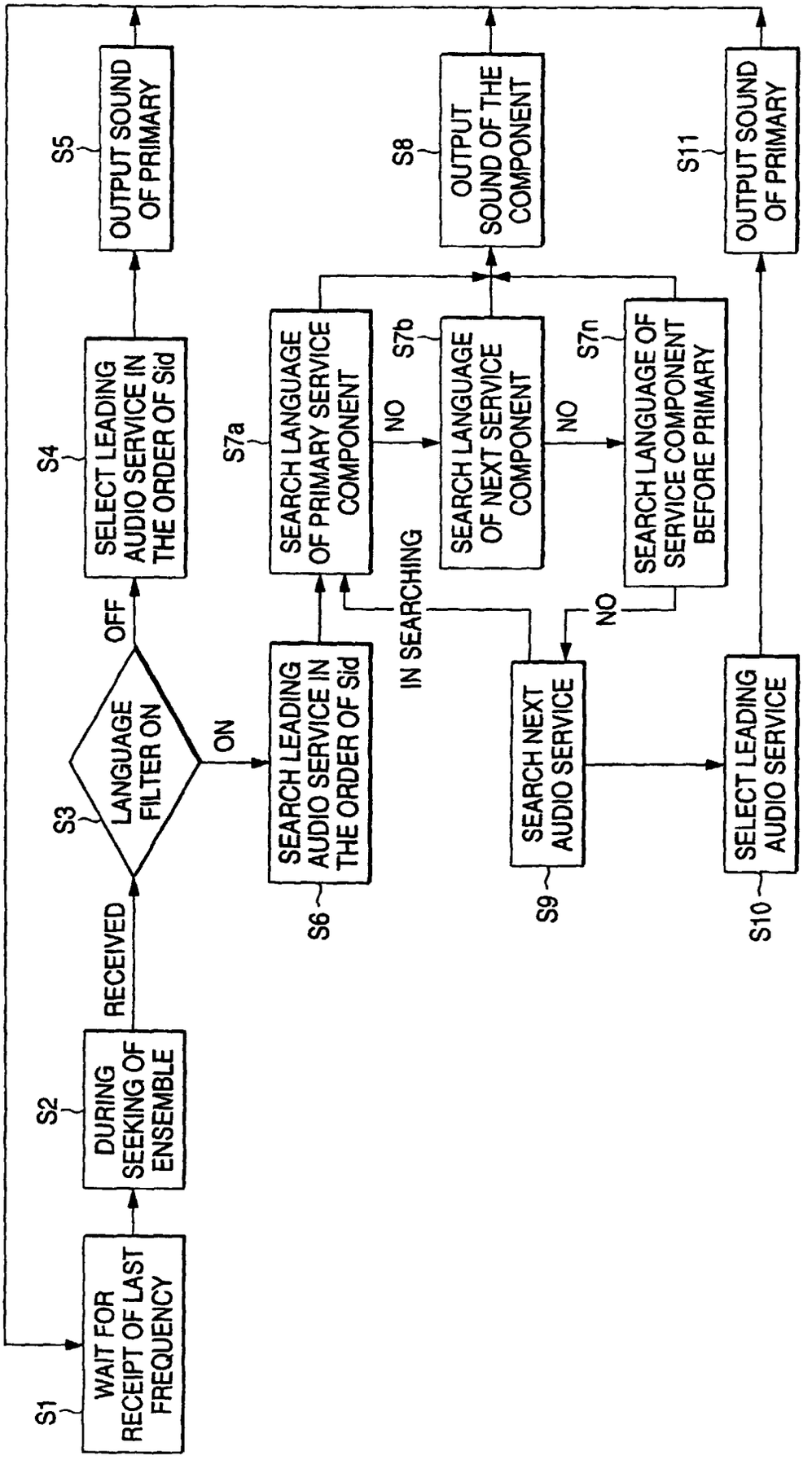

S1
WAIT FOR RECEIPT OF LAST FREQUENCY
S2
DURING SEEKING OF ENSEMBLE
RECEIVED
S3
LANGUAGE FILTER ON
OFF
ON
S4
SELECT LEADING AUDIO SERVICE IN THE ORDER OF Sid
S5
OUTPUT SOUND OF PRIMARY
S6
SEARCH LEADING AUDIO SERVICE IN THE ORDER OF Sid
S7a
SEARCH LANGUAGE OF PRIMARY SERVICE COMPONENT
NO
S7b
SEARCH LANGUAGE OF NEXT SERVICE COMPONENT
NO
S7n
SEARCH LANGUAGE OF SERVICE COMPONENT BEFORE PRIMARY
NO
IN SEARCHING
S8
OUTPUT SOUND OF THE COMPONENT
S9
SEARCH NEXT AUDIO SERVICE
S10
SELECT LEADING AUDIO SERVICE
S11
OUTPUT SOUND OF PRIMARY

FIG. 2A

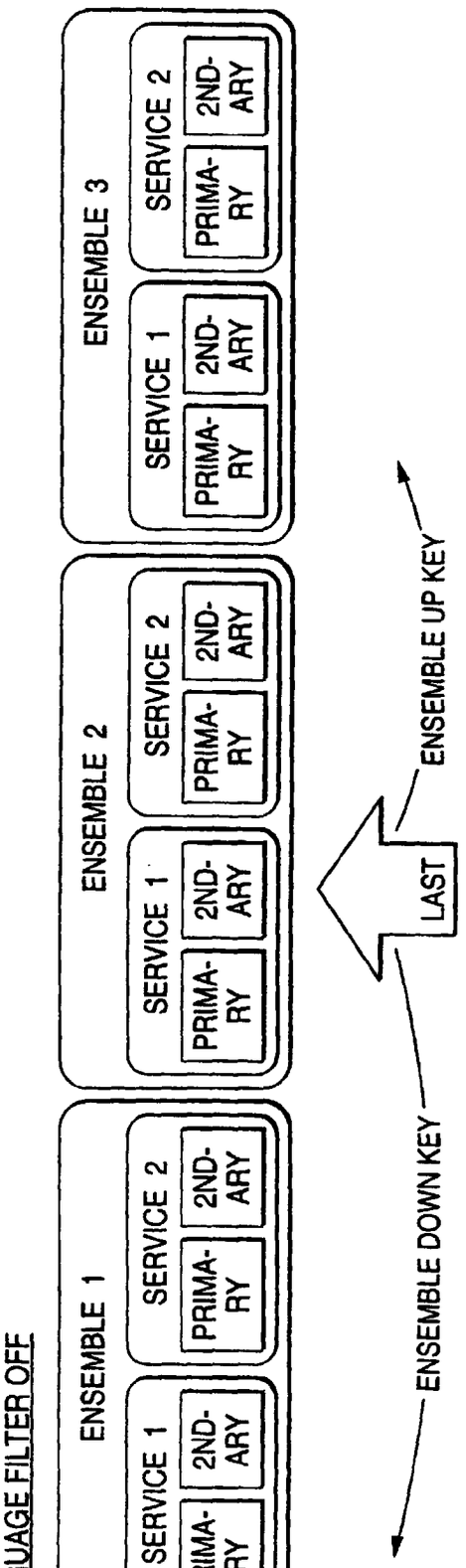

LANGUAGE FILTER OFF
ENSEMBLE 1
SERVICE 1
PRIMA-RY
2ND-ARY
SERVICE 2
PRIMA-RY
2ND-ARY
ENSEMBLE 2
SERVICE 1
PRIMA-RY
2ND-ARY
SERVICE 2
PRIMA-RY
2ND-ARY
ENSEMBLE 3
SERVICE 1
PRIMA-RY
2ND-ARY
SERVICE 2
PRIMA-RY
2ND-ARY
LAST
ENSEMBLE DOWN KEY
ENSEMBLE UP KEY

FIG. 2B

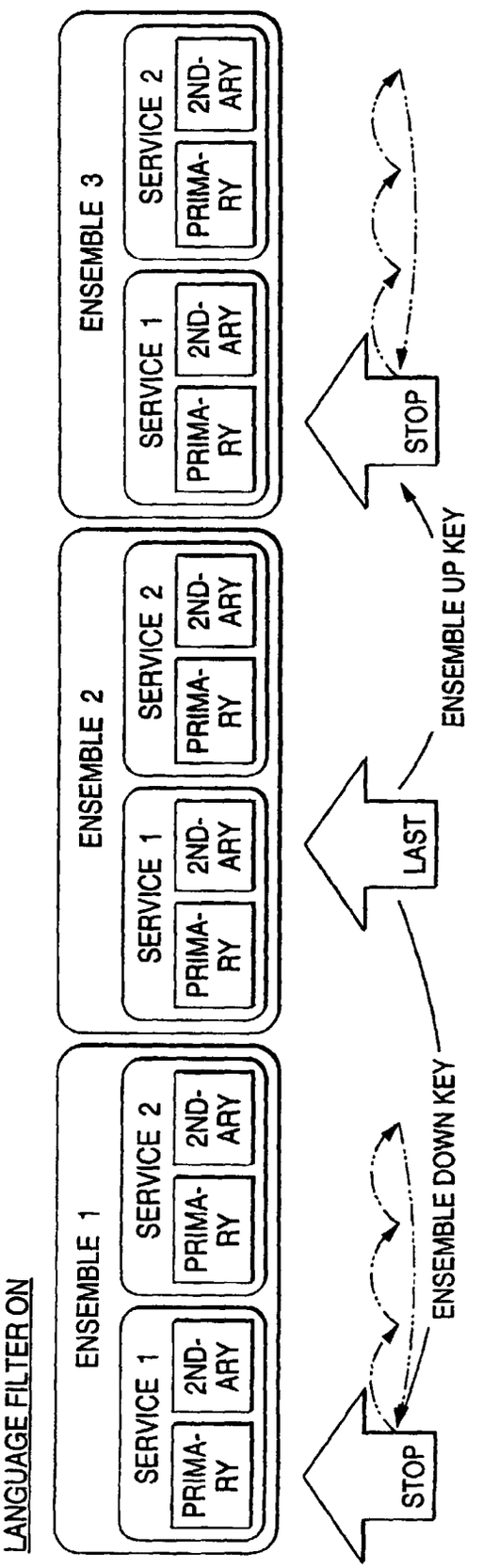

LANGUAGE FILTER ON
ENSEMBLE 1
SERVICE 1
PRIMA-RY
2ND-ARY
SERVICE 2
PRIMA-RY
2ND-ARY
ENSEMBLE 2
SERVICE 1
PRIMA-RY
2ND-ARY
SERVICE 2
PRIMA-RY
2ND-ARY
ENSEMBLE 3
SERVICE 1
PRIMA-RY
2ND-ARY
SERVICE 2
PRIMA-RY
2ND-ARY
STOP
ENSEMBLE DOWN KEY
LAST
ENSEMBLE UP KEY
STOP

FIG. 3

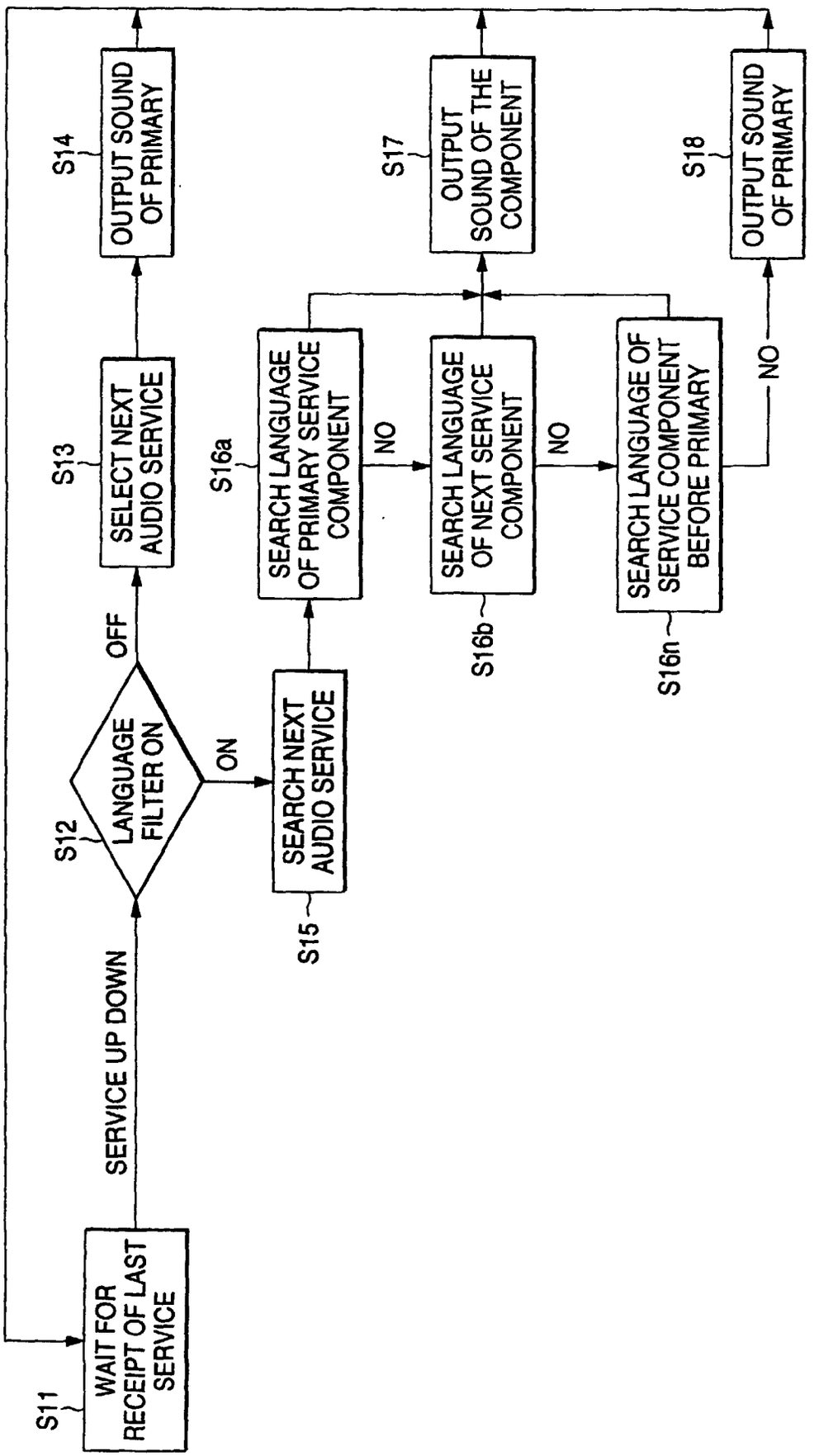

S11
WAIT FOR RECEIPT OF LAST SERVICE
SERVICE UP DOWN
S12
LANGUAGE FILTER ON
OFF
ON
S13
SELECT NEXT AUDIO SERVICE
S14
OUTPUT SOUND OF PRIMARY
S15
SEARCH NEXT AUDIO SERVICE
S16a
SEARCH LANGUAGE OF PRIMARY SERVICE COMPONENT
NO
S16b
SEARCH LANGUAGE OF NEXT SERVICE COMPONENT
NO
S16n
SEARCH LANGUAGE OF SERVICE COMPONENT BEFORE PRIMARY
NO
S17
OUTPUT SOUND OF THE COMPONENT
S18
OUTPUT SOUND OF PRIMARY

FIG. 4A

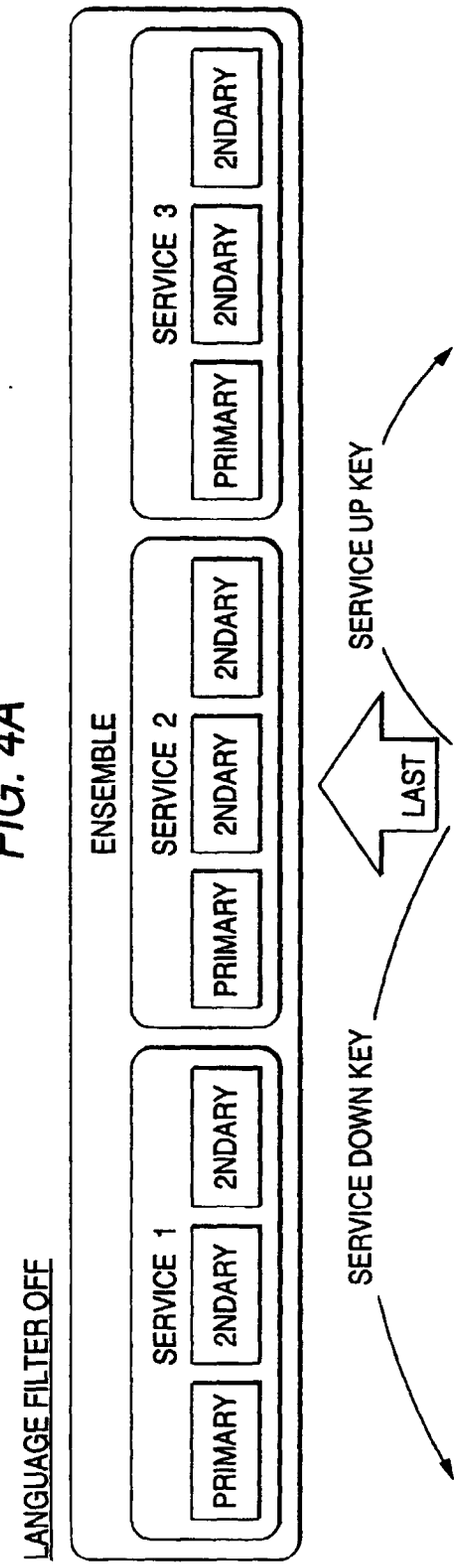
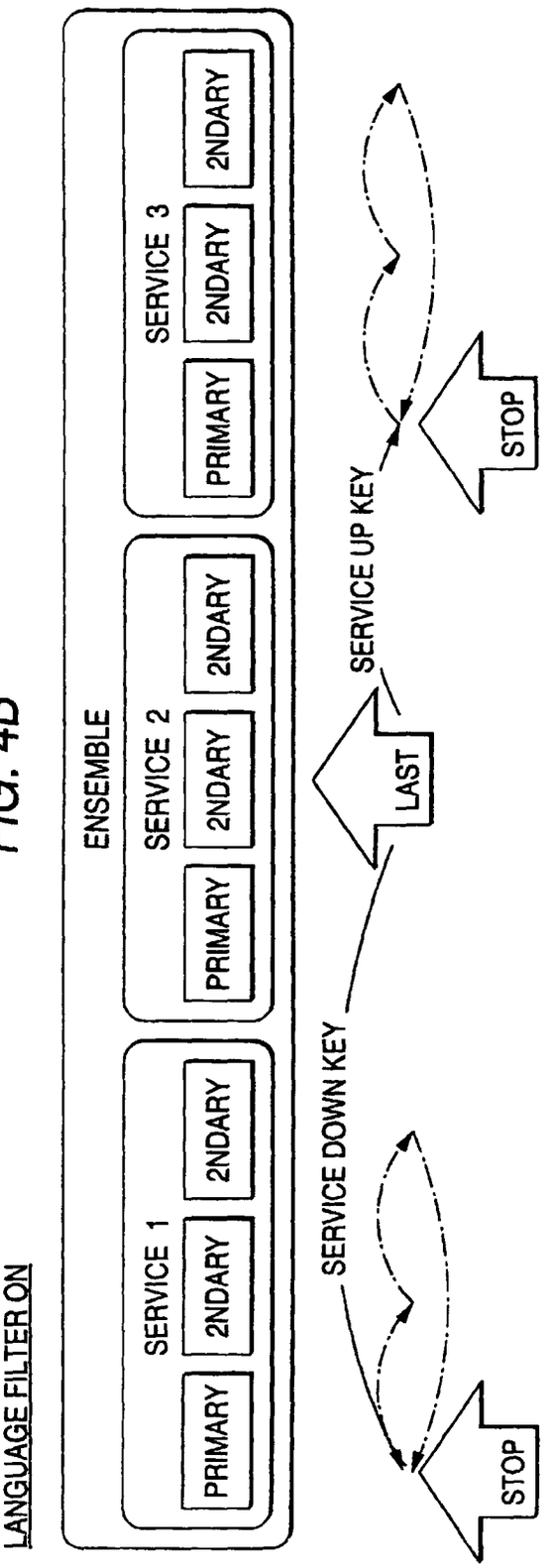

LANGUAGE FILTER OFF
ENSEMBLE
SERVICE 1
PRIMARY
2NDARY
2NDARY
SERVICE 2
PRIMARY
2NDARY
2NDARY
SERVICE 3
PRIMARY
2NDARY
2NDARY
SERVICE DOWN KEY
LAST
SERVICE UP KEY

FIG. 4B


LANGUAGE FILTER ON
ENSEMBLE
SERVICE 1
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2NDARY
2NDARY
SERVICE 2
PRIMARY
2NDARY
2NDARY
SERVICE 3
PRIMARY
2NDARY
2NDARY
SERVICE DOWN KEY
LAST
SERVICE UP KEY
STOP
STOP

FIG. 5

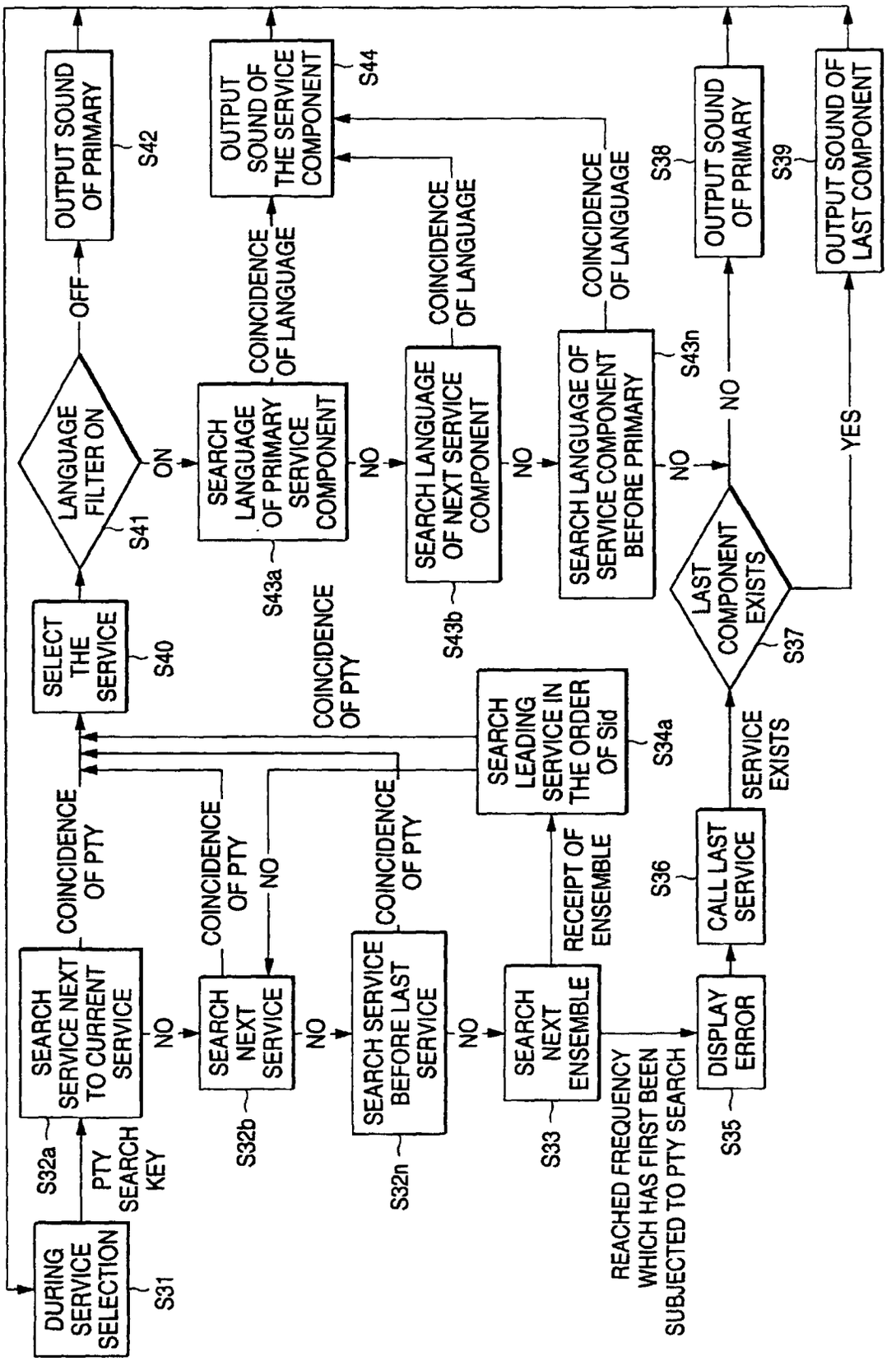

DURING SERVICE SELECTION
S31
PTY SEARCH KEY
S32a
SEARCH SERVICE NEXT TO CURRENT SERVICE
COINCIDENCE OF PTY
NO
SEARCH NEXT SERVICE
S32b
COINCIDENCE OF PTY
NO
SEARCH SERVICE BEFORE LAST SERVICE
S32n
COINCIDENCE OF PTY
NO
SEARCH NEXT ENSEMBLE
S33
RECEIPT OF ENSEMBLE
SEARCH LEADING SERVICE IN THE ORDER OF Sid
S34a
REACHED FREQUENCY WHICH HAS FIRST BEEN SUBJECTED TO PTY SEARCH
DISPLAY ERROR
S35
CALL LAST SERVICE
S36
SERVICE EXISTS
LAST COMPONENT EXISTS
S37
YES
NO
OUTPUT SOUND OF LAST COMPONENT
S39
OUTPUT SOUND OF PRIMARY
S38
SEARCH LANGUAGE OF SERVICE COMPONENT BEFORE PRIMARY
S43n
NO
COINCIDENCE OF LANGUAGE
SEARCH LANGUAGE OF NEXT SERVICE COMPONENT
S43b
NO
COINCIDENCE OF LANGUAGE
SEARCH LANGUAGE OF PRIMARY SERVICE COMPONENT
S43a
NO
COINCIDENCE OF LANGUAGE
OUTPUT SOUND OF THE SERVICE COMPONENT
S44
SELECT THE SERVICE
S40
COINCIDENCE OF PTY
LANGUAGE FILTER ON
S41
ON
OFF
OUTPUT SOUND OF PRIMARY
S42

FIG. 6

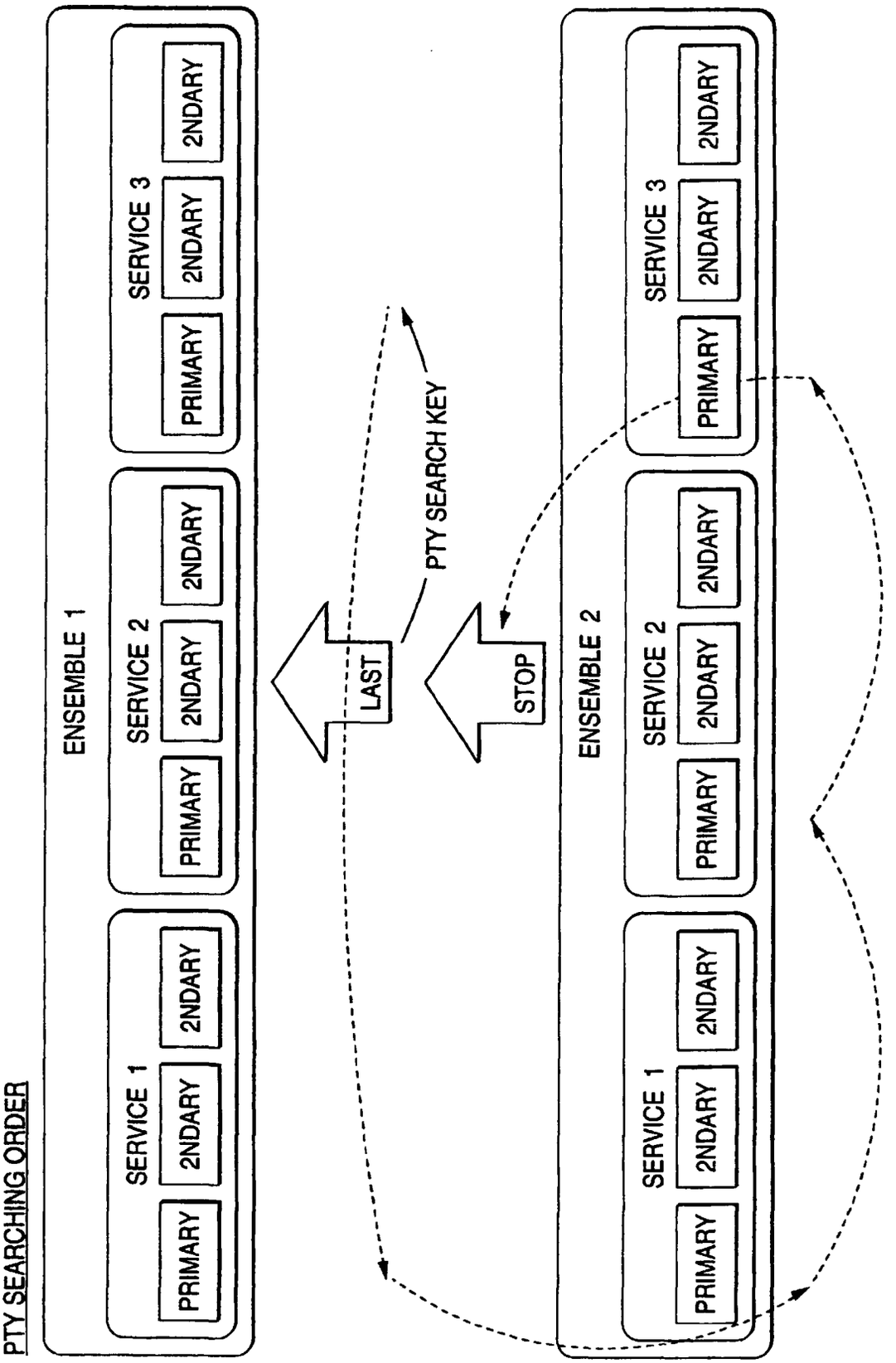
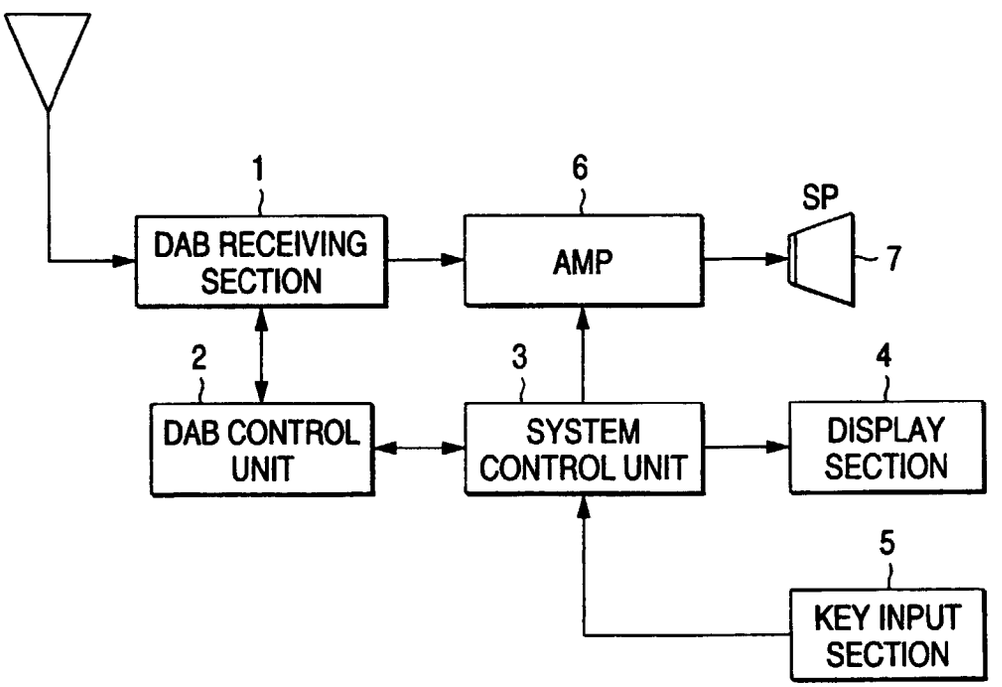

PTY SEARCHING ORDER
ENSEMBLE 1
SERVICE 1
PRIMARY
2NDARY
2NDARY
SERVICE 2
PRIMARY
2NDARY
2NDARY
SERVICE 3
PRIMARY
2NDARY
2NDARY
LAST
PTY SEARCH KEY
STOP
ENSEMBLE 2
SERVICE 1
PRIMARY
2NDARY
2NDARY
SERVICE 2
PRIMARY
2NDARY
2NDARY
SERVICE 3
PRIMARY
2NDARY
2NDARY

FIG. 7


1
DAB RECEIVING SECTION
6
AMP
SP
7
2
DAB CONTROL UNIT
3
SYSTEM CONTROL UNIT
4
DISPLAY SECTION
5
KEY INPUT SECTION