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(54) **FULLY AUTOMATED RADIO AND TV PROGRAMME SELECTION SYSTEM**

SYSTEM ZUR VÖLLIG AUTOMATISCHEN PROGRAMMAUSWAHL VON RADIO- UND  
FERNSEHSENDUNGEN

SYSTEME INTEGRALEMENT AUTOMATIQUE DE SELECTION DE PROGRAMMES  
RADIO/TELEVISION

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**Description**

This invention relates to a Fully Automated Radio and TV Programme Selection System. (Fully Automated Radio Disc Jockey System).

**BACKGROUND OF THE INVENTION:**

A radio disc jockey selects and lines up a record then prepares for his next speech input. When the music comes to the fade out he switches the microphone on and makes his announcement. Shortly before ending he starts the next song and finishes the speech during the introduction of the current song. Again he has to select and prepare the next record.

During this procedure, however, he faces a considerable amount of spare time. Moreover the actual choice of music lies often with another person, the programme producer.

**DESCRIPTION OF RELATED ART:**

Radio programming systems have been invented to function automatically when live broadcasting cannot be scheduled.

A system according to the preamble of Claim 1 which is described in GB,A,1 088 145 provides an alternate selection of music and commercial inputs from two different playback sources. The programme flow will be interrupted by dead air (no sound at all) between the various inputs because this system uses silence detectors as sole monitoring means.

Most prior art systems do not safeguard against possibilities of "dead air" unless they are equipped with complicated feedback arrangements which restrict such systems to use only specially recorded tapes on expensive multitrack equipment. Another shortcoming of prior art systems is the inflexible choice of announcements, usually only restricted to a station ID. Another system of the above type is known from US,A,3 896 490.

Since only two sources may be activated alternately, those systems are not flexible in respect of programme structuring and source selection.

A system to overcome this disadvantage is known from DE,A,3 836 597 which includes means for automatically initiating the selection and compiling of items in accordance with a preset programme schedule. A "schedule" would determine the exact running order of individual inputs.

RCS Selector by Radio Computing Services New York is a software application assisting programme producers to design such schedule according to a programme policy by compiling manually inserted data about programme items and printing out a programme schedule according to certain user defined criteria, programme policy. There are no provisions made however to combine the RCS system with any of the aforementioned.

Another shortcoming of the current state of art is that all but the first above mentioned systems require some form of operator entered information about the programme-input-items, be it in form of pilot tones, descriptive data or a fully prepared programme schedule.

**OBJECTS OF THE INVENTION**

It is the object of the present invention to provide a novel Radio and Television Programme Selection System which is able to select, mix and crossfade different programme items such as music and information inputs which are stored on different playback sources characterised by

a programme selector comprising means to compile items according to a user defined programme policy without having prior data about the item itself, without a detailed programme schedule provided and without the item having specific characteristics such as pilot-tones,

whereby the programme selector contains a combination of different monitoring means which do not require any additional signal feedback from a music signal source to a controller of the system other than the actual recording of the music which is broadcast; and

means to select different information items sorted by category, according to the specified policy.

**DESCRIPTION OF THE INVENTION**

According to the present invention there is provided a Fully Automated Radio and TV Programming System which mixes music with different speech items utilizing both pilot tones and volume level detectors as well as timers. Infor-

mation inputs can be selected from several sources.

The music comes from one source, e.g. record, tape, compact disc, in a running sequence of several songs. The other programme inputs such as disc jockey announcements, commercial intervals, news, will be prerecorded onto several tapes.

5 Accordingly the entertainment programme input (music) is separated from the information input (speech).

The Fully Automated Radio and TV Programming System will mix the two programme parts in the following pattern:

When the music (entertainment source) starts to fade out, a speech tape switches on, enabling another programme source such as information to follow or to be mixed over the outro of the music; e.g. an announcer speaks over the outro of a song.

10 Seconds after the actual end of the song (the music / entertainment input) the music / entertainment source will be stopped.

When the speech (information input) comes to its end, the music (entertainment source) switches on, enabling music to follow the speech or to be mixed under the outro (fade out) of the speech; e.g. the announcer finishes his last sentence over the intro of the next song.

15 After the actual end of the speech (information input) its tape drive will be stopped.

When the music (entertainment source) starts to fade out again, the process as described above will be repeated.

The Fully Automated Radio and TV Programming System energises and de-energises playback sources and compiles their outputs by fading and cross-fading to feed a transmitter (TX) or an in-house tanoy network.

## 20 DESCRIPTION OF THE DRAWINGS

A specific embodiment of the invention will now be described by way of example, with reference to the accompanying diagrams.

The Fully Automated Radio and TV Programming System consists of five main parts which are interconnected:

25

The Emergency Music Start Function (abbreviated EMS) Fig 1;

The Music Control Board (abbreviated MCB) Fig 1;

The Speech Control Board (abbreviated SCB) Fig 2;

The Music Play Back Counter (abbreviated MPC) Fig 3;

30

The Audio Matrix (audio mixer with preamplifier) which is not shown.

The MPC is an optional feature of the Fully Automated Radio and TV Programming System.

## DESCRIPTION OF THE PREFERRED EMBODIMENT:

35

The **Audio Matrix** is an automatic audio mixer with preamplifiers. The music / entertainment signal coming from its source will be fed through a control at the Music Control Board (Fig 1 input X35/1 and X35/2) and then diverted to the stereo music / entertainment input at the Audio Matrix (Fig 1 output X18). Furthermore the Audio Matrix has two separate inputs for track one and track two (right channel and left channel) for each tape machine connected to the speech / information input. The right speech channel carries five kilo hertz pilot tones to indicate several functions to the Speech Control Board (Fig 2 input X42). These will be described at a later stage.

40

The output of the right speech matrix will be supplied to the pilot tone decoder at the Speech Control Board (Fig 2 input X42). The left speech channel which carries the actual information input as a mono signal will be split and distributed to two matrices (stereo). One of the outputs of these matrices is sent to the left channel mixer the other to the right channel mixer. The purpose of these mixers is to mix the music / entertainment inputs with the speech / information inputs.

45

The mixer has a third input, named *Volume Control*. This input is controlled by the Speech Control Board (Fig 2 output X22). If the Volume Control input is low the speech / information input will be closed, and the music / entertainment input will be fully opened. If the Volume Control input is high, the speech / information input will be fully opened and the music / entertainment input will be reduced in volume. The level of reduction is variable and can be preset with a potentiometer.

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The mixer ( TX ) outputs deliver the full radio (lf = audio / video) signal to the transmitter.

**The Emergency Music Start Function** is shown in the Music Control Board diagram (Fig 1). The Emergency Music Start Function is a pure back up control to reset the whole Fully Automated Radio and TV Programming System, should a fault occur. Monitoring the left TX output (Fig 1 input X20), the Emergency Music Start Function will trigger off if it notices *dead air* (meaning no signal at all) for more than 17 seconds.

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*Dead air* might appear e.g. if a tape drive was not loaded, pilot tones were forgotten to be recorded, tapes develop a mechanical fault or through a fault in the Fully Automated Radio and TV Programming System itself, to mention just

a few.

The main purpose of the Emergency Music Start Function is to restart the music / entertainment source; therefore the Emergency Music Start Function will give a start signal to the Music Start input of the Music Control Board. (Fig 1: Switch S15 Diode D15)

If a Music Play Back Counter is connected to the Fully Automated Radio and TV Programming System an Emergency Music Start Signal will also be sent to the Emergency Music Start Input at the Music Play Back Counter (Fig 1 outputs X24/6, X24/7 and Fig 3 inputs X24/6, X24/7). This might reset / set the Music Play Back Counter depending upon the operational stage it is in. This will be described in the chapter about the Music Play Back Counter.

Should *dead air* occur as a result of a fault in the speech / information source the Emergency Music Start Function will stop and rewind the relevant tape. (A signal will be sent from Fig 1 output X46 to Fig 2 input X46) The Emergency Music Start Function can be switched off with switch S15 (Fig 1) (e.g. for test purposes).

#### Technical description of the Emergency Music Start Function

The Emergency Music Start Function works basically on the same principles as the Volume Level Indicators which will be described later. (for reference refer to the Volume Level Indicator block diagram as shown on Fig 1 top left)

The incoming signal is regulated by a potentiometer (pre set), then put through a rectifying amplifier, a conventional OP (e.g. LM 741) with the non inverting input connected to ground (minus pole). This signal will be sent to the prime input of a 1:2 transformer. The transformer output will be rectified with a diode. This signal will be directly distributed to the non inverting input of another OP (one in each box "50%" and "100%", Fig 1), the other transformer output is connected with the inverting OP input. Parallel to the OP inputs is a capacitor and the signal can be regulated by a variable resistor parallel to the capacitor. The non inverting input of the OP is also connected with a resistor to KP (plus pole) and a capacitor to ground (minus pole). The offset / control voltage input of this OP will also be connected to ground.

The OP output will be delivered to two transistors which convert this positive signal to a negative potential at the RC-combination of a following timer, providing the Emergency Music Start Function input has a sufficiently loud signal. Should the signal strength fall below the preset level, the RC- combination at the timer will start to load up. If the signal strength fails to improve within the RC-combination's charge up time, which is less than one second, the timer output will fall from a positive to a negative potential.

The outputs are feeding conventional inverters (Fig 1 inverters following boxes "50%" and "100%") which distribute the relevant signals. The two timers are set / started by the Music Start (Fig 1 input X45) impulse coming from the Speech Control Board (Fig 2 output X45).

At the Emergency Music Start Function the timer is an Integrated Circuit which is self resetting. A further timer follows because the time between the impulse and the reset is too short to trigger a relay. The second timer's only purpose is to give a sufficiently long trigger impulse, inverted to the first timer's output.

The output of the second timer goes to switch S15 (Fig 1) and from there to the Music Play Back Counter (Fig 1 output X24/6 and X24/7, Fig 3 input X24/6 and X24/7) to the Speech Control Board (Fig 1 output X46, Fig 2 input X46) , through a diode to the Music Start input of the Music Control Board (Fig 1) and to relay E23 (not shown on the diagram); this is for external connection.

Relay E23 might load compact disc players or tape machines which need a preprogrammed running order (like the Sony MTL 10 Cassette Player). For this purpose one can connect a *Five Cassette Loader* which triggers five or two (depending on its switch setting) different switches at the relevant machine, one after another with a pause in between, if it receives one Emergency Music Start trigger.

Relay E23 might also trigger alarm systems to alert radio station staff of the occurrence of faults during the programme.

The main purpose of the **Music Control Board** (Fig 1) is to monitor the music / entertainment source. There are three different possibilities (modes) to monitor the song. It can be done either

- through monitoring the volume level of the right channel (The function of the *Volume Level Indicators* was described in the paragraph about the *Emergency Music Start* Function); (Fig 1 top right: *Volume Level Indicator*);
- or by an external controller (e.g. a computer with a programmed database of the song order and duration in connection with a timer); (Fig 1 input X44);
- or by pilot tones on the right channel of the source (Fig 1 input X35/2 to S11 to Pilot Tone Decoder shown in Fig 1 bottom centre left) while the left channel carries a mono signal (Fig 1 input X35/1). Using the pilot tone operation mode, one would require a three track source for stereo operation because one track is needed for the pilot tones.

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The monitor will signal twice:

- Once at the 50 % Volume Stage, which indicates the fade out / ending of the song (entertainment input). (Fig 1 inverter following Box "50%" top centre left).
- Once at the 100 % Reduced Volume Stage, which indicates the actual end of a song. (Fig 1 inverter following Box "100%" top centre left).

These stages are either

- automatically set by the Volume Level Indicators (Fig 1 top left),
- or by the external controller (Fig 1 input X44),
- or set by the prerecorded pilot tones on the source, according to the mode in which the monitor is programmed (Fig 1 X35/2, S11, PT Decoder).

This can be done by altering the switches S9 and S10 (Fig 1) which are shown to be set in the Volume Level Indicator Control mode.

The timing for the actual command to indicate the 50 % Volume Stage is variable and might be during or after the outro of a song. It relates to the sensitivity setting of the 50 % Volume Level Indicator, the pilot tones or the external commands. (Fig 1) The 50 % Volume Stage gives a Start Speech Signal to the Speech Control Board, (Fig 1 output X43, Fig 2 input X43) meaning it starts a speech / information tape, as well as giving a set / count signal to the Music Play Back Counter (Fig 1 output X24/9, Fig 3 input X24/9).

The 100 % Volume Stage

- switches the link off to the Audio Matrix from the right channel of the music / entertainment source (Fig 1 marked box below E21, showing transistorised switch) and
- switches the link off to the Audio Matrix from the left channel of the music / entertainment source if switch S8 is set accordingly (Fig 1 marked box above E21, showing transistorised switch), and
- switches the link off to the Audio Matrix (Fig 1 X35/1 & X35/1 to X18) from the whole music / entertainment source if switch S8 (Fig 1) is set accordingly and switches S9 and S10 (both Fig1) are in pilot tone operation mode (two track recorded source) and
- leads the right channel of the music / entertainment source to the pilot tone decoder and (Fig 1 input X35/2 to S11 to decoder)
- triggers an opto isolator for external signalling (Fig 1 OK1) and
- starts the timer facility with I14 (Fig 1) which stops the source after 3 or 4 seconds according to the setting of switch S14 (Fig 1) (*stop break*).

The source may not be stopped if its start / stop function is controlled by relay E22 (Fig 1). (E 22 gives the start as well as the Stop Command to Playback sources with single button control.) In this case the Pilot Tone Controlled Cassette Change Function with I 16 (Fig 1) might override the switch off command. This Function is designed for sources with long switch over times, eg from cassette one to cassette two or side A to side B (a typical machine of this kind would be the Sonv 10 Cassette Changer MTL 10 ).

During the 100 % Volume Stage the right channel of the music / entertainment source is lead to the pilot tone decoder (Fig 1 input X35/2 via S11). If it receives a 5 khz pilot tone before the timer facility with I14 stops the source, this function will override the timer. Relay E22 will then stop the source as soon as the Pilot Tone Controlled Cassette Change Function (Fig 1: I16) receives a second 5 khz tone from the right channel of the source unless a Start Music signal was received before from the Speech Control Board (Fig 2 output X45, Fig 1 input X45).

The Pilot Tone Controlled Cassette Change Function with I 16 (Fig 1) does not work in the pilot tone operation mode, set by switch S9 and S10. The pilot tones on tapes for sources with long switch over times can be recorded accordingly by omitting the pilot tone for the 100 % Volume stage at the end of the last song on the relevant side / tape. Instead it will be recorded at the beginning of the next side / tape exactly four seconds before the first song starts. (For

sources with fast switch over times, such as the operation with the Music Play Back Counter, this pilot tone will be recorded at the end of the last song.)

The pilot tone decoder (Fig 1) is protected by a delay which prevents it from receiving more than one impulse within approx. three seconds.

5 A further input of the Music Control Board (Fig 1) is the *Music Start* connection (input X45) which receives its signal from the Speech Control Board (Fig 2 output X45).

Such a signal will

- give a start signal to the Music Play Back Counter (Fig 1 output X24/6, Fig 3 input X24/6),
- 10 - and set (start) the Volume Level Indicators. (Fig 1 top left Box "*Volume Level Indicators*" set-input).

It will also start a timer. (Fig 1 top centre "80s Timer") For a duration of 80 seconds it overrides the level indicators (Fig 1 top left Box "*Volume Level Indicators*") and prevents the Volume Level Indicators from giving the *start speech* signal and from stopping the music / entertainment source.

15 This 80 seconds timer primarily protects the 50 % Volume Level Indicator from giving false signals during a song's intro. It can be switched off for test purposes or during pilot tone controlled mode with switch S13.(Fig 1)

Furthermore this timer will reset the counters I 14 / I 16 / I 18 (Fig 1) and keep them in that position for 80 seconds.

20 The *Music Start* signal will also trigger relay E22 provided the *Security Music Start* function with X 50 (Fig 1) indicates that the music / entertainment source is in stop position.

The *Security Music Start* Function (Fig 1 X50) is a safe-guard to prevent relay E22 (Fig 1) making a *Start* trigger while the connected drive is in operation, because such an additional *Start* signal would in fact be regarded as a *Stop* signal by the relevant play back source.

25 The *Security Music Start* Function requires an opto isolator (Fig 1 resistor X50) with its LED (light source) connected to the motor (or any other *play back on* indicator) at the playback-source, which is controlled by relay E22.

#### Other Special Functions:

Switch S11 (Fig 1 bottom left) cuts the pilot tone decoder off and connects it with a test input.

30 A high signal during Volume Level Indicator Control mode through Switch S12 (Fig 1 top centre input "Special Music Play") overrides the 50 % level indicator (Fig 1) and prevents it from giving the *start speech signal*. This function is useful when the music / entertainment source carries a prepackaged programme which does not require further speech / information inputs.

35 The input of switch S12 requires an opto isolator with its LED connected to a "*play back on*" indicator at the source, which plays the prepackaged programme. It should be connected in a way that the LED switches and stays off as soon as the prepackaged programme ends. This will let the Fully Automated Radio and TV Programming System resume automated programming.

40 The music / entertainment input can be played from various sources, provided these sources have electro-mechanically switched drives. The music / entertainment input is not limited to tape machines but can be connected to any signal source such as Compact Disc Players, Record Players, Radio Receivers to mention just a few.

Music / entertainment sources can either be controlled by relay E22 on the Music Control Board (Fig 1), or by individual Start / Stop Controls (Fig 1 X24/6 & X 24/8), or by the Music Play Back Counter (Fig 3).

45 Relay E22 gives both, the *start* and the *stop* commands. This can be used for one button only controlled Play Back sources. This option requires the use of the *Security Music Start* Function (Fig 1 X50) to prevent *Start* commands to stop the drive.

Two relays can be connected to (Fig 1 output) X24/6 and X24/8 to send a separate *Start* and *Stop* impulse to the music / entertainment source.

50 These two options have two great disadvantages. The relays control only one play back machine. This limits the capacity of programme length or requires special multi tape machines or expensive juke box alike Compact Disc or Record Players. The second disadvantage is that tapes, if used, have to be recorded right up to the very end to avoid *dead air space*. Lastly it is possible that certain tape or record changers need special impulses or commands, like those described in the paragraph about the *Pilot Tone Controlled Cassette Change Function*. Naturally an increased use of special commands reduce the reliability of a complex machine such as the Fully Automated Radio and TV Programming System.

55 The **Music Play Back Counter** was invented to increase the reliability of the Fully Automated Radio and TV Programming System, to simplify the music / entertainment recording process and to increase the capacity of the whole Fully Automated Radio and TV Programming System.

(Fig 1 output) X24/6 and X24/8 can be used to connect the Music Play Back Counter (Fig 3).

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Basically designed to run two or four (to be chosen by switch S19, Fig 3) auto reverse cassette drives, the Music Play Back Counter can also be used with two or four single direction drives but this does obviously decrease the capacity by half. To do so the switches S20 - S23 (Fig 3) have to be set to *single direction play back*. The operation description will be the same as for auto reverse drives in single direction mode.

5 If the Counter I 17 (Fig 3 top right) and its following controls leading to the Start (Fig 3 outputs 1-4> and Fig 3 outputs 1-4<), Stop (Fig 3 relay: STOP) and *Rewind* (Fig 3 outputs 1-4<<) relays are expanded, the Music Play Back Counter can be used with any amount of single or reverse direction drives, as long as their quantity is higher than two.

10 The music / entertainment tape machines used in conjunction with the Music Play Back Counter can be either CD, Reel To Reel or Cassette drives. In either case they should be equipped with electro-mechanically operated *Start*, *Stop* and *Rewind* functions (so called soft touch button operation). The function switches of those drives have to be replaced by the contacts of the relevant relay in the Music Play Back Counter. Reverse machines should have separate Start buttons for each direction.

(A recommended auto reverse cassette recorder with these functions would be the Technics RS-TR 355.)

15 The idea of the Music Play Back Counter is to play a certain amount of songs on each side of a tape. The counter (Fig 3 IC1 & IC2) as shown in the diagram is set to play eight songs (on industrial recorded tapes), 15 songs (on C90 cassettes) or 19 songs (on C120 cassettes).

20 The setting can be programmed for three different steps (with switches S16 and S17, Fig 3) between two and 99 songs; or even from 2 -  $\infty$  songs if the capacity or the combination of counter IC 1 and counter IC 2 (Fig 3) will be expanded.

The following description will always relate to a setting of 19 songs, which is nevertheless the most economical and realistic setting for cassette drives.

25 The programme sequence resembles the following example: Song 1 - speech / information, song 2 - speech / information, song 3 - speech / information song 19 - speech / information; song 1 **side two** (flip side)- speech / information, song 2 side two - speech / information song 19 side two - speech / information; information; song 1 **cassette two side 1** - speech / information and so on.

30 Simply, what this example shows is that after song 19 plus the 3 or 4 seconds *stop break*, the playing order will change to the next or the reverse drive. Tapes do not have to be filled right to the end, because the flip side will start exactly where the last song of the previous side ended.

After playing 19 songs of the reverse side this drive will rewind the tape to the beginning of side one and another drive will be started with the next *Start Music Play Back Counter* Signal.

While recording music tapes, there are two items to watch: to count the exact amount of songs and to watch that the songs on the flip side are marginally shorter than on the first side (tape length Side 2 < Side 1).

35 The *set / song-count* impulse is given by the 50% Volume Stage as indicated by the Music Control Board (Fig 1 output X24/9, Fig 3 input X24/9). This makes sure that the Music Play Back Counter counts even if the tape drive does not stop, e.g. if the announcement is shorter than the fade out plus the four seconds *stop break*.

Please note that the Music Play Back Counter actually counts the music / entertainment inputs rather than the songs as such. This means if two songs are faded into another, there is no speech / information input between the two songs, the counter will assume that only one song was played.

40 If the Music Control Board is in *Volume Level Indicator Mode* it is possible to play almost all commercially recorded tapes on the music / entertainment cassette recorders which are controlled by the Music Play Back Counter.

Commercially recorded tapes do not restart side 2 exactly after the end of the last song on side 1. Therefore they can only be played on one side. The switches S20 - S23 (Fig 3 centre right) will enable the four drives individually to be switched into *Single Side* mode.

45 As soon as the last song on side 1 in this drive finishes the *Single Side* mode will rewind the tape to the beginning of side one and another drive will be started with the next *Start Music Play Back Counter* Signal.

The *Count Number* cannot be set individually for each drive. Therefore the lowest song count of all two or four tapes should be selected. The counter will skip songs which follow after the highest setting. Accordingly it will restart the reverse side after the set song.

50 As an example: The counter setting is 15 but there are 19 songs on the tape. The Music Play Back Counter will skip the songs 16 - 19. So, side 2 of that tape will be started after song 15 on the first side. If this tape was recorded for a counter 19 setting, side 2 will now probably start in the middle of its third or fourth song. It is then also advisable to switch off this drive's reverse function.

55 Tapes can be changed while transmission is in progress. This should be done while the music drives are in stop position during a speech / information input. New tapes should be rewound to the beginning of side 1. After the change the counter must be reset to zero with switch S18 (Fig 3 centre left).

Careful consideration was given to the design of the Music Play Back Counter's Emergency Music Start Functions.

If the Music Play Back Counter (Fig 3) receives an Emergency Music Start signal (Fig 3 input X24/7) it will firstly

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check if a music / entertainment drive is in operation. (This would be shown by the Flip/Flop, Timer combination connected to inputs X24/6 & X24/8 Fig 3 centre) If not, the reason for a blank TX signal must be suspected to come from a speech / information drive. This will then be rewound, as described before, and the Music Play Back Counter will start the next lined up song without taking further action.

5 If the Music Play Back Counter receives an Emergency Music Start signal and a music / entertainment drive is in operation it will start the next music / entertainment machine and rewind side 1 of the tape which caused the fault.

The actual "heart" of the Fully Automated Radio and TV Programming System is the **Speech Control Board**. (Fig 2)

10 The speech / information tape machines used in conjunction with the Speech Control Board can be either Reel To Reel or Cassette drives. In either case they should be equipped with electro - mechanically operated Start, Stop and Rewind functions (so called soft touch button operation).

The function switches of those drives have to be replaced by the contacts of the relevant relay in the Fully Automated Radio and TV Programming System.

(A recommended cassette recorder with these functions would be the Technics RS-TR 355.)

15 The running order of the speech / information tape machines is set by Counter IC4 (Fig 2). The counter outputs Q 0 - Q 9 are connected to a 15 Pin distributor socket (Not individually shown in Fig. 2). Further connections are the socket outputs 1 & 2 & 3 & 4 (Fig 2 IC4 output 1-4) for the tape drives and the Reset (RST) Pin which is wired up to the reset input of counter IC4. The plug inserted into this socket will operate as a programme disc. Every counter output will be assigned to a tape drive to programme the running order.

20

**Tape Order**

**1 2 3 4 1...**

25  
 Q0 = 1  
 Q1 = 2  
 Q2 = 3  
 Q3 = 4  
 Q4 = RST  
 Q5 = not connected  
 Q6 = not connected  
 Q7 = not connected  
 Q8 = not connected  
 Q9 = not connected

**Tape Order**

**1 1 2 2 3 4 1 1...**

Q0 = 1  
 Q1 = 1  
 Q2 = 2  
 Q3 = 2  
 Q4 = 3  
 Q5 = 4  
 Q6 = RST  
 Q7 = not connected  
 Q8 = not connected  
 Q9 = not connected

35

40

**Tape Order**

**1 2 1 3 1 4 1...**

45  
 Q0 = 1  
 Q1 = 2  
 Q2 = 1  
 Q3 = 3  
 Q4 = 1  
 Q5 = 4  
 Q6 = RST  
 Q7 = not connected  
 Q8 = not connected  
 Q9 = not connected

**Tape Order**

**1 2 2 1 3 1 2 2...**

50  
 Q0 = 1  
 Q1 = 2  
 Q2 = 2  
 Q3 = 1  
 Q4 = 3  
 Q5 = RST  
 Q6 = not connected  
 Q7 = not connected  
 Q8 = not connected  
 Q9 = not connected

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The operational stages of the Speech Control Board are basically indicated by counter I 10 (Fig 2). At its *set input* (which is also the *set input* for the whole operation of the Speech Control Board) lies a delay which prevents it from receiving more than one impulse within approx. three seconds (Fig 2 Delay to I10). This is a precaution to eliminate

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false commands resulting from unclean signals.

The delay inputs are a pilot tone indicator (Fig 2 input X42 to Pilot Tone Decoder to Delay), which monitors the right channel of all speech / information tapes, (Fig 2 input X42 shows the right channel of all speech information sources) and the Start Speech (Fig 2 X43)input which receives its signal from the Music Control Board (Fig 1 X43). This signal is transformed to a single, short needle impulse so that it does not overshadow the information coming from the pilot tone indicator.

Counter I 10 (Fig 2) sets four steps:

### Q0 = high:

The speech / information sources are off, the TX signal is broadcast entirely from the music / entertainment source (to Fig 1 X35 to X18 to audio matrix), the Volume Control input at the Audio Matrix is low (Fig 2 X22 leading to the Audio Matrix), the pilot tone decoder's (Fig 2 bottom centre) input is closed (the actual switch off of the decoder is not shown in Fig 2), the 17 seconds timer (Fig 2 Box: "17 sec") is held in *reset* position and Flip /Flop I 14a (Fig 2) is enabled to trigger Flip /Flop I 14b, (Fig 2) if required, to put Drive 4 prior to the other speech (information) drives. (Fig 2 shows on the very left, from the top: Speech drives 1-4 with individual *Start* and *Rewind* inputs and one common *STOP* input at the bottom).

The next impulse will come from the (Fig 1 output X43) Music Control Board to start a speech / information drive. This sets the counter I 10 (Fig 2 input X43 to IxTrigger to Delay to I10).

### Q1 = high:

The Volume Control input at the Audio Matrix (Fig 2 output X22) becomes high, a speech / information drive will be started (Fig 2: point Z is high and one of the following And-Gates already receives another high signal from IC4), the pilot tone indicator's input is now open, the 17 seconds counter (Fig 2 centre right) is still held in reset position.

The next impulse to set I 10 will be a pilot tone on the currently playing speech / information tape (Fig 2 input X42) This tone indicates that the speech / information input will end soon. This impulse sets the counter I 10 (Fig 2) to:

### Q2 = high:

The Volume Control input at the Audio Matrix (Fig 2 X22) stays high but the music / entertainment source is restarted with a signal sent to the Music Control Board (Fig 2 output X45, Fig 1 input X45), the speech / information drive continues to play (Fig 2 point Z still high), the 17 seconds counter (Fig 2 centre right) is now started.

The next impulse to set I 10 can be a pilot tone on the currently playing speech / information tape (Fig 2 input X42). This tone indicates that the speech / information input will now end. This impulse would set the counter I 10 (Fig 2) to:

### Q3 = high:

Q3 is also named Point A (Fig 2 centre). This stops the speech / information tape (all Flip/Flops left of point A are reset and the STOP output is activated; Fig 2), counter IC4 (Fig 2) is set and counter I 10 (Fig 2) is reset to Q0 = high position.

If the pilot tone indicator should fail to receive another pilot tone (at Fig 2 input X42 to set Q3=high) within the 17 seconds *talk-over* the next song's intro, the timer (Fig 2) will trigger. This will set counter IC4 (Fig 2) and reset counter I 10 (Fig 2) into Q0 = high position which in turn switches Point Z (Fig 2) to low. The gates to the left of point Z will cause the speech / information tape to stop and rewind.

The Plug / Programme Disc outputs 1 & 2 & 3 ( Drive 1 - Drive 3 )(in Fig 2 this disc is incorporated into IC4) and the output of switch S2 (Fig 2) (Drive 4) determine the tape drive which will be put on the air. Counter I 10 output Q1 or Q2 ( Point Z ) (Fig 2) put the currently chosen speech / information drive in *play back* mode. A further signal (Point A) comes from I 10 output Q3 (Fig 2). A high signal at point Z will put the chosen drive in *play back* mode. If Point Z turns low and Point A stays low the drive will rewind the tape. If a high Point Z becomes low but Point A switches to high the drive will be stopped.

The following controls (shown to the left in Fig 2) will give commands to the tape machines.

They will convert

- signal at Point Z,(Fig 2)
- the signal for the drive choice (Fig 2 IC4 outputs 1-4) and
- Signal at point A (Fig 2)

into relay trigger:

the relevant trigger will be *Start* or *Stop* or *Stop and Rewind*. Those controls consist of four Flip / Flops, four Inverters, eight And- Gates, two Delays and two Needle Impulse Senders.

This description relates directly to the Speech Control Board operation with soft touch button controlled tape drives and the controls shown in the main Speech Control Board Diagram (Fig 2). Controls for *Special Cassette Drives* are have also been invented but are similar to the embodiment as described here.

The diagram for the Speech Control Board (Fig 2) shows the controls to run four different speech / information tape machines. This should be sufficient capacity to run even radio stations with a high speech / information output. Nevertheless further tape drives may be connected by expanding counter IC4 (Fig 2 right top) and additional control set ups following points A and Z marked in the diagrams.

A **Special Cassette Drive Connection** set up with three drives was specially designed for this Fully Automated Radio and TV Programming System. It can be used instead of soft touch operated, commercially available machines. This is a low cost alternative, with the additional advantage that the mechanical response delay is shorter than with usual soft touch operated tape decks. The mechanical drives have an electro magnet. If this magnet is in operation the drive will be in Play Back mode, otherwise it will be in Rewind mode. The Stop mode is the rewind mode with the motor switched off.

The Special Cassette Drive Connection contains the cassette end indicators (flip / flops), auto mute facilities (to switch play back amplifiers off when not in use) and its relevant controls which will be connected to the points A and Z in the main Speech Control Board Diagram. Therefore the controls past points A and Z shown in the diagram will not be used.

Tape Deck One has a further play back amplifier for a third track to play stereo speech / information inputs, if required. Stereo inputs have to be recorded on three track machines. Otherwise Tape Deck One needs to be switched to *Mono* play back mode. (This is not shown in the diagrams)

A special Plug / Programme Disc, the **Remote Recording Control Disc**, (no Diagram filed) is a special connector to enable remotely controlled recordings with the same tape machine which is connected to the Fully Automated Radio and TV Programming System. Obviously, this is only possible with tape machines which are fitted with a recording facility. The Remote Recording Control Disc will indicate when the machine is available for recording and if the recording is in progress it will divert eventual playback commands to other drives.

Switch S6 (Fig 2 centre right) can delay the *high* command to the Audio Matrix. Such a delay would take into consideration that there is a short time difference between the Start Speech Signal (start signals Fig 2 very left) and the actual start of the tape due to mechanical inertia.

Tapes can be changed while transmission is in progress. This should be done while the relevant speech / information drive is in stop position. New tapes should be rewound to the beginning of a speech/ information input.

The speech / information **Drive 4** has some special functions.

Switch S2 (Fig 2 top right) determines if Drive 4 will be played in a programmed order designated by the Programme Disc / Plug (as incorporated in Fig 2 IC4) and Counter IC4 (Fig 2) or if it may override the counter (*order* or *timer* mode).

Provided switch S2 is set to *Timer Play / Override*, a high impulse at the input of Flip / Flop I 14a (Fig 2 S7, bottom right) will give Drive 4 preference for the next speech / information programme input. This impulse can be a remotely sent signal (Fig 2 input X58) (for example from an outside broadcast van) or a timer (Fig 2: 3600 seconds counter, to enable "News on the Hour"). This choice will be selected with switch S7 (Fig 2 bottom right) .

The timer, if selected, sets the Flip / Flop shortly before the full hour to broadcast e.g. the news or any other required speech / information item almost precisely on the hour, namely when the current music / entertainment input ends.

Please note, that in case Flip / Flop I 14a (Fig 2) is triggered while a speech / information tape is in operation, Drive 4 will not override this input immediately but it will be scheduled to insert the next speech / information input after the following music / entertainment input.

The output of Flip / Flop I 14a is kept in *hold* position but will be admitted to trigger Flip / Flop I 14b (Fig 2) if Counter I10's (Fig 2) output Q0 is high.

A time signal (e.g. the Greenwich Bleeps or a station call sign) can be triggered off at the precise time when Flip / Flop I 14a is set by the timer if its trigger is connected to the TS output (Fig 2 Bottom right). This signal will then override the current programme if mixed in a separate mixer with the TX output of the Audio Matrix. It is recommended to transmit it only on one of the two stereo channels.

Switch S4 sets the timer (not shown).

#### **Further Special Functions of Drive 4:**

If switch S1 (Fig 2 centre) is set in *Special* position, Drive 4 will rewind automatically after its programme input irrespectively of stop signals given by pilot tones. (This might shorten the 17 seconds talk over which is usually required for rewind commands).

If switch S5 (Fig 2 top right) is in on-position, counter IC4 will be reset after every input from Drive 4.

Instead of using a tape drive, one could use the Drive 4 function as the source input for a live-studio. In this case

the *Drive 4 Start Relay* (Fig 2 left: "4{Start}") will trigger an *On Air Light* to notify the *Live Disc Jockey*.

The **Base Time Unit** ( no diagram ) is a 1 Hz supply for all digital timers in the Fully Automated Radio and TV Programming System and has also a 100 Hz supply to test the 3600 seconds timer, which is connected to Flip / Flop I 14a on the Speech Control Board (Fig 2). To test this timer, a switch ( S3, not shown ) has to be set in *test* position. The time base will be taken from the alternation of the AC-mains supply. For operation with no AC supply (e.g. of batteries in remote areas) the Basis Time has to be created by a oscillator, preferably a quartz oscillator.

The *Fully Automated Radio and TV Programming System* can also be used to run a **Fully Automated Television Station**.

A Fully Automated Television Station works similarly to a Fully Automated Radio Disc Jockey System and mixes different programme inputs which were originally separated on different video tapes in different video recorders.

The Fully Automated Television Station will mix the programme inputs according to the outlined example:

When the entertainment source (e.g. a film or music video) comes to its end, a link tape (e.g. commercials, weather forecast or another music video) switches on, enabling another programme source (link tape) to follow or to be mixed over the outro of the entertainment source.

Seconds after the actual end of the entertainment input, its source will be stopped.

When the information input (link) comes to its end, the entertainment source switches on, enabling a new film or music video to follow or to be mixed under the outro of the information link. After the actual end of the link input its tape drive will be stopped.

While or after the entertainment source comes to its end again, the process as described above will be repeated.

A combination of video recorders is required:

they must have two audio tracks (mono), or three tracks for stereo operation and their Start, Stop and Rewind functions must have Soft Touch Controls.

Unless the entertainment programme inputs are exclusively Music inputs, the Fully Automated Television Station's *Music Control Board* (Fig 1 switches S9 & S10) must not be set to *Volume Level Indicator Mode*. Other inputs than music (e.g. Films, TV Shows, News ) do not have constant volume levels which would enable the Volume Level Indicators (Fig 1 top left) to work sufficiently.

For that reason the Fully Automated Television Station should only be run on pilot tone (or external) commands. Following this recommendation there is one of the audio tracks to be used as the pilot tone channel, the other tracks are then free to carry the audio signals.

The audio outputs of the video recorders will be connected to the Fully Automated Radio and TV Programming System, in the same way as signal sources / tape drives are connected for Fully Automated Radio Stations.

The Video Outputs will be mixed in a separate video mixer, which might be controlled by connection to the Music Volume Control output at the Speech Control Board (Fig 2 output X22) or by any other possible means. This might also include additional contacts at the relays on the Speech Control Board which give Start and Stop signals to the drives (Fig 2 very left). A selection of suitable Video Mixers is already commercially available.

**The Studio Controls** are a little set up to support the recording of programme inputs which will be played on the Fully Automated Radio and TV Programming System. (There are no drawings submitted) The Studio Controls consist of Volume monitors and pilot tone generators.

Even though the Fully Automated Radio and TV Programming System is very reliable it is recommended to check music / entertainment tapes before the first broadcast. The Volume Level Indicators work entirely on detection of a drop in volume; therefore it is possible that short gaps or slow parts within a song might trigger the 50 % Volume Level Indicators. A **Recording Monitor** was invented to avoid such mistakes during a radio programme.

This Recording Monitor has two Volume Level Indicators like the ones on the Music Control Board. One 50% Volume Level Indicator and one for the 100% level. They will be connected to the headphone output of the music recording machine in the studio. At their output are two lamps and a buzzer which can be switched off.

At the start of the recording of a song the Volume Level Indicators will be set. The 50 % lamp should switch off (and the buzzer should start during the outro) indicating the moment when the speech / information input would start if played by the Fully Automated Radio and TV Programming System.

The 100% lamp switches off at the actual end of the song. If the lamps switch off at the required moment the recording will be suitable to be played on the Fully Automated Radio and TV Programming System switched to Volume Level Indicator mode.

Music Tapes which were not recorded with the aide of a Recording Monitor should be played back through the music recording machine and checked by the Recording Monitor. The Recording Monitor has to be set manually. For music recording machines with electro-mechanically switched Start, Stop and Record functions optional automatic facilities have been invented.

An additional *Set / Start* switch will start the recorder and the Recording Monitor simultaneously and also take the 80 seconds timer at the Music Control Board into consideration. Three seconds after the end of the song the Recording Monitor will stop the recorder automatically, provided the song is suitable.

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It is recommended that the music recorder should be preceded by an electronic limiter / compressor to increase the Volume Level Indicator's reliability.

The Studio Controls also have a 5 khz oscillator to record pilot tones. The pilot tone time will always be of the same duration, suitable for the decoders irrespective of the length of time the signal switch was pressed.

5 To simplify the speech / information recording there is an automatic facility to put a pilot tone on the tape as soon as the *Pause* button at the recorder is released. This puts the *Stop* command for the previous recording before the beginning of the current input. Only the *Start Music* command needs to be given manually.

Please note that the automatic facility has to be switched off, so that no pilot tone is recorded before the first and after the last recorded input on a tape.

10 The pilot tone timer for the automatic facility needs different RC (resistor / capacitor) combinations for manual operated recording drives than for soft touch operated ones. This is due to longer mechanical inertia of electro-mechanically operated drives.

Opto isolators can be connected to the set switches (the *set / start* switch and the switch for the *start music* command) to attach a stop clock.

15

### Claims

20 1. A Fully Automated Radio and Television Programme Selection System which is able to select, mix and crossfade different programme items such as music and information inputs which are stored on different playback sources characterised by

a programme selector comprising means to compile items according to a user defined programme policy,

25 whereby the programme selector contains a combination of different monitoring means which do not require any additional signal feedback from a music signal source to a controller of the system other than the actual recording of the music which is broadcast; and

means to select different information items sorted by category, according to the specified policy.

30

2. A Fully Automated Radio and Television Programme Selection System according to Claim 1 which comprises means to compile items according to a user defined programme policy without having prior data about the item itself, without a detailed programme schedule provided and without the item having specific characteristics such as pilot-tones.

35

3. A Fully Automated Radio and Television Programme Selection System as claimed in Claim 1 wherein means are provided to compile music programmes which contain freely selectable speech / information inputs which will be selected from two or more independent play-back sources.

40 4. A Fully Automated Radio and Television Programme Selection System according to Claim 1 wherein the system contains a back up control to reset the whole Fully Automated Radio and Television Programme Selection System, should a fault occur,

45 whereby this back up control monitors if a music / entertainment drive is in operation during the occurrence of dead air, in which case it will start the next music machine and rewind the tape which caused the fault,

whereby, if the music drive is not in operation, the next lined up song will be started and any faulty speech drive will be reset and a new speech drive will be scheduled for the next information input.

50 5. A Fully Automated Radio and Television Programme Selection System according to Claim 1 wherein means are provided to monitor music inputs: either by an external controller, a pilot-tone decoder or **volume-level-sensors**, wherein this monitor facility will signal twice, once to indicate that the music is fading out and once to indicate the actual end of the music input.

55 6. A Fully Automated Radio and TV Programme Selection System according to Claim 1 which is adaptable for use with a variety of readily available commercial hardware including tape drives, record players, CD-players which can either be controlled by a single relay or by separate Start / Stop relays, or by a Music Play Back Counter.

7. A Fully Automated Radio and Television Programme Selection System according to Claim 5 wherein means are provided to playback a prepackaged programme thus overriding automated programming until the prepackaged programme has finished.
- 5 8. A Fully Automated Radio and Television Programme Selection System according to Claim 1 wherein a source input for a live-studio is provided.
9. A Fully Automated Radio and Television Programme Selection System according to Claim 1 wherein a Music Play Back Counter is provided
- 10
- to play a certain number of songs on each side of a tape,
  - to rewind the tape to the beginning after playing a set amount of songs on the reverse side,
  - to rewind the tape to the beginning after playing a set amount of songs on the first side of a tape provided the drive is in Single Direction Mode,
  - 15 - to count songs even if a tape drive does not stop between songs / inputs.
10. A Fully Automated Radio and Television Programme Selection System according to Claim 1 wherein means are provided to rewind a source tape automatically after its programme input.
- 20 11. A Fully Automated Radio and Television Programme Selection System according to Claim 1 wherein a special unit is provided to enable remotely controlled recordings with the same tape machine which is connected to the Fully Automated Radio and Television Programme Selection System, whereby this unit contains means to indicate when the relevant drive is available for recording and whereby this unit contains means to divert eventual playback commands to other drives, if recording is in progress.
- 25
12. A Fully Automated Radio and Television Programme Selection System according to Claim 1 wherein a switch determines if a speech / information Drive will be played in a programmed order or if this drive may override the order by a remotely sent external signal or through a timer, to broadcast news on the full hour, in such a way that it will not override the current programme output immediately but will be scheduled as the next link input, after the end of the current song or, if currently a speech input is broadcast, after the following song.
- 30

### Patentansprüche

- 35 1. Ein vollautomatisiertes Radio und Fernseh Programmauswahlsystem das verschiedene Programm Teile, wie Musik - und Informationseinlagen, die auf verschiedenen Wiedergabequellen gespeichert sind, auswählen, mischen und überblenden kann, ausgezeichnet durch
- 40 einen Programmwähler, der so ausgestattet ist, daß er Einlagen auswählen kann, entsprechend eines vom Benutzer vorgegebenens Programmschemas,
- wobei der Programmwähler eine Kombination von verschiedenen Kontrolleinrichtungen verfügt, die kein zusätzliches Signal von der Musikquelle zum Kontrollteil benötigen als die bloße Aufnahme des Liedes welches gesendet wird; und
- 45 Mechanismen um verschiedene Informationseinlagen, die nach Kategorie geordnet sind, entsprechend des vorgegebenen Sendeschemas auszuwählen.
2. Ein vollautomatisiertes Radio und Fernseh Programmauswahlsystem gemäß Anspruch 1, das so ausgestattet ist, daß es, entsprechend eines vom Benutzer vorgegebenen Programmschemas, Einlagen auswählen kann, ohne vorherige Daten der Einlage zu kennen, ohne eines vorherbestimmten Programmablaufplans und ohne daß die Einlage über spezielle Eigenschaften verfügt, wie zB Pilottöne.
- 50
3. Ein vollautomatisiertes Radio und Fernseh Programmauswahlsystem gemäß Anspruch 1, das so ausgestattet ist, daß es Musikprogramme zusammenstellen kann, die frei wählbare Sprach / Informationseinlagen beinhalten, die von zwei oder mehreren unabhängigen Abspielgeräten stammen.
- 55
4. Ein vollautomatisiertes Radio und Fernseh Programmauswahlsystem gemäß Anspruch 1, welches Schutzeinrich-

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tungen beinhalten um das gesammte vollautomatisierte Radio und Fernseh Programmauswahlsystem neu zu starten, sollte eine Panne passieren,

5 indem die Schutzeinrichtung kontrolliert ob ein Musik / Unterhaltungsabspielgerät tatsächlich läuft während Sendestille, in welchem Fall es das nächste Musikabspielgerät startet und das Tonband, das die Panne verursachte, zurückspult;

10 wobei, sollte kein Musikabspielgerät arbeiten, das nächste bereitgestellte Lied gestartet wird und das Sprachabspielgerät, das die Panne verursachte, zurückspult und ein neues Sprachabspielgerät bereitgestellt wird für die nächste Ansage.

5. Ein vollautomatisiertes Radio und Fernseh Programmauswahlsystem gemäß Anspruch 1, welches über Mechanismen verfügt um die Musikeinlagen zu überwachen: entweder durch externe Einrichtungen, ein Pilottondecoder oder **Lautstärke-Level-Sensoren**,

15 wobei solch Überwachungseinrichtung zwei Signale gibt, erstens um anzuzeigen daß die Musik ausgeblendet wird und zweitens um das tatsächliche Ende der Musikeinlage anzuzeigen.

6. Ein vollautomatisiertes Radio und Fernseh Programmauswahlsystem gemäß Anspruch 1, welches benutzbar ist mit einer Vielfalt von käuflich erwerbbaaren Abspielgeräten, einschließlich Tonband / Cassetten Recordern, Schallplatten - und CD Spielern, welche entweder über einen kombinierten Start/Stop oder separate Start/Stop Relais kontrolliert werden können oder durch einen Musikabspielzähler.

7. Ein vollautomatisiertes Radio und Fernseh Programmauswahlsystem gemäß Anspruch 5, welches über eine Einrichtung verfügt um vorgefertigte Programme abzuspielen und dabei die automatische Programmerstellung stoppt bis das vorgefertigte Programm beendet ist.

8. Ein vollautomatisiertes Radio und Fernseh Programmauswahlsystem gemäß Anspruch 1, welches einen Signaleingang für ein Live-Studio hat.

9. Ein vollautomatisiertes Radio und Fernseh Programmauswahlsystem gemäß Anspruch 1, welches über einen Musikabspielzähler verfügt

- um eine bestimmte Anzahl von Liedern auf jeder Seite eines Tonbandes abzuspielen,
- um das Tonband an seinen Anfang zurückzuspulen, nachdem eine bestimmte Menge Lieder auf der Rückseite gespielt wurde,
- um das Tonband an seinen Anfang zurückzuspulen, nachdem eine bestimmte Menge Lieder auf der ersten Seite gespielt wurde, vorausgesetzt daß das Abspielgerät für einseitige Wiedergabe programmiert ist.
- um Lieder zu zählen selbst wenn ein Abspielgerät nicht stoppt zwischen zwei Liedern.

10. Ein vollautomatisiertes Radio und Fernseh Programmauswahlsystem gemäß Anspruch 1, welches über Einrichtungen verfügt um ein Abspielgerät nach gesendeter Einlage zurückzuspulen.

11. Ein vollautomatisiertes Radio und Fernseh Programmauswahlsystem gemäß Anspruch 1, welches über ein Spezialgerät verfügt um per Ferneingabe eine Programmeinlage aufzunehmen mit dem selben Tonbandgerät welches an dem vollautomatisiertes Radio und Fernseh Programmauswahlsystem angeschlossen ist, wobei diese Ferneingabeeinheit über Mechanismen verfügt um anzuzeigen wenn das jeweilige Tonbandgerät frei ist für Aufnahmen und wobei diese Ferneingabeeinheit über Mittel verfügt um eventuelle Abspielkommandos an andere Abspielgeräte weiterzuleiten während der Aufnahme.

12. Ein vollautomatisiertes Radio und Fernseh Programmauswahlsystem gemäß Anspruch 1, wobei ein Schalter angibt ob eine Sprach / Informationsquelle in programmierter Reihenfolge abgespielt wird oder ob diese Quelle Vorrang über alle anderen Abspielgeräte erhalten soll wenn der Schalter entweder ein Fernbedienungssignal erhält oder ein Signal von einer Uhr erhält um somit zur vollen Stunde die Nachrichten zu senden; allerdings soll das laufende Programm nicht sofort unterbrochen werden durch diese Ansage, sondern sie wird als nächste Spracheinlage bereitgestellt, um nach dem Ende des laufenden Liedes oder, sollte das laufende Programm gerade eine Spracheinlage sein, dann nach dem nächsten Lied gesendet zu werden.

**Revendications**

- 5 1. Un système de sélection de programmes radio et télévisés complètement automatisé qui est capable de sélectionner, de mélanger et d'enchaîner des éléments de programmation différents comme par exemple de la musique et des entrées d'information qui sont classifiées sur des sources de lecture différentes caractérisées par

un sélecteur de programmes englobant des moyens d'assembler des éléments en accordance avec une ligne de programmation définie par l'utilisateur,

10 par lequel le sélecteur de programme contient une combinaison de moyen de surveillance qui ne nécessite aucune réinjection de signal venant d'un signal de source musicale jusqu'au contrôleur du système autre que l'enregistrement même de la musique qui est diffusée; et

15 moyens de sélectionner des éléments d'information différents classifiés par catégories, en accordance avec la ligne de conduite spécifiée.
- 20 2. Un système de sélection de programmes radio et télévisés complètement automatisé en accordance avec la revendication numéro 1 qui englobent des moyens d'assembler des éléments en accordance avec la ligne de conduite définie par l'usagé sans avoir de données antérieures au sujet de l'élément lui même, sans un calendrier de programmation détaillé fournit et même avec le produit n'ayant aucune caractéristiques comme par exemple des fréquences pilotes.
- 25 3. Un système de sélection de programmes radio et télévisés complètement automatisé en accordance avec la revendication numéro 1 où moyens d'assembler des programmes qui contiennent des sélections de dialogues / des données d'information qui Deuvent être choisis de deux sources ou plus.
- 30 4. Un système de sélection de programmes radio et télévisés complètement automatisé en accordance avec la revendication numéro 1 par lequel le système contient un contrôle de ressource pour reprogrammer entièrement le système de programmes radio et télévisés complètement automatisé dans le cas où une erreur se présenterait,

par conséquences cette ressource de moniteurs de contrôle si de la musique / la lecture d'entretien est en opération durant un silence, dans quel cas le système va engager le prochain élément musical et rembobiner la cassette qui a causé la faut;

35 par conséquences si le lecteur de musique n'est pas en opération, la chanson suivante programmée sera jouée et quelque faute d'unité de paroles sera remis à l'état et une autre parole d'unité va être programmée pour la donnée d'information suivante.
- 40 5. Un système de sélection de programmes radio et télévisés complètement automatisé en accordance avec la revendication numéro 1 où des moyens de contrôler des données musicales sont fournies : par un contrôleur extérieur, par un décodeur de sons pilotes ou par des capteurs de volume de sons, où ce moniteur facilité va signaler deux fois, une fois pour indiquer que la musique va disparaître doucement et une autre fois pour indiquer la fin de la donnée musicale.
- 45 6. Un système de sélection de programmes radio et télévisés complètement automatisé en accordance avec la revendication numéro 1 qui peut être adaptée pour l'usage facile de matériel commercial comprenant des lecteurs de cassettes, tourne disques, lecteurs de lazars qui peuvent être contrôlés où par un simple relais ou par un relais start / stop, ou par un compteur qui rejouent de la musique.
- 50 7. Un système de sélection de programmes radio et télévisés complètement automatisé en accordance avec la revendication numéro 5 où les moyens de rejouer un programme fournit qui en conséquences couvrent une programmation automatisée jusqu'à tant que le programme soit fini.
- 55 8. Un système de sélection de programmes radio et télévisés complètement automatisé en accordance avec la revendication numéro 1 où la source données pour un studio en direct est fournit.
9. Un système de sélection de programmes radio et télévisés en accordance avec la revendication numéro 1 où un conteur de musique reversée est fournit.

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- \* pour jouer un certain nombre de chansons sur chaque face de la cassette
- \* pour rembobiner la cassette jusqu'au début après avoir joué un certain nombre de chansons sur la face opposée
- \* pour rembobiner la cassette jusqu'au début après avoir joué un certain nombre de chansons sur la première face de la cassette fournie, le lecteur est dans un mode de lecture singulaire
- \* Pour conter les chansons même si le lecteur de cassettes ne s'arrête pas entre les chansons et les données

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**10.** Un système de sélection de programmes radio et télévisés complètement automatisé en accordance avec la revendication numéro 1 où les moyens de rembobiner une cassette automatiquement après ses données de programmation.

15

**11.** Un système de sélection de programmes radio et télévisés complètement automatisé en accordance avec la revendication numéro 1 où une unité spéciale est fournie pour contrôler les enregistrements à une distance avec le même lecteur de cassette qui est connecté avec le système de sélection de programmes radio et télévisés complètement automatisé, par lequel cette unité contient des moyens d'indiquer lorsque le lecteur est disponible pour enregistrer, et par laquelle cette unité contient des moyens de divertir des commandes pour rejouer à d'autres lecteurs, si l'enregistrement est en cours.

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**12.** Un système de sélection de programmes radio et télévisés complètement automatisé en accordance avec la revendication numéro 1 où un bouton détermine si un dialogue / lecteur d'information va être utilisé dans un ordre de programmation ou si ce lecteur va annuler l'ordre par un signal transmis par une télécommande ou grâce à un minuteur pour diffuser les-3 nouvelles sur une heure complète, de telle manière au'il ne va pas annuler le programme en cours mais va être intégré comme la prochaine liaison, après la fin de la chanson en cours ou, si un dialogue est en train d'être diffusé, après la chanson suivante.

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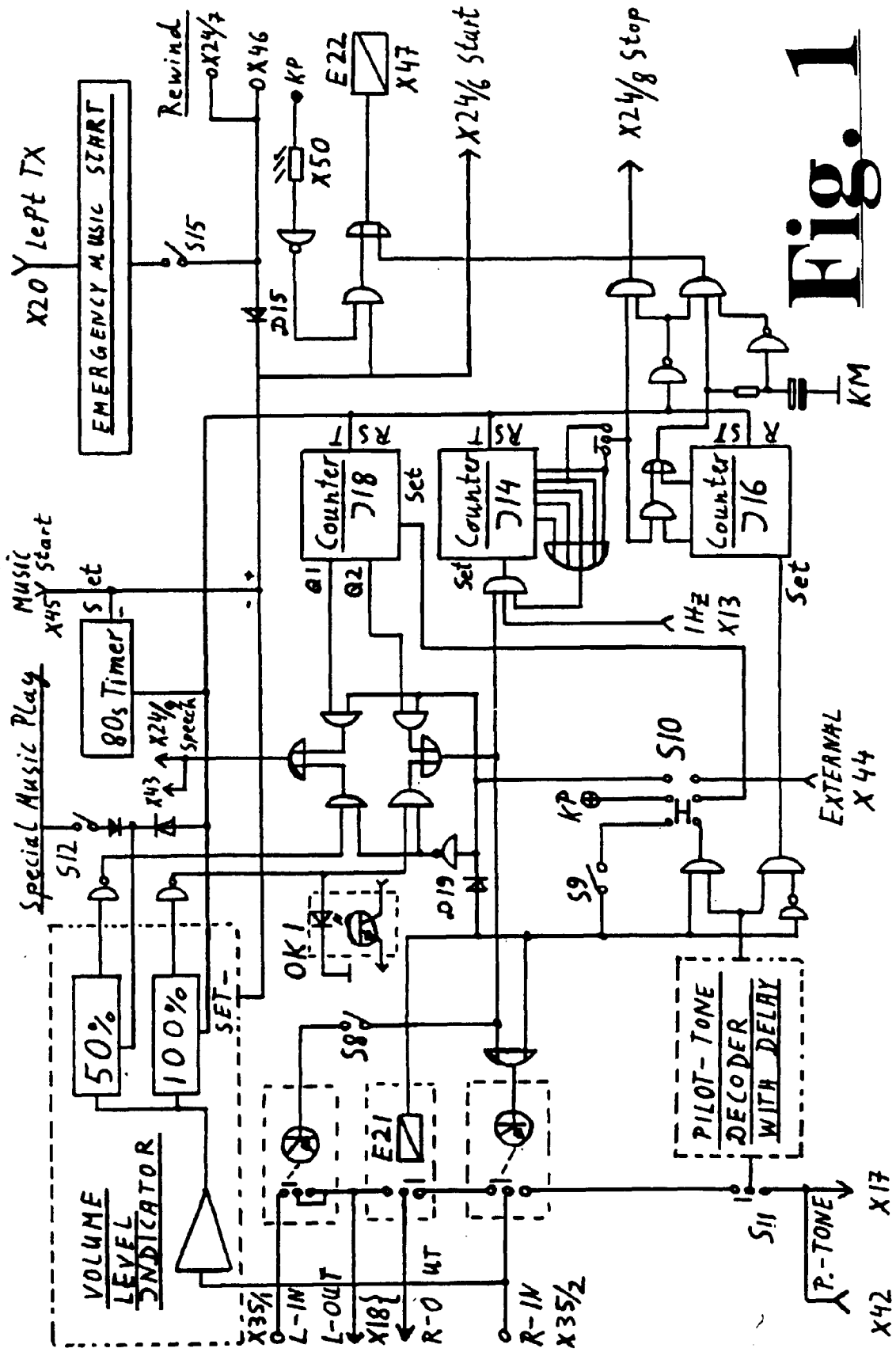
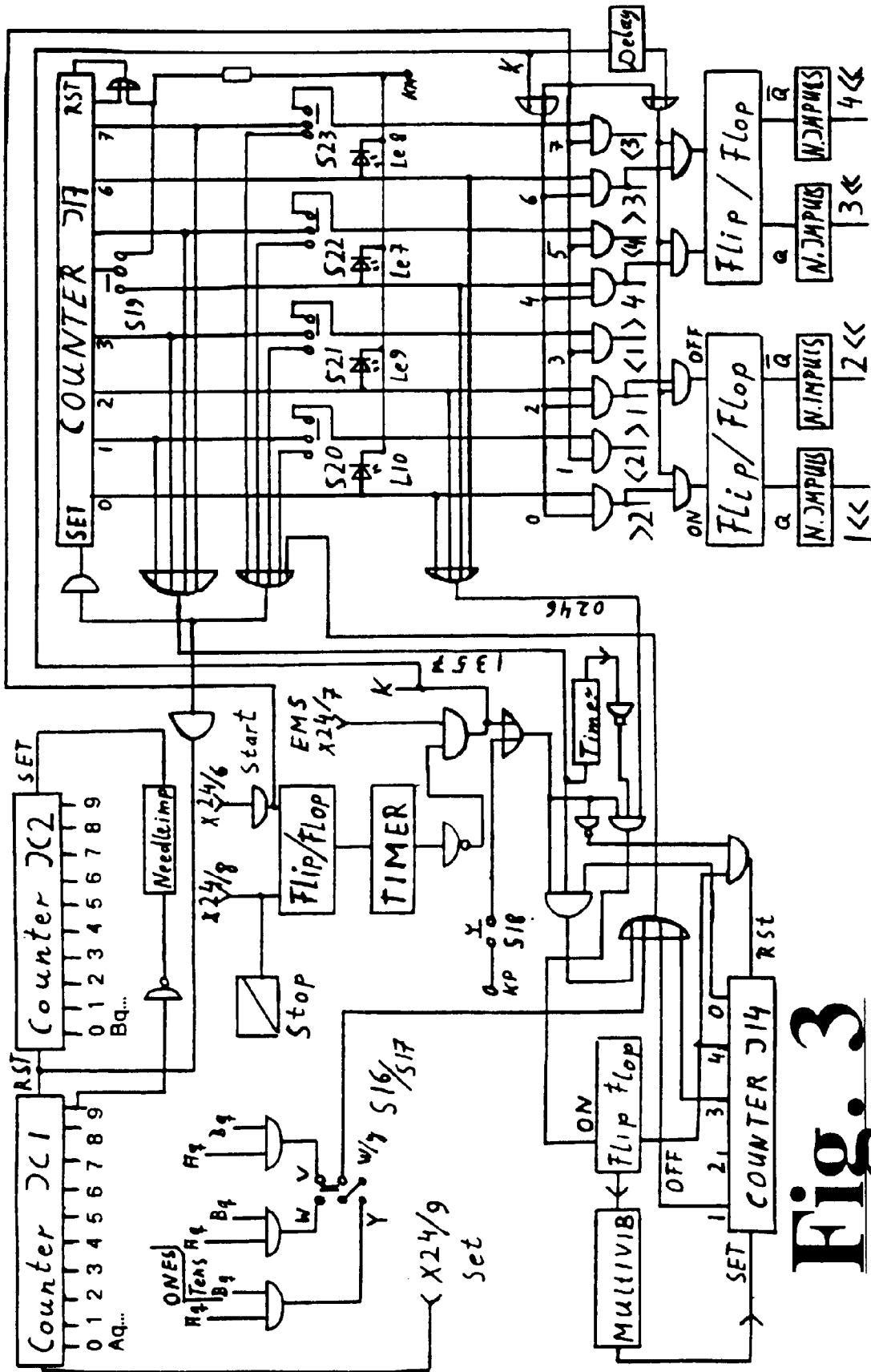


Fig. 1





**Fig. 3**