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(54) **Broadband service distribution method and device**

Verfahren und Vorrichtung zur Verteilung von Breitbanddiensten

Procédé et dispositif de distribution de services à large bande

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Description

[0001] The present invention relates to a broadband service distribution method.

[0002] Modern telecommunications systems currently carry, in addition to ordinary voice calls, other services for users, including the transmission of television pictures and programming, such as cable television and data transmission services such as the well-known Internet.

[0003] The passband per user required to carry these services is far greater than the band required to carry ordinary telephony.

[0004] Accordingly, telecommunications companies are developing and installing so-called "broadband access networks".

[0005] These specialized networks are designed to carry digital signals to users, characterized by very wide passbands in the directions from the exchange to the user and with narrow bands in the opposite direction.

[0006] This is due to the fact that user requests occupy a small amount of band in comparison with the large amount of information downloaded to the user.

[0007] The broadband access network is usually constituted in a hybrid, i.e. mixed, manner by a fiber-optic part and by a coaxial-cable part and is accordingly termed "Hybrid Fiber Coaxial (HFC) network".

[0008] Accordingly, Figure 1 illustrates an exemplifying diagram in which the optical part is used to carry signals from one location, designated by the reference numeral 1 and termed "head end", where the various programs to be fed into the broadband network are concentrated, to a point, designated by the reference numeral 2 and termed "fiber node", of the broadband network implemented with the hybrid fiber coaxial (HFC) network system, in which the optical signal that arrives from the fiber is converted into an electrical signal for transmission over coaxial cable.

[0009] The coaxial cables 4 used to distribute the signal to the users branch out from the fiber node 2, which is located proximate to the users, generally designated by the reference numeral 3.

[0010] Inside the building, and starting from the so-called "network termination" (NT), designated by the reference numeral 5, the coaxial cable 4 branches out, by means of a distribution system designated by the reference numeral 6, towards the individual users, designated by the reference numerals 7.

[0011] Special equipment is required, however, to receive the services: in the case of digital cable television, a special receiver is used which is capable of performing the following operations: tuning to a channel typically in the band between 47 and 862 MHz; decrypting the signal (in the case of pay channels); decompressing the signal according to the MPEG2 standard; and sending it to the television set, designated by the reference numeral 8, in the standard PAL format.

[0012] The above-described distribution system known as Hybrid Fiber Coaxial (HFC) network is used

extensively because it is a solution having a good price/performance ratio.

[0013] This system, however, entails many drawbacks, including mainly the laying of coaxial cables inside buildings and along city streets.

[0014] Particularly in urban areas and in older buildings, laying said cables entails demolition and restoration work which is particularly expensive and sometimes altogether unacceptable for users.

[0015] In Figure 1, the expression "distribution node" references the point of access to the broadband network for channels arriving from a plurality of head ends and at the same time the point of distribution of all the transmission channels towards the users.

[0016] As a partial solution to these drawbacks, which are worsened by the extent to which they force the user of the service to perform unwanted structural work, it is known, in order to transmit broadband signals efficiently and inexpensively, to use different systems, including the one known generically by the name "broadband asymmetric transmission system" or Asymmetric Digital Subscriber Loop (ADSL) or similar systems termed XDSL, where the letter X must be replaced in each case with the technology being used.

[0017] The expression ADSL designates a broadband transmission system capable of using the conventional telephone wire pair, designated by the reference numeral 9, to carry broadband digital channels simultaneously with the ordinary telephone service, also allowing communication between the user and the head end by means of a return channel (upstream channel) at low speed (differently from the downstream channel, which operates at high speed, hence the term "asymmetric").

[0018] The ADSL broadband asymmetric transmission system thus uses the ordinary wire pair, which currently reaches every home, to carry a broadband channel over said wire pair.

[0019] This ADSL broadband asymmetric transmission system preserves the ordinary service that can be used with a telephone set, designated by the reference numeral 10, and allows the user to request the chosen program or service from the service exchange by means of the upstream channel.

[0020] The exchange 50, however, must be capable of supplying the programs on demand and individually to each user: this type of service is known as Video On Demand (VOD) and entails the presence, in the exchange, of power and accordingly expensive equipment known as "video servers", capable of serving the requests of users, or of equally expensive switching systems which typically use ATM (Asynchronous Transfer Mode) technology.

[0021] Substantially, the video server is a powerful computer capable of transmitting programs and services to users at the user's request, while the ATM switch alternatively switches the requested channel towards the user.

[0022] Accordingly, any use of the ADSL broadband

asymmetric transmission system configures the network as point-to-point, as shown schematically in the accompanying Figure 2, between the exchange and the user, differently from the above-mentioned distribution structure known as hybrid fiber coaxial (HFC) network, in which the network gradually branches out from the exchange or head end to the users.

[0023] The ADSL broadband asymmetric transmission system therefore connects the user to broadband services only with a channel at a maximum rate of 8 Mbit/s and uses the existing wire pair, sharing it with the basic telephone services. This structure, however, entails very expensive equipment and a radical change in distribution concept.

[0024] The aim of the present invention is to solve the described technical problems, eliminating the drawbacks of the cited prior art and thus by providing a solution which allows to eliminate the costs and inconveniences of coaxial-cable wiring for the user.

[0025] Within the scope of this aim, an important object of the present invention is to provide a solution in which the end user does not have to perform any specific work at the masonry level in his home in order to utilize the broadband service.

[0026] Another important object of the present invention is to provide a solution which entails low implementation costs for the distribution of the broadband service.

[0027] Another important object of the present invention is to provide a solution which does not require the use of very expensive equipment such as powerful computers capable of serving the user's requests.

[0028] This aim, these objects and others which will become apparent hereinafter, are achieved by a method for distributing broadband services characterized in that it provides for:

- separating a broadband front end of a receiver circuit from other portions of the circuit;
- placing said front end in utility closets of a building;
- connecting said front end to a so-called "modulator-demodulator" (ADSL modem) or to a so-called "modulator" or to an amplifier;
- transferring a signal from said modulator-demodulator or from said modulator or from said amplifier and the sign from a telephone exchange to a first adder in order to mix the broadband and telephone services;
- transferring signals from said first adder over a telephone wire pair to an individual end user; and
- splitting the signals to a telephone and to a television set.

[0029] Further characteristics and advantages of the invention will become apparent from the following detailed description of a particular embodiment thereof, illustrated only by way of non-limitative example in the accompanying drawings, wherein:

Figure 1 is a diagram of a prior art arrangement;

Figure 2 is another diagram of another prior art arrangement;

Figure 3 is a block diagram of the structure of a digital receiver;

Figure 4 is a schematic view of the device according to the present solution;

Figure 5 is a block diagram of an indication of a possible mode of operation;

Figure 6 is a schematic view of the device according to the present invention, using the modulator in the utility closet of the house;

Figure 7 is a schematic view of the device according to the present invention, without using the modulator;

Figure 8 is a block diagram of an indication of a possible operation with a modulator, as shown in the diagram of Figure 6;

Figure 9 is a block diagram of an indication of a possible operation without a modulator, as shown in the diagram of Figure 7.

[0030] The structure of a digital receiver (see Figure 3), generally designated by the reference numeral 11, for broadband services is described with reference to the above figures, and particularly with reference to Figure 3, in order to improve the comprehension of the method according to the invention. The receiver comprises a block, designated by the reference numeral 12, which is termed "front end" and is constituted by an electronic module which collects the signals 4 arriving from the network and processes them appropriately by tuning and conditioning them so that they become usable by the subsequent stages of the receiver.

[0031] Substantially, the front end 12 has the purpose of selecting the selected channel within the band available to the user: the front end 12 also converts the received signal 4 into a plurality of data which are then processed by the other subsequent stages.

[0032] The reference numeral 13 designates a block, termed "conditional access", which is a system that allows access to services, for example the viewing of a television channel, only to authorized users (for example to those who pay a subscription), preventing use by unauthorized users by means of transmission encryption methods.

[0033] The reference numeral 14 designates a block conventionally termed "Mpeg demux", which is constituted by a system for the digital encoding and compression of video signals which, by means of appropriate decoders 15 (video and audio decoders) and digital to analog converters (DAC) 16, carry the signals to a SCART socket 17, the entire system being managed by means of a microprocessor 18.

[0034] In the method, the broadband front end 12 of the receiver 11 is separated from the rest of the circuit, placing it in the fiber node 2, as shown in Figure 4 or in the same point of the building where the wire pairs of the telephone service enter said building and therefore typ-

ically in the utility closets located in the basement of the house.

[0035] There, the front end 12 is connected to a coaxial cable 4 of the fiber node 2; in the prior art, said coaxial cable 4 would have had to reach the user directly.

[0036] The front end 12 is then connected to a modulator-demodulator (ADSL modem), designated by the reference numeral 19 (see Figure 6), or to a modulator 23 (see Figure 7), which in turn sends the signal to a first adder 20 which also receives a signal from a telephone exchange generally designated by the reference numeral 21.

[0037] The front end selects the channel to be received: this switching is requested by a decoder 24 over an upstream channel driven by a command transmitter 26 and interpreted and executed by a command receiver 25.

[0038] The signals are carried from the first adder 20, over the telephone wire pair 9, to a second adder or adder-splitter 22, which is located at the individual user and splits the signal, sending it to an additional modulator-demodulator (ADSL modem) 29 and then to a television set 8 and to a telephone 10; as an alternative, the signals are carried from the first adder 20, over the telephone wire pair 9, to a second adder-splitter 22 which is located at the individual user and splits the signal, sending it to a telephone 10 and to a demodulator 39 which is located inside the decoder 24 and then to a television set 8.

[0039] The method for transmitting the signals from the first adder to the second adder over the telephone wire pair 9 may be the most convenient and therefore may use the following systems:

- a transmission technology using a 'broadband asymmetric transmission system' (ADSL), which splits the information to be transmitted into a large number of small packets to be transmitted (ADSL DMT or Discrete Multi Tone);
- an alternative transmission technology using a 'broadband asymmetric transmission system' (ADSL) (ADSL CAP or Carrierless Amplitude Modulation);
- a modulation system used for digital transmission over broadband cable networks (ADSL QAM or Quadrature Amplitude Modulation);
- a system that differs from the 'broadband asymmetric transmission system' (ADSL) in that it provides symmetrical communication in the upstream and downstream channels (HDSL or High Speed Digital Subscriber Loop);
- a system which differs from the preceding one in terms of a higher transmission rate (VDSL or Very High Speed Digital Subscriber Loop);
- wireless transmission at radio frequencies (narrowband wireless);
- transmission with methods known as "spread-spectrum".

[0040] The illustrated solutions therefore allow to achieve all the advantages that can be individually ascribed to known technology without requiring interventions such as the addition of further cables, wiring and masonry work, with consequent cost reductions and elimination of the previously mentioned inconveniences.

[0041] Figure 5 is a block diagram of an indication of a possible method of operation. The user selects a channel with remote control of decoder (step 100). The decoder receives signal of remote control and sends a tuning request to the front end in fiber node over an upstream channel (step 101). The ADSL modem in user's home sends request over the telephone wire pair and simultaneously ensures normal telephone service (step 102). The ADSL modem in fiber mode receives the upstream channel and sends it to the front end module (step 103). The microprocessor in front end module tunes into the chosen channel and sends it over a downstream channel to the user for viewing (step 104).

[0042] Figures 6 and 7 are block diagrams of the device of the present invention.

[0043] Figures 8 and 9 are flow charts of further possible methods of operation. The user selects a channel with remote control of decoder (step 105). The decoder receives the signal of remote control and uses command transmitter to transmit, over the telephone wire pair, tuning request to the front end module located either proximate to fiber node or in basement closets (for example basements or meter closets) (step 106). The command receiver receives the channel tuning request and selects the channel by means of the front end. The front end converts the channel into data stream and sends it to the modulator (step 107). The modulator modulates the data stream and sends it over the telephone wire pair (step 108). The demodulator module located in the decoder receives modulated data from the wire pair and converts them back to data which are processed by the rest of the decoder until display of picture on television set is achieved (step 109).

[0044] The method shown in Figure 9 instead provides for the following steps. The user selects a channel with remote control of the decoder (step 105). The decoder receives signal of the remote control and uses command transmitter to transmit, over the telephone wire pair, tuning request to the front end module located either proximate to fiber node or in basement closets (for example basements or meter closets) (step 106). The command receiver receives the channel tuning request and selects the channel by means of the front end. The front end converts the channel into a standard fixed-frequency channel without altering its modulation and sends it over the telephone wire pair after amplification (step 107). The demodulator module located in the decoder receives modulated data from the wire pair and converts them back to data which are processed by the rest of the decoder until display of picture on television set is achieved (step 111).

[0045] It has thus been observed that the illustrated

method has achieved all of the intended aim and objects, since it is possible to distribute broadband services to the various users, eliminating the costs and inconveniences of laying coaxial-cable to reach the user.

[0046] Attention is also drawn to the fact that the switching system located in the utility closets of the building can be controlled, for example, by means of a conventional telephone modem which is included by the service provider, so as to enable or disable the supply of the service, and thus becomes the system for conditional access to the service.

[0047] It is noted that the switching system according to the present method can be supplied by various power sources, such as electric mains power, over the coaxial cable of the broadband network, by means of the telephone wire pair of the telephone system, by means of the set-top box (decoder) using the wire pair section that connects the set-top box to the switching system.

[0048] The present invention is of course susceptible of numerous modifications and variations, all of which are within the scope of the same inventive concept.

[0049] For example, the front end 12 might directly accept a fiber-optic input, avoiding optoelectrical conversion at the fiber node side, with an additional economical advantage.

[0050] The materials and the dimensions that constitute the individual components used in the illustrated solutions, as well as the method for transmitting the signals to the second adder, may of course also be the most pertinent according to specific requirements.

[0051] Where technical features mentioned in any claim are followed by reference signs, those reference signs have been included for the sole purpose of increasing the intelligibility of the claims and accordingly, such reference signs do not have any limiting effect on the interpretation of each element identified by way of example by such reference signs.

Claims

1. A method for distributing broadband services, **characterized in that** it comprises the steps of:

- separating a broadband front end (12) of a receiver circuit (11) from other portions of the circuit;
- placing said front end (12) in utility closets of a building;
- connecting said front end (12) to a modulator-demodulator (19) or to a modulator (23) or to an amplifier;
- transferring a signal from said modulator - demodulator (19) or from said modulator (23) or from said amplifier and the signal from a telephone exchange (21) to a first adder (20) in order to mix the broadband and telephone services;
- transferring signals from said first adder (20)

over a telephone wire pair (9) to an individual end user;

- splitting the signals to a telephone (10) and to a television set (8).

2. The method according to claim 1, **characterized in that** said broadband front end (12) of said receiver (11), separated from the other portions of said circuit, is located in a fiber node (2) and to the point of a broadband hybrid fiber-coaxial HFC network where the optical signal arriving from the fiber is converted into an electrical signal for transmission on coaxial cable.

3. The method according to claim 2, **characterized in that** said front end (12) is connected to the coaxial cable of said fiber node (2).

4. The method according to claim 1, **characterized in that** the signals are carried from said first adder (20) over the telephone wire pair (9) to a second adder (22) located at the individual user, which splits the signal and transfers it to an additional modulator-demodulator (29) and then to the television set (8) and to the telephone (10).

5. The method according to claim 4, **characterized in that** the method for transmitting the signals between said first and second adders (20, 22) over said telephone wire pair occurs with a method chosen among:

- transmitting using a 'broadband asymmetric transmission system', which splits the information to be transmitted into a large number of small packets to be transmitted;
- transmitting using a 'broadband asymmetric transmission system';
- modulating the signals by means of a modulation system used for digital transmission over broadband cable networks;
- providing symmetrical communication in the upstream and downstream channels;
- transmitting using a spread spectrum technique.

6. The method according to claim 1, **characterized in that** said broadband front end (12) of said receiver (11), separated from the rest of said circuit, is located in a chosen point of a house reached by the telephone wire pair (9).

7. The method according to claim 6, **characterized in that** said front end (12) is connected to said modulator (19), which in turn sends the signal to said first adder (20) which also receives a signal from the telephone exchange (21).

8. The method according to claim 7, **characterized in that** said front end (12) is connected to said amplifier, which in turn sends the signal to said first adder (20), which also receives a signal from the telephone exchange (21).
9. The method according to claim 8, **characterized in that** said front end (12) selects a channel to be received, said selection being requested by a decoder (24) over an upstream channel driven by a command transmitter (26) and being interpreted and executed by a command receiver (25).
10. The method according to claim 9, **characterized in that** it comprises the step of implementing, by said command receiver (25), data from a telephone network so that said command receiver (25) also acts as a system for conditional access to the broadband network.
11. The method according to claim 10, **characterized in that** the signals are transferred from said first adder (20) over the telephone wire pair (9) to said second adder (22) located at the individual user, which splits the signal and transfers it to a demodulator (39) which is located inside said decoder and then to the television set (8).
12. The method according to claim 11, **characterized in that** the method for transmitting the signals between said first and second adders (20, 22) over said telephone wire pair (9) is a transmission method using a spread spectrum technique.

Patentansprüche

1. Ein Verfahren zur Verteilung von Breitbanddiensten, **dadurch gekennzeichnet, dass** es die folgenden Schritte umfasst:
- Abtrennen eines Breitband-Front-Ends einer Empfängerschaltung (11) von anderen Teilen der Schaltung;
 - Platzieren des Front-Ends (12) in Verteilerschränke eines Gebäudes;
 - Verbinden des Front-Ends (12) mit einem Modulator/Demodulator (19) oder mit einem Modulator (23) oder mit einem Verstärker;
 - Übertragen eines Signals vom Modulator/Demodulator (19) oder vom Modulator (23) oder vom Verstärker und des Signals vom Fernsprechamt (21) an einen ersten Addierer (20), um die Breitband- und Fernsprechdienste zu mischen;
 - Übertragen von Signalen des ersten Addierers (20) über eine Telefon-Doppeladerleitung (9) zu einem individuellen Endbenutzer.

- Aufspalten der Signale zu einem Telefon (10) und zu einem Fernseher (8).

2. Das Verfahren gemäß Anspruch 1, **dadurch gekennzeichnet, dass** das von den anderen Teilen der Schaltung getrennte Breitband-Front-End (12) des Empfängers (11) in einem Glasfaserknoten (2) angeordnet ist und bis zu dem Punkt eines hybriden Glasfaser-Koaxial-HFC-Breitbandnetzwerks, an dem das optische Signal von der Glasfaser ankommt in ein elektrisches Signal zur Übertragung auf Koaxialkabel umgewandelt wird.
3. Das Verfahren gemäß Anspruch 2, **dadurch gekennzeichnet, dass** das Front-End (12) mit dem Koaxialkabel des Glasfaserknotens (2) verbunden ist.
4. Das Verfahren gemäß Anspruch 1, **dadurch gekennzeichnet, dass** die Signale vom ersten Addierer (20) über die Telefon-Doppeladerleitung (9) zu einem zweiten Addierer (22), der beim individuellen Benutzer angeordnet ist, übertragen werden, der das Signal aufspaltet und es an einen zusätzlichen Modulator/Demodulator (29) überträgt und dann an den Fernseher (8) und an das Telefon (10) überträgt.
5. Das Verfahren gemäß Anspruch 4, **dadurch gekennzeichnet, dass** das Verfahren zum Übertragen der Signale zwischen dem ersten und zweiten Addierer (20, 22) über die Telefon-Doppeladerleitung erfolgt, mit einem Verfahren ausgewählt aus:
- Übertragung mittels eines "asymmetrischen Breitbandübertragungssystems", das die zu übertragenden Informationen in viele kleine zu übertragende Pakete aufspaltet;
 - Übertragung mittels eines "asymmetrischen Breitbandübertragungssystems";
 - Modulieren der Signale mit Hilfe eines für digitale Übertragung über Breitbandkabelnetzwerke verwendeten Modulationssystems;
 - Bereitstellen symmetrischer Kommunikation in den Upstream- und Downstreamkanälen;
 - Übertragung mittels eines Bandspreizverfahrens.
6. Das Verfahren gemäß Anspruch 1, **dadurch gekennzeichnet, dass** das Breitband-Front-End (12) des Empfängers (11), getrennt vom Rest der Schaltung, in einem ausgewählten Punkt eines Hauses angeordnet ist, das von der Telefon-Doppeladerleitung (9) versorgt wird.
7. Das Verfahren gemäß Anspruch 6, **dadurch gekennzeichnet, dass** das Front-End (12) an einem Modulator (19) angeschlossen ist, der abwechselnd das Signal zum ersten Addierer (20), der auch ein

Signal vom Fernsprechamt (21) empfängt, sendet.

8. Das Verfahren gemäß Anspruch 7, **dadurch gekennzeichnet, dass** das Front-End (12) an einen Verstärker angeschlossen ist, der abwechselnd das Signal zum erster Addierer (20), der auch ein Signal vom Fernsprechamt (21) empfängt, sendet. 5
9. Das Verfahren gemäß Anspruch 8, **dadurch gekennzeichnet, dass** das Front-End (12) einen zu empfangenden Kanal auswählt, wobei die Auswahl von einem Dekoder (24) über einen von einem Befehlsübertrager (26) gesteuerten Upstream-Kanal angefordert wird und von einem Befehlsempfänger (25) interpretiert und ausgeführt wird. 10 15
10. Das Verfahren gemäß Anspruch 9, **dadurch gekennzeichnet, dass** es den Schritt des Umsetzens von Daten von einem Telefonnetzwerk durch einen Befehlsempfänger (25) umfasst, damit der Befehlsempfänger (25) auch als ein System für die Zugangsberechtigung zum Breitbandnetzwerk fungiert. 20
11. Das Verfahren gemäß Anspruch 10, **dadurch gekennzeichnet, dass** die Signale vom ersten Addierer (20) über die Telefon-Doppeladerleitung (9) an einen zweiten Addierer (22), der beim Benutzer angeordnet ist, übertragen werden, der das Signal aufspaltet und es an einen Demodulator (39) überträgt, der innerhalb des Dekoders angeordnet ist, und dann an ein Fernsehgerät überträgt. 25 30
12. Das Verfahren gemäß Anspruch 11, **dadurch gekennzeichnet, dass** das Verfahren zum Übertragen der Signale zwischen dem ersten und zweiten Addierer (20, 22) über die Telefon-Doppeladerleitung (9) ein Bandspreizverfahren verwendendes Übertragungsverfahren ist. 35 40

Revendications

1. Procédé de distribution de services à large bande, **caractérisé en ce qu'il** comprend les étapes consistant à: 45
- séparer une borne frontale à large bande (12) d'un circuit de récepteur (11) des autres parties du circuit;
 - placer ladite borne frontale (12) dans les locaux techniques d'un édifice; 50
 - connecter ladite borne frontale (12) à un modulateur-démodulateur (19) ou à un modulateur (23) ou à un amplificateur;
 - transférer un signal depuis ledit modulateur-démodulateur (19) ou depuis ledit modulateur (23) ou depuis ledit amplificateur et le signal depuis un central téléphonique (21) à un premier 55

additionneur (20) afin de mélanger les services à large bande et les services téléphoniques;

- transférer les signaux depuis ledit premier additionneur (20) à travers une ligne bifilaire téléphonique (9) à un utilisateur final individuel;
- diviser les signaux au téléphone (10) et à la télévision (8).

2. Procédé selon la revendication 1, **caractérisé en ce que** ladite borne frontale à large bande (12) dudit récepteur (11), séparé des autres parties dudit circuit, est situé dans un noeud de fibres (2) et au point d'un réseau hybride à large bande et à fibre coaxiale HFC où le signal optique arrivant de la fibre est converti en un signal électrique pour la transmission sur un câble coaxial. 10
3. Procédé selon la revendication 2, **caractérisé en ce que** ladite borne frontale à large bande (12) est connectée au câble coaxiale dudit noeud de fibre (2). 15
4. Procédé selon la revendication 1, **caractérisé en ce que** les signaux sont transportés depuis ledit premier additionneur (20) à travers la ligne bifilaire téléphonique (9) à un deuxième additionneur (22), situé chez un utilisateur individuel, qui divise le signal et le transfère à un modulateur-démodulateur supplémentaire (29) et ensuite à la télévision (8) et au téléphone (10). 20
5. Procédé selon la revendication 4, **caractérisé en ce que** le procédé de transmission des signaux entre lesdits premier et deuxième additionneurs (20, 22) à travers ladite ligne bifilaire téléphonique a lieu avec un procédé choisi parmi les suivants: 25
- transmettre en utilisant un "système de transmission asymétrique à large bande", qui divise l'information à transmettre en un large nombre de petits paquets à transmettre;
 - transmettre en utilisant un "système de transmission asymétrique à large bande";
 - moduler les signaux au moyen d'un système de modulation utilisé pour la transmission de données à travers des réseaux de câble à large bande;
 - fournir une communication symétrique dans les canaux en amont et en aval;
 - transmettre en utilisant une technique à fréquence étendue. 30
6. Procédé selon la revendication 1, **caractérisé en ce que** ladite borne frontale à large bande (12) dudit récepteur (11), séparée du reste dudit circuit, est située dans un point choisi de la maison atteint par la ligne bifilaire téléphonique (9). 35
7. Procédé selon la revendication 6, **caractérisé en** 40

ce que ladite borne frontale (12) est connectée audit modulateur (19) qui à son tour envoie le signal audit premier additionneur (20) qui reçoit également un signal du central téléphonique (21).

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8. Procédé selon la revendication 7, **caractérisé en ce que** ladite borne frontale (12) est connectée audit amplificateur qui à son tour envoie le signal audit premier additionneur (20) qui reçoit également un signal du central téléphonique (21).

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9. Procédé selon la revendication 8, **caractérisé en ce que** ladite borne frontale (12) sélectionne un canal devant être reçu, ladite sélection étant requise par un décodeur (24) à travers un canal en amont actionné par un transmetteur de commande (26) et étant interprété et exécuté par un récepteur de commande (25).

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10. Procédé selon la revendication 9, **caractérisé en ce qu'il** comprend l'étape consistant à mettre en application, par ledit récepteur de commande (25), des données depuis un réseau téléphonique de sorte que ledit récepteur de commande (25) agisse également comme un système pour l'accès conditionnel au réseau à large bande.

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11. Procédé selon la revendication 10, **caractérisé en ce que** les signaux sont transférés depuis ledit premier additionneur (20) à travers la ligne bifilaire téléphonique (9) audit deuxième additionneur (22), situé chez l'utilisateur individuel, qui divise le signal et le transfère à un démodulateur (39) qui est situé à l'intérieur dudit décodeur et ensuite à la télévision (8).

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12. Procédé selon la revendication 11, **caractérisé en ce que** le procédé de transmission des signaux entre lesdits premier et deuxième additionneurs (20, 22) à travers ladite ligne bifilaire téléphonique (9) est un procédé de transmission utilisant une technique à fréquence étendue.

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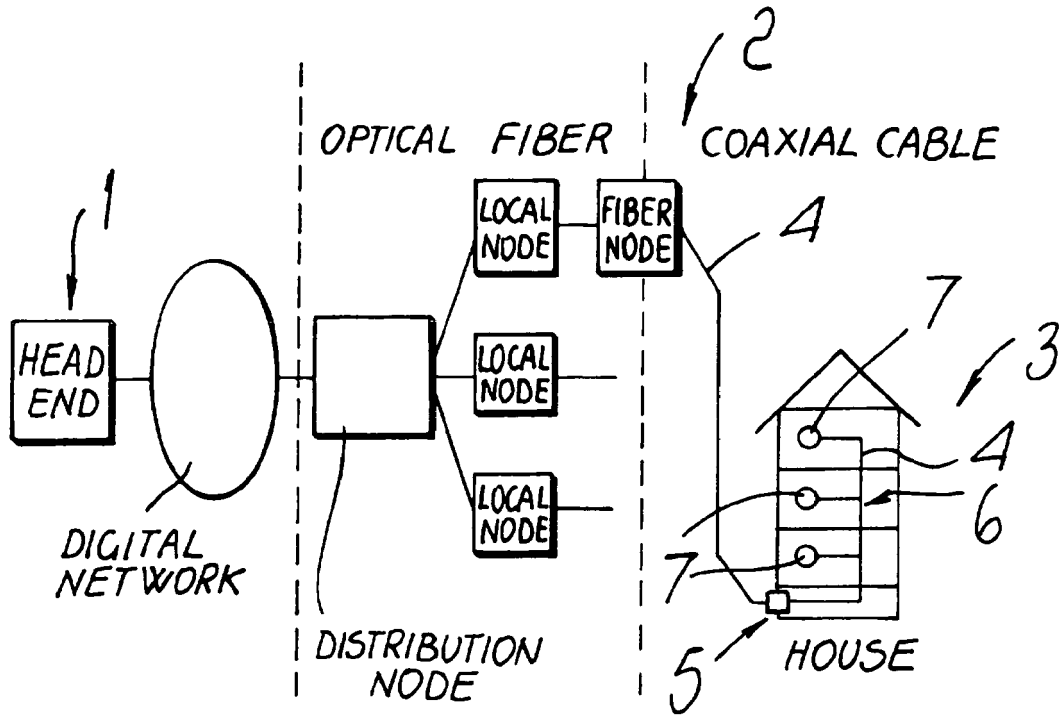


FIG. 1

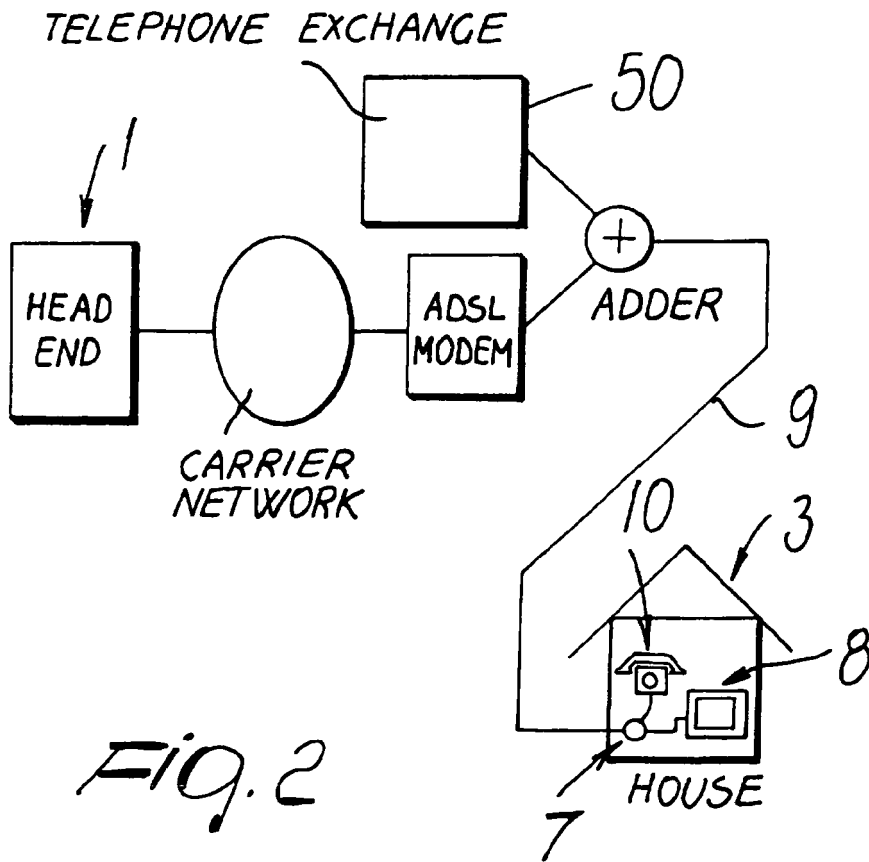


FIG. 2

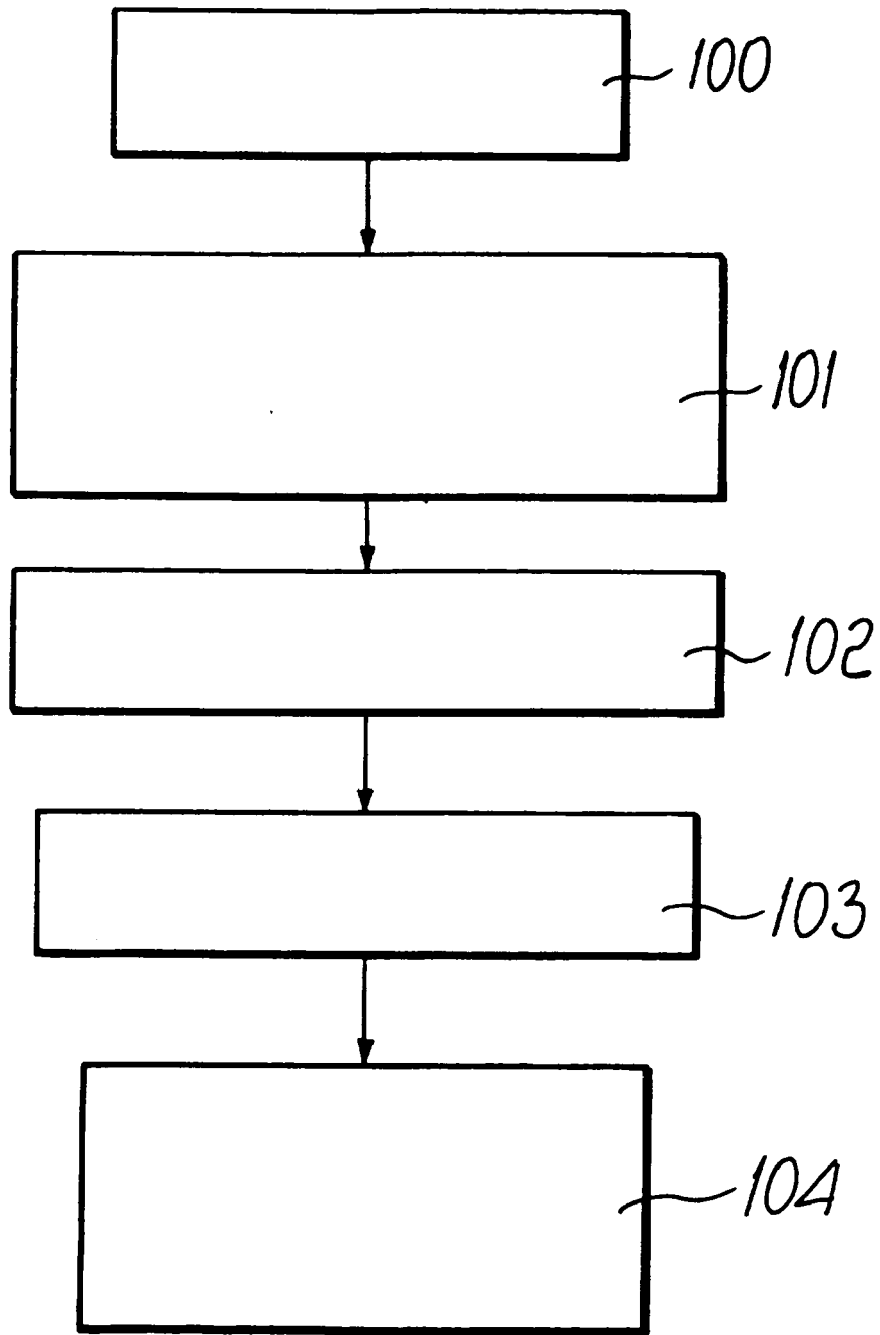
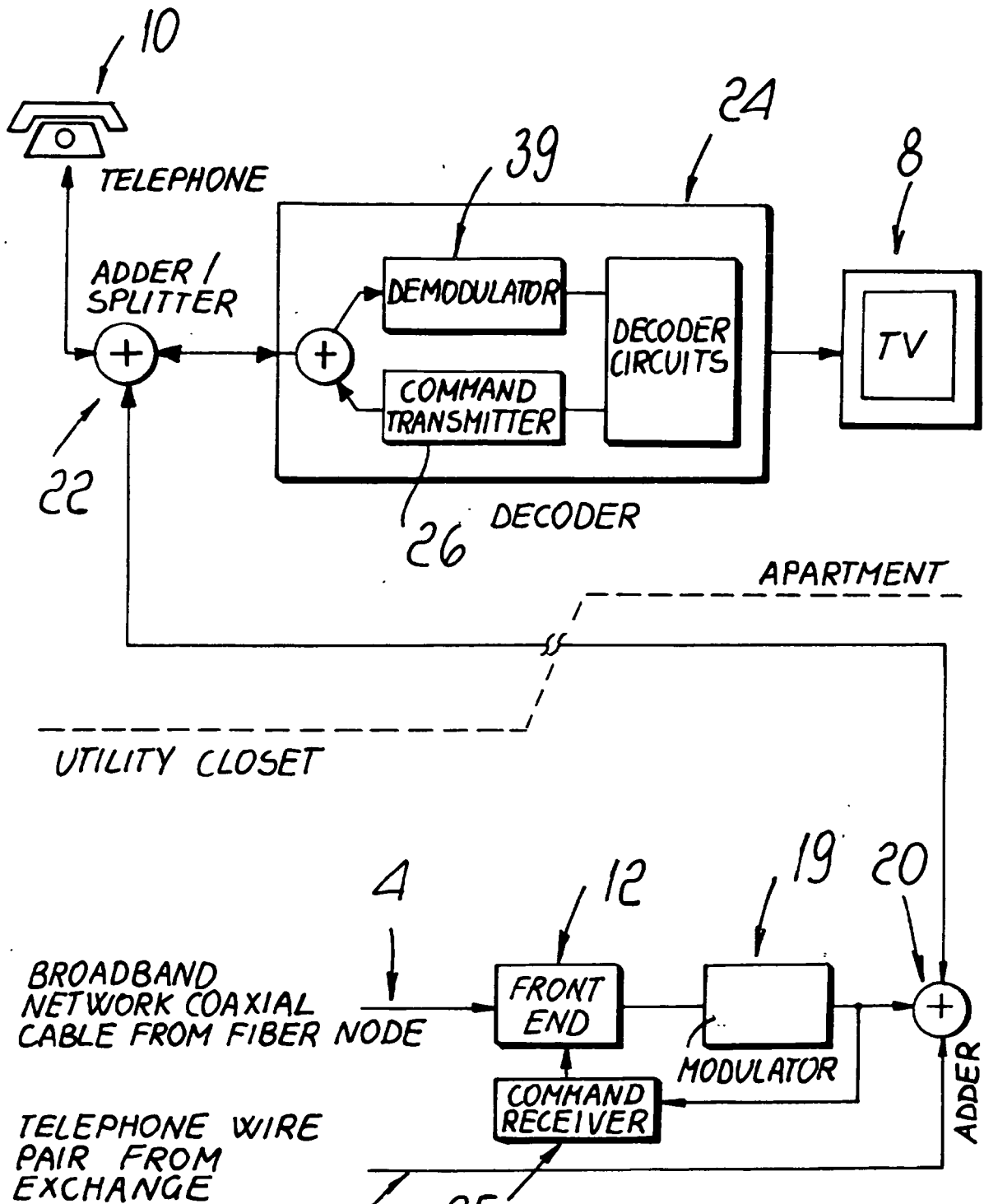


FIG. 5



9
25
FIG. 6

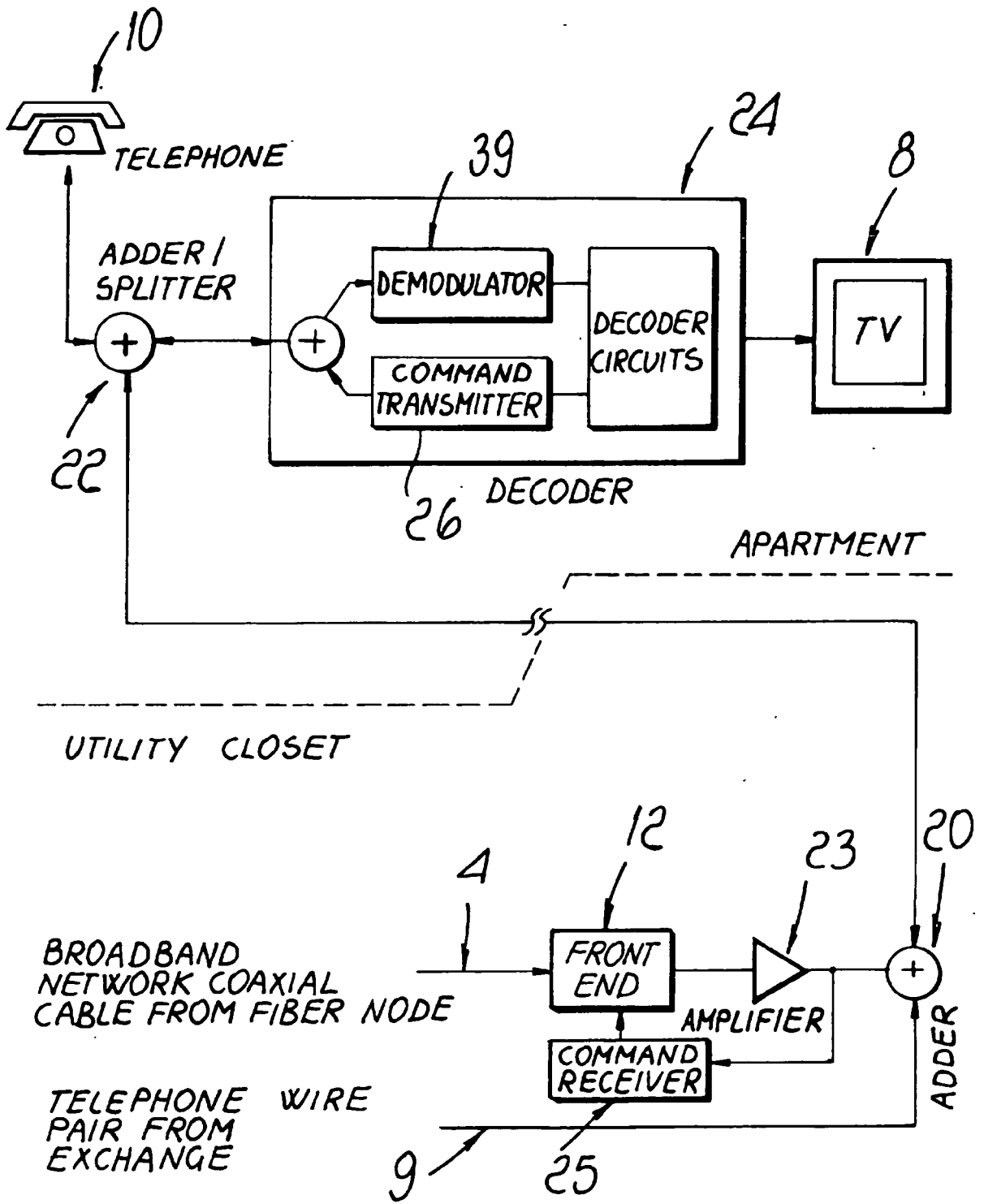


Fig. 7

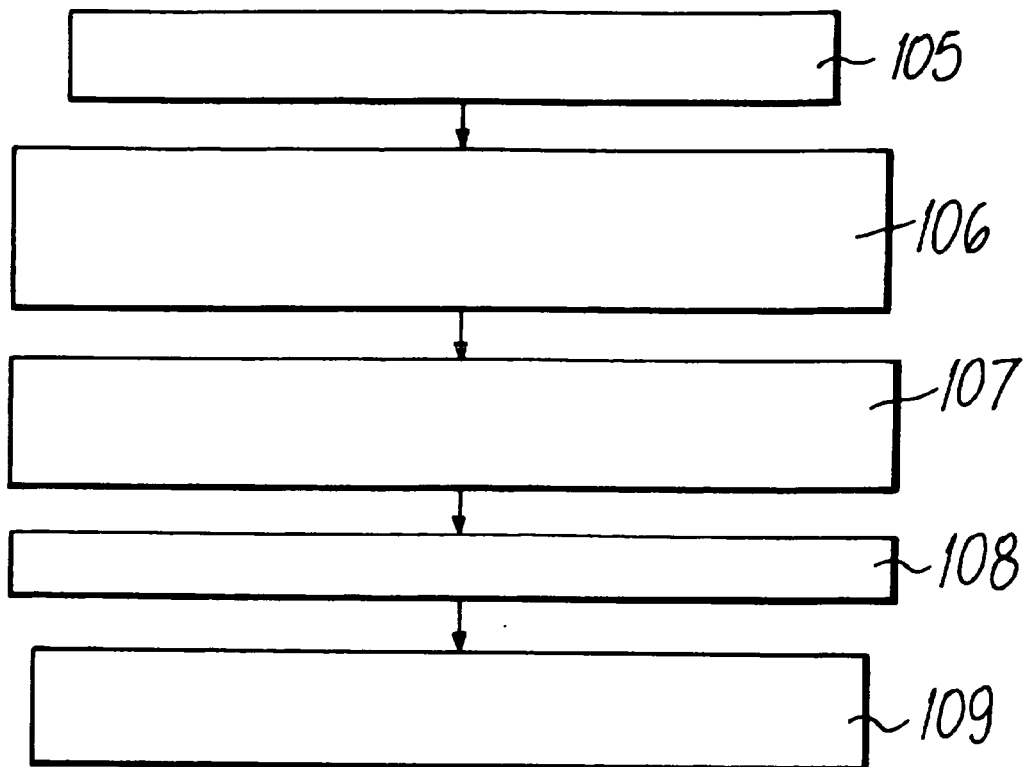


FIG. 8

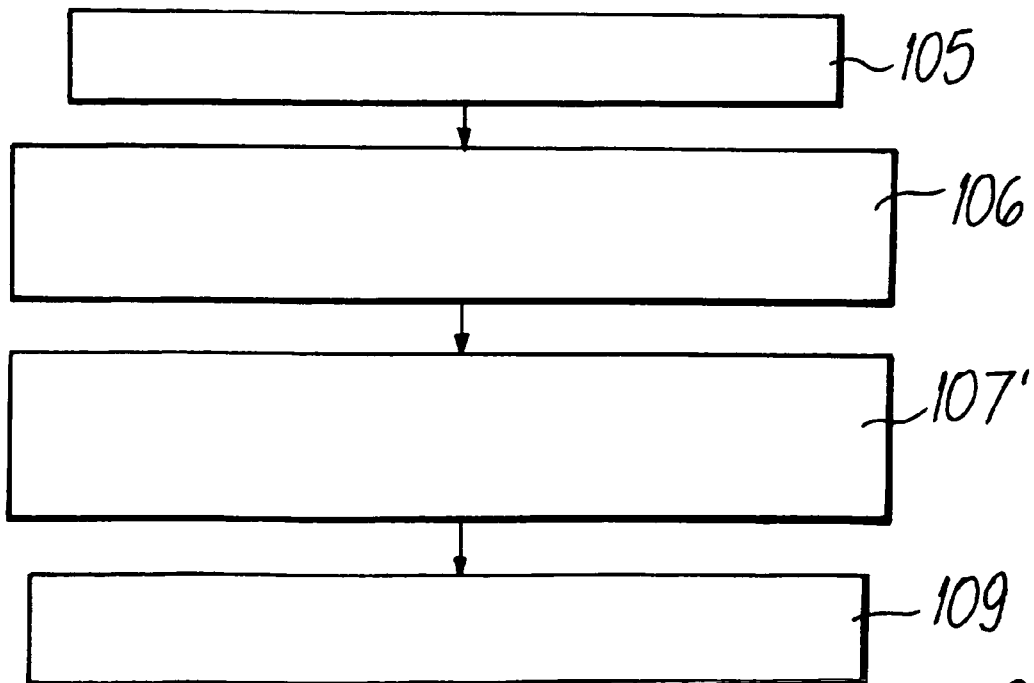


FIG. 9