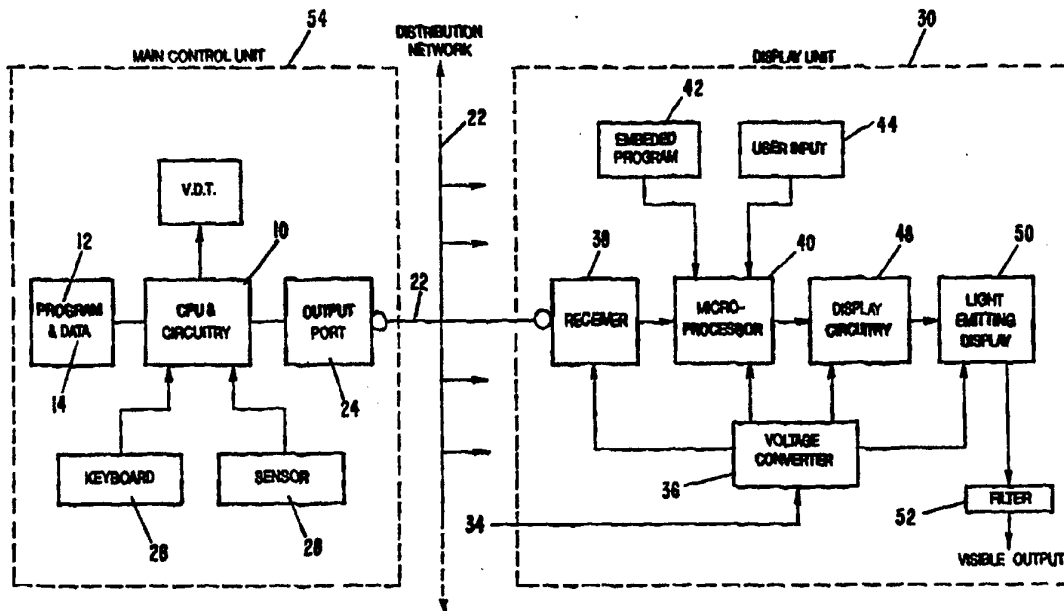




INTERNATIONAL APPLICATION PUBLISHED UNDER THE PATENT COOPERATION TREATY (PCT)

<p>(51) International Patent Classification ⁶ : A63J 5/10, H04H 1/00, H04N 5/44, G03B 21/26</p>	<p>A1</p>	<p>(11) International Publication Number: WO 95/07122 (43) International Publication Date: 16 March 1995 (16.03.95)</p>
<p>(21) International Application Number: PCT/US94/10122 (22) International Filing Date: 9 September 1994 (09.09.94) (30) Priority Data: 08/120,044 10 September 1993 (10.09.93) US (71) Applicant: FIGARO SYSTEMS, INC. [US/US]; 1209 Vitalia Street, Santa Fe, NM 87501 (US). (72) Inventors: MARKLE, Patrick, G.; 1209 Vitalia Street, Santa Fe, NM 87501 (US). WEBB, Geoffrey, J., H.; 322 West 57th Street No. 31p, New York, NY 10019 (US). ERKMAN, Ronald, E.; 1535 Richmond Road, Staten Island, NY 10304 (US). (74) Agent: ARMIJO, Dennis, F.; Armijo, Baca & Torres, Suite B, 3811 Atrisco Drive Northwest, Albuquerque, NM 87120 (US).</p>		<p>(81) Designated States: AU, CA, CN, JP, European patent (AT, BE, CH, DE, DK, ES, FR, GB, GR, IE, IT, LU, MC, NL, PT, SE). Published <i>With international search report. Before the expiration of the time limit for amending the claims and to be republished in the event of the receipt of amendments.</i></p>

(54) Title: ELECTRONIC LIBRETTO DISPLAY APPARATUS AND METHOD



(57) Abstract

The disclosure is directed to an apparatus and method for the presentation of a performance script (16) available in the original language or multiple translations. The electronic libretto comprises a main control unit (54) containing custom programs (12) comprising text (14) of the performance in different languages. Text (14) is sent through distribution system (22) to display units (30). The text (14) is displayed in the language selected by the user via language display switch (118) simultaneously with the live show or cinema. In addition, other visual information such as scores and advertisements can be transmitted to display units (30).

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ELECTRONIC LIBRETTO DISPLAY APPARATUS AND METHODTechnical Field:

5 The invention relates to communication systems, and more particularly to a communication apparatus and method for broadcasting translations by visual means of performances both live and recorded in several languages.

Background Art:

10 The current state of the art for displaying translations of a performance, either live (as in theater or opera) or recorded (as in cinema or television mediums) is by displaying a single translation upon a surface within the field of vision of the audience. The "super titles" used in opera are usually
15 in the language commonly spoken at the site of the performance. Film and television use "subtitles" which are superimposed over the presented image, different copies being made for specific languages.

The main problem with all of these systems is that the
20 entire audience sees the translation whether they want to or not. Only one translation is feasible at a time and the displayed information can become very large and too complicated to comprehend with the needed rapidity. Many opera patrons are offended by translations, whereas many other
25 opera patrons find translations essential to their understanding and enjoyment of the performance.

It is, therefore, desirable to provide the patrons with an individual or group display unit which presents a translation in the language they wish to view and does not
30 obstruct the view or disturb patrons who do not wish to see the translations or other visual depictions of the performance.

U.S. Patent No. 4,763,291 to Schwaber, entitled *Remote Display for a Microcomputer*, is set up specifically for
35 displaying numeric data only. Further, the system described specifies a wireless distribution system. No mention is made of performances of one or several languages.

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U.S. Patent No. 4,820,167 to Nobles, et al., entitled *Electronic School Teaching System*, describes a method for transferring data between multiple teacher and student computers. The data is being sent in both directions (in both
5 broadcast and individual address form) whereas the present invention is broadcast only. While written data is transmitted, it is designed for teaching purposes only. Additionally, there is no disclosure relating to transmission of written translations into multiple languages.

10 U.S. Patent No. 4,516,156 to Fabris, et al., entitled *Teleconferencing Method and System*, describes a very complex system for the transmission of audio and visual signals in both directions between multiple sites. No mention is made of the transmission of written data. No mention is made of
15 broadcasting from one source to many receivers or of written translations.

While all of these inventions transmit data by electronic means to one or more remote receivers, none are designed to display text or graphics in one of several languages at each
20 of many remote receivers (displays) simultaneously.

DISCLOSURE OF THE INVENTION

In accordance with the present invention there is provided an apparatus and method for providing individual
25 users or groups the ability to view texts from performances such as opera. The apparatus of the invention comprises a main control unit for storing a preselected sequence of text in different languages; an apparatus for controlling transmission of sections of the preselected sequence of text;
30 structure for distributing the sections to remote sites; and a display for receiving the sections from the structure for distributing and displaying the sections in a language selected by a user.

The preferred apparatus for controlling the transmission
35 of sections further comprises a control code between the sections. The preferred control code comprises structure for designating a beginning of a section and structure for designating each different language in the section.

An alternative apparatus for controlling the transmission of sections comprises an apparatus for sensing an identifying structure on a film stock.

5 The preferred apparatus for distributing the sections comprises a primary distribution line and at least one secondary branch line. An alternative apparatus for controlling transmission of sections comprises tertiary branches.

10 The preferred apparatus comprises structure for isolating distribution signals. The preferred structure for isolating distribution signals comprises structure for isolating at least one secondary branch line from the primary distribution line. The preferred isolating structure comprises optical isolation.

15 As an alternative, the preselected sequence of text can comprise graphic information. The graphic information comprises graphic information selected from the group consisting of scores, images, diagrams, and combinations thereof.

20 An alternative display comprises a portable display. The preferred display comprises individual user displays.

The method of the invention comprises the steps of loading a main control unit with a preselected text in different languages; controlling an output of the main control
25 unit containing sequential sections of the preselected text; transmitting the output to at least one user display; selecting a language to be displayed; and displaying the sequential sections in the selected language.

30 The preferred step of controlling the output of the main control unit further comprises the step of providing a control code between the sequential sections. The preferred step of providing a control code comprises designating a beginning of a section and designating each different language in a section.

35 An alternative step of controlling comprises sensing an identifier on a film stock.

The preferred step of distributing comprises providing a primary distribution line and at least one secondary branch

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line. The step of distributing can also comprise the step of providing at least one tertiary branch.

The preferred method comprises the step of isolating distribution signals. The preferred step of isolating
5 comprises isolating at least one secondary branch line from the primary distribution line.

The preferred step of isolating also comprises providing optical isolation.

An alternative step of loading a main control unit also
10 comprises loading graphic information.

The graphic information loaded comprises graphic information selected from the group consisting of scores, images, diagrams and combinations thereof.

The preferred step of displaying comprises providing
15 individual user displays.

The primary object of the present invention is to provide performance patrons with an individual or group display unit which presents a translation in the language they wish to view.

20 It is another object of the present invention to restrict the display output so that it is visible clearly to that specific individual user or group.

Yet another object of the present invention is to provide users with the possibility of seeing the musical score as it
25 is played or other graphic-based information.

The primary advantage of the present invention is that individual users can utilize the system without interfering with the enjoyment of others who do not wish to use the system or to be aware of its use by others.

30 Another advantage of the present invention is that each individual member of an audience can choose one of many translations of the current performance.

Yet another advantage of the present invention, when applied to cinema, is that one master copy of the film with
35 all translations desired encoded upon it can be duplicated and sent to any venue where, with the appropriate equipment, any of the included translations can be accessed by individual patrons.

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Another advantage is that people with disabilities or physical restrictions have access to translations and other visual information.

Other objects, advantages and novel features, and further scope of applicability of the present invention will be set forth in part in the detailed description to follow, taken in conjunction with the accompanying drawings, and in part will become apparent to those skilled in the art upon examination of the following, or may be learned by practice of the invention. The objects and advantages of the invention may be realized and attained by means of the instrumentalities and combinations particularly pointed out in the appended claims.

BRIEF DESCRIPTION OF THE DRAWINGS

The accompanying drawings, which are incorporated into and form a part of the specification, illustrate several embodiments of the present invention and, together with the description, serve to explain the principles of the invention. The drawings are only for the purpose of illustrating a preferred embodiment of the invention and are not to be construed as limiting the invention. In the drawings:

Fig. 1 is a block diagram of the preferred embodiment of the present invention;

Fig. 2 is a schematic diagram of the distribution apparatus and method;

Fig. 3 is a schematic of a typical data packet;

Fig. 4 is an exploded view of the preferred display apparatus;

Fig. 5 is an exploded view of an alternative display apparatus;

Fig. 6 is a flowchart of the main control unit program; and

Fig. 7 is a flowchart of the display unit embedded program.

BEST MODES FOR CARRYING OUT THE INVENTION

This invention relates to a method for displaying simultaneously at a number of individual locations a user

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selected translation of a performance, broadcast to all locations at a particular instant during the performance.

The electronic libretto apparatus and method of the present invention comprise hardware components and associated software to provide a user with the ability to view a selected score or text of an opera, for example, on an individual or group display unit in a language selected by the user. The invention is particularly useful in live theater, live opera, cinema, television and other like performances and media.

10 The preferred apparatus and method is shown in Fig. 1. There are three major sections to this preferred embodiment: main control unit 54, distribution network 22 and display unit 30. Computer 10 is loaded with custom program 12 containing text 14 of the particular production to be displayed simultaneously with the live show or cinema. In addition to the text 14 of a production, other visual information can be loaded such as scores, advertising and messages. Program 16, which is shown in Fig. 6, collects the next line 18 of each language to be displayed by inserting "control code" 20 between individual sections. Program 16 then instructs computer 10 to prepare to transmit all of the next lines 18 sequentially into distribution system 22 via output port 24 and does so when the "supertitlist" (system operator) presses a selected key on computer keyboard 26. In an alternative embodiment, such as for use in the cinema, the "go signal" would come from a special mark on the film stock which is detected by sensor 28 mounted on the projector. Sensors of this type are well known in the art.

Distribution system 22 then transmits the lines of text 14 to display units 30. This can be done via network system 32 which comprises isolated distribution amplifiers and wires to each seat in the auditorium through electrical conduit or the like. A second electrical flex 34 can also contain wires which carry power supply voltage for each individual display unit 30. In an alternative embodiment, battery power supplies the display units.

The power supply voltage is regulated by voltage converter 36 into different voltages for use within the

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display circuitry. Voltage converter 36 supplies power to receiver 38 which converts the transmitted signal over network system 32 to a form compatible with the display circuitry. Voltage converter 36 also supplies power to microprocessor 40 which upon being energized runs embedded program 42. A flow diagram for embedded program 42 is depicted in Fig. 7. Embedded program 42 instructs microprocessor 40 to examine user input 44 and signal input from distribution system 22 to receiver 38 and passes information to be displayed to display circuitry 48 which in turn causes the selected information to be presented by light emitting display 50. The visible output is modified by filter 52 and can then be seen by user.

Fig. 2 is an electrical schematic of the isolated distribution system 22. Source signal 60 is sent to transmitter node 62 where it is converted and broadcast over network 64. The broadcast signal is received by displays 30 and repeater nodes 66. Power supply 68 supplies power to these units connected directly to immediate network branch 64 only. Receiver 70 is isolated from transmitter 72, and therefore no electricity can flow between different branches of the network 74, 76, and 78, thus protecting the distribution network 22 from electrical surges and spikes.

Fig. 3 shows a typical data packet which is broadcast over the distribution network 22. Data package header 80 is a sequence of reserved characters which indicate that a data packet starts at this point. The next character is a header character 82 which indicates that all the following characters up to the next header character 84 are data 86 for a first language. Headers 84 and 88, and data strings 90 and 92, of second and third included languages are added sequentially to the data packet. The number of headers and data strings are dependent on the number of languages to be transmitted. The last character is an end of transmission character 94 which indicates the end of the data packet.

In another embodiment a system of fiber-optic cables are used to distribute the signal through distribution amplifiers and wires to each seat in the auditorium.

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Another embodiment is to use a wireless distribution method utilizing electro-magnetic radiation.

In the preferred apparatus as shown in Fig. 4, the theater patron plugs display unit 30 into a receptacle mounted on or about the seat (not shown), permitting the unit to draw power to activate itself and receive data via the distribution system 22. The preferred display unit 30 comprises a back part of case 100, front part of case 102, cord 104 with a multi-pin plug 106, an apparatus to reduce convert the voltage of the data transmission to a level compatible with the integrated circuitry (not shown), an alpha-numeric display 108 which is capable of displaying selected characters such as the ASCII range of characters, international characters, Cyrillic characters, Hebrew characters, katakana characters and several custom characters which can be defined and used as needed, microprocessor 110, voltage regulator 112, switch 114 for changing the display brightness from 100% to 0%, on-off switch 116 for turning the unit off and on, and language display switches 118 for selecting the language to be displayed.

The preferred display 108 is a Vacuum Florescent Display module (VFD), manufactured by Industrial Electron Engineers, Inc., or the like, which contains circuitry to display characters when instructed. A colored transparent plastic sheet 120 with a hardened scratch resistant and glare inhibiting surface, manufactured by Panelview Inc., or the like, can be placed over the display to increase character contrast, modify the character color and protect the glass VFD from damage. Transparent directional filters 122, manufactured by 3M Inc., or the like, which limit the angle at which the display can be seen can also be included. The filter components can be bound together into a filter module using die-cut double faced pressure sensitive self adhesive tape 124. Voltage regulator 112 which supplies +5 volts DC is connected to the VFD 108 and also to the microprocessor 110.

In an alternate embodiment as shown in Fig. 5, the display 30 is permanently mounted in a tubular rail 130 which is rigidly attached to the floor or other part of the theater

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(not shown). The theater patron turns on the display by using the on/off switch 116 and selects the desired language by pressing the appropriate language display switch 118. The display 108, display circuitry (not shown), microprocessor 110, voltage regulator 112, signal converter (not shown), switches 114, 116, 118 and connectors 132 can be combined onto one circuit board 134 which is attached to bezel 136 by mounting screws 138, or other appropriate mounting means. The filter unit is sandwiched between bezel 136 and display 108. The combined display, filter and bezel assembly is then attached to the rail by screws 138.

In an alternate embodiment, display unit 30 may be a head mounted display unit, manufactured by Reflection Technology Inc., or the like, which projects an image of the text to be displayed into the user's field of vision. The projected image appears superimposed on whatever the user is viewing. Such a system would plug into a multi-pinned receptacle mounted upon the seat in a manner similar to the preferred embodiment.

In another alternate embodiment, display unit 30 may be mounted on the seat in front of the user and projects an image onto a transparent sheet which is positioned in the user's field of vision in a manner so as to reflect the projected image towards the user's eyes. The display 30 may also be built into seat backs. The projected image will then be visible to the theater patron.

In yet another alternate embodiment, a display unit 30 may be attached to a television receiver to display translations simultaneously transmitted with the video signal or obtained from a video tape recorder in a similar manner to the way secondary audio programming is currently handled. The information can be converted into a form compatible with the preferred embodiment, and the viewer would then be able to access translations of the program in the language of their choice. The display could be either a separate module or integrated into the television receiver.

Although the invention has been described in detail with particular reference to these preferred embodiments, other

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embodiments can achieve the same results. Variations and modifications of the present invention will be obvious to those skilled in the art and it is intended to cover in the appended claims all such modifications and equivalents. The
5 entire disclosures of all references, applications, patents, and publications cited above are hereby incorporated by reference.

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CLAIMS

What is claimed is:

1. A simultaneous translation display apparatus comprising:
 - 5 main control unit means for storing a preselected sequence of text in different languages and optionally graphic information;
 - means for controlling transmission of sections of said preselected sequence of text and optionally graphic
10 information;
 - distribution means for distributing said sections to remote sites; and
 - display means for receiving said sections from said distribution means and displaying said sections in a
15 language selected by a user.
2. The invention of claim 1 wherein said means for controlling the transmission of sections further comprises control code means between said sections optionally
20 comprising means for designating a beginning of a section and means for designating each different language in said section.
3. The invention of claim 1 wherein said controlling
25 means comprises means for sensing an identifying means on a film stock.
4. The invention of claim 1 wherein said distribution
30 means comprises a primary distribution line means and at least one secondary branch line means and optionally a tertiary branch means.
5. The invention of claim 4 further comprises
35 isolation means for isolating distribution signals.
6. A method of displaying simultaneously at remote locations a user-selected translation of a work, the method comprising the steps of:

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- a) loading a main control unit with a preselected text in different languages and optionally graphic information;
- b) controlling an output of the main control unit containing sequential sections of the preselected text and optionally graphic information;
- c) transmitting the output to at least one user display;
- d) selecting a language to be displayed; and
- e) displaying the sequential sections in the selected language.

7. The method of claim 6 wherein the step of controlling the output of the main control unit further comprises the step of providing a control code between the sequential sections optionally comprising designating a beginning of a section and designating each different language in a section.

8. The method of claim 6 wherein the step of controlling comprises sensing an identifier on a film stock.

9. The method of claim 6 wherein the step of distributing comprises providing a primary distribution line and at least one secondary branch line and optionally comprising the step of providing at least one tertiary branch.

10. The method of claim 6 further comprising the step of isolating distribution signals.

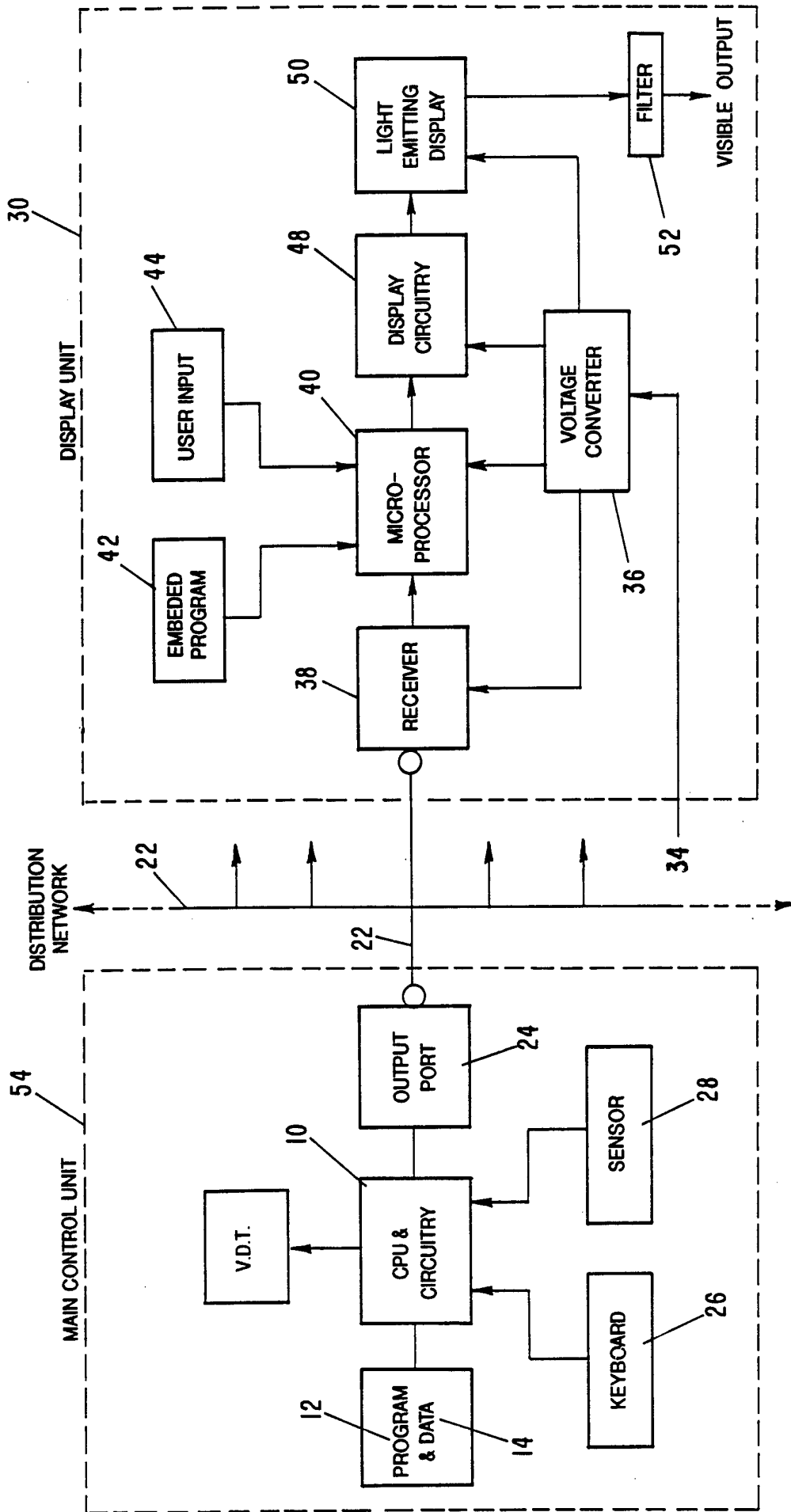


FIG -1

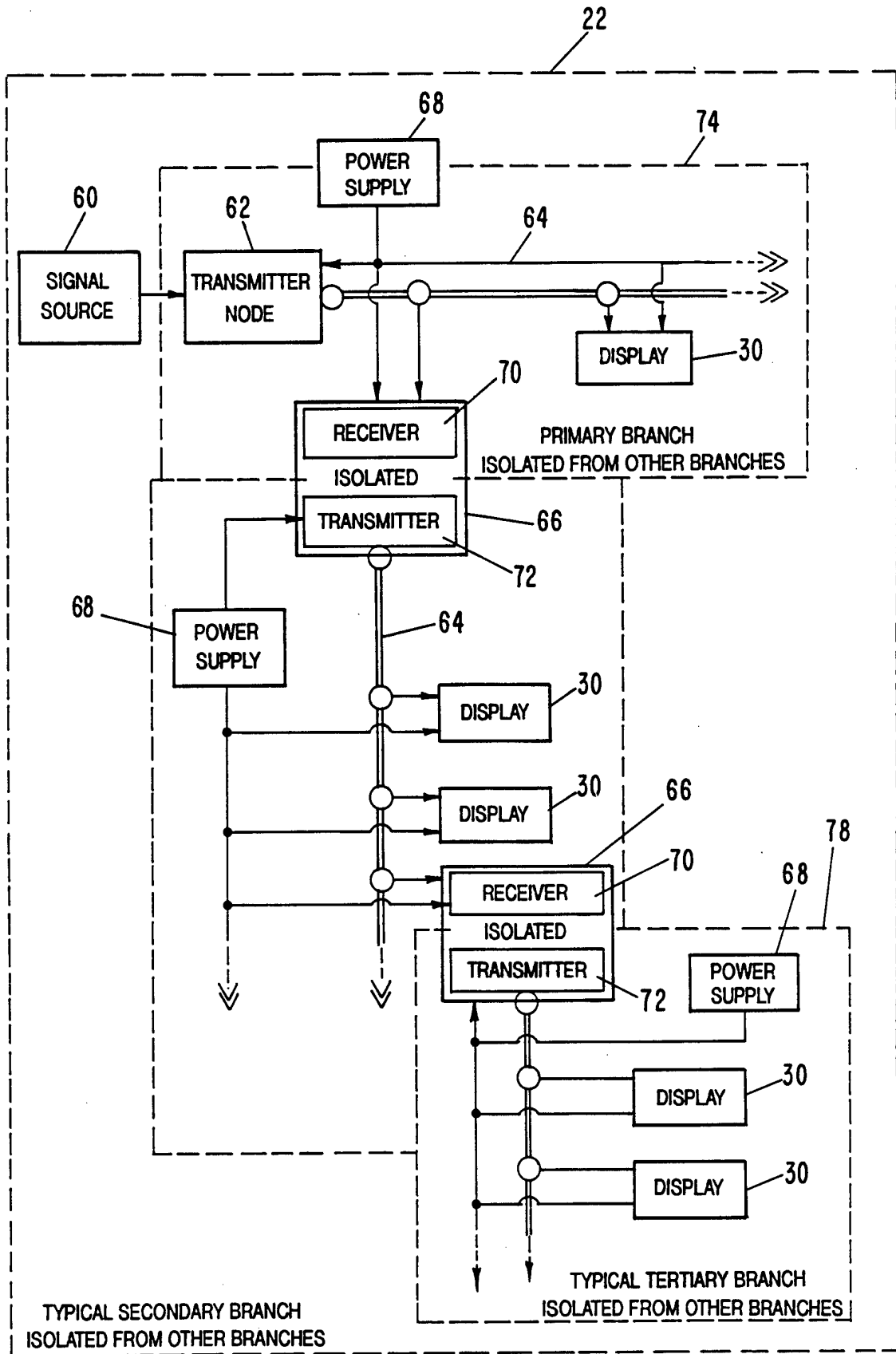


FIG - 2

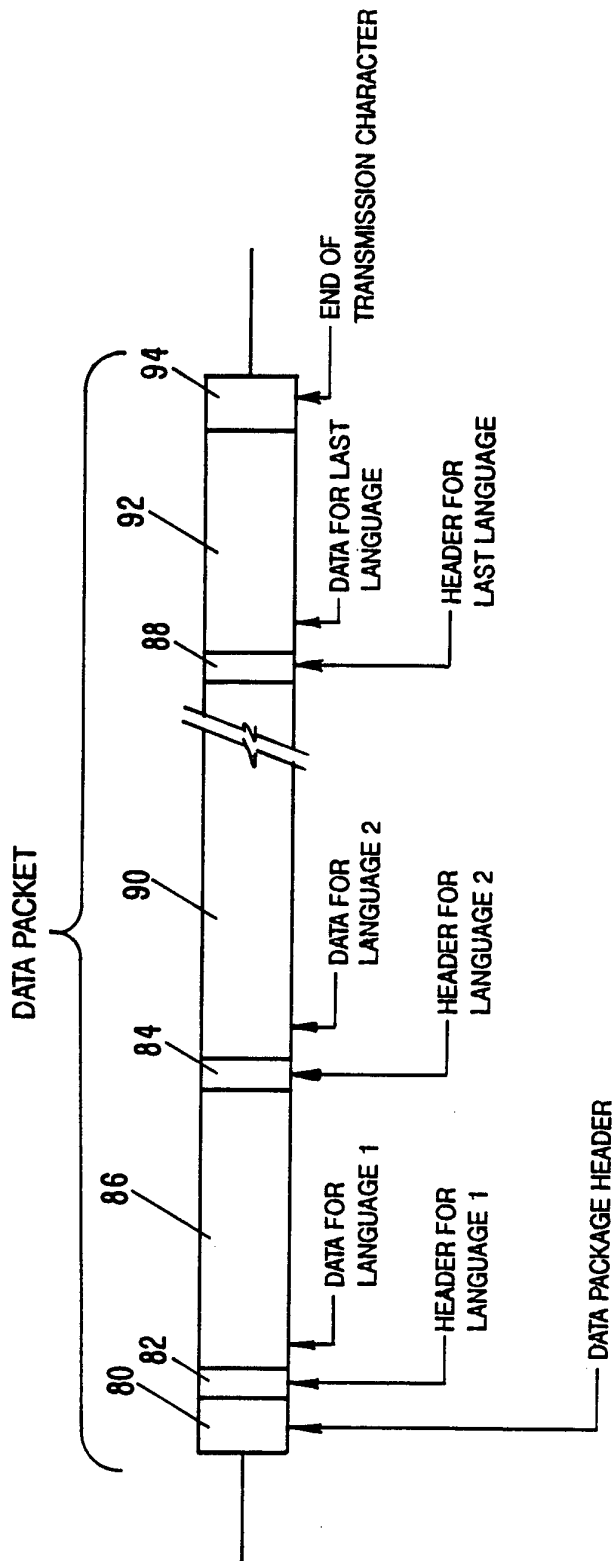


FIG - 3

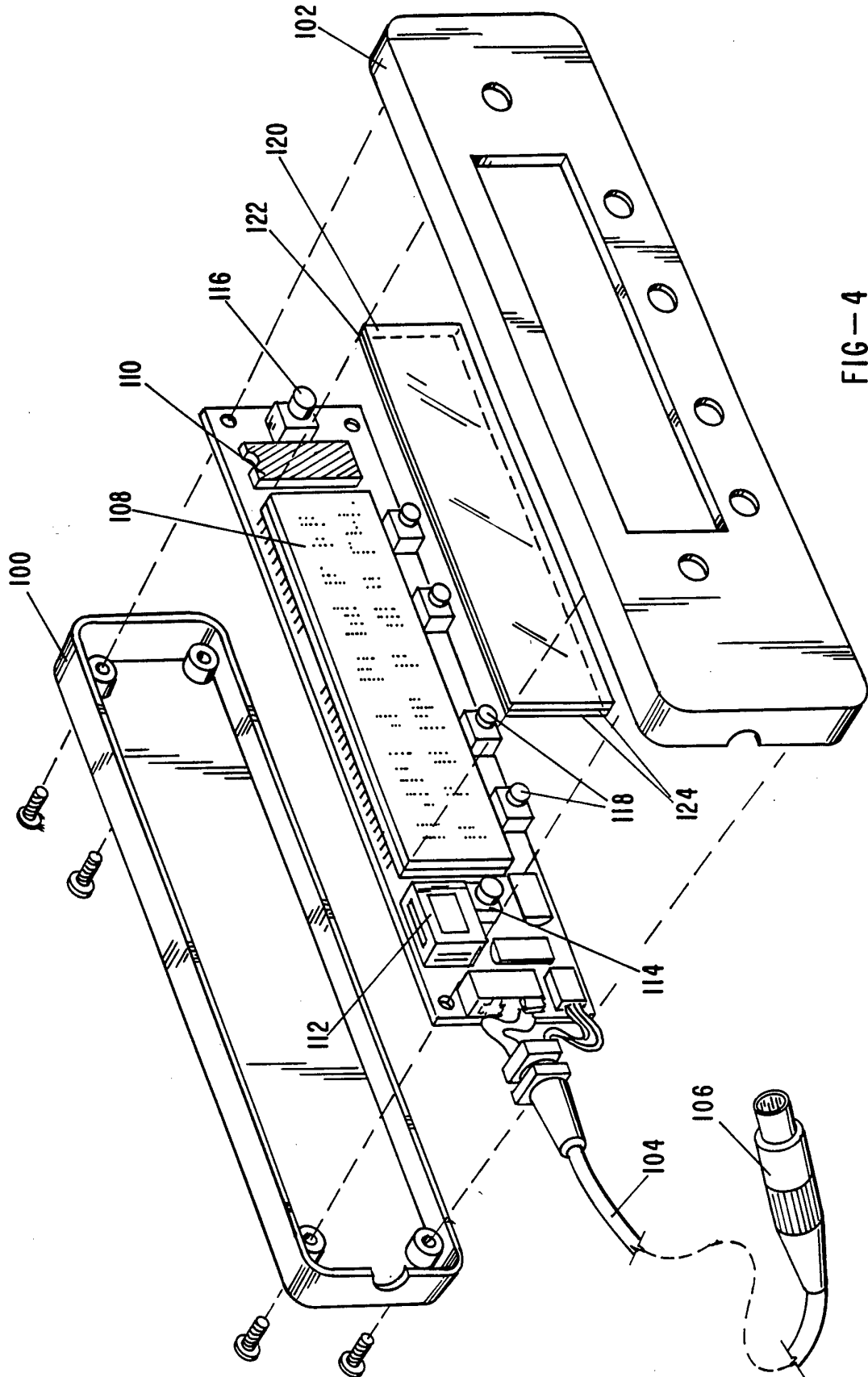


FIG-4

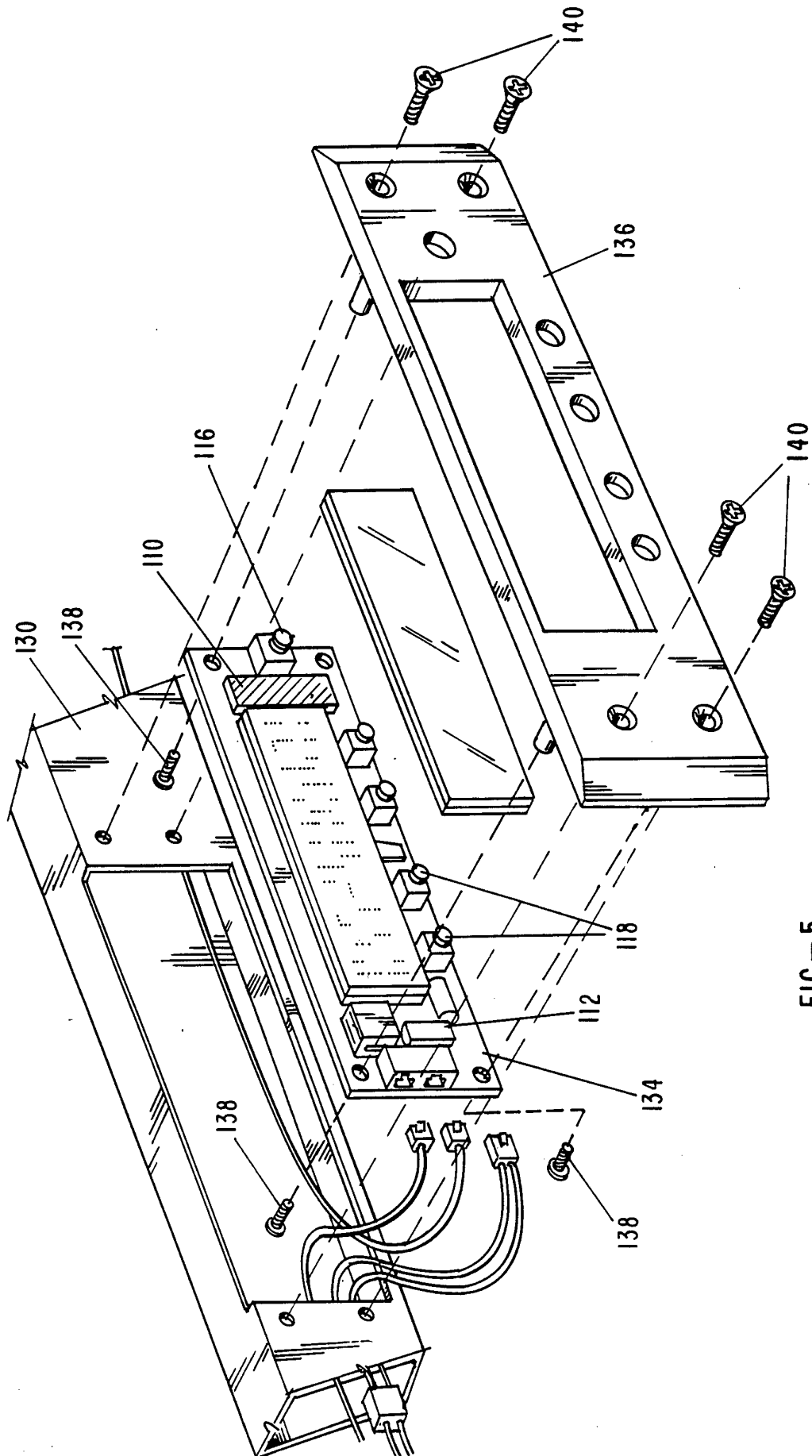


FIG-5

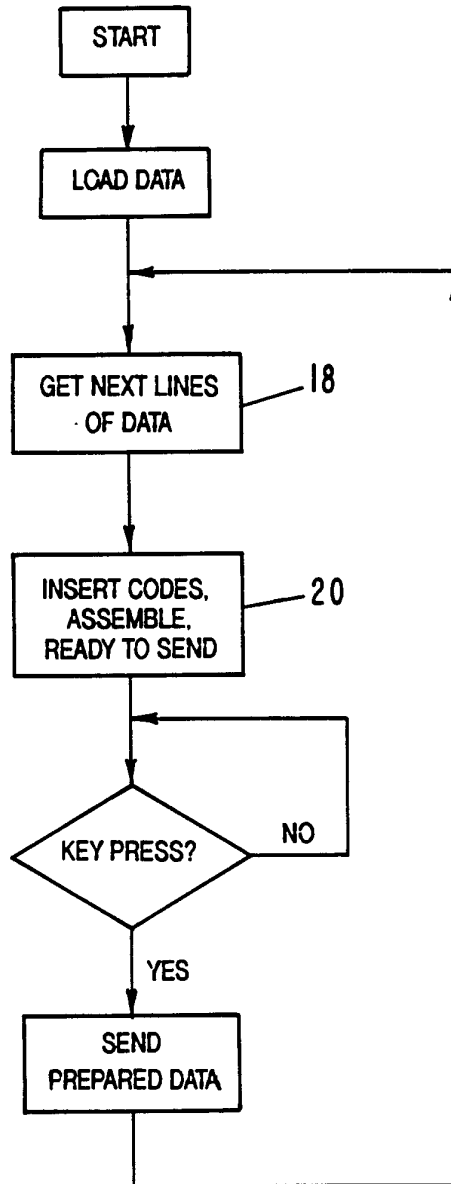


FIG - 6

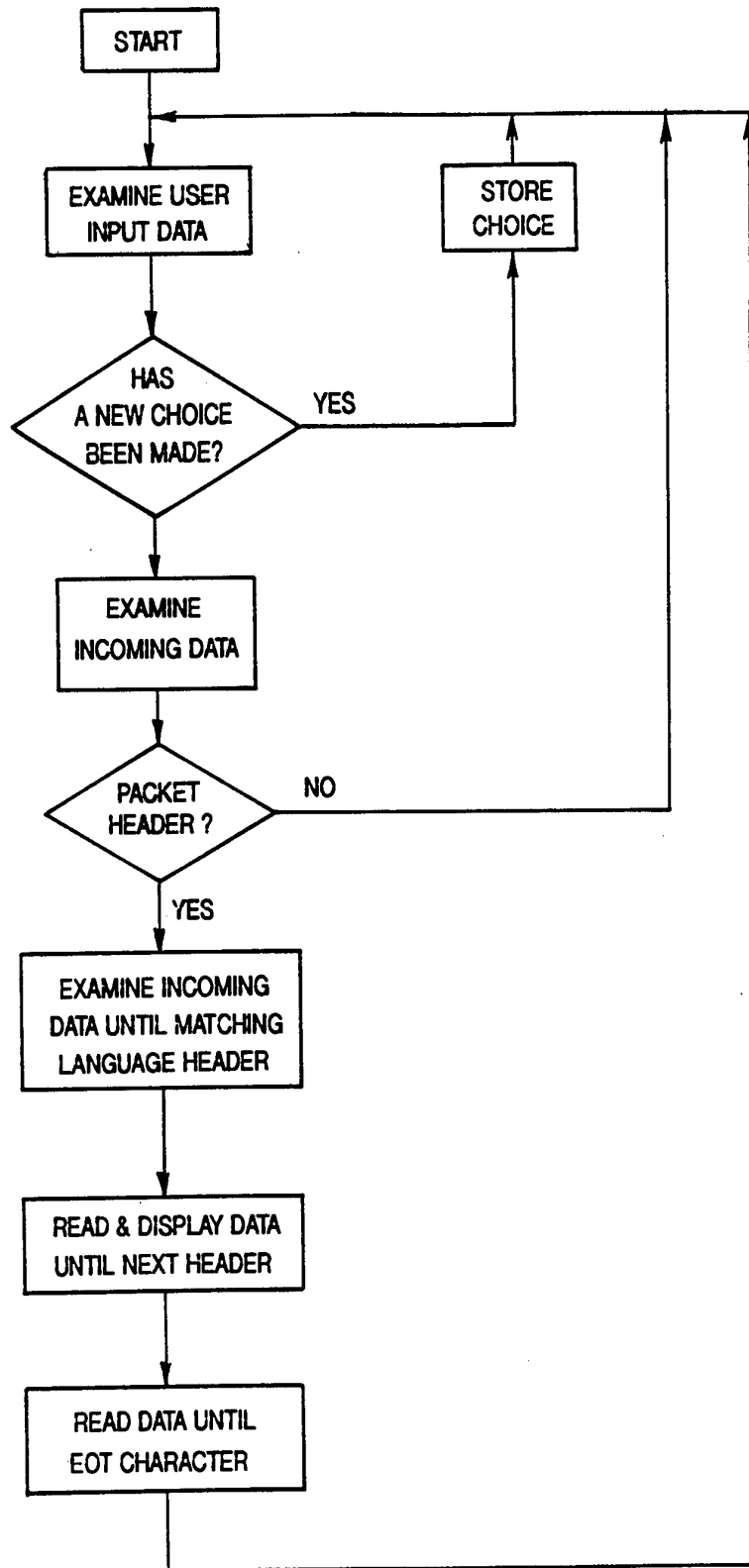


FIG - 7

INTERNATIONAL SEARCH REPORT

International Application No

PCT/US 94/10122

A. CLASSIFICATION OF SUBJECT MATTER
 IPC 6 A63J5/10 H04H1/00 H04N5/44 G03B21/26

According to International Patent Classification (IPC) or to both national classification and IPC

B. FIELDS SEARCHED

Minimum documentation searched (classification system followed by classification symbols)
 IPC 6 H04N A63J G03B

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched

Electronic data base consulted during the international search (name of data base and, where practical, search terms used)

C. DOCUMENTS CONSIDERED TO BE RELEVANT

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Y	see the whole document ---	2,3,7
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Y	EP,A,0 263 253 (RAI RADIOTELEVISIONE ITALIANA) 13 April 1988 see column 5, line 26 - line 32 ---	2,7
Y	EP,A,0 076 237 (STUFA V.) 6 April 1983 see page 1, line 11 - page 2, line 20 ---	3
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Patent family members are listed in annex.

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Date of the actual completion of the international search

4 January 1995

Date of mailing of the international search report

19.01.95

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INTERNATIONAL SEARCH REPORT

Interr. Application No

PCT/US 94/10122

C.(Continuation) DOCUMENTS CONSIDERED TO BE RELEVANT		
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